Base Load Power Hub (BLPH)

DAVIT CRANE Tag.No.X99001

EQUIPMENT MANUFACTURER RECORD BOOK

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Base Load Power Hub (BLPH)

DAVIT CRANE Tag.No.X99001

EQUIPMENT MANUFACTURER RECORD BOOK - INDEX

Document Number: 1724001010-QC-LIS-00003

ROSETTI MARINO

1	NO COMMENTS - APPROVED - WORK MAY PROCEED
2	MINOR COMMENTS - REVISE AND RESUBMIT - WORK MAY PROCEED
3	MAJOR COMMENTS – REJECTED – DO NOT PROCEED
4	APPROVAL NOT REQUIRED

NOTE: Approval doesn't relieve the supplier from mandatory compliance with contractual documents and specifications. Comments made do not imply acceptance of any cost or delivery impact.

Sign	Date
ROSETTI MARINO S.p.A.	10/12/2024

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1 INTRODUCTION

1.1 PROJECT OVERVIEW

Crosswind, a Shell and Eneco joint venture, was awarded the tender to develop the offshore Hollandse Kust Noord (HKN) wind farm, located 18.5km off the coast of Netherlands near the town of Egmond aan Zee. The consortium plans to have HKN operational in 2023 with an installed capacity of 759MW generating at least 3.3TWh per year. This is sufficient renewable power to supply more than 1 million Dutch households with green electricity.

Offshore wind farms produce intermittent electricity and balancing these dips and peaks and integrating this electricity into the national energy system requires new technologies. For this reason, the offshore wind farm will include several new technologies that could be implemented at full-scale in the future. The new technologies being explored include a floating solar park, a short-duration battery storage as well as long-term storage via green hydrogen produced by water electrolysis and subsequently consumed in a fuel cell. The combination of these individual measures, herein referred to as the Base Load Power Hub (BLPH) will ensure a continuous power supply regardless of the wind situation.

1.1.1 Project Location

The Hollandse Kust Noord (HKN) wind farm is located 18.5km off the coast of the Netherlands near the town of Egmond aan Zee.

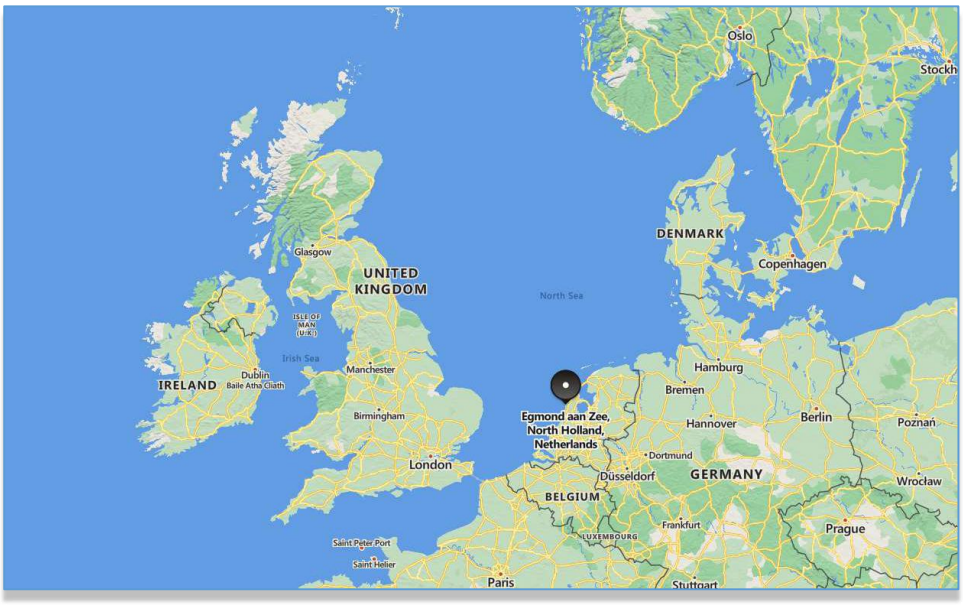


Figure 1 HOLLANDSE KUST NOORD WIND PARK Location Map



Figure 2 - Wind Park Details

The wind farm will consist of No. 69 x 11.5MW wind turbine generators each to be installed on a dedicated monopile structure. A 70th monopile located on coordinates E 590719.1, N 5841602.3 is reserved for installing the platform accommodating the BLPH. The monopile structure was designed and installed by Van Oord Offshore Wind (VooW) and therefore not part of the BLPH scope.

1.1.2 Project Concept

All components included in the BLPH will be integrated onshore on a topsides and installed in an offshore location within the boundaries of the HKN wind farm. At its simplest, the BLPH will store energy during periods of high electricity generation from renewable sources (a wind turbine generator and the floating solar PV farm) and release it during periods of low generation. In practice. It is expected that the energy stored will supplement generation from renewable sources to ensure that at least 1.0MW of power is exported to the electrical grid regardless of wind/solar availability.

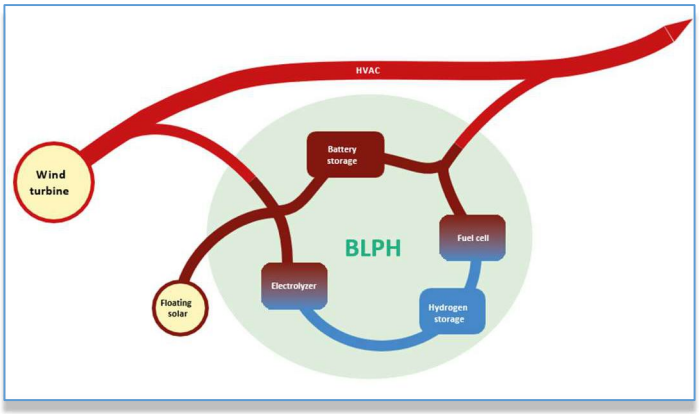


Figure 3 – BLPH Concept

Electricity in the BLPH will be stored in the form of electrons in a battery energy storage system (BESS) as well as converted into green hydrogen via water electrolysis. When the power output from the connecting wind turbine drops to below 1 MWe, the BLPH will return its stored energy to supplement the remaining power output. This will be by discharging the BESS, while stored hydrogen will be converted back into electricity using a fuel cell to extend the discharge duration.

The purpose of the BLPH s to function as a testbed for the integration of energy storage technologies with renewable generation. It is expected that equipment installed on the BLPH will operate as Normally Unmanned Installation for at least two (2) years with no or minimal maintenance and it will have its own independent control room with the ability to communicate with Crosswind's control room.

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2 DOCUMENT SCOPE

EQUIPMENT MANUFACTURERS RECORD BOOK INDEX

2.1 DEFINITIONS AND ABBREVIATIONS

COMPANY or Client (CPY):	Crosswind
CONTRACTOR (CTR):	ROSETTI MARINO S.p.A.
PROJECT:	HOLLANDSE KUST NOORD WIND PARK Project

Table 1 - Definitions and Abbreviations

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3 EQUIPMENT MANUFACTURER RECORD BOOK-INDEX

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MANUFACTURER RECORD BOOK INDEX

DAVIT CRANE Tag.no.X-99001

24-27012

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State		**Date**	**Signature**
Review without comments	☐		
Review with comments	☐		
Comments:			

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00	First issue	CZB	MPU	12/07/2024
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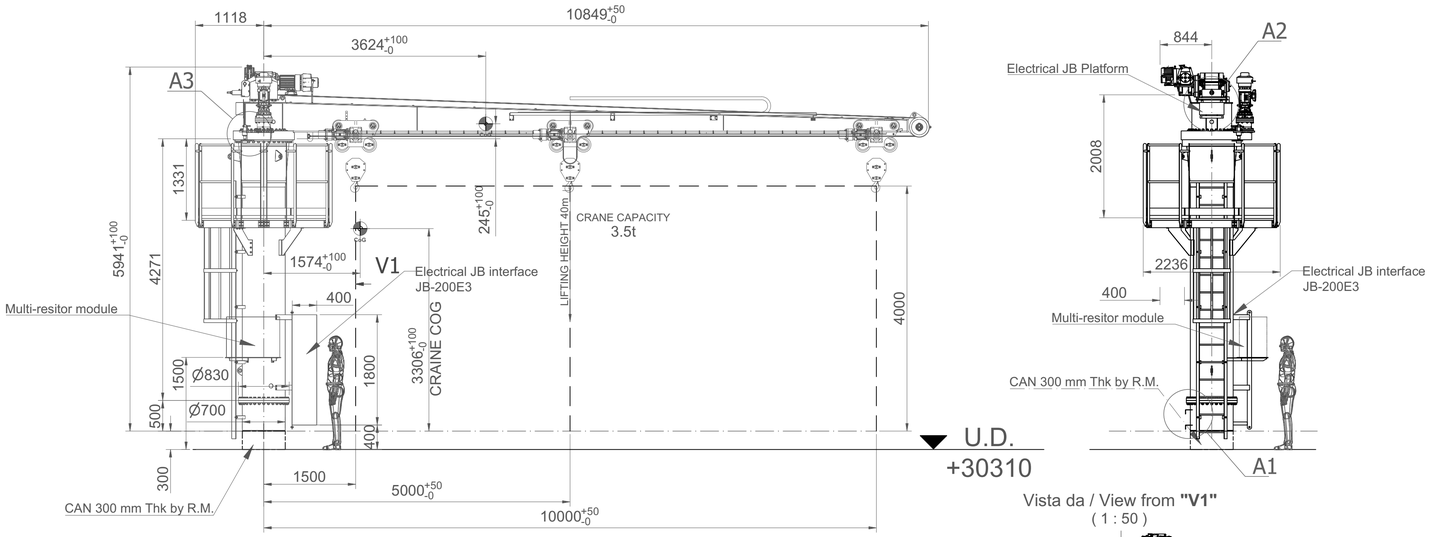
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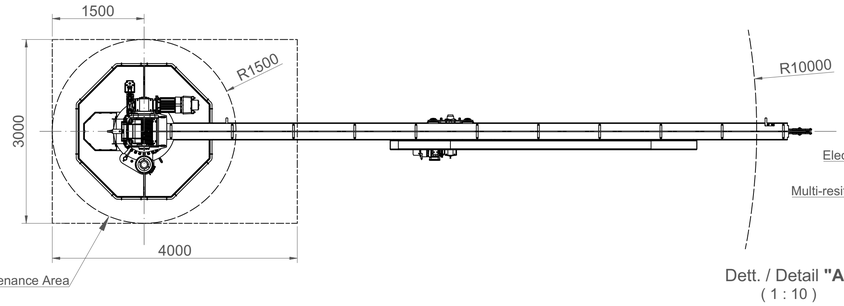
3 PART 1 – DESIGN DOSSIER

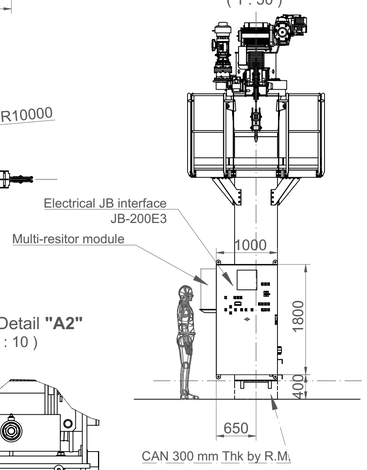
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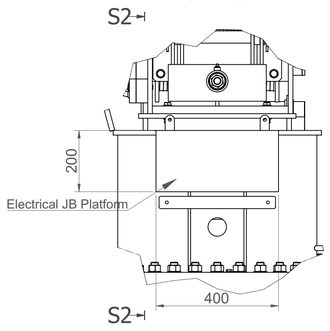


Vista da / View from **"V1"**
(1 : 50)

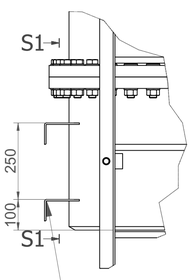




Dett. / Detail **"A2"**
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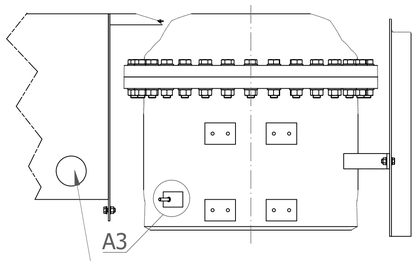


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(1 : 10)



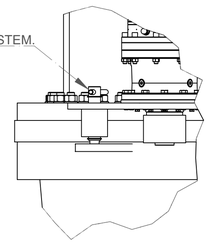
WELDED "L" PROFILE
For supports cable ladder

Sez. / Sec. **"S1-S1"**
(1 : 10)

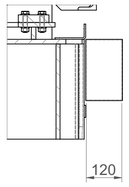


EL. CABLE IN DN32
For cable by R.M.

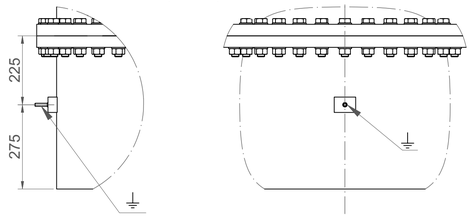
Dett. / Detail **"A3"**
(1 : 10)



Sez. / Sec. **"S2-S2"**
(1 : 10)



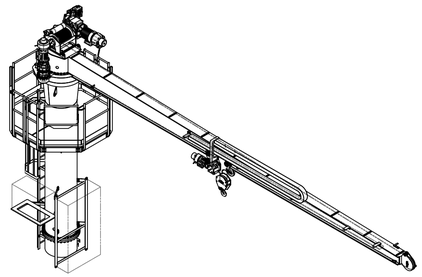
Dett. / Detail **"A3"**
(1 : 10)



EARTING POINT
Threaded stud, Ø16mm, L.30mm, material S355J2+N

Material :
S355 J2+N

Painting Color :
RAL Code: 7038.



EL.	Description Eng	MATERIAL	Q.TY	WEIGHT
3	Travelling Trolley Assembly	S 355 J2+N UNI EN 10025	1	256,01 kg
2	Boom Assembly	S 355 J2+N UNI EN 10025	1	2542,26 kg
1	Fixed Column Ass.	S 355 J2+N UNI EN 10025	1	1241 kg

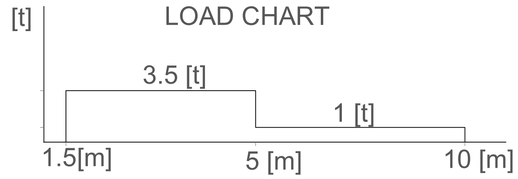
Load at deck interface

MAX FORCE ON DECK	
F_{Vmax}	-120[kN]
F_{Rmax}	15[kN]
M_{Zmax}	±45[kNm]
M_{Rmax}	520[kNm]

Forces on the table are calculated with 3.5[t]x5[m] outreach.
Forces to be applied at deck level in center of adapter.
DAF= 1.7 (Outboard Lift in Offshore)
Contingency Factor=1.05 (included)
F_{Vmax}: vertical load on deck.
F_{Rmax}: max radial load on deck in any direction (plane x-y)
M_{Zmax}: max Torsion moment in z direction.
M_{Rmax}: max tilting moment (perp. to the boom line)

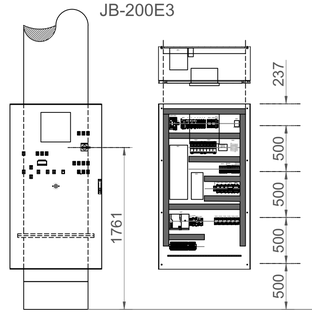
Test load:

5.6[t]x5[m] - 1.6[t]x10[m]
in according to DNV-ST-0378 rules

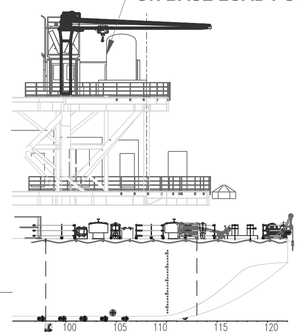


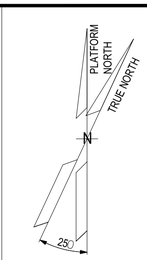
Description	Q.ty	Notes
CRANE TYPE		PLATFORM CRANE OFF-SHORE
LIFTING CAPACITY	3.5[t] 1.5-5[m] 1[t] 1.5-10[m]	STEEL ROPE HOIST WINCH
HOOK STROKE	40[m]	Electric driven by gearbox Brake on the El. Motor
LIFTING SPEED	3.75/15[m/min]	Variable speed motor
Hoist winch stroke (radial movement)	1.5-10[m]	Eletric driven rack - pinion system
RADIAL SPEED	2-8[m/min]	
PRELIMINARY WEIGHT	6000[kg]	
ROTATIONAL MOVEMENT	0-180°	By electric Motor Geqarbox Pinion on slewing bearing
ROTATIONAL SPEED	0.25/0.5[rpm]	Variable speed motor
WORKING TEMPERATURE	-9/45[°C]	
HAZAEDOUS AREA:		SAFE AREA
PERSONEL LIFT		NO
POWER SUPPLY	400[v]/3Ph/50[hZ] (3Ph+N)	
TOTAL POWER ABS.	20[kW]	

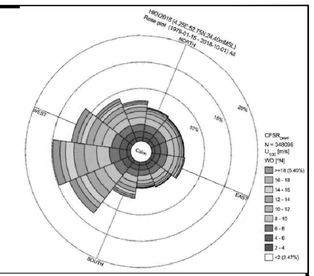
Electrical JB interface
JB-200E3



STORAGE POSITION
ON BASE LOAD POWER HUB







NOTES

LEGEND

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Sign | Date

M. Di Scipio 22/11/2024

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REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
4	05/11/24	R.S.	M.P.	A.T.	ACCEPTED FOR CONSTRUCTION
3	20/09/24	R.S.	M.P.	A.T.	ACCEPTED FOR CONSTRUCTION
2	21/08/24	R.S.	M.P.	A.T.	ACCEPTED FOR CONSTRUCTION
1	03/07/24	R.S.	M.P.	A.T.	ACCEPTED FOR CONSTRUCTION
0	18/06/24	R.S.	M.P.	A.T.	ISSUE FOR REVIEW (IFR)

CROSSWIND

ROSETTI MARINO

TITLE : 123A90A – Base Load Power Hub Platform
CRANE GENERAL ARRANGEMENT DRAWINGS
DAVIT CRANE

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE 1:50
DRAWN R.S. | CHECKED M.P. | APPROVED A.T. | DATE 18/06/24
A1 | DRAWING NO. 1724001010-MAC-DA-00009 | SHEET 001 | REV. 4

File Name : 1724001010-MAC-DA-00009

Base Load Power Hub (BLPH)

DAVIT CRANE
INSTALLATION, OPERATING AND MAINTENANCE MANUAL

Document Number:
1724001010-MAC-MAN-00016

Document Class: 3

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1 INTRODUCTION

1.1 PROJECT OVERVIEW

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1.1.1 Project Location

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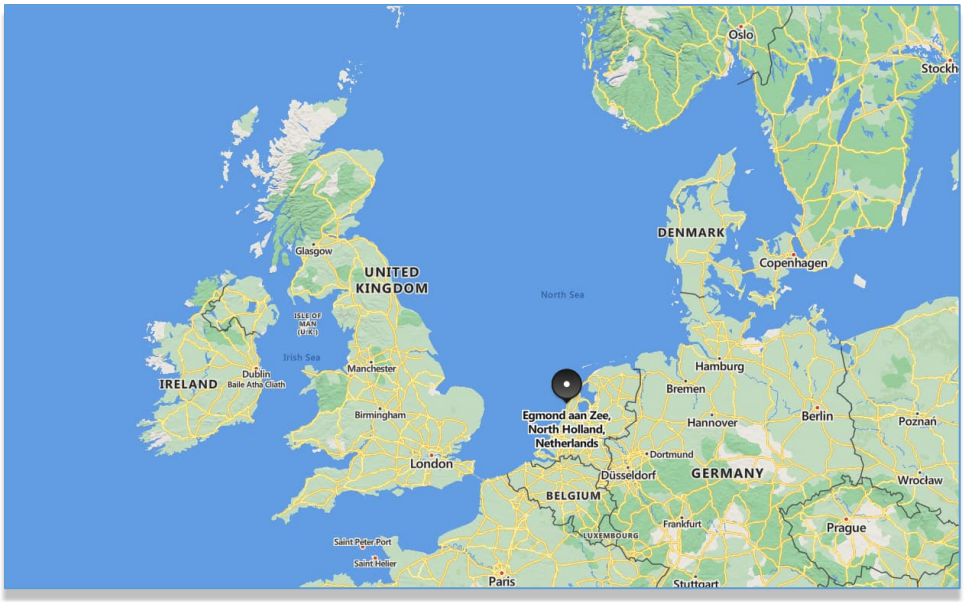


Figure 1 HOLLANDSE KUST NOORD WIND PARK Location Map



Figure 2 - Wind Park Details

The wind farm will consist of No. 69 x 11.5MW wind turbine generators each to be installed on a dedicated monopile structure. A 70th monopile located on coordinates E 590719.1, N 5841602.3 is reserved for installing the platform accommodating the BLPH. The monopile structure was designed and installed by Van Oord Offshore Wind (VooW) and therefore not part of the BLPH scope.

1.1.2 Project Concept

All components included in the BLPH will be integrated onshore on a topsides and installed in an offshore location within the boundaries of the HKN wind farm. At its simplest, the BLPH will store energy during periods of high electricity generation from renewable sources (a wind turbine generator and the floating solar PV farm) and release it during periods of low generation. In practice. It is expected that the energy stored will supplement generation from renewable sources to ensure that at least 1.0MW of power is exported to the electrical grid regardless of wind/solar availability.

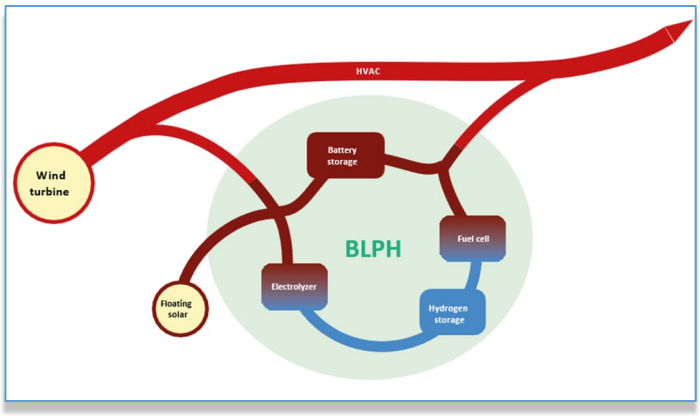


Figure 3 – BLPH Concept

Electricity in the BLPH will be stored in the form of electrons in a battery energy storage system (BESS) as well as converted into green hydrogen via water electrolysis. When the power output from the connecting wind turbine drops to below 1 MWe, the BLPH will return its stored energy to supplement the remaining power output. This will be by discharging the BESS, while stored hydrogen will be converted back into electricity using a fuel cell to extend the discharge duration.

The purpose of the BLPH s to function as a testbed for the integration of energy storage technologies with renewable generation. It is expected that equipment installed on the BLPH will operate as Normally Unmanned Installation for at least two (2) years with no or minimal maintenance and it will have its own independent control room with the ability to communicate with Crosswind's control room.

2 DOCUMENT SCOPE

The instruction manual uses texts, words, signals, symbols or diagrams, pictures to convey information to those who will use the machine: install it, use it, carry out maintenance.

2.1 REFERENCES

Doc. No.	Description
1724001010-MAC-DA-00009	Crane General Arrangement Drawings
1724001010-MAC-DG-00012	Wiring Diagram

Table 1 - Reference Documents

2.2 DEFINITIONS AND ABBREVIATIONS

COMPANY or Client (CPY):	Crosswind
CONTRACTOR (CTR):	ROSETTI MARINO S.p.A.
PROJECT:	HOLLANDSE KUST NOORD WIND PARK Project

Table 2 - Definitions and Abbreviations

N°1 ELECTRIC JIB CRANE (DAVIT)
Capacity: 3,5 t

MAINTENANCE AND OPERATING INSTRUCTIONS



JOB: 24-27012
(C09-0001)

ROSETTI MARINO

REMAZEL ENGINEERING

3. IDENTIFICATION DATA	
CLIENT:	Rosetti Marino
ORDER Nº:	1724001010 123A90A
LOCATION:	Hollandse Kust Noord offshore windfarm
PROJECT:	Baseload power hub (BLPH)
CRANE TYPE:	Davit
EQUIPMENT TAG:	X-99001
SERIAL NUMBER:	4366
JOB:	24-27012
DELIVERY DATE	December 2024
REVISION	"3"

MAKER:	**REMAZEL ENGINEERING SPA (Ex Concrane Srl)**
HEADQUARTERS:	Via Portici Manarini 41/A – 24060, Chiuduno (BG) - ITALY
OPERATING HEADQUARTERS:	Via Caboto, 26 – 34147 TRIESTE – ITALY
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E-MAIL (services requests):	cruiseservices@ remazel.com
WEB:	www.remazel.com

4. INTRODUCTION

This document is a manual of a product manufactured by **Remazel Group Company.**
If any questions arise, please contact your contact person at **Remazel Group Company**

Important: Immediately upon delivery, inspect the product for any damage which might have been caused during transportation.
Do NOT install or commission a damaged product!
Immediately report damage caused during transportation to **Remazel Group Company.**
After inspection, damaged items must be repaired or replaced, before installation and commissioning.
Assembly, installation, commissioning, tests and maintenance may only be executed by competent persons!
Every operator must have read the manual carefully before using the product.

Factory warranty: The warranty of the product will become void if the instructions in this manual for installation, operation, inspection, maintenance etc. are not followed.

- Repairs and elimination of faults within the scope of the warranty may only be performed by competent persons after **Remazel Group Company** has been consulted and has given its approval.
- The warranty will become void if the product is modified or original spare parts are not used.
- After improper use the warranty will become void.

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6. SAFETY INSTRUCTIONS

Safety instructions:

The products of REMAZEL Spa are equipped with safety devices, such as limit switches, overload protection, brakes, etc. however, danger which arises from improper use cannot be prevented with our safety devices. Please read the safety instructions of this manual carefully to work as safe as possible.

Safety precautions:

The product can only be controlled by operators with the following qualifications:
- Complete knowledge of this manual.
- Reached the age of 18.
- Capable both physically and mentally.
- Have been instructed in operating and maintaining the product and have shown proof of their competence.
- May be expected to perform the duties assigned to them reliably and have awareness of the risks and dangers.

The following organizational measures shall be taken:
- A safe and clear working environment shall be ensured.
- The operating instructions must be stored properly and easily available for the operator.
- At regular intervals, check that work is being carried out in a safety-conscious manner.
- Observe the intervals specified for periodic maintenance and tests. File the reports in the product logbook.
- Safety regulation and accident prevention policy are implemented properly.
- Compliance with national regulations.

Purpose of use:

- The product shall be used for vertical lifting and horizontal transport of loads within the limits of the technical specifications. The technical specifications are enclosed within this manual.
- The product may only be loaded up to the safe working load as specified in the technical specifications.
- Always lift and tension in a straight vertical line between load and crane.
- If the product is used for special applications beyond the technical specifications, the individual application must be assessed. In case of doubt contact Remazel Spa
- The product is only to be used in combination with monorails, gantries, suspensions end stops and supporting constructions that are properly designed and dimensioned.
- In case of tandem operation (operating 2 cranes simultaneously with one control) special instructions required of **Remazel Group Company.**
- Use in areas with potentially explosive atmospheres.
- Using the crane to transport people or animals is strictly forbidden.
- Using the crane with people walking / moving underneath the load.
- Exceeding the safe working load of the hoist under the specified conditions.
- Operation exceeding the allowed operating circumstances as mentioned in the technical specification (For example; reduced capacity at a certain sea state, ships angles, off and side lead angles and temperatures).
- Using a damaged crane or crane with defective parts.
- Pulling, dragging or towing loads.
- Lifting loads at an angle exceeding the specified limitations.
- Shorting or knotting of hoisting chain or wire rope.
- Removing the safety latch of the hook.
- Using the hoist with slack or twisted chain or wire rope.
- Touching the moving parts, such as chain, sprockets, wheels, etc.
- Tampering of the overload protection device.
- Using the emergency limit switch as an operational limit switch.
- If the crane forms a part of a machine or installation, customer is responsible that the product meets the specific regulations of the application.

Safe operation:

- The operator is responsible for the safe operation, lifting and avoiding all possible risks involved at the working environment.
- The operator shall have complete knowledge of the manual and the operating instructions before starting to work with the product.
- The operator shall perform daily checks before operating.
- Never put yourself under a suspended load. Danger to life and limbs!
- Find out where the emergency stop button is before starting operation.
- Make sure before starting with lifting, that the safe working load will not be exceeded. See chapter “Safe Working Load”.
- If overload occurs always inspect the crane for any damage.
- Never put limbs between parts which might pinch or cut.
- Do not lift a load with loose parts which can fall down attached.
- Take notice of the relevant instructions when attaching loads.
- Operate from a place with clear sight en overview.
- Never stand between the load and wall or construction.
- Start lifting carefully when picking up the load.
- When lifting and setting down loads, ensure that they are in a stable position in order to avoid accidents.
- Never try to solve a malfunction while the load is suspended.
- Never use bended, distorted or broken load hooks.
- Never attempt to straighten the hook when it is distorted.
- Never apply a heat treatment to the hook.
- Locking the buttons of the control device is forbidden.
- Prevent load shocks on the crane during pick up of the load.
- When the power is off, secure the load.
- Do not kink or crush power and control cabling.
- Never expose power and control cables to tensile stress.
- Never try to join or weld hoist chains or wire rope.
- Never touch metal components that are colder than 0°C or hotter than 55°C without protective gloves.
- Do not use the emergency limit switch as an operational limit switch.
- Immediately report damage and defects of the product to the responsible person. Examples of damage or defects are abnormal noises, impaired braking function, deformations, etc… Do not use the product until the faults have been eliminated.
- Do not remove information plates from the product. Replace illegible or damaged plates.
- It is strictly forbidden to move the hoist by pulling the chain, wire rope, hook block or by other means.
- The crane shall be tested and inspected by a relevant authority before commissioning.

Proper load attachment / suspension:

- Use only tested and certified slings to attach the load.
- Never use the hoist when the load chain or wire rope is damaged.
- Ensure a load is always suspended above the centre of gravity.
- The load must always be suspended from the base of the hook. The tip of the hook must not be subjected to load.
- Removing the safety latch from suspension and load hooks is not permitted.
- When one single load is suspended into two cranes during tandem operation, special instructions required of **Remazel Group Company.**

Electrical equipment:

Products can be supplied with different electrical control systems. The power supply is a dangerous electrical voltage. During assembly, installation, maintenance and repair, the next points shall be observed:

- Disconnect the main power of the electrical installation before opening covers marked with the “Electrical voltage warning” symbol. Only experienced electricians or competent persons may open covers marked with this symbol.
- Check wires for damage and exposed blank cores.

Installation, commissioning, maintenance and repairs:

- Only competent persons may perform installation, commissioning, maintenance and repairs.
- Only original spare parts may be used for repairs.
- We recommend having installation and commissioning carried out by personnel engaged by the manufacturer.
- Do not carry out any alterations or modifications.
- Any additional outfitting must be approved by the manufacturer.
- Dismantled guards and safety devices must be properly re-installed.
- The system shall always be tested before putting it back into operation.

Periodic inspection and tests:

- A competent person must test the product and supporting structures once a year. It may be necessary to carry out tests more often if the operating conditions demand it.
- The results of the tests must be recorded and filed in the log book.

Safe Working Load

The design is based on the safe working load specified in the technical specification of the crane. It is the operator’s responsibility not to go beyond what is permitted.

- The safe working load indicated with S.W.L describes what load is permitted and can be found on the nameplate. Below an illustration of a nameplate. (The nameplate’s image is only an example.)



7. TRANSPORT AND STORAGE

Transport:

The products will be delivered as complete construction with or without custom built support frames. The products must be fixated properly for transportation.

Storage:

When the product is going to be stored, pay attention to the following points:

- The surroundings should be clean, dry and conditioned and free from excessive vibrations.
- Temperature not colder than 0°C or hotter than 55°C.
- Store the product always straight up and secure against toppling.
- Observe environmental protection laws for storage (do not allow oil etc. to leak).
- If possible rotate all bearings and shafts every six months.
- When storing for more than six months replace the oil breather plugs with blind plugs in every gearbox (only for slewing gearbox). Check the thread and length by dismantling the breather plug and obtain a blind cap with the correct thread and length.
- **Attention!** Put the breather plugs back in place when the products will be installed.
- When the product will be stored for more than six months, fully fill up the gearboxes with oil and generously grease the sealings, shafts and bearings.
- **Attention!** Drain the oil to the normal level before putting the product in service.
- If possible rotate all shafts and bearings every 6 months.
- In case of a spare product in storage it is recommend switching the operating product with the spare product every 2 years.

Sea fastening:

Products installed on ships shall be sea fastened when necessary. Sea fastening is fixating the product, so the product cannot move. This shall prevent damage. The owner is responsible for proper sea fastening of the crane.
The following measures shall be taken:

- Fixate the crane and its components by lashing or other means.
- Make sure the hoist trolley unit is fixated.
- Be sure the trolley is not able to travel on the girder.
- Lift the hook block to its highest limit.
- If present, the chain should be stored in the chain box and the chain box should be fixated.

8. COMMISSIONING:

After installation, it is important to make sure that the complete system is functioning properly by following the next tests and checks in the correct order. The tests and checks before commissioning must also be executed when the system has been stored or has been out of operation for a longer period of time.

Warning! Installation may only be carried out by competent persons!

Checks before commissioning

1. Visual check that installation is performed correctly for:
    a. Crane (winch or other types of lifting machines)
    b. Hoist and, if installed, the trolley
    c. Power supply
2. Check tightening of all bolted connections. For reference see chapter “Tightening torques”.
3. Check that all gearboxes are equipped with proper breather plugs. (Especially when taking out of storage).
4. Check the oil level of the gearboxes and bring, if needed, to a normal level.
5. Check the oil level in the tank of the electro-hydraulic unit (only in the case of an electro-hydraulic crane), and fill it if necessary.
6. Check that there are no oil spills and therefore any breakages in the hydraulic parts (pipes, valves, etc.), (only in the case of electro-hydraulic cranes).
7. Check load chain or wire rope on the following criteria:
    a. Not twisted
    b. Lubricated and clean
8. Check presence of all limit switches.
9. Check if all electrical wiring is properly connected according the electrical diagram. See Appendix “Electrical drw. “1724001010-MAC-DG-00012”
10. Check strain relieving elements of the control and power cables for damage.
11. Check the control device housing for damage.
12. Visually check if the warning lights and junction boxes are not damaged.
13. Check if the end stops are properly mounted onto the gantry.
14. Visually check if runway is clean and without obstacles.
15. Visually check if tooth rack and pinions are clean and lubricated.

Test and checks during commissioning

- Always ensure that there is enough space for travelling and hoisting without the risk of collision or direct activation of the limit switches.
- Ensure the emergency stop is functioning correctly immediately after switching on the installation. See chapter “Operating the control device” section “Emergency stop”.
- Always push the button directional movement up for hoisting first, hook must go upwards.
- The directional movements of the system must correspond with the control device.
- Check all movements. All movements must be smoothly and without any abnormal noises or vibrations.
- If tandem operation is applicable, switching over between individual control and tandem control must be tested.
  Caution! Tandem operation must be understood well by the operator, as this is a special function.
- If applicable, an emergency control pendant must be checked the same way as the standard control device.
- Check the braking of all movements.
- Test the functioning of all limit switches.
- Register the results if necessary.

Load test

The crane should be function- and load tested according to the directives given in “DNV-ST-0378 rules and standards”.

Warning! Function and load tests may only be carried out by competent and qualified persons.
Attention!

- Suitable test load shall be used (life load).
- Both static and dynamic load tests must be carried out.
- Use a calibrated load cell between load and hoist.

Dynamic test with Class

For dynamic testing the overload device must be bypassed.

Danger! The overload device may only be bypassed during dynamic load testing and shall be reinstalled properly afterwards. Only competent persons may bypass the overload protection.

The crane shall be tested with a suspended load. The load shall be lifted 100 mm to 200 mm above the ground at slow speed. The following test loads shall be applied for the dynamic test:

S.W.L. of unit, in metric ton	Test Load
Up to 20 t	125% S.W.L.
Exceeding 20 t but not exceeding 50 t	S.W.L. + 5 ton
Exceeding 50 t	110% S.W.L.

The test load shall be suspended for a period necessary to make the observations and measurements and tests are considered successful if no fractures, permanent deformations or damages affecting the function or safety of the product are visible and if no connections have loosened or show signs or damage.

Overload test

After testing the crane with the Class, the Load Limiter has to be set in order to stop the hoisting movement with a load more than the 110 % S.W.L.
The tests shall include repeated starting and stopping of each motion, including all combined movements as provided by the intended use over the whole sequence and range of the movements.

During these tests the product shall be continuously monitored to check for:

- Overload protection shut down.
- Smooth operation of the product.
- Effective operation of the braking systems.
- Effectiveness and accuracy of limiting and indicating devices.

The overload tests are considered successful if the involved components have fulfilled their function, the subsequent examination does not reveal any damage to the drive or supporting structure and if no connection had loosened or has been damaged.

- Start lifting and pre stressing the chain or wire rope at low speed.
- Use the maximum speed that the control system allows in this situation.
- Run the hoist up to the triggering point of the overload protection device.
- Test is considered satisfactory when the triggering point is correct.

9. OPERATION:

Duties of the operator

Personal protective equipment shall be provided by the operator or owner and shall be used where necessary, for example:

- Safety boots.
- Head protection.
- Protective gloves.
- Eye protection.
- Ear protection.
- Closely fitting clothes (danger of clothing being drawn into equipment).
- When operating a hoist or standing close to it there is a danger of fingers, clothing, jewelry, etc. being drawn into equipment.



Working environment

- The operator must have excellent sight.
- Movements of the load in all directions must be clearly visible.
- Clean up disturbing objects.
- The operator must not stand in the hazard area.

Instructions for safe operation

The following guidelines are for working with the hoist trolley unit:

- Before operation, the operator must carefully observe:
    a. If there is any visible damage, functionality of the brakes and limit switches.
    b. The load to be lifted.
    c. The working environment, such as people, obstacles, the moving directions of the load and sufficient workspace.
    d. Safety instructions of the manual.

- The operator should always have a clear sight of the working environment, workload and lifting equipment.
- When it is not possible for the operator to observe the load and/or lifting equipment, a signaler should give directions to the operator. The operator must always follow the directions of the signaler.
- If another person than the operator attaches the load, clear signals must be given to the operator.
- Stop operating if any failure or defect is noticed.
- Do not exceed the safe working load. See chapter “Safe Working Load”.
- Never move suspended load above people.
- Never leave the hoist with suspended load unattended.
- Always keep the control device in easy reach.
- Do not move the load in opposite direction until the initial movement has completely stopped.
- Do not pull jammed loads.

Operating the control device

This chapter gives a short description of the control device.

Emergency stop

Danger! In case of an emergency situation, immediately press the red emergency stop button on the bottom of the control device. All movements will stop immediately and all functions will become inoperative. This button must be freely accessible at all times.

Danger! After using the emergency stop, a competent person must eliminate the fault which led to an emergency situation. After all faults are eliminated and when there is no danger, the operator may restart the crane.

When the emergency stop is used, it can be released by turning in the direction shown on top of the button.

Warning! Lethal voltage remains present in the switch panel after the emergency stop is used.

The crane and hoist trolley unit may only be operated by competent persons. The operating instructions and button layout of the control device must be available near the equipment and accessible for the operator of the crane.

- Read chapter “Safety instructions”
- Read chapter “Duties of the operator” for use of personal protective equipment.
- See column “Before use” of table “Maintenance schedule”.

10. MAINTENANCE:

In this chapter the maintenance, lubrication and torques are given.

- **Warning!** Maintenance, inspection and damage assessment may only be executed by competent maintenance personnel.
- Malfunctions have to be reported immediately, in writing, to the owner, who has to initiate repair work, which is to be carried out by a trained specialist.
- All maintenance, measurements, shortcomings, damages and repairs must be written in a logbook
- **Warning!** Repair work may only be performed after the equipment is unloaded and the main power supply is turned off by the main power switch.
- **Warning!** Parts must always be replaced when damage occurs that directly or indirectly endangers the safety or operation of the hoist.
- Shorten the periods between maintenance works in harsh operating conditions. For example multi-shift operation, high number of switch actuation, poor environmental conditions.

Daily and monthly maintenance schedule

The following regular maintenance intervals are for reference. Regular maintenance work must be adapted to the service conditions if the product is used in higher than normal service conditions.

Maintenance and checks	Daily / Before use	Monthly
Visual check of wire rope is clean, well lubricated and not twisted	x	
Visual check of hook block and hook safety latch	x	
Check operation of emergency stop	x	
Check operation of hoisting and lowering limit switches	x	
Check operation of braking	x	
Check operation of all limit switches	x	
Check for damage to electrical cables and control boxes		x
Check for oil leaks from gearboxes	x	

Mid-long term maintenance schedule

1ST MAINTENANCE (6 MONTHS)	PERSONNEL (n°)	EXPECTED TIME (hours)
Check operation of all limit switches	1	8
Check operation of emergency stop		
Check pinion for wear		
Check wire rope for wear		
Check hook block for wear		
Grease rack and pinions		
Clean and lubricate wire rope		
Check for oil leaks from gearboxes		

2ND MAINTENANCE (12 MONTHS)	PERSONNEL (n°)	EXPECTED TIME (hours)
Check operation of all limit switches	2	8
Check operation of emergency stop		
Check pinion for wear		
Check wire rope for wear		
Check hook block for wear		
Grease rack and pinions		
Clean and lubricate wire rope		
Check for oil leaks from gearboxes		
Change gearboxes oil		
Grease slewing bearing		
Check terminals tightening		
Check UPS battery		
Main components tightening torques check		

3RD MAINTENANCE (18 MONTHS)	PERSONNEL (n°)	EXPECTED TIME (hours)
Check operation of all limit switches	1	8
Check operation of emergency stop		
Check pinion for wear		
Check wire rope for wear		
Check hook block for wear		
Grease rack and pinions		
Clean and lubricate wire rope		
Check for oil leaks from gearboxes		

4TH MAINTENANCE (24 MONTHS)	PERSONNEL (n°)	EXPECTED TIME (hours)
Check operation of all limit switches	2	16
Check operation of emergency stop		
Check pinion for wear		
Check wire rope for wear		
Check hook block for wear		
Grease rack and pinions		
Clean and lubricate wire rope		
Check for oil leaks from gearboxes		
Change gearboxes oil		
Grease slewing bearing		
Check of calibration of load cell		
Check terminals tightening		
Electric insulation test		
Change UPS battery		
Main components tightening torques check		
Hoisting brake test		
Rocking test		

TIGHTENING TORQUES

Tightening torques of fasteners in components such as motors gearboxes etc. should be checked according to the specific instruction manual of the component. Other fasteners are according to below tables.
All bolts are of 8.8 quality unless otherwise noted.

BOLTS PRELOAD - Class 8.8			
Dimension	**Axial preload [kN]**	**Lubricated Torque STD / HV300 Whaser [Nm]**	**Lubricated Torque Heico Lock Whaser or Dry Torque STD/HV300 [Nm]**
M 8	18	20	24
M 10	29	40	47
M 12	43	68	81
M 16	80	165	200
M 20	124	323	392
M 22	154	438	534
M 24	179	557	675
M 27	233	812	993
M 30	285	1.110	1.352
M 33	353	1.489	1.827
M 36	415	1.922	2.350
M 39	496	2.470	3.038
M 42	569	3.060	3.751
M 45	666	3.812	4.698
M 48	748	4.603	5.655
M 52	896	5.896	7.282
M 56	1.033	7.349	9.064

BOLTS PRELOAD - Class 10.9			
Dimension	**Axial preload [kN]**	**Lubricated Torque STD / HV300 Whaser [Nm]**	**Lubricated Torque Heico Lock Whaser or Dry Torque STD/HV300 [Nm]**
M 8	26	28	34
M 10	41	56	66
M 12	60	96	115
M 16	112	232	282
M 20	175	455	551
M 22	216	615	751
M 24	252	784	949
M 27	328	1.142	1.396
M 30	401	1.561	1.902
M 33	496	2.094	2.569
M 36	584	2.703	3.305
M 39	698	3.473	4.272
M 42	801	4.303	5.275
M 45	937	5.361	6.606
M 48	1.051	6.473	7.952
M 52	1.260	8.291	10.241
M 56	1.453	10.334	12.747

Taking out from operation

Taking the crane out of service for a period longer than 6 month requires the following steps to keep the crane in good condition:

- Fill all gearboxes generously with oil and let the motors run briefly
- Let the motors run briefly with a monthly interval to keep them in good shape.
- Turn off the power supply.
- **Warning!** If the crane contains switch panel and motor heaters, keep the power supply for heating switched on otherwise turn the power supply off.
- Coat all wheels with a light film of oil.
- Make sure the load chain or wire rope is clean and well lubricated.
- Perform routine maintenance before taking the crane out of operation. See chapter “Maintenance schedule”.
- Finally read chapter “Storage”.

When the crane, hoist trolley unit or its components have reached their end of service live, they shall be replaced or taken out of service.

11. DRAWING LIST

DWG Number	*Title*
1724001010-MAC-DA-00009 – Rev.3	Crane general arrangement assembly
1724001010-MAC-DA-00010 – Rev.1	Pedestal adaptor
C09-0001-A0002 Rev.A	Mechanical assembly
C09-0001-A0003 Rev.A	Boom assembly
C09-0001-A0004 Rev.A	Winch assembly
C09-0001-A0005 Rev.A	Trolley traversing assembly
C09-0001-A0006 Rev.A	Fixed column assembly
C09-0001-A0007 Rev.A	Hook assembly
C09-0001-A0008 Rev.A	Wheel assembly Ø167
C09-0001-A0009 Rev.A	Ladder assembly
C09-0001-A0010 Rev.A	Aft gangway assembly
C09-0001-A0011 Rev.A	Pulley assembly Øc209
C09-0001-A0012 Rev.A	Rope presser assembly
C09-0001-A0013 Rev.A	Pulley assembly Øc285
C09-0001-A0014 Rev.A	Locking pin assembly
C09-0001-A0015 Rev.A	Fore gangway assembly
C09-0001-A0016 Rev.A	Electrical panel support assembly

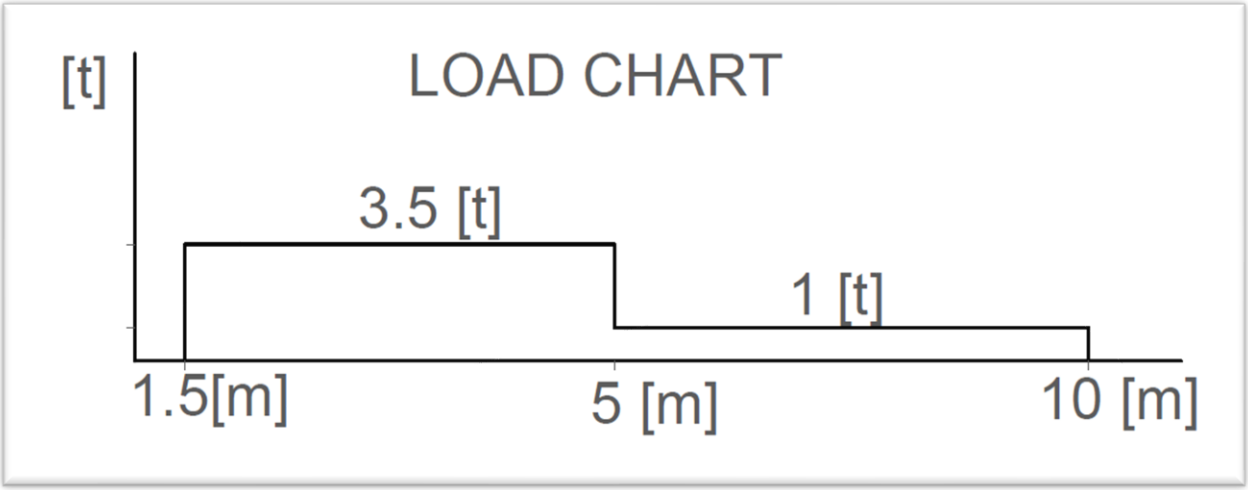
12. ELECTRIC DIAGRAMS

DWG Number	*Title*
24-27012-BD-001 – Rev.0	Blocks diagrams
1724001010-MAC-DG-00012 – Rev.1	Electric wiring diagrams

13. MAIN FEATURES

GENERAL DATA		
MODEL		**ELECTRIC JIB CRANE**
TYPE		**JBO**
GENERAL ASSEMBLY	Drw.	1724001010-MAC-DA-00009
DESIGN CRITERIA – AND APPLICABLE DOCUMENTS		
Design class		A4/M4
Operating life	Years	2
Zone Area		Safe area
Wave height	m	1.5
Working Temperature	°[C]	-9/45° [C]
TECHNICAL DATA		
Hoisting		
Capacity	SWL	3.5t@5m/ 1t @10m
Minimum Outreach	m	1.5
Maximum Outreach	m	5/10
Lifting Speed (Min/Max)	m/min	3.75/15
Hook stroke	m	40
Personnel handling		NO
Travelling		
Travelling stroke	m	1.5 - 10
Radial speed	min	2/8[min]
Slewing		
Max slewing speed (Min/Max)	rpm	0.25/0.5
Slewing range angle	degrees	0-180°
Weights (preliminary)		
Total weight	Kg	**~ 6000**
Voltage rating and frequency		
Current for motor power available		400 V, 50Hz, 3ph
Power pack		
Power installed		20 kW

14. LOAD CHART DIAGRAM



15. DESCRIPTION OF THE SUPPLY

Certification And Atex

Cranes are intended for installation in safe area & C E certificate.

Pedestal Adapter

It is made up of welded plates and lets the crane to be directly welded or bolted to the pedestal supplied by shipyard.

The upper part of the basement is flanged, machined, and holed for the fixing of the swing bearing.

The cross section is circular, and his bottom part will be flanged and suitable for bolting to the platform structure. A manhole is fitted for inspection or maintenance.

In the pedestal adapter are installed the JB for the incoming line and data exchange (where required) and the hydraulic and electric swivel.

The ladder and platform in upper side included.

Slewing Column

Made up of welded plates. The bottom part is machined and holed, to be coupled to the swing bearing. Are fitted the swing mechanism and the main panels and junction boxes.

Ladders and gangways allow an easy access to all points that require maintenance.

Rotation unit

The rotation unit will consist of an electric motor with negative brake, connected to a gearbox and pinion. The system will allow the rotation of the arm and therefore the rotation of the crane through pinion-slew gear.
The crane will be able to rotate of limited 360 °.
Appropriate electromechanical limit switches will be provided to control the limited rotation with a zero-point defined case by case.

Slew Bearing

The rotation of the crane arm will be guaranteed by the slew bearing. The inner ring will be fixed on the column, and the outer ring at the base of the crane arm. The inner ring will be equipped with teeth to ensure rotation by means of pinion/crown drive.

Boom

It is composed by high tensile welded plates, and it is welded on the slewing column.

At the end of the boom is fitted the sheave for the hoist.

On the bottom will be mounted the travelling trolley for hoisting and near the slewing column is fitted the hoisting load cell

Main Hoist Winch

The winch will be installed or on the top of the slewing column.

The winch is composed of:

- One electric axial motor, constant displacement type.
- A brake, mounted between motor and reduction gear, which blocks the winch in case of failure or, anyhow, at the end of the operation.
- A gearbox, fitted in the drum, working in an oil-bath.
- A drum, made up of steel tube, turned and grooved, suitable to receive, on one or more layers, the requested length of rope plus 3 full safety wraps; the pitch diameter is not less than 18 times the nominal diameter of the rope. The maximum number or wire rope layers on the drum is 5.
- A roller, loaded by springs, to prevent the wire rope from becoming slack when the load block is empty, or the hoist drum is unwinding at its maximum speed.
- Galvanized wire rope extra-flexible, rotation-resistant type.
- No bolted connections are foreseen for the construction of winch drum or main shafts.

Travelling trolley

The trolley structure in made of welded plates, machined for the installation of:

- Hoisting sheaves.
- Traversing mechanism

The trolley traversing mechanism (travelling system on crane boom) consists of:

- One electric motor completes of an electro-magnetic self-closing disc brake mounted on the motor, which blocks the trolley in case of failure or, anyhow, at the end of the operation.
- a gearbox, working in an oil-bath.
- wheels, flanged design, running on the bottom flange of the boom.

Wire Rope

It is composed of hot dip galvanized steel, extra-flexible, rotation-resistant type, safety factor according to applicable rules. Thimble hot dip galvanized.

Sheaves

All sheaves, made of steel or plastic, have pitch diameter not less 20 times the nominal diameter of the rope used. The sheaves are mounted on waterproof roller bearings.

Sheaves will be steel made welded or plastic material.

Hoisting Block

The hoisting block of hoist is composed of a counterweight, which contains an axial ball bearing, fitted in a waterproof housing; the counter-weight is connected to the rope by means of a shackle; the axle of the swivel is connected to a cargo DIN 15402 hook. The hook rotates on an axial thrust bearing.

The swivels are tested at 2xSWL. A positive locking means is foreseen for hook intended for personnel lifting. A double mark indicates the SWL for both personnel and Non personnel lifting operation.

Slewing Mechanism

A swing mechanism is installed inside the crane; it is composed of:

- One electric motor.
- One electric disc brake (stationary brake), mounted between motor and reduction gear, which blocks the crane rotation in case of failure or, anyhow, at the end of the operation.
- One planetary reduction gear.
- One pinion, made up of high tensile steel, mounted on the slow axis of the reduction gear; this pinion works on the toothed gear of the swing bearing.

Lubrication

All mechanisms that require grease lubrication are equipped with grease nipples. The first lubrication will be performed in our Workshop; reduction gears will be sent full of oil.

Electrical Motors

Motors will be in IP56 protection F as minimum, equipped with thermistors and heaters.

Main Electrical Panels

All panels installed on the cranes will be in aluminium marine grade painted.

Control

The crane is commanded by means of a push button installed on the control cabin.

Following reported main controls:

- Emergency push-button
- Alarm reset button.
- ON/OFF button
- Buttons for the hosting, slewing, and travelling.

Safety Devices

The following safety devices are installed on the crane:

- Hoisting limit switch (cam type), mounted on the drum axis, to limit the run of the hook when lifting (hook close to the boom head) or lowering (only 3 wraps of rope on the drum).
- overload device (load cell).
- Emergency push button/lever on column.
- Anti-two block.

Overload Device

The purpose of the overload device is:

- to stop the hoisting winch when the lifted load is over than this one allowed by the loading diagram.
- MOPS (Mean Operating Pressure System), AOPS (Automatic Overload Protection System), are incorporated to ensure adherence to safety regulations and prevent overloading.

Emergency Operation

In case of failure, it is possible to perform the following emergency operations, at a very low speed Lowering of the hook.

The emergency operation is done by means of a mechanical lever on the brakes (only to open brakes for manual lowering of the load).

Anti spalking

No Sparkling: Chain, Trolley (wheel only), Pulley, Hook.

Painting and environmental protection

Structural steel of equipment will be painted according to the following specification:

Surface preparation	
Standard	SSPC-SP1 + ISO 8501-1
Steel imperfection	ISO 8501-3 – Grade P1
Blasting degrees	ISO 8501-1 SA 2.5
Roughness	ISO 8503 Grade Medium G
Painting	
Product	**DFT µm**
HB Epoxy Surface Tolerant	150
HB Epoxy Polyamide Cured	150
Top Coat Polyurethane	50
TOTAL	**350**

Notes:

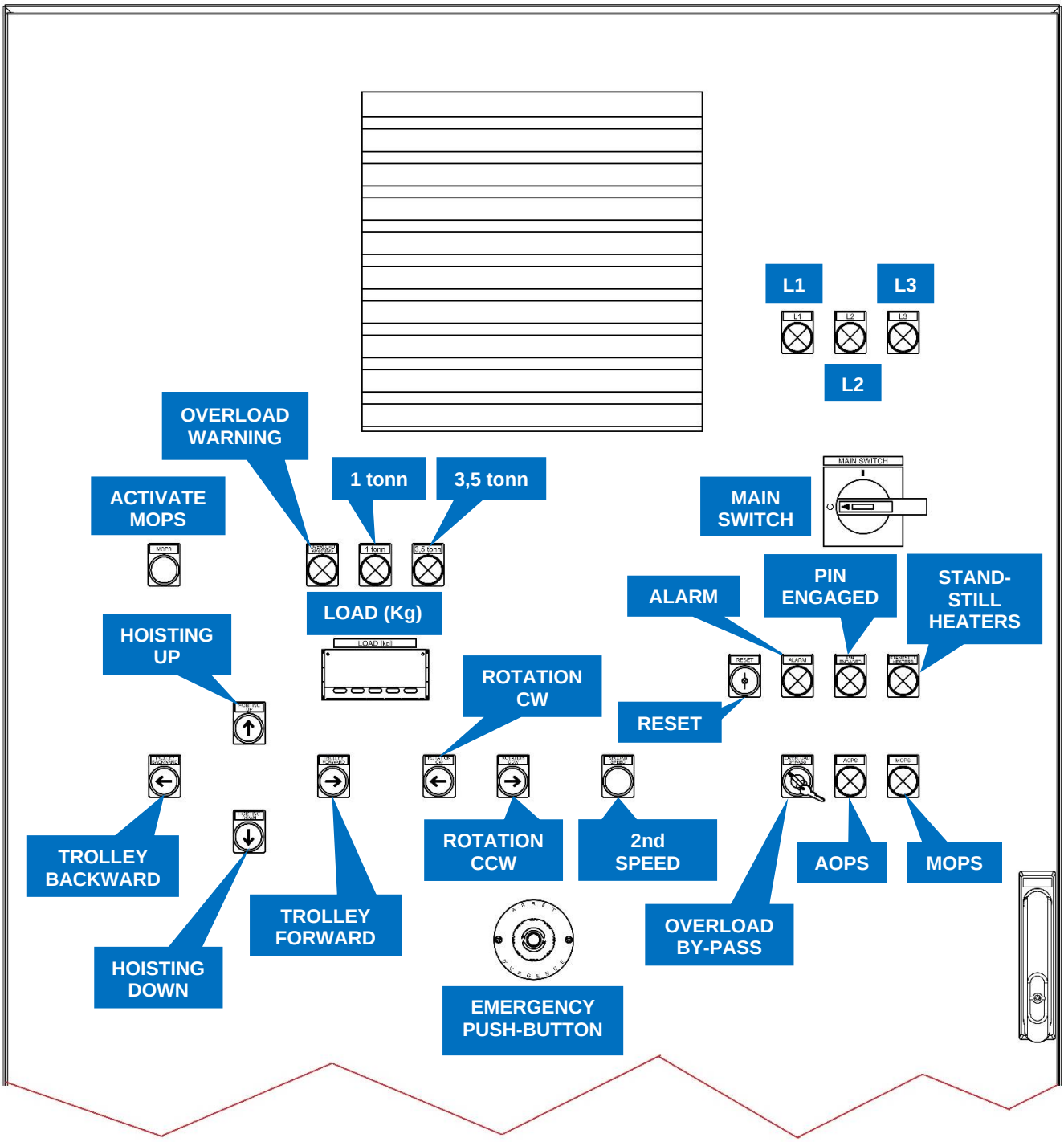
- Painting procedure applicable to structural steel.
- Other commercial items: painting suitable for the installation area, according to manufacturer's standard.

16. SPARE PARTS LIST

The following spare parts, contained in an inventoried box, are supplied for the set of 1 cranes:

Item	ID-Code	Q.ty	Units	Item Description	Description Additional	Item n°
1	011-0014-C1311	2	Each	Fuse	10,3x38 CH10 1A gG	50Q2
2	011-0014-C1315	6	Each	Fuse	10,3x38 CH10 2A gG	32Q1
3	011-0014-C0643	1	Each	Fuse	10,3x38 CH10 6A gG	40Q2
4	011-0014-C0641	1	Each	Fuse	10,3x38 CH10 10A gG	34Q1
5	011-0014-C2598	2	Each	Fuse	22x58, CH22, 50A, aM	50Q1
6	011-0014-C1527	1	Each	Contactor	Contactor TeSys LC1D - 3 poles - AC3 440V 9 A - 24 V CC	50KM1
7	011-0014-C2604	1	Each	Contactor	Contactor TeSys LC1D - 4 poles - AC1 440V 32 A- 24 V CC	KM11
8	011-0014-C2605	1	Each	Contactor	Contactor aux TeSys CA3SK - 10 A - 24 V CC	74KM1
9	011-0014-C1828	1	Each	Contactor	Contactor TeSys LC1D - 3 poles - AC3 440V 9 A - 230 V AC	84KM1
10	011-0014-C2599	2	Each	Relay	PLC-INTERFACE, with PLC-BPT.../21 with connection Push-in and relay, mounting on NS 35/7,5, 1 contact, input voltage 24 V DC	32KA1
11	011-0015-C0034	1	Each	Load cell amplifier	Load cell amplifier, output 4-20mA	80E1
12	007-0003-C0579	1	m	Cable chain	Dim. 100mm, pitch: 75, curvature radius: 75mm, pitch n°: 72	N.A.
13	011-0008-C2429	1	Each	Limit switch	Proximity switch, M12, 4 mm, DC, 3 wires, PNP NA, IO-Link COM3, cable 5 m	LS0024-0025
14	011-0008-C2430	1	Each	Limit switch	Proximity switch, M12, 4 mm, DC, 3 wires, PNP NA, IO-Link COM3, cable 15 m	LS0034-0035
15	006-0003-C0210	3	Each	Cylindrical roller bearing	Wheel roller bearing NNF 5008 ADA-2LSV (40x68x38)	N.A.
16	006-0003-C0849	3	Each	Cylindrical roller bearing	Pulley roller bearingNNF 5012 ADB-2LSV (60x95x46)	N.A.
17	007-0006-C1220	1	Each	Electric motor	Slewing motor MGM BAHK2 100 LB4 Enhanced Power (E.P.)	M2
18	007-0006-C1221	1	Each	Electric motor	Hoisting motor MGM BAHK2 132 MC4 Enhanced Power (E.P.)	M1
19	007-0006-C1222	1	Each	Electric motor	Traversing motor MGM BAHK2 90 SA4 Enhanced Power (E.P.)	M3

17. ELECTRICAL PANEL - CRANE CONTROL PUSH-BUTTONS



L1, L2, L3
The lights, independent by PLC, are on when the electrical panel is powered up.

Standstill heaters
The light signals that the heaters of the motors are on. They turn off when the motors are running.

Alarm
The light signals an alarm condition.

Pin Engaged
The light signals the state of the block pin. When it's ON, the pin is engaged and the crane can't rotate.

Reset
The reset lamp is:

- **ON** when the safety ESD is active.
- **FLASH** when the safety condition is not active, but a reset action is required.
- **OFF** when the system is ready to work.

When the light is flashing, the button must be pressed for reset the system.

MOPS
The light is on when the manual overload protection system (MOPS) is active

AOPS
The light is on when the automatic overload protection system (AOPS) is active

Overload Bypass
The key selector permits to bypass the overload alarm. The command must be maintained by the operator.

Overload Warning
The light signals when the load is over the 90% of the SWL.

1 ton
The light is ON when the SWL is 1 ton (over 5 meters of trolley run)

3,5 ton
The light is ON when the SWL is 3,5 ton (within 5 meters of trolley run)

MOPS
The push button actives the MOPS. The command is full electric, the PLC receives only the feedback of the activation of the command.

LOAD
The display visualizes the weight of the load in real time. The data is expressed in kg.

Hoisting Up
The push button commands the hoisting up of the winch. The command must be maintained by the operator.

Hoisting Down
The push button commands the hoisting down of the winch. The command must be maintained by the operator.

Trolley backward
The push button commands the movement backward of the trolley. The command must be maintained by the operator.

Trolley forward
The push button commands the movement forward of the trolley. The command must be maintained by the operator.

Rotation CW
The push button commands the movement of clockwise rotation. The command must be maintained by the operator.

Rotation CCW
The push button commands the movement of counterclockwise rotation. The command must be maintained by the operator.

Second Speed
The push button active the second speed of the selected movement. The command must be maintained by the operator.

18. CRANE OPERATION

Foreword:

The Main switch of the crane should always remain in the ON (I) position, even when the crane is not operational. This allows the engine heaters to always remain active, to avoid condensation, humidity or anything else that could compromise their functioning.

If the main switch must be turned OFF (O) position for more than a week, or if, upstream, the power supply reaching the crane electrical panel from the platform is deactivated, we recommend placing silica gel bags inside the crane electrical panel and inside the motor terminal blocks to avoid condensation, humidity, etc.

Remember, before starting operations with the crane, to unlock the locking pin (see following pages for details on the locking pin).

STARTING OF THE CRANE

Perform as follows (for reference, see previous page):

- switch ON (I position) the main switch fitted on the electrical panel (although normally, as explained before, it should already be in the ON position);
- the Light L1 – L2 – L3, are on when the electrical panel is powered up.
- unlock the Emergency push-button, if it is locked;
- the Reset button/light, after unlocking the emergency button, will be flashing.
  Then press the button Reset to activate the crane functions. The flashing light will turn off.
- if the Alarm light is on it will not be possible to operate the crane. Once the (electrical) problem has been solved, the light will go off.
- if the locking pin is still inserted, a PIN ENGAGED light on will indicate that we are in this condition and it will not be possible to continue (the crane controls are electrically inhibited). Then unlock the pin. The light will turn off and you will be able to continue with the controls;
- the Standstill Heaters light turns off when the electric motors are activated (when we are using the crane movement controls). If the light turns off while the crane is moving, it may mean that the Heaters are faulty (or the bulb is broken). Check before proceeding.
- the Overload Warning light turns on when the lifted load is greater than 90% of the maximum load.
- The 1 tonn light turn on when we are lifting a load of maximum 1 ton;
- The 3,5 tonn light turn on when we are lifting a load of maximum 3,5 ton;

  As shown by the Load Chart diagram (see previous pages) the crane has a capacity of 3.5 t with up to 5m Outreach. The crane's capacity, from 5 to 10m Outreach, is 1t.
  If the load lifted is 3.5t the trolley will automatically stop (via PLC) at 5m Outreach;

- move the hook Up or Down, pushing the buttons Hoisting UP or Hoisting DOWN;
- move the trolley Backward or Forward, pushing the buttons Trolley Backward or Trolley Forward;
- rotate the crane CW (Clockwise) or CCW (Counterclowise) pushing the buttons Rotation CW or Rotation CCW;

  All crane movement buttons, if released, instantly interrupt the manoeuvre, so they must be kept pressed to continue the manoeuvre;

- by pressing the 2nd Speed button we can obtain the second speed for all crane movements. The button must be kept constantly pressed to obtain the second speed. If released it will return to normal (slow) speed;
- by pressing the Activate Mops (Manual Overload Protection System) button activates the emergency brake which will release the load (slowly) in case of emergency.
  The MOPS light button (on the right side of the panel) will turn on and at the same time the crane siren will also be activated;
- The Overload By-pass key switch can be used (very conservatively) to lift a load greater than the nominal one. Turn the key to the right to activate it. To use it, the key must be kept turned to the right continuously. If released it will return to the initial position and immediately deactivate the Overload By-pass;
- The AOPS (Automatic Overload Protection System) light button (on the right side of the panel) will turn on and at the same time the crane siren will also be activated, in case the system AOPS activates.

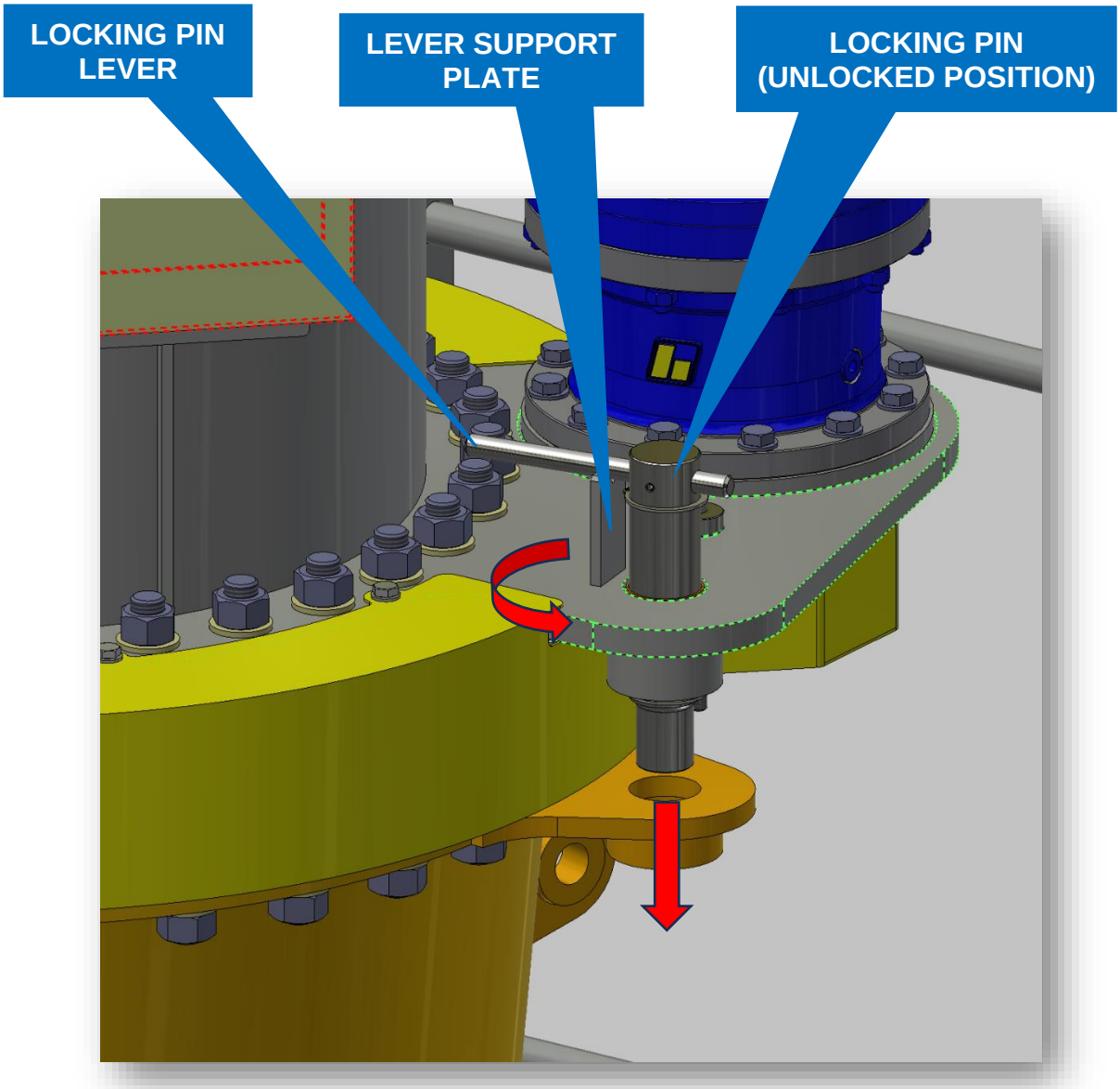
At the end of the crane operations, put the Locking pin on the locking position and press the button Emergency Stop push-button

19. LOCKING PIN DEVICE

A manually operated locking pin, mounted between the fixed column and the slewing column, mechanically prevents (when inserted) rotation when the crane is not in use. A proximity sensor, connected to the electrical panel, will also prevent other movements, lifting and translation (with the pin inserted).

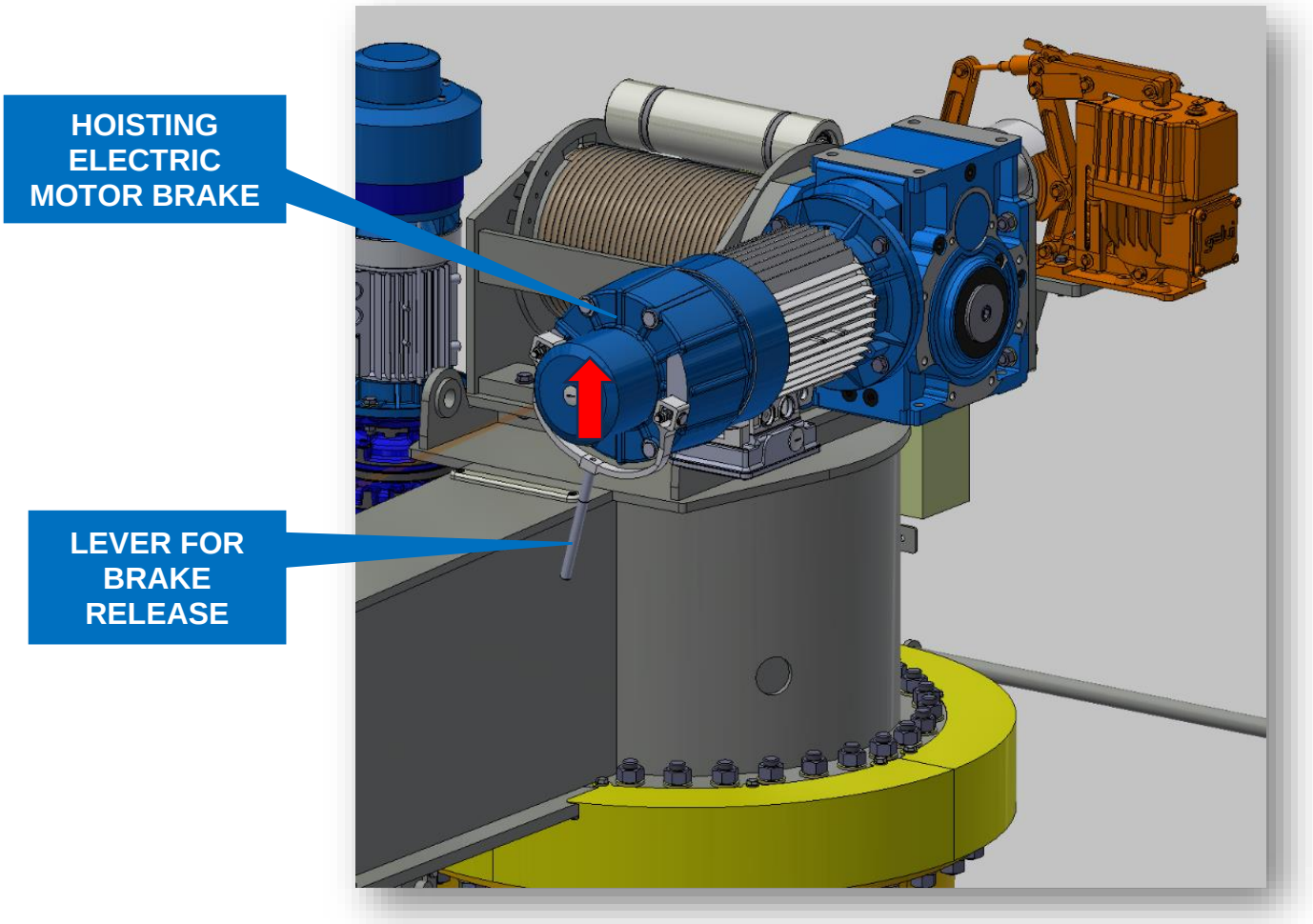
In the picture below the pin is not inserted, to insert it, lift the lever and rotate it to the left (as indicated by the rotating red arrow in the figure below) and lower it (as indicated by the red arrow in the figure below).

The pin will finally be inserted into the support with a hole in the fixed column, mechanically blocking the rotation movement.



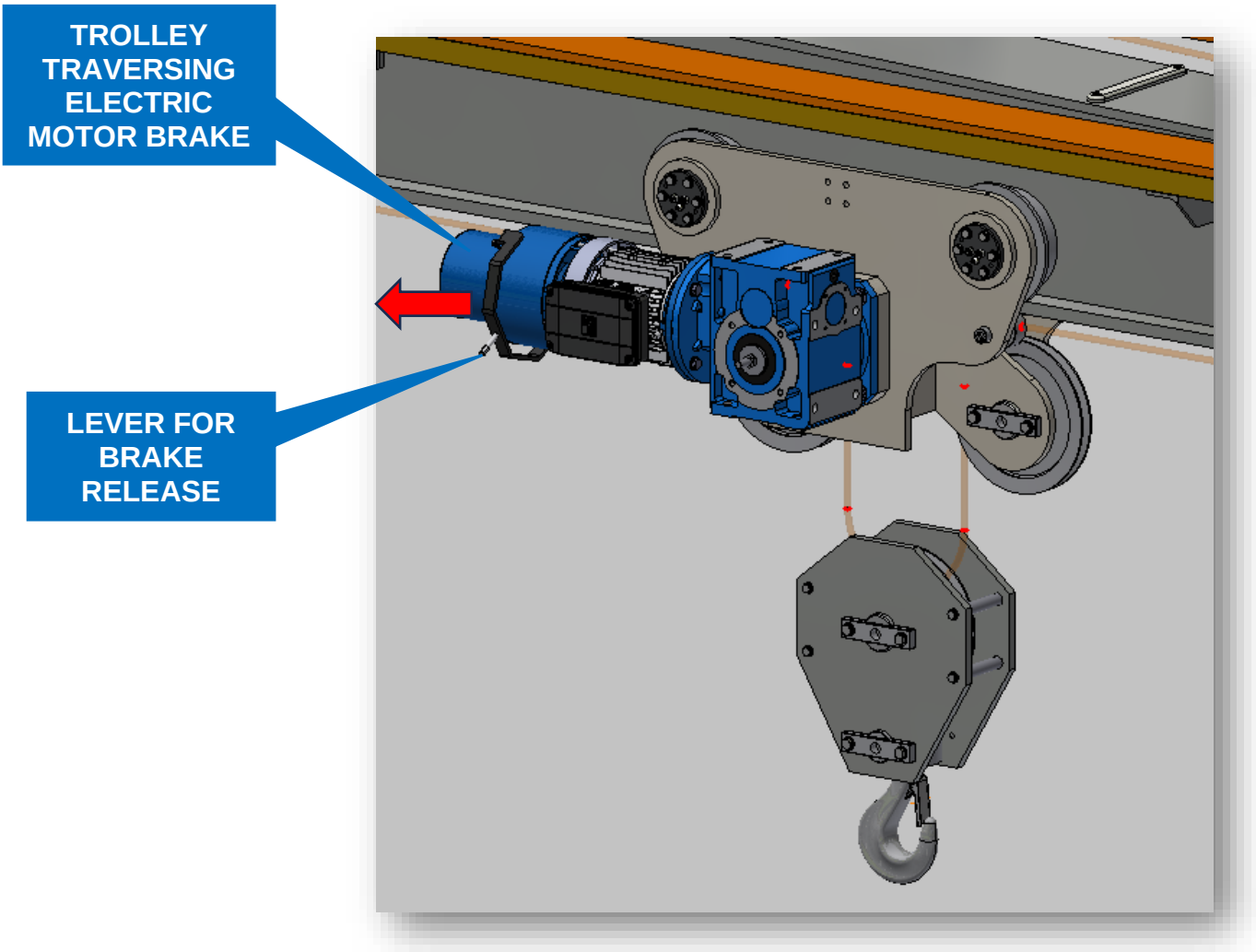
20. LOWERING EMERGENCY OPERATION

In case of emergency (for example due to power failure during use of the crane) the electric hoisting motor is equipped with an emergency brake, which can be released using a lever (shown in the figure below) in order to lower the load.
Pull the lever upwards as indicated by the red arrow in the figure below to lower the load.



21. TRAVERSING EMERGENCY OPERATION

In the event of an emergency (for example due to a power cut while using the crane) the electric traversing motor is equipped with an emergency brake, which can be released using a lever (shown in the figure below) to move the trolley.
Pull the lever to the left as indicated by the red arrow in the figure below to unlock the trolley.

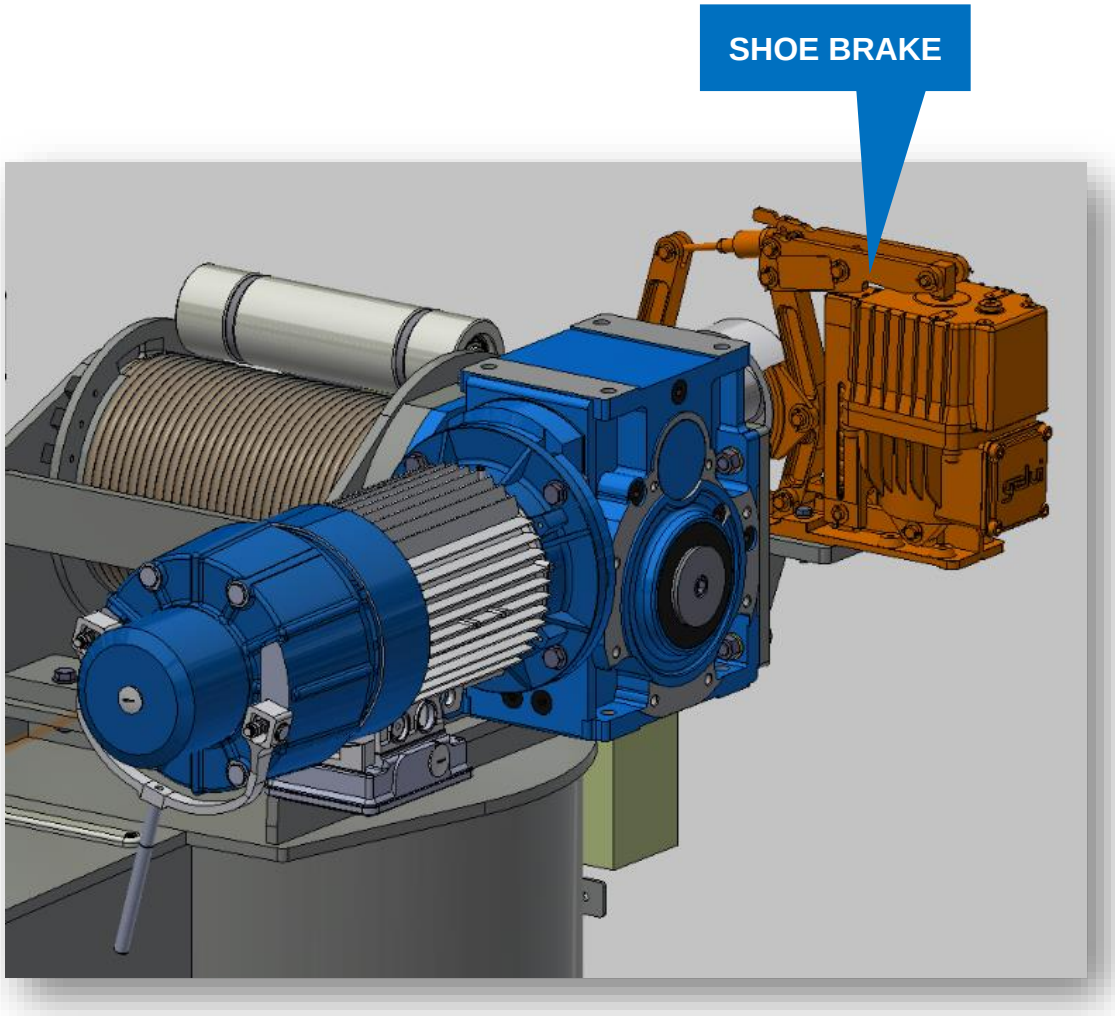


22. EMERGENCY BRAKE FOR HOISTING (SHOE BRAKE)

Shoe brake is negative brakes. Two opposing shoes, coated with friction material, act on a cast iron pulley (brake band half-joint) by means to the push of a spring. They are negative brakes as the opening of the braking is obtained by activating an electro-hydraulic brake booster which counteracts the action of the brake spring; in the absence of electrical power the blocks keep the pulley braked and therefore the load lifted.

The shoe brake is supplied assembled and already set.

See attachments for installation and maintenance manual.



23. WIRE ROPE

Two hoisting ropes, made of galvanised steel, are supplied with the crane and have the following characteristics:

ROPE ***CHARACTERISTICS***		***Hoisting***
Rope structure		19x7
Rope type		A7 ALC - Non rotating
Diameter	mm	11
Length	m	107
Working Load (SWL)	kN	23,1
Minimum breaking load	kN	115,5
Remarks		Thimble spliced by Talurit clamp

Item	Description	ID-Code	Off
Rope	Galvanized wire rope ø11 mm L=107 m – 19x7-CR>115,5kN, one end with thimble and sleeve talurit	002-0011-C1893	1

Rope service

The rope should be inspected at least EVERY SIX MONTHS; if any of the wires is broken, or if any other damage due to the corrosion may be seen, the rope should be changed. For rope mounting see the relevant page.

During changing unwind the new rope from its reel or coil with careful, in order to avoid kinks.

Rope greasing

Before commissioning and then every six months, rope should be cleaned and then greased with:

MOBIL *MOBILARMA 798* or other equivalent grease

Lubrication recommendations

Lubrication It is important to state that the internal lubrication of wire ropes can be made only during the rope manufacturing with different products, depending on rope using. The purpose of internal lubricant is to facilitate the reciprocal sliding of the wires during bending and to inhibit the formation of oxide. The initial quantity of lubricant put into the rope is higher than the quantity that the rope can hold after its settlement. Therefore, once in place, it may occur leakage of the lubricant, that will be sunk on the outer surface of the wires protecting the wire rope against oxidation in the first period of life. The lubrication in service must be made with high quality products and with excellent viscosity and adhesion characteristics. The frequency of re-lubrication depends on working conditions and environmental characteristics; if the wire rope works running on the pulley the re-lubrication is not necessary to protect it against the oxidation because the continuous contact with the pulleys inhibits oxide formation on the wire rope.

The re-lubrication of ropes to protect them from external oxidation must comply with the following general rules:

• do the necessary operations with rope completely dry, if environmental conditions were not ideal it is preferable not make lubrication

• clean the surface of rope from grease accumulation dry, powder, rubber or anything else with only mechanical action (brush or scraper shaped).

For cleaning cannot be used chemicals and solvents solutions. It is necessary to remember that the lubricant adheres to the clean surface of the rope and it has no benefit when applied on the dirt below. If the used grease is fluidized with solvents, during the application, the product should be thoroughly mixed. Apply small quantity of grease in a uniform way to build a thin continuous and transparent coating, that permit to see the entire surface of the steel. After application the grease need some time to dry. Approximately, the required quantity of lubricant to be applied can be determined using the following formula:

$P = 0.2\ d\ L$

where:

P = amount of product required in kg

d = rope diameter in mm

L = cable length in km

24. ROPE INSPECTION AND REPLACEMENT CRITERIA

See type "A7 ALC"

Rope type	N° of bearing wires in the external strands	Maximum number of broken wires			
		Machine classification groups			
		M1 - M2 - M3 - M4		M5 - M6 - M7 - M8	
		Regular lay on a length of:			
		6d	30d	6d	30d
Non-rotating ropes		6d	30d	6d	30d
A4 L - A4 ALC - A6 < 30 A6 ALC < 34 - A7 ALC < 34		1	2	2	4
A6 > 32 - A6 ALC > 34 A7 ALC > 36		2	4	4	8

In compliance with ISO 4309, the operating safety of a rope is ensured above all by correct evaluation of:

- number of breakages and their position
- wear of wires
- internal and external corrosion
- damage and deterioration of the rope.

Breakage of wires

(according to ISO 4309/90)

The broken wires that are visible on the outside surface of the rope must be counted, naturally taking into consideration the most worn section of the rope. The table below gives the maximum number of broken wires allowed for a length of rope of 6 or 30 times the diameter of the rope.

The broken wires have to be checked on both lengths; the rope must be replaced if the number of broken wires exceeds the indicated minimum even on just one of the two lengths.

Wear of the wires

The check of the rope for its replacement must take in consideration, not only the number of broken wires. The flattening of wires due to wear anticipates their imminent breakage. In the presence of worn wires, the time between inspections must be shortened and the check of broken wires must take into consideration wires whose diameter is visibly reduced by around 50% compared to the original value.

Internal and external corrosion

External corrosion reduces the diameter of the wires.

The indications in the paragraph above apply also in this case, adopting even tighter criteria of caution because corrosion causes more serious deterioration than wear.
Evaluation of internal corrosion requires expertise. Clamps can be used to open the rope, with a careful untwisting manoeuvre (see ISO 4309/90).

Remarks:

Ø = nominal rope diameter

The filling wires are not considered bearing wires and are therefore not included to the count.

In multi-layered ropes and ropes with metal core, inspection should be made only of the external layer.

Broken wires must have two clearly visible broken ends.

The values indicated are adapted to the types of ropes offered in this catalogue and are recommended on the basis of our experience. These values apply only to ropes wound around winches and sheaves that are not coated with synthetic material.

When consulting the table bear in mind that the wire breakage in 6 and 8 strand ropes is greater in the external layers. This is not the case in the case in multi- strand ropes where breakage involves the inner part and so it is not visible.

We recommend replacing ropes in the presence of broken wires close to each other, in a length of not more than 6 d or concentrated in a single strand even if the number of broken wires is less than that indicated in the table.

ROPE DETERIORATION AND REPLACEMENT CRITERIA (AS PER ISO 4309)

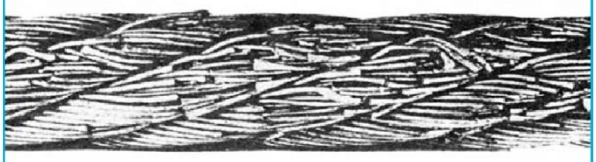
Broken wires out of position in two strands of a regular lay rope. This rope must be replaced.



Broken wires in several strands, close to a return sheave (sometimes hidden by the sheave). This rope must be replaced.



Major wear and high number of broken wires in a regular lay rope. This rope must be replaced immediately.



Broken wires in two strands due to bending fatigue, linked to major localised wear. This rope must be replaced.



Broken wires in a single strand and slight wear in a lang lay rope. In this case the broken wires must be removed to make the rope smooth.



Birdcage in a multilayer (non- rotating) type rope Caused by forced rotation around small grooves or excessive fleet angle. This rope must be replaced immediately.



More serious example of the previous defect with protrusion of the inner wires of the strands. Major localised defect caused by applying shock loads. This rope must be replaced immediately.



Confined increase of diameter of a lang lay rope, caused by distortion of the metal core caused by a dynamic load. There are also traces of corrosion and major wear of the external wires. This rope must be replaced immediately.



Protrusion of the steel core, generally linked to basket deformation. This rope must be replaced immediately.



Confined increase of diameter of the rope, due to the protrusion of the textile core between the external strands. This rope must be replaced.



Wire rope which has been twisted during installation and used. Now subject to localised wear and lengthening of the strands. This rope must be replaced.



Major kink causing fibrecore protrusion. This rope must be replaced immediately.



More serious example of the previous defect with protrusion of the inner wires of the strands. Major localised defect caused by applying shock loads. This rope must be replaced immediately.



The wires of a single strand have loosened although inspection of a section of rope has shown that the deformation can be seen at regular intervals, normally equal to the lay pitch. This defect must be kept under



Confined reduction in the rope diameter because the outer strands tend to fill the volume of the textile core which has been destroyed. This rope must be replaced immediately.



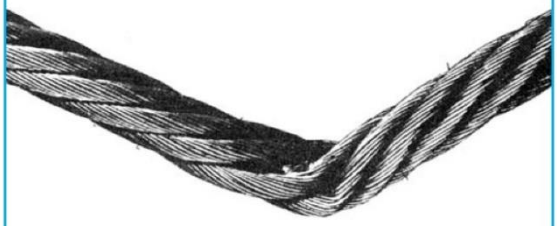
Flattened section caused by local crushing due to mechanical action; this causes a lack of equilibrium in the strands. There are also broken wires. This rope must be replaced.



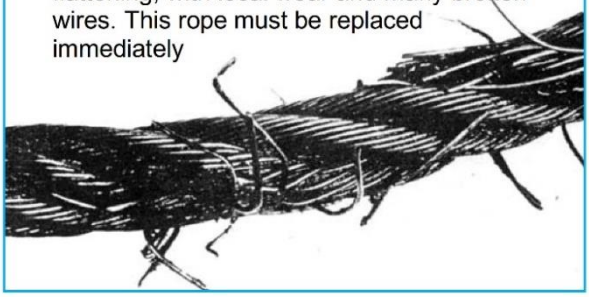
Flattened section of a multi- strand rope caused by mechanical action on a long section caused by incorrect unwinding from a winch. Note the increased lay pitch of the external strands with unbalanced tension in load conditions. This rope must be replaced.



Example of major bending. This rope must be replaced.



Typical example of a rope which has come out of the groove of a sheave and has been trapped with resulting deformation and flattening, with local wear and many broken wires. This rope must be replaced immediately



Cumulative effects of several deterioration factors. Note the major wear of the external wires, which has caused loosening of the wires resulting in basket deformation; the risk here is that the rope could be expulsed from the sheave.
This rope must be replaced immediately.



A: Slight flattening of external wires. Small reduction of the rope diameter.

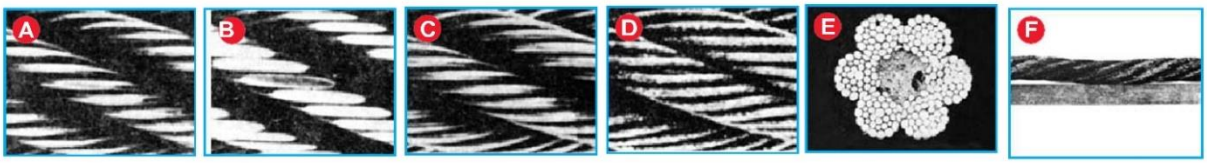
B: Continuous flattening; metal wires which begin to loosen, with a reduction of diameter that can be estimated at approx.. 40%. Immediate replacement.

C: Start of surface corrosion.

D: Highly perforated surface and completely loosened wires. Serious reduction in diameter with space between the wires of more than half their diameter. Immediate replacement.

E: Example of major internal corrosion. Clear reduction of the area of many external wires of the strands, in the contact area of the core, the high level of compression, the lack of space between the strands and the ensuing reduction in the diameter of the rope. Immediate replacement.

F: Helical distortion is a distortion where the longitudinal axis of the rope has a helical shape. In this condition the rope must be inspected continuously. There may be wear and broken wires in the event of prolonged use. The rope must be replaced if the deformation exceeds the value set in UNI ISO 4309/84



1

- Check the end connection of the rope at winch.
- Check for any defective winding around the winch which cause deformations (flattened sections) and wear, which could be major around the deviated pull area.
- Check for broken wires.
- Check for corrosion.
- Check for deformations caused by dynamic loads.

2

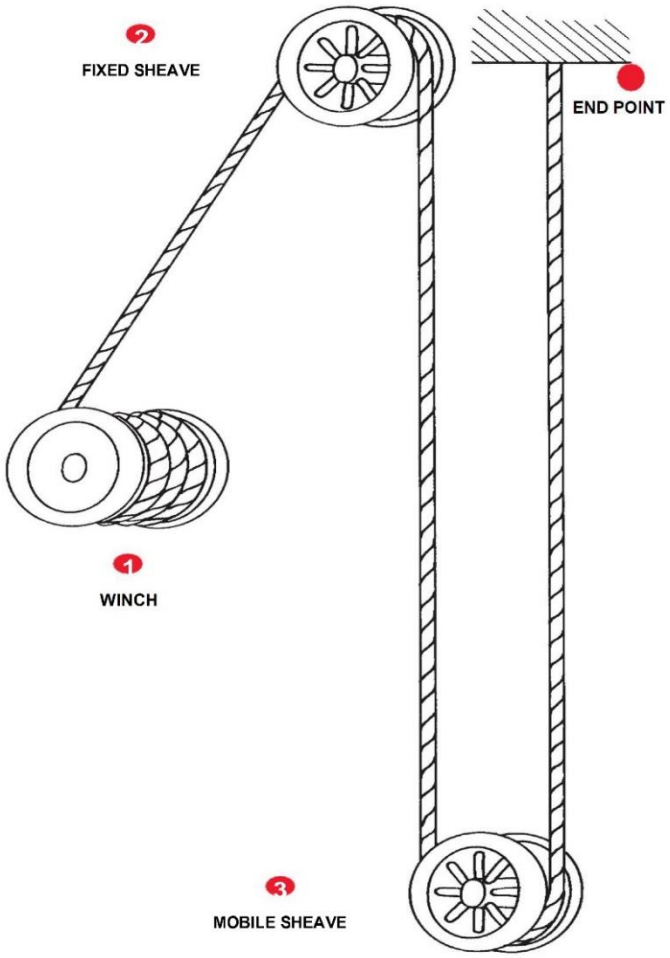
- Check the section of the rope which winds around the sheave for broken wires and wear.
- Check the groove of the sheave in according to the instructions

3

- Carefully inspect the section which winds around mobile sheaves and above all the section on the sheave when the equipment is under load conditions.
- Check for broken wires and surface wear.
- Check for corrosion.
- Check the groove of the sheave in according to the instructions

4

- End points:
- check for broken wires;
- similarly, inspect the section of rope above or close to the compensation sheave.
- Check for deformations.
- Check the rope diameter.
- Check the condition of the end device according to the instructions



25. OIL LUBRICATION

All gears are working in an oil-bath. The reduction gears are supplied already filled with oil.

This oil should be changed at least every two years (for more details see the attached gearbox data sheet).

Fill, drain and level oil plugs are indicated in the relative drawings or on gearboxes parts list (see attachments list)

ITEM (ID-CODE)	DRAWING	OIL QUANTITY (L)
Hoisting gearbox (002-0027-C1432)	C09-0001-A0004	6,8
Trolley traversing gearbox (002-0027-C1433)	C09-0001-A0005	1,6
Slewing traversing gearbox (002-0027-C1431)	C09-0001-A0003	2,3

RECOMMENDED OIL TYPE:

MOBIL **MOBILGEAR SHC XMP220**

or another equivalent type.

26. GREASE LUBRICATION

The following points, provided with lubricators M10x1 DIN 3404 and indicated on relative assemblies, should be greased at least every two months.

If lubrication is only possible every 6 months we recommend another type of grease (see below).

ITEM	DRAWING	N. OF GREASERS
Winch assembly	C09-0001-A0004	2
Trolley traversing assembly	C09-0001-A0005	7
Hook assembly	C09-0001-A0007	2
Rope presser assembly	C09-0001-A0012	1

RECOMMENDED GREASE TYPE:

MOBIL **MOBILGREASE XHP 222** (every 2 months)

or another equivalent type.

MOBIL MOBILITH SHC 460 (every 6 months)

or another equivalent type.

RACKS and PINIONS

must be lubricated by means of a brush, at least every 6 months.

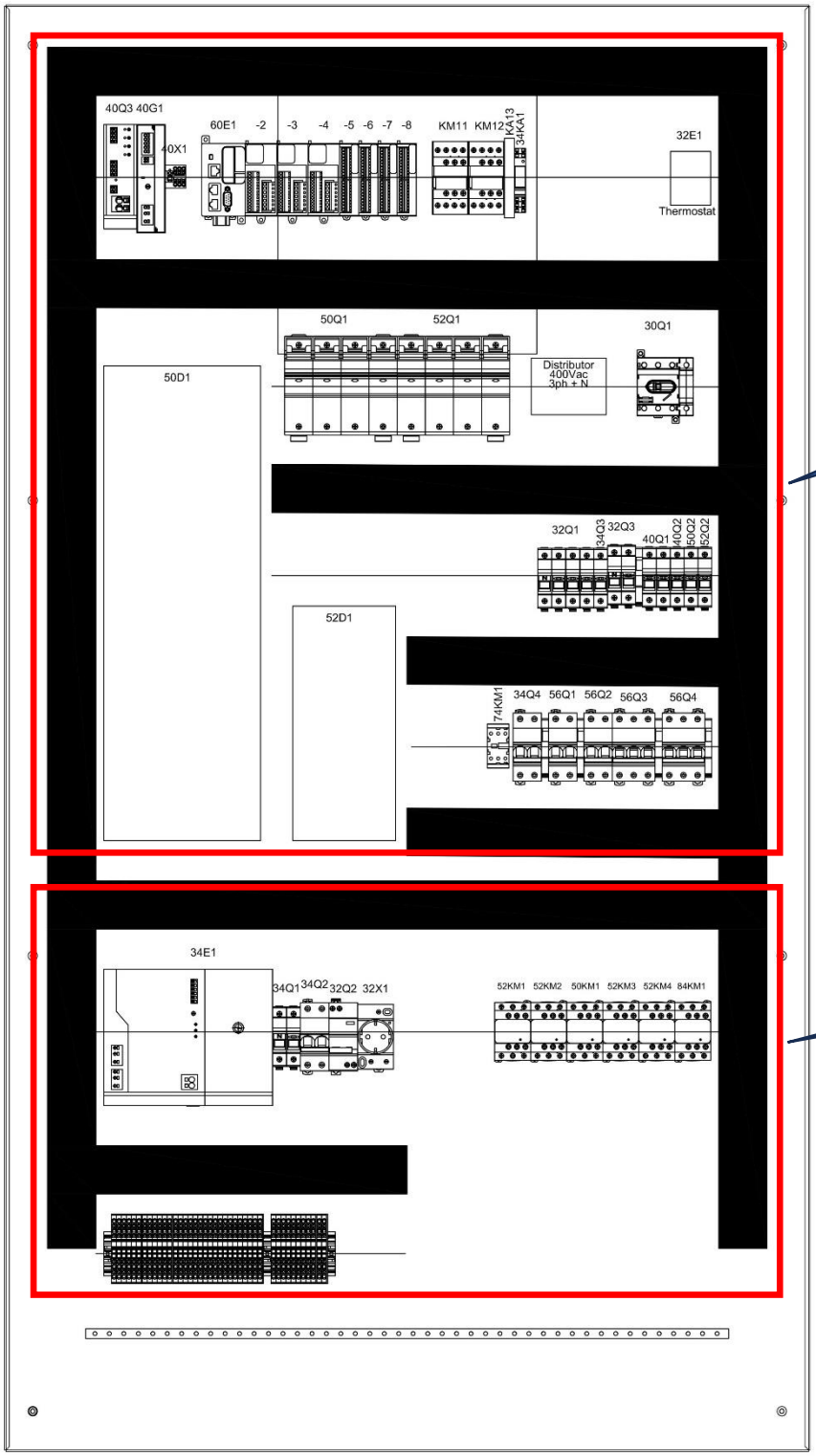
GREASE TYPE: MOBIL MOBILTAC A or

or other equivalent grease.

WIRE ROPE

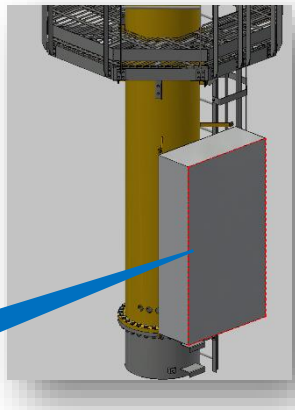
See the relevant page in this book

27. ELECTRICAL PANEL - INTERNAL VIEW



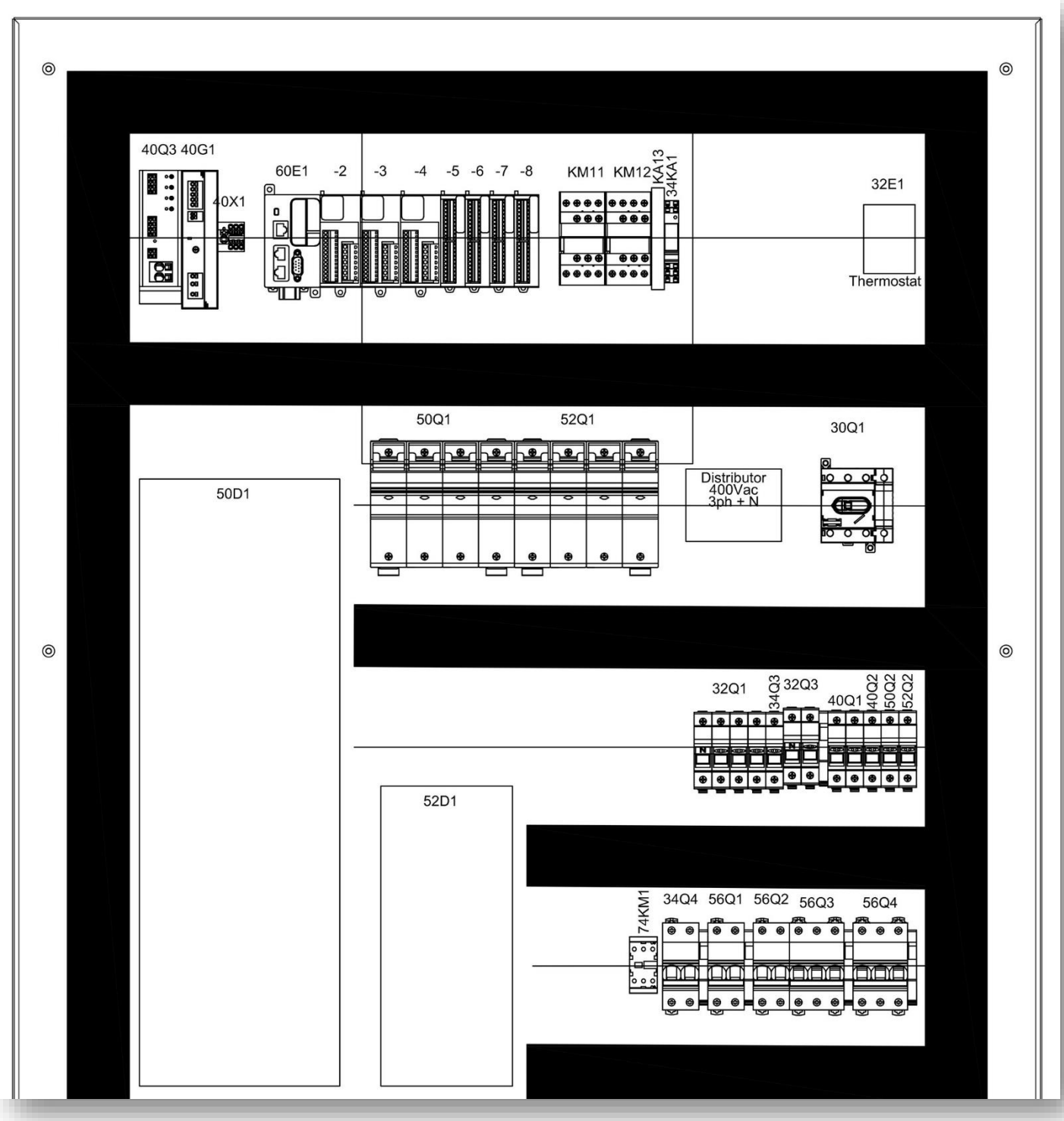
See next pages
Detail “1”

See next pages
Detail “2”

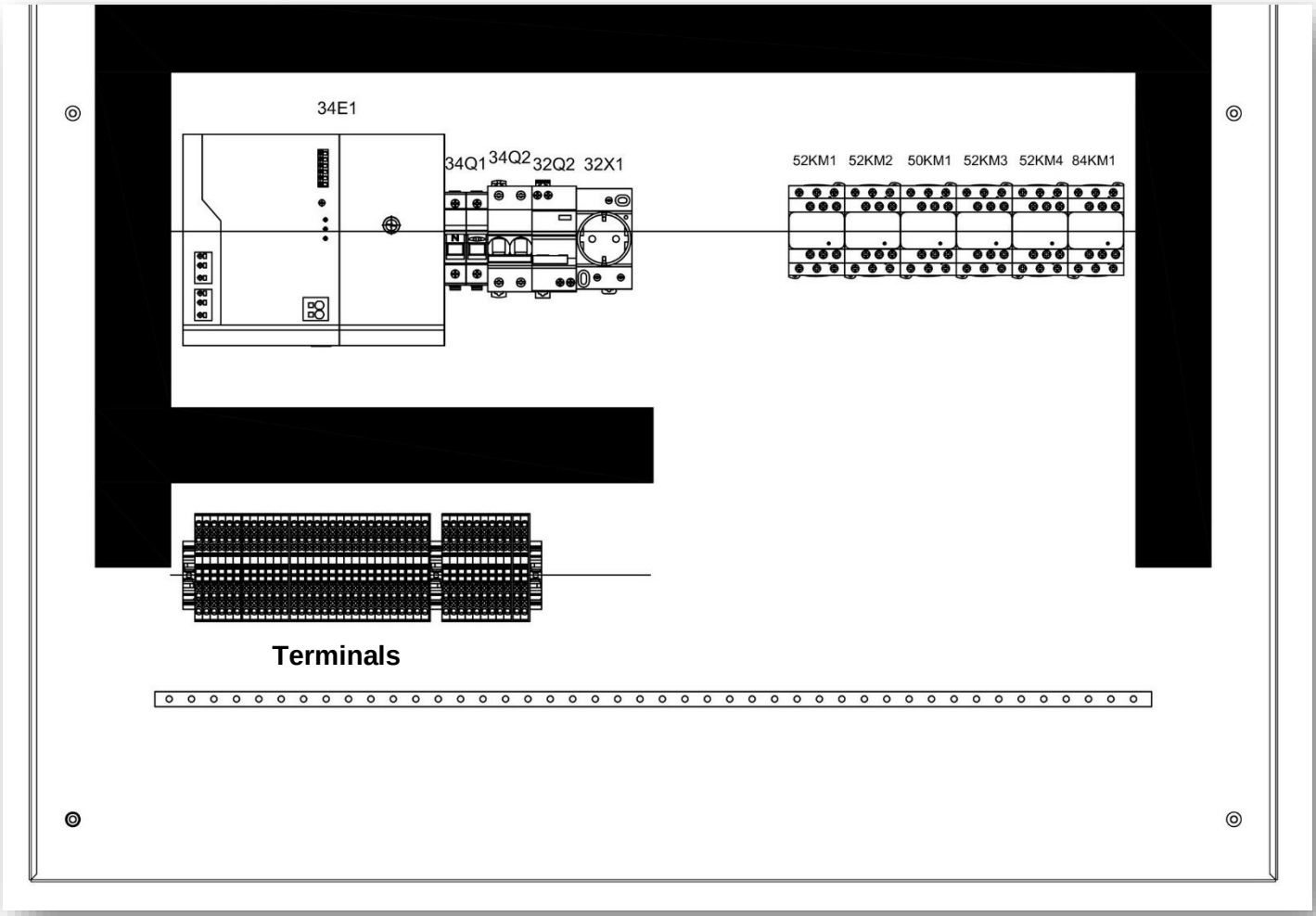


POSITION ON
THE PEDESTAL

ELECTRICAL PANEL – DETAIL "1"



ELECTRICAL PANEL – DETAIL "2"



28. ELECTRIC COMPONENTS LIST

ID-Code	Q.ty	Description	Item
ELECTRICAL PANEL C01-EP-0001			
011-0003-C1359	1	Frequency Converter NXP 380-500 V, 38 A, 15 kW, IP21, Alpha-numeric display, Integrated Brake chopper, Interface boards: A1, AF, A5, E6	50D1
011-0003-C1360	1	Frequency Converter NXP 380-500 V, 12 A, 4 kW, IP21, Alpha-numeric display, Integrated Brake chopper, Interface boards: A1, AF, B5, E6	52D1
011-0014-C2596	1	Switch-disconnector, 4P, 63A	30Q1
011-0014-C2550	1	Handle for power circuit breaker, IP66 (NEMA 4X), AISI 316	30Q1
011-0014-C2597	1	Shaft for pistol handle, 6mm, Shaft Length 360mm	30Q1
011-0014-C2611	1	Holder for cylindrical fuses, 3P+N, 10x38, 32A	32Q1
011-0014-C1315	3	Fuse 10,3x38 CH10 2A gG	32Q1
011-0014-C2599	1	Plc-interface, consisting of PLC-BPT.../21-21 basic terminal block with Push-in connection and plug-in miniature relay with power contact, for mounting on DIN rail NS 35/7,5, 2 changeover contacts, input voltage 24 V DC	32KA1
011-0014-C2602	1	Residual current breaker with overcurrent protection (RCBO) 1P+N, 6 A, C Curve, 6000 A, 30 mA, AC type	32Q2
007-0004-C0534	1	Socket 220V 2P+T 16Astandard Italian/German	32X1
007-0004-C0075	1	Support for mounting system range components on din rail - 2 gang - 3 modules din	32X1
011-0014-C2612	1	Holder for cylindrical fuses, 1P+N, 10x38, 32A	32Q3
011-0014-C1315	1	Fuse 10,3x38 CH10 2A gG	32Q3
007-0019-C0051	1	Thermostat, NO, NC	32E1
007-0010-C0133	1	Anti-condensation heater, 150W	32R1
007-0019-C0052	1	Extraction fan, 413mc/h, 322x322	32E2
007-0019-C0053	2	Guard, 340x326	32E2
007-0019-C0054	1	Intake filter FPO 118, 322x322	32E2
007-0019-C0055	1	Filter mat	32E2
011-0014-C2612	1	Holder for cylindrical fuses, 1P+N, 10x38, 32A	34Q1
011-0014-C0641	1	Fuse 10,3x38 CH10 10A gG	34Q1
007-0008-C0131	1	1AC/1AC/750 VA uninterruptible power supply with integrated battery, lead AGM, VRLA technology, 24 V DC, 4 Ah for 230 V AC applications.	34E1
011-0014-C2032	1	circuit breaker iC60N 2P C 6A 6000A	34Q2
011-0014-C2599	1	Plc-interface, consisting of PLC-BPT.../21-21 basic terminal block with Push-in connection and plug-in miniature relay with power contact, for mounting on DIN rail NS 35/7,5, 2 changeover contacts, input voltage 24 V DC	34KA1
011-0014-C2032	1	Circuit breaker iC60N 2P C 6A 6000A	34Q4
011-0014-C2603	1	Auxiliary contact, iOF, 100mA to 6A, 24VAC to 415VAC, 24-130 VDC, bottom connection	34Q4

ID-Code	Q.ty	Description	Item
011-0014-C1874	1	Holder for cylindrical fuses, 1P, 10x38, 32A	34Q3
011-0014-C1315	1	Fuse 10,3x38 CH10 2A gG	34Q3
011-0014-C2129	1	Holder for cylindrical fuses, 2P, 10x38, 32A	40Q1
011-0014-C1315	1	Fuse 10,3x38 CH10 2A gG	40Q1
007-0017-C0226	1	Primary-switched TRIO POWER power supply for DIN rail mounting, input: 3-phase, output: 24 V DC/5 A	40G1
011-0014-C1874	1	Holder for cylindrical fuses, 1P, 10x38, 32A	40Q2
011-0014-C0643	1	Fuse 10,3x38 CH10 6A gG	40Q2
007-0024-C0047	1	6/6X2,5 GY - Distribution block	40X1
011-0014-C2600	1	Multi-channel, electronic circuit breaker with active current limitation for protecting four loads at 24 V DC in the event of overload and short circuit. With nominal current assistant and electronic locking of the set nominal currents. For installation on DIN rails.	40Q3
011-0014-C1896	1	Holder for cylindrical fuses, 3P, 22x58, 63A	50Q1
011-0014-C2598	1	Fuse 22x58, CH22, 50A, aM	50Q1
011-0014-C1874	1	Holder for cylindrical fuses, 1P, 10x38, 32A	50Q2
011-0014-C1311	1	Fuse 10,3x38 CH10 1A gG	50Q2
011-0014-C1527	1	Contactor TeSys LC1D - 3P - AC3 440V 9 A - 24 V CC	50KM1
011-0014-C1896	1	Holder for cylindrical fuses, 3P, 22x58, 63A	52Q1
011-0014-C2598	1	Fuse 22x58, CH22, 50A, aM	52Q1
011-0014-C1874	1	Holder for cylindrical fuses, 1P, 10x38, 32A	52Q2
011-0014-C1311	1	Fuse 10,3x38 CH10 1A gG	52Q2
011-0014-C1527	1	Contactor LC1D - 3P- AC3 440V 9 A - 24 V CC	52KM1
011-0014-C1527	1	Contactor LC1D - 3P - AC3 440V 9 A - 24 V CC	52KM2
005-0008-C0330	1	Mechanical interlock	52KM1 / 52KM2
011-0014-C1527	1	Contactor LC1D - 3P - AC3 440V 9 A - 24 V CC	52KM3
011-0014-C1527	1	Contactor LC1D - 3P - AC3 440V 9 A - 24 V CC	52KM4
011-0014-C2032	1	Circuit breaker iC60N 2P C 6A 6000A	56Q1
011-0014-C2603	1	Auxiliary contact, iOF, 100mA to 6A, 24VAC to 415VAC, 24-130 VDC, bottom connection	56Q1
011-0014-C2032	1	Circuit breaker iC60N 2P C 6A 6000A	56Q2
011-0014-C2603	1	Auxiliary contact, iOF, 100mA to 6A, 24VAC to 415VAC, 24-130 VDC, bottom connection	56Q2
011-0014-C2032	1	Circuit breaker iC60N 2P C 6A 6000A	56Q3
011-0014-C2603	1	Auxiliary contact, iOF, 100mA to 6A, 24VAC to 415VAC, 24-130 VDC, bottom connection	56Q3
011-0014-C2032	1	Circuit breaker iC60N 2P C 6A 6000A	56Q4
011-0014-C2603	1	Auxiliary contact, iOF, 100mA to 6A, 24VAC to 415VAC, 24-130 VDC, bottom connection	56Q4

ID-Code	Q.ty	Description	Item
011-0002-C0848	1	Controller M251 Ethernet CAN	60E1
011-0002-C0626	1	Modicon TM3 Safety module - 1 Function, Cat 3 PL d/SIL CL2 (screw) 24Vdc	60E1-2
011-0002-C0626	1	Modicon TM3 Safety module - 1 Function, Cat 3 PL d/SIL CL2 (screw) 24Vdc	60E1-3
011-0014-C2604	1	Contactor LC1D - 4P - AC1 440V 32 A- 24 V CC	KM11
011-0014-C1518	1	Auxiliary contact block, 2NO + 2NC, front mounting, screw clamp terminals	KM11
011-0014-C2604	1	Contactor LC1D - 4P - AC1 440V 32 A- 24 V CC	KM12
011-0014-C1518	1	Auxiliary contact block, 2NO + 2NC, front mounting, screw clamp terminals	KM12
011-0014-C2601	1	Coupling relay for SIL 3 high-demand and low-demand applications, couples digital output signals to the I/O, 3 enabling current paths, safe state off and safe state on applications, test pulse filter, plug-in screw terminal block	KA13
011-0002-C0626	1	Modicon TM3 Safety module - 1 Function, Cat 3 PL d/SIL CL2 (screw) 24Vdc	60E1-4
011-0002-C0623	2	Modicon TM3 - 16 inputs (screw) 24Vdc	60E1-5 / 60E1-6
011-0002-C0625	1	Modicon TM3 - 16 relay outputs (screw) 24Vdc	60E1-7
011-0002-C0849	1	Modicon TM3 - 4 analog inputs, 2 analog output (screw) 24Vdc	60E1-8
007-0023-C0162	1	electronic alarm sounder with LED light up to 120dB output	HAL1
011-0014-C2605	1	Control relay TeSys CA3SK - 10 A - 24 V CC	74KM1
011-0014-C1828	1	Contactor LC1D - 3P - AC3 440V 9 A - 230 V AC	84KM1
011-0014-C1520	1	Contactor - 3P(3 NO) - AC-3 440 V 9 A - 230 V AC coil	84KM1
007-0013-C1023	1	Electrical panel 1000x1800x400, AISI 316	C01-JB-0002/1
007-0013-C1024	1	Door 1000x1800, AISI 316	C01-JB-0002/2
007-0013-C1025	1	Back plates FeZn for QCXB 1000x1800	C01-JB-0002/3
007-0013-C1027	1	Fixing brackets, AISI 316	C01-JB-0002/4
007-0013-C1026	1	Roof for QCHB and QCXB 1000x400, AISI 316	C01-JB-0002/5
007-0024-C0013	5	End bracket	C01-JB-0002/6
007-0024-C0087	2	End cover	C01-JB-0002/7
011-0003-C1377	1	9 Way Panel Mount Dsub Connector Socket, 2.77mm Pitch DB9	C01-JB-0002/8
011-0003-C1378	1	Dataphone Shell (To be locked by hand) for D-Sub	C01-JB-0002/9
FRONT ELECTRICAL PANEL C01-EP-0001			
007-0002-C0735	3	Head for pilot light, universal LED, white, plain lens Ø22	32HL1-2-3
007-0002-C0796	3	Light block, universal LED, screw clamp terminals, 230...240V AC-Ø22	32HL1-2-3
007-0002-C0781	3	Body/fixing collar for electrical block, metal Ø22mm	32HL1-2-3
007-0002-C0741	1	Head for pilot light, universal LED, orange, plain lens Ø22	34HL1
007-0002-C0796	3	Light block, universal LED, screw clamp terminals, 230...240V AC-Ø22	34HL1

ID-Code	Q.ty	Description	Item
007-0002-C0781	1	Body/fixing collar for electrical block, metal Ø22mm	34HL1
007-0002-C1277	1	Emergency stop switching off, metal, red mushroom, Ø40, Ø22, trigger latching turn to release, 2 NC	ESB1
007-0002-C1197	1	Illuminated push button, metal, blue flush, 22mm, universal LED, plain lens, 1NO + 1NC, 24V AC DC	62SB1
007-0002-C1278	7	Push button, metal, flush, black, Ø22, spring return, unmarked, 1 NO	SB1-7
007-0002-C1281	1	Pilot light,metal, orange, 22mm, universal LED, plain lens, 24V AC DC	74SB2
007-0002-C1280	1	Pilot light, metal, red, 22mm, universal LED, plain lens, 24V AC DC	74SB3
007-0002-C1281	1	Pilot light,metal, orange, 22mm, universal LED, plain lens, 24V AC DC	74SB4
007-0002-C0794	4	Light block, white, for head 22mm, universal LED, screw clamp terminals, 24V AC DC	76SB1-4
007-0002-C0781	4	Body/fixing collar for electrical block, metal Ø22mm	76SB1-4
007-0002-C1208	4	Head for pilot light, universal LED, yellow, plain lens Ø22	76SB1-4
011-0017-C0022	1	Instrument, 96x48 mm format, 5-digit display, for DC current/voltage measurements, 2 NO relay outputs, 24V AC/DC power supply.	78E1
011-0017-C0023	1	Watertight Cover for display	78E1
007-0002-C1282	1	Yellow flush pushbutton head Ø22 push-push unmarked	84SB1/1
007-0002-C0781	1	Body/fixing collar for electrical block, metal Ø22mm	84SB1/2
007-0002-C0787	2	Single contact block, silver alloy, screw clamp terminal, 1 NO	84SB1/3
007-0002-C1209	1	Yellow padlockable flap for Ø22 flush pushbutton	84SB1/4
007-0002-C0824	8	Transparent boot for circular projecting push button Ø22	84SB1/5
007-0002-C1283	1	Key switch selector, metal, black, Ø22, key n°455, 2 positions, spring return right to left, 1 NO	SB8
JUNCTION BOX C01-JB-0002			
011-0015-C0034	1	Load cell amplifier, with 4-20mA output	80E1
007-0013-C1021	1	Junction box, AISI 316, 200x400x120	C01-JB-0002 /1
007-0013-C1022	1	Wall fixing brackets for junction box	C01-JB-0002 /2
007-0024-C0086	38	Feed-through terminal block	-
007-0024-C0013	3	End bracket	-
007-0024-C0087	2	End cover	-
EXTERNAL COMPONENTS			
007-0023-C0162	1	Electronic alarm sounder with led light, 12-24V AC / 12-60V DC, 100-240V AC (AC: 50/60 Hz), IP66-IP69K	C01-CHB-0014
011-0008-C2428	3	Inductive Hollow shaft encoder, Absolute, diam. 58mm, AISI 316L	ENC13-23-33
007-0003-C0579	5,4	Cable chain	-
011-0008-C1961	1	A2B limit switch	SW0036
011-0008-C2429	2	Proximity sensor, inductive, nickel-brass, short body, M12, 5 m cable	LS0024-0025
011-0008-C2430	4	Proximity sensor, inductive, nickel-brass, short body, M12, 15 m cable	LS0034-0035

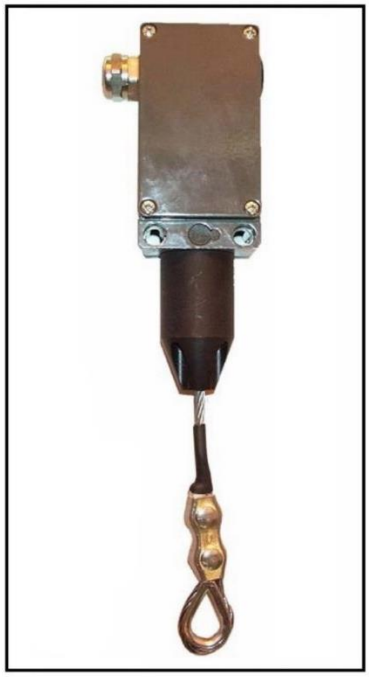
ID-Code	Q.ty	Description	Item
007-0006-C1221	1	Hoisting electric motor 3 phase type BAHK2E 132 MC4 Enhanced Power (E.P.) 4poli 1500rpm 14,0kW @ 50Hz S3 60% voltage 3x230/400V - 50Hz with brake inverter 1x230Vac (PMG250) and release lever (type unlocking and automatic spring return) IP56; Cl.F Tropicalized; brake Disc K2 (brake torque max 150Nm) PTC; flange B5, heaters 1x230Vac, with encoder, painting C5M RAL 7038	C01-M-0010
007-0006-C1220	1	Slewing motor 3 phase type BAHK 100 LB4 Enhanced Power (E.P.) 4poli 1500rpm 3.9kW @ 50Hz S3 60% voltage 3x230/400V - 50Hz brake inverter AC Vb=Vm and release lever (type unlocking and automatic spring return) IP56; Cl.F Tropicalized; brake Disc type standard (brake torque 60-70% of max value 50Nm) PTC; flange B5 (V1) heaters 1x230Vac painting C5M RAL 7038	C01-M-0020
007-0006-C1222	1	Trolley traversing motor 3 pahse type BAH 90 SA4 Enhanced Power (E.P.) 4 poles 1500rpm 1,45kW @ 50Hz S3 60% voltage 3x230/400V - 50Hz brake inverter AC Vb=Vm and release lever (type unlocking and automatic spring return) IP56; Cl.F Tropicalized; brake Disc type standard (brake torque 60-70% of max value 38Nm); PTC; flange B5 heaters 1x230Vac painting C5M RAL 7038	C01-M-0030
002-0017-C0394 002-0017-C0395	1+1	Shoe brake (electro-hydraulic DIN 15435, V. 230/400 - Hz 50, IP.65, isol. classe F, and pulley.	-
007-0010-C0196	1	Brake resistor 63 ohm, 2 kW	-
007-0010-C0197	1	Brake resistor 19 ohm, 12kW	-
011-0008-C2436	1	Position limit switch with short piston and special lever with roller	-

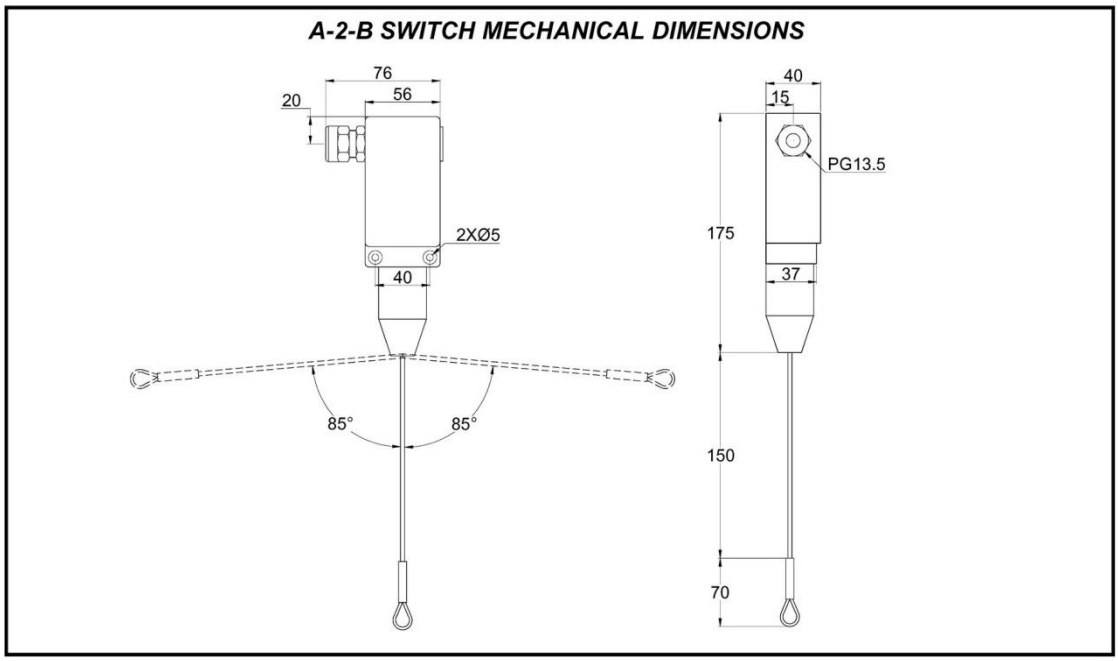
29. HOISTING LIMIT SWITCHES

The maximum stroke of the hook is limited by a special encoder. The minimum stroke, however, is obtained via an Anti two block device (see figures below).

The limit switch are supplied assembled and already set

According to crane safety requirements, all parts of this device have been designed in conformity with the rules of the current MACHINE DIRECTIVE STANDARDS.
It has been designed to perform very easy installation on any kind of machine: from the largest and most complex lattice boom cranes to the simplest and smallest hydraulic cranes.
As an option the device can be supplied with a chain and 5 Kg weigh.
No specific care or special tool is required for its installation.
The device uses an actually simple and reliable spring mechanic, including a micro switch with normally closed contacts, as stated by CE Standards.
If the hoist is lifted over its limit, the contact opens and the alarm function is activated.





A second limit switch, on the drum (see example figure below) limits the maximum stroke of the hook by reading the presence of the wire rope on the drum by means a limit switch and its pressing roller. The limit switch are supplied assembled and already set.

See the following page in case it needs to be set again.



30. SETTING OF LIMIT SWITCH ON THE DRUM

⚠WARNING

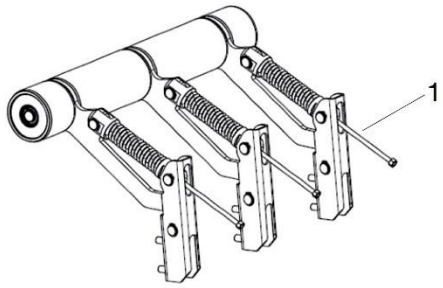
Pay attention to the pressure roller springs: danger of projecting objects and crushing.

The pressure roller is installed on the machine if requested, if not supplied it is demanded to the installer to prevent the rope to go out of the drum flanges causing dangerous situations.

NOTICE

Before any rotation of the drum, for example for the installation of the rope, make sure that the pressure roller is at a distance from the drum equal to the diameter of the rope, by adjusting it with the tie rods (1). These must be removed only after having wrapped the first layer of rope on the drum.

Warning: only the first layer, and not the second.



SETTING OF THE MINIMUM ROPE CAPACITY LIMIT SWITCHES: ELECTRIC AND HYDRAULIC

The minimum rope capacity limit switch is installed on the machine if requested, if not supplied it is demanded to the installer.

This device can be supplied with electric o hydraulic microswitch, and in both cases prior to delivery, the clicking mechanism is pre-set by DANA with the roller touching the drum. The installer shall double check the correct setting any time maintenance is needed or as per first installation when connecting the signal in the final application.

To set the click mechanism proceed as follow:

1 - Loosen the two nuts (1)

2 - Check that the roller (2) touches the drum

3 - Position the screw (3) making sure that the button (4) is activated and there is still a small gap before going in to interference with the microswitch itself

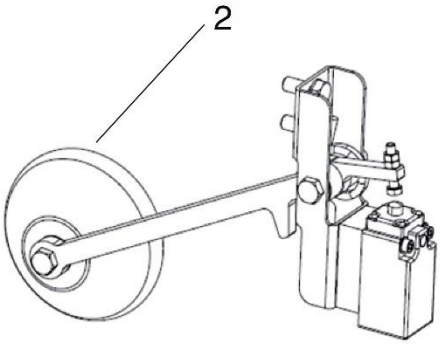
4 - Lift the roller several times and drop it to double check the correct positioning, it should keep clicking the button all the times

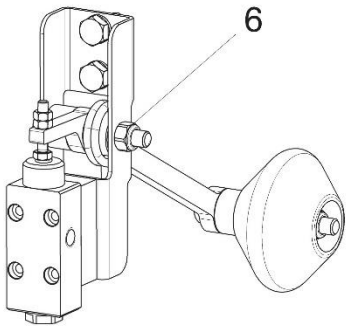
5 - Tighten the nuts (1) to the required torque to avoid later unwanted loosening

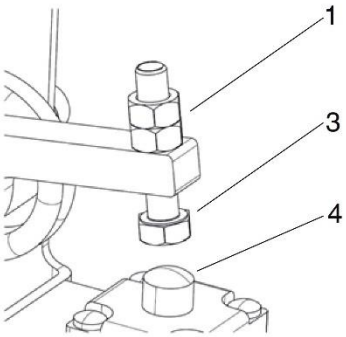
6 - Make sure the self-locking nut (6) of the lever pin is set against the support but it does not prevent the lever from freely rotating

7 - Replace roller (7) when worn.

INSTALLATION







NOTICE

To avoid full unwinding of the rope from the drum, a minimum of 3 (three) windings shall always remain wound. Limit switches are mandatory for lifting applications but are only fitted if requested, if not supplied it is demanded to the installer.

According to BWE-BWP size, the roller of this device can be mounted on the left or on the right of the lever. When ordered as spare parts, it will be supplied in the standard position. If the roller must be moved to ensure the minimum windings requirement to the other side of the lever, make sure to follow the steps below:

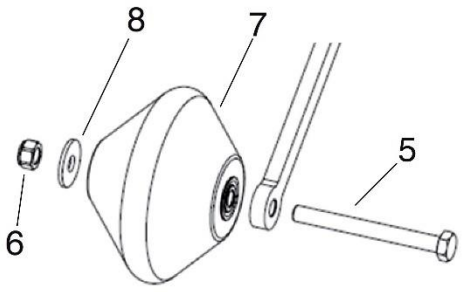
1 - Loosen the screw (5) and nut (6)

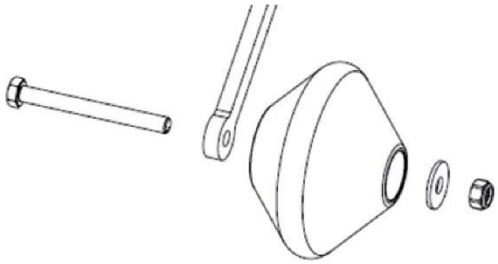
2 - Switch the position of the roller (7) and its internal component

3 - Pay attention to not lose washer (8)

4 - Re assembly all these parts on the other side of the lever

5 - Tighten screw (5) and nut (6) to the required torque

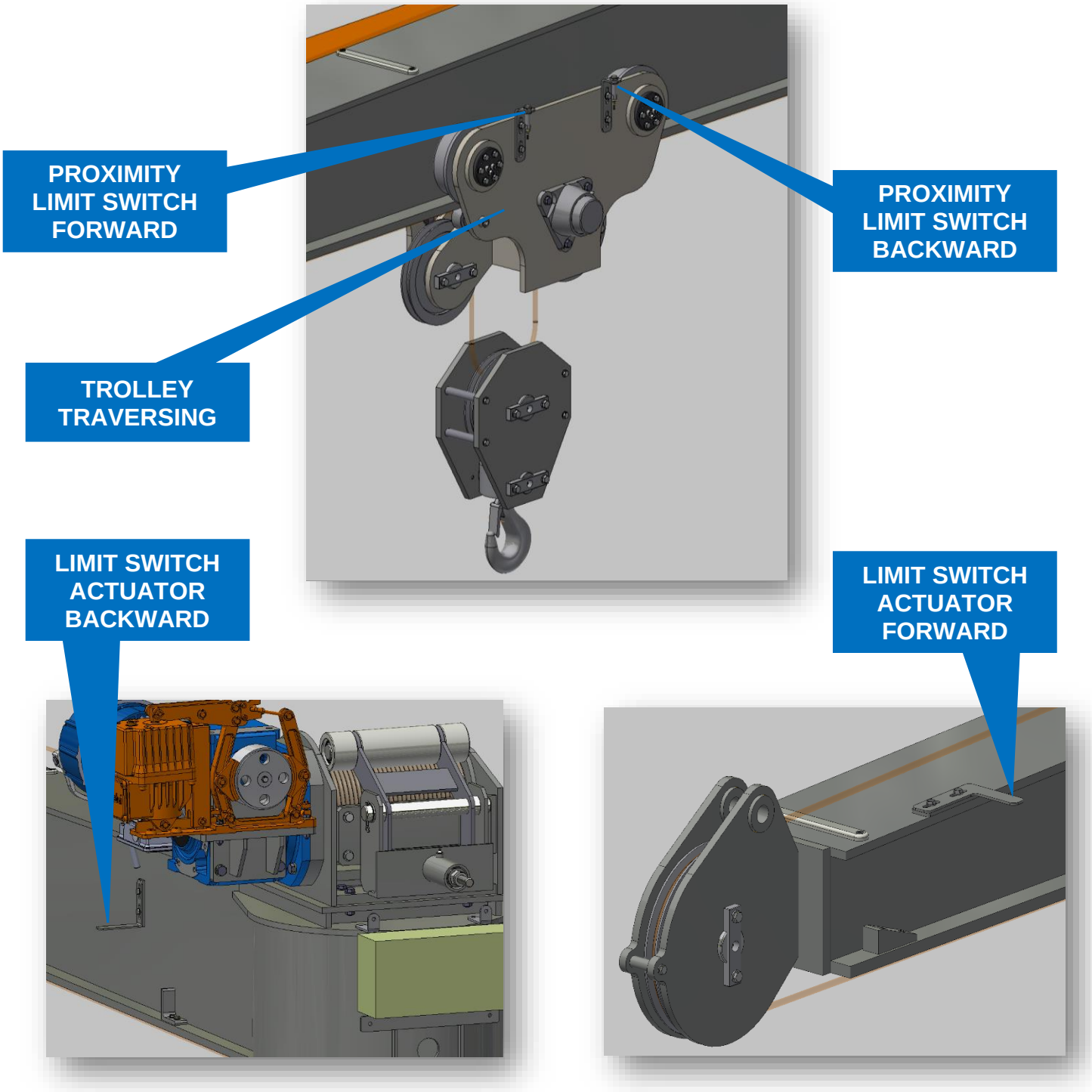




31. TROLLEY TRAVERSING LIMIT SWITCH

Two proximity limit switches are fitted on the traversing trolley and by means their actuators they prevent (electrically) the trolley from exceeding its stroke (forward and backward).

See picture below.



32. OVERLOAD DEVICE SETUP

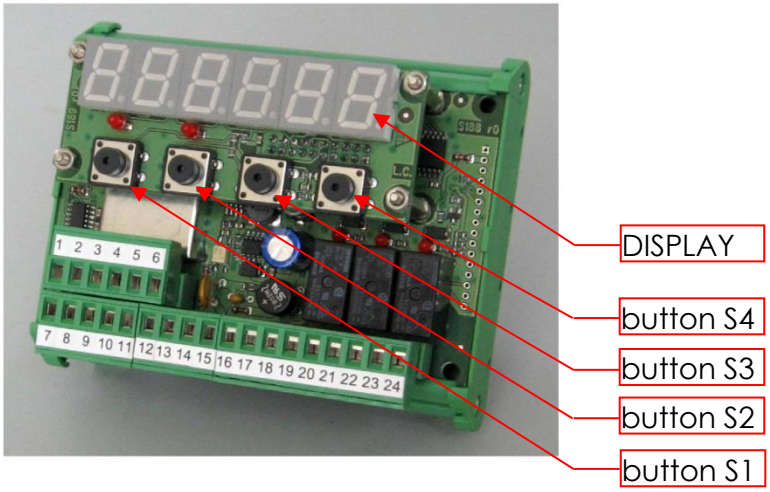


Fig. 1 Electronic card LC 200 front view

IMPORTANT: This procedure has to be done **only** :

- at first mounting or
- after load cell replacing
- after electronic card replacing

1. Switch on the current,
2. Press contemporarily buttons **S2** and **S4**: "**CONST**" appears on the display
3. Press button **S4,** on the display appears "**TARAT**"
4. Press button **S4**, on the display appears "**PASSwd**"
5. Press **S4**: on the display appears "**00000**", and the first zero on the left of the display is blinking
6. Insert the password: **2792**; to insert the numbers:
   - Press **S1** – to increase from 0 to 9,
   - Press **S2** – to decrease from 9 to 0,
   - Press **S3** – to select the next number
7. Press **S4** to confirm inserted password: "**CAPAC**" appears on the display
8. Press button **S4**,
9. Set the value in "Kg" of the **OVERLOAD**; nominal value **+ 25%** (by means of the buttons S1, S2, S3 as above described) and press the button **S4**
10. Press button **S3:** "**TARAT**" appears on the display
11. Press **S1** or **S2** until "**DIVIS**" appears on the display
12. Press button **S4**
13. Set the value "**10**" (by means of the buttons S1, S2, S3 as above described) and press button **S4**
14. Press button **S3**: "**DIVIS**" appears on the display
15. Press **S1** or **S2** until "**CONST**" appears on the display
16. Press button **S4**
17. Press **S1** or **S2** until "**PARAM**" appears on the display
18. Press button **S4**

19. Press **S1** or **S2** until "**FILTER**" appears on the display
20. Press button **S4**
21. Set the value "**6**" " (by means of the buttons S1, S2, S3 as above described) and press the button **S4**
22. Press button **S3**: "**FILTER**" appears on the display
23. Press **S1** or **S2** until "**STABIL**" appears on the display
24. Press button **S4**
25. Set the value "**1**" (by means of the buttons S1, S2, S3 as above described)and press the button **S4**
26. Press button **S3**: "**STABIL**" appears on the display
27. Press button **S3:** "**PARAM**" appears on the display
28. Press **S1** or **S2** until "**CALIBR**" appears on the display
29. Press button **S4**
30. As now we have to set the ZERO value, be sure that the HOOK IS EMPTY (no load applied)
31. Hold pressed the button **S3** until the actual weight on the display becomes "**0**"
32. On the display start blinking and switching from "**0**" to "**CAL**"
33. Now we have to set the device with a KNOWN LOAD; this load has:
    - to be bigger than the half of the rated capacity of the crane
    - to be smaller or equal to the rated capacity of the crane
34. Lift the known load and Press **S1**
35. By means of the buttons S1, S2, S3 as above described, set the value of the known load (in "**Kg**") and press the button **S4** to confirm the relevant value
36. The display start blinking and switching from "**CAL**" to the "**new value**"
37. Press the button **S4**
38. Press the button **S3** until "**STORE**" appears on the display; after some seconds on the display appears the value of the load on the hook
39. Press contemporarily buttons **S1** and **S4:** "**SET1**" appears on the display
40. Press the button **S4**
41. Now we must set the value in "**Kg**" of the load at which the crane lifting has to be stopped (it could be included from +5% to +10%, according to the wishes of the Register)
42. Press the button **S4**
43. Press the button **S3** until "**STORE**" appears on the display; after some seconds on the display appears the value of the load on the hook (the actual value, not the overload)

IMPORTANT:

IF DURING THE SETUP THE CURRENT IS SWITCHED OFF ALL DATA NOT "STORED" WILL NOT BE SAVED, AND THE WHOLE PROCEDURE MUST BE REPEATED

33. AUDIBLE AND VISIBLE ALARM – ITEM C01-CHB-0014

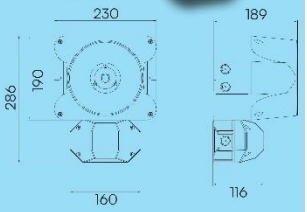
ELECTRA

SE 120 LED
SE 120 PRO LED



SE 120 LED
kg 2.20

SE 120 LED 100-240V AC
kg 2.40



IP69K

120 dB max

LED

Corpo / Body / Corps

SE 120 LED è una sirena elettronica con output fino a 120dB e luce LED, progettata per applicazioni industriali in cui siano richieste robustezza ed elevate prestazioni.
Disponibile nel colore grigio o rosso, in diverse tensioni e molteplici funzioni. Il modulo NFC integrato e la speciale app MySirena rendono la connessione, la configurazione e la diagnostica del dispositivo molto semplici. Collegando SE 120 PRO LED a un PC, è possibile scaricare e configurare messaggi personalizzati, in modo da programmare completamente la sirena e la luce in base alle proprie esigenze.

TENSIONE OPERATIVA
12-24V AC / 12-60V DC, 100-240V AC (AC: 50/60 Hz)

CARATTERISTICHE GENERALI
Temperatura di funzionamento: -40° +60°C
Grado di protezione: IP66-IP69K
Resistenza agli impatti: IK08
Servizio continuo



CARATTERISTICHE MECCANICHE
Per le caratteristiche meccaniche vedere SE 120 (pagina 24) e EL-7L (pagina 69).

CARATTERISTICHE ACUSTICHE
Multisuono: 64 suoni selezionabili e regolazione del volume (8 livelli).
Collegando la versione SE 120 PRO LED ad un PC, è possibile caricare e configurare messaggi personalizzati.

CARATTERISTICHE LUMINOSE
7 LED ad elevata luminosità che producono diversi effetti luminosi: luce fissa, singolo flash (FPM: 1F 95), doppio flash (CPM: 2F 80), triplo flash (CPM: 3F 67), strobo (FPM: 1F 300) con possibilità di personalizzare il numero di flash/min. tramite l'app

CERTIFICAZIONI / CERTIFICATIONS

CONFORME DIRETTIVA RED
RED COMPLIANT DEVICE
DISPOSITIF CONFORME À LA DIRECTIVE RED

LED - CD max	24V	580

SE 120 LED LT

SE 120 LT

V DC	12	24	-	-	48	60
V AC	-	-	12	24	-	-
mA	500	900	750	1400	1300	1400

EL-7L MULTI

V DC	12	24	-	-	48	60
V AC	-	-	12	24	-	-
mA	1800	700	2200	900	350	300

SE 120 LED HT

	SE 120 HT	EL-7L
100V AC	450 mA	250 mA
240V AC	350 mA	140 mA

SE 120 LED is an electronic alarm sounder with LED light up to 120dB output, designed for industrial applications where robustness and high performance are required. Available in gray or red color, different voltages and multiple functions. The built-in NFC module and special MySirena app make connection, configuration and diagnostics of the device very easy. By connecting SE 120 PRO LED to a PC, customized messages can be downloaded and configured, so the siren and the light can be fully programmed to meet your needs.

VOLTAGES
12-24V AC / 12-60V DC, 100-240V AC (AC: 50/60 Hz)

GENERAL FEATURES
Operating temperature: -40° +60°C
IP rating: IP66 IP69K
Impact Protection: IK08
Continuous operation

MECHANICAL FEATURES
See SE 120 (page 24) and EL-7L (page 69).

ACOUSTIC FEATURES
Multisound: 64 selectable sounds and volume adjustment (8 levels). By connecting the SE 120 PRO LED version to a PC, customized messages can be uploaded and configured.

OPTICAL FEATURES
7 very bright LEDs producing different light effects: steady light, single flash (FPM: 1F 95), double flash (CPM: 2F 80), triple flash (CPM: 3F 67), strobe (FPM: 1F 300), with the possibility to customize the number of flash/min via MySirena App.

SE 120 LED est une sirène électronique avec feu LED et une puissance jusqu'à 120dB, conçue pour les applications industrielles où la résistance et les hautes performances sont nécessaires.
Performante et durable, elle est disponible en différentes versions de tension, de fonctionnalité et de couleur pour permettre une plus grande polyvalence et adaptabilité à chaque application. Grâce au module NFC intégré et à l'application MySirena dédiée, elle est simple à connecter, configurer et diagnostiquer. En connectant la version SE 120 PRO LED à un PC, on peut télécharger et configurer des messages personnalisés, ce qui permet de configurer entièrement la sirène et le feu selon vos besoins.

TENSION D'UTILISATION
12/24V AC / 12-60V DC, 100-240V AC (AC : 50/60 Hz)

CARACTÉRISTIQUES GÉNÉRALES
Température de fonctionnement : -40° +60°C
Degré de protection : IP66 - IP69K
Résistance aux chocs : IK08
Service continu

CARACTÉRISTIQUES MÉCANIQUES
Voir SE 120 (page 24) et EL-7L (page 69).

CARACTÉRISTIQUES ACOUSTIQUES
Multi sons : 64 tonalités sélectionnables et réglage du volume (8 niveaux). En connectant la sirène SE 120 PRO LED à un PC, il est possible de télécharger et configurer des messages personnalisés.

CARACTÉRISTIQUES OPTIQUES
7 LED à haute luminosité produisant différents effets lumineux : lumière fixe, simple éclat (FPM : 1F 95), double éclat (CPM : 2F 80), triple éclat (CPM : 3F 67), stroboscopique (FPM : 1F 300), avec la possibilité de personnaliser le nombre de flash/min par l'application MySirena.

SE 120 LED

12/24V AC / 12-60V DC	22710	22711
100-240V AC	22718	22719
12/24V AC / 12-60V DC	22714	22715
100-240V AC	22722	22723

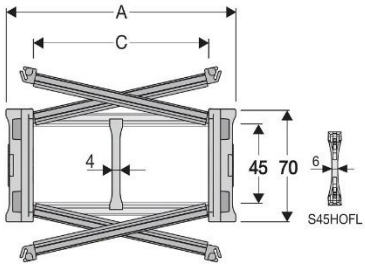
SE 120 PRO LED

12/24V AC / 12-60V DC	22712	22713
100-240V AC	22720	22721
12/24V AC / 12-60V DC	22716	22717
100-240V AC	22724	22725

34. CABLE CHAIN

H45SC
Nylon cable chain with opening frames

Inner height (D) 45 mm
Sideband construction with quickly removable pin. Frames openable from either side on both inner and outer radius. As standard the chain comes with frames every second link, on request with frames every link. Vertical and horizontal modular separator system is available.



Separator	
-Unassembled	Part.no S45CF3
-Assembled*	Part.no S45CF3MCI
-Assembled**	Part.no S45CF3MCE
Strong-hold Separator *for C > 250 mm*	
-Unassembled	Part.no S45HOFL
-Assembled	Part.no S45HOFL
Pin	
	Part.no PNH45RS

** for chain opening outer radius*
*** for chain opening inner radius*

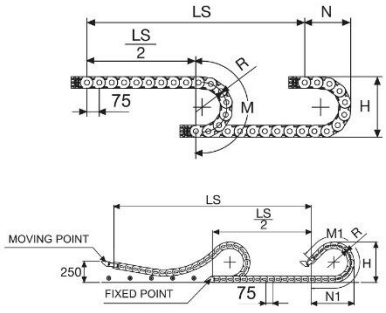
Technical Characteristics when self-supporting	
Speed	8 m/s
Acceleration	40 m/s²

For higher requirements please consult our technical dept.

For sliding applications, characteristics techniques may vary depending on the frequency, added weight and work environment.

A	B	C	D	R	Weight/m	Chain
mm	mm	mm	mm	mm	kg	Part Number
113	70	75	45	075-100-125-150-175-200-250-300	2,29	**H45SC075** □□□ *
138	70	100	45	075-100-125-150-175-200-250-300	2,37	**H45SC100** □□□ *
163	70	125	45	075-100-125-150-175-200-250-300	2,44	**H45SC125** □□□ *
188	70	150	45	075-100-125-150-175-200-250-300	2,52	**H45SC150** □□□ *
213	70	175	45	075-100-125-150-175-200-250-300	2,60	**H45SC175** □□□ *
238	70	200	45	075-100-125-150-175-200-250-300	2,67	**H45SC200** □□□ *
263	70	225	45	075-100-125-150-175-200-250-300	2,75	**H45SC225** □□□ *
288	70	250	45	075-100-125-150-175-200-250-300	2,83	**H45SC250** □□□ *
313	70	275	45	075-100-125-150-175-200-250-300	2,91	**H45SC275** □□□ *
338	70	300	45	075-100-125-150-175-200-250-300	2,99	**H45SC300** □□□ *
388	70	350	45	075-100-125-150-175-200-250-300	3,14	**H45SC350** □□□ *
438	70	400	45	075-100-125-150-175-200-250-300	3,30	**H45SC400** □□□ *

**Complete the code by inserting the value of the radius (R): Ex. H45SC100 [2][5][0]*
Chain equipped with nylon frame every picth: complete the code by inserting the letter D. Ex. H45SC100250 [D]



Length of chain (L)
Half travel distance $(\frac{LS}{2})$
plus length of curve (M) or (M1)

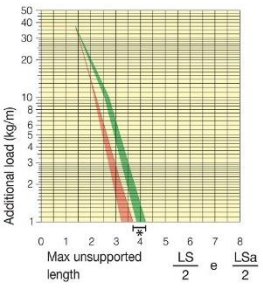
$L = \frac{LS}{2}$ + M or M1

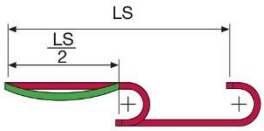
R	H	N	M	N1	M1
mm	mm	mm	mm	mm	mm
075	220	185	390	265	540
100	270	210	465	275	595
125	320	235	545	395	870
150	370	260	625	515	1150
175	420	285	700	635	1430
200	470	310	780	750	1705
250	570	360	940	990	2265
300	670	410	1095	1225	2820



Self-Supporting Capacity Diagram

The maximum length of the self-supporting capacity or in admissible sagging in relationship to the weight of the cables and hoses contained per linear metre.





***If the chain is in the ADMISSIBLE SAGGING area** (between GREEN and RED area) version with **frames on every link** is necessary.

The area in the diagram considers the difference of weight between various widths.

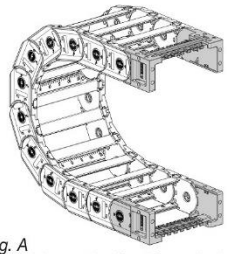
Red for self-supporting chain, green for chain in admissible sagging.

For applications with ($\frac{LS}{2}$) and weights not included in the diagram of self-supporting capacity, verify the possible use of support rollers (see page 30).

End Brackets

The end brackets set allows the two ends of the chain to be attached to the equipment. Set complete with tiewrap clamps available on request.

Nylon Type



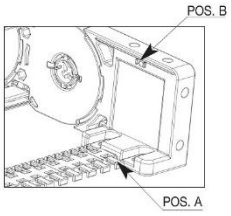
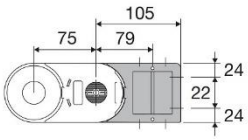
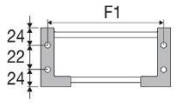
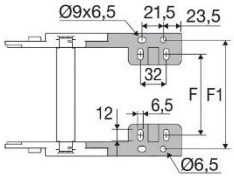


Fig. A
The chain can be fixed frontally, inner and outer radius (Fig A)







Chain Type	F mm
H45SC075	91
H45SC100	116
H45SC125	141
H45SC150	166
H45SC175	191
H45SC200	216
H45SC225	241
H45SC250	266
H45SC275	291
H45SC300	316
H45SC350	366
H45SC400	416

Chain Type	F mm
H45SC075	55,5
H45SC100	80,5
H45SC125	105,5
H45SC150	130,5
H45SC175	155,5
H45SC200	180,5
H45SC225	205,5
H45SC250	230,5
H45SC275	255,5
H45SC300	280,5
H45SC350	330,5
H45SC400	380,5

Nylon Type Part Numbers

Complete Set Assembled

Chain Type	End Brackets set
H45SC...	**ANH45SC□□□KM□****

Complete Set Unassembled

Chain Type	End Brackets set
H45SC...	**ANH45SC□□□K**

*** 1=Pos.1; 2=Pos.2; 3=Pos.3*

Tiewrap Clamp

Complete Set Assembled

Chain Type	Tiewrap Clamp set
Pos. A	**SFCTH45□□□*KMA**
Pos. B	**SFCTH45□□□*KM**

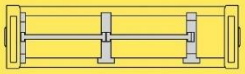
Complete Set Unassembled

Mounting Position	Tiewrap Clamp set
Pos. A	**SFCTH45□□□*KA**
Pos. B	**SFCTH45□□□*K**

** Inner Width C*

H45SC

Nylon cable chain with opening frames

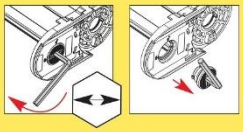


Separation System page. 196

How to open the frame



How to release the pin junction





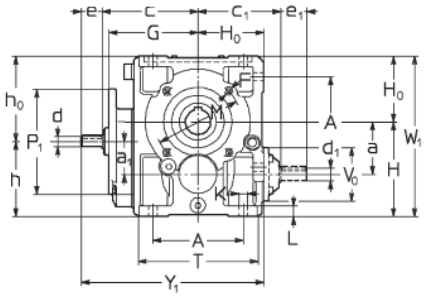
Suitable to long travel distance in frame every pitch version.

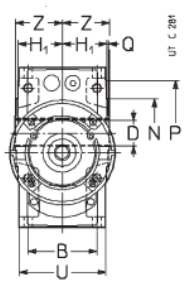
For further informations please consult Brevetti Stendalto's Technical Office

35. TROLLEY TRAVERSING GEARBOX

Designs, dimensions, mounting positions and oil quantities

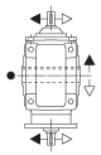






R ICI 50 ... 200

Design (direction of rotation)



U03D

● Position of the reference groove (see ch. 20) for verification of radial load.

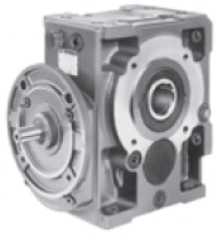
Grand. Size	a	a_1	A	B	c	c_1	D Ø H7	d Ø	e	Y_1	d Ø	e	Y_1	d_1 Ø	e_1	d_1 Ø	e_1	F	G	H	H_0	H_1	h	h_0	K Ø	L	M Ø	N Ø h6	P Ø	P_1	Q	T	U	V_0 Ø	W_1	Z	Massa Mass
								$i_N \leq 80$			$i_N \geq 100$			4) $i_N \leq 40$		5) $i_N \geq 50$		1)		h11	h11	h12	h11	h11				h6									kg
50	50	40	86	75	107	94	24	11	23	197	–	–	–	16	30	14	30	M6	98	100	67	49	90	77	9,5	12	85	70	105	140[3]	2,5	120	95	78	167	53	11
63	63	50	102	90	127	108	30	14	30	237	14	30	237	16	30	14	30	M8	118	125	80	58,5	112	93	11,5	14	100	80	120	160[3]	3	143	114	78	205	63	17
64	63	50	102	90	127	108	32	14	30	237	14	30	237	16	30	14	30	M8	118	125	80	58,5	112	93	11,5	14	100	80	120	160[3]	3	143	114	78	205	63	17
80	80	50	132	106	147	131	38	14	30	277	14	30	277	19	40	16	30	M10	138	150	100	69,5	120	130	14	17	130	110	160	160[3]	3,5	180	135	86	250	75	28
81	80	50	132	106	147	131	40	14	30	277	14	30	277	19	40	16	30	M10	138	150	100	69,5	120	130	14	17	130	110	160	160	3,5	180	135	86	250	75	28
100	100	63	172	131	181	157	48	19	40	346	16	30	336	24	50	19	40	M12	170	180	125	84,5	143	162	16	20	165	130	200	200	3,5	228	165	104	305	90	50
125	125	80	212	162	216	188	60	24	50	416	19	40	406	28	60	24	50	2)	205	225	150	103,5	180	195	18	23	215	180	250	200	4	274	201	122	375	110	88
140	140	80	212	162	216	188	70	24	50	416	19	40	406	28	60	24	50	2)	205	240	150	103,5	180	210	18	23	265	230	300	200	4	274	201	122	390	125	102
160	160	100	252	201	258	226	80	28	60	498	24	50	488	38	80	32	80	2)	247	280	180	128,5	220	240	22	28	265	230	300	250	4	328	249	155	460	136	164
180	180	100	252	201	258	226	90	28	60	498	24	50	488	38	80	32	80	2)	247	300	180	128,5	220	260	22	28	300	250	350	250	5	328	249	155	480	150	188
200	200	125	320	250	318	282	100	32	80	623	32	80	623	48	110	38	80	2)	305	355	225	158	280	300	27	34	350	300	400	300	5	410	307	190	580	167	296

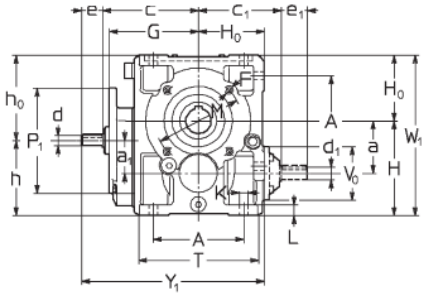
Item	Description	Code	Off
-	Orthogonal type gearbox type cat. G MR ICI 80 UO3A - 24x200 - 52 Form B3 - Flange B5 (F1) painting cycle 2I (C5 M) white RAL 7038 without motor	002-0027-C1433	1

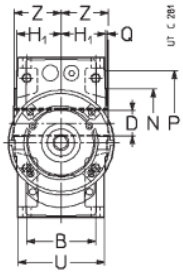
36. HOISTING GEARBOX

Designs, dimensions, mounting positions and oil quantities

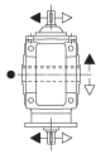
R ICI 50 ... 200







Design (direction of rotation)



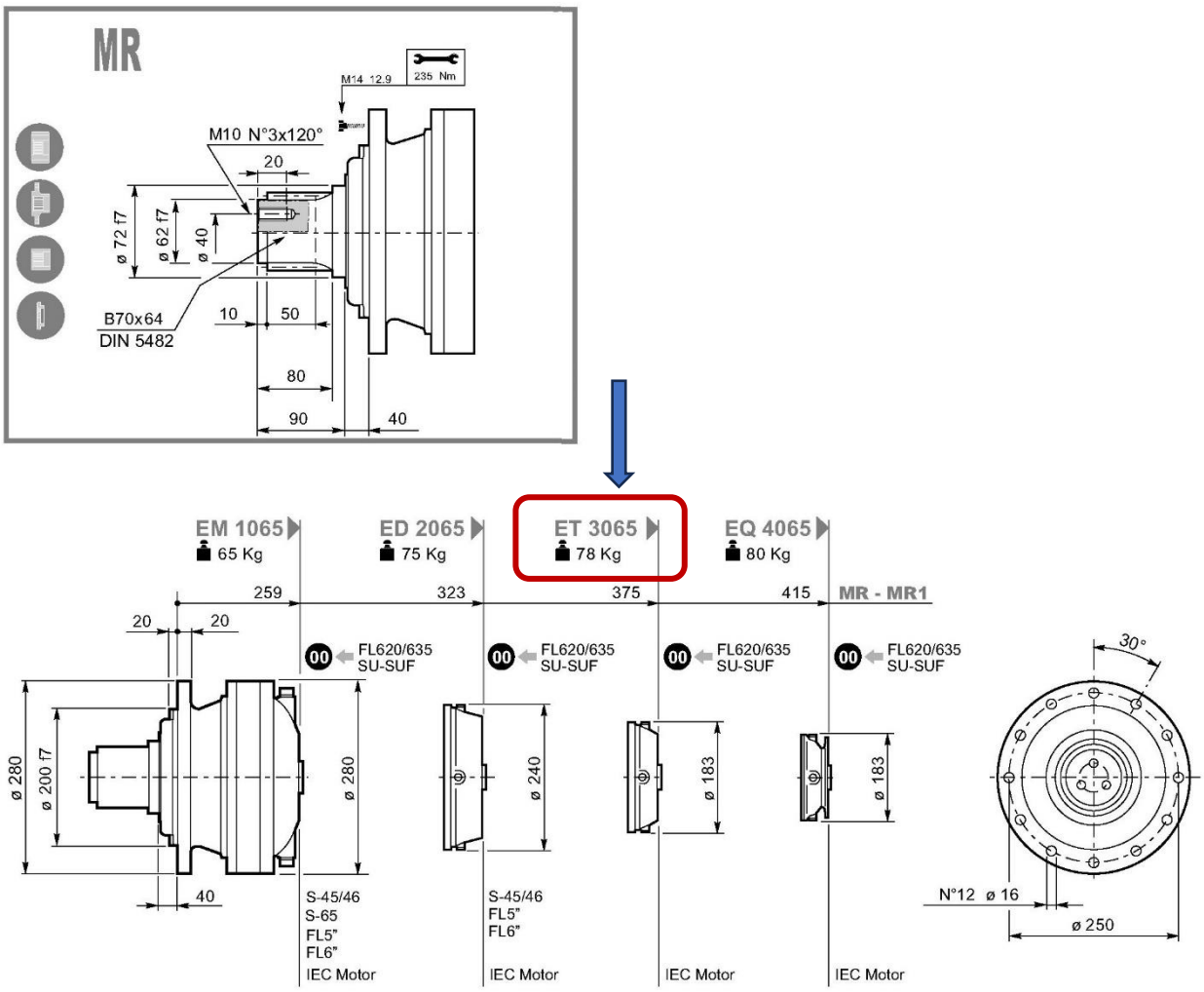
UO3D

● Position of the reference groove (see ch. 20) for verification of radial load.

Grand. Size	a	a_1	A	B	c	c_1	D Ø H7	d Ø	e	Y_1	d Ø	e	Y_1	d_1 Ø	e_1	d_1 Ø	e_1	F	G	H h11	H_0 h11	H_1 h12	h h11	h_0 h11	K Ø	L	M Ø	N Ø h6	P Ø	P_1	Q	T	U	V_0 Ø	W_1	Z	Massa Mass kg
									$i_N \leq 80$			$i_N \geq 100$		4) $i_N \leq 40$		5) $i_N \geq 50$		1)																				
50	50	40	86	75	107	94	24	11	23	197	–	–	–	16	30	14	30	M6	98	100	67	49	90	77	9,5	12	85	70	105	140[3]	2,5	120	95	78	167	53	11
63	63	50	102	90	127	108	30	14	30	237	14	30	237	16	30	14	30	M8	118	125	80	58,5	112	93	11,5	14	100	80	120	160[3]	3	143	114	78	205	63	17
64	63	50	102	90	127	108	32	14	30	237	14	30	237	16	30	14	30	M8	118	125	80	58,5	112	93	11,5	14	100	80	120	160[3]	3	143	114	78	205	63	17
80	80	50	132	106	147	131	38	14	30	277	14	30	277	19	40	16	30	M10	138	150	100	69,5	120	130	14	17	130	110	160	160[3]	3,5	180	135	86	250	75	28
81	80	50	132	106	147	131	40	14	30	277	14	30	277	19	40	16	30	M10	138	150	100	69,5	120	130	14	17	130	110	160	160[3]	3,5	180	135	86	250	75	28
100	100	63	172	131	181	157	48	19	40	346	16	30	336	24	50	19	40	M12	170	180	125	84,5	143	162	16	20	165	130	200	200	3,5	228	165	104	305	90	50
125	125	80	212	162	216	188	60	24	50	416	19	40	406	28	60	24	50	2)	205	225	150	103,5	180	195	18	22	215	180	250	200	4	274	201	122	375	110	88
140	140	80	212	162	216	188	70	24	50	416	19	40	406	28	60	24	50	2)	205	240	150	103,5	180	210	18	23	265	230	300	200	4	274	201	122	390	125	102
160	160	100	252	201	258	226	80	28	60	498	24	50	488	38	80	32	80	2)	247	280	180	128,5	220	240	22	28	265	230	300	250	4	328	249	155	460	136	164
180	180	100	252	201	258	226	90	28	60	498	24	50	488	38	80	32	80	2)	247	300	180	128,5	220	260	22	28	300	250	350	250	5	328	249	155	480	150	188
200	200	125	320	250	318	282	100	32	80	623	32	80	623	48	110	38	80	2)	305	355	225	158	280	300	27	34	350	300	400	300	5	410	307	190	580	167	296

Item	Description	Code	Off
-	Orthogonal type gearbox type cat. G MR ICI 140 UO3D - 38x300 - 40,6 Form B3 - Flange B5 (F1) Painting cycle 2I (C5 M) white RAL 7038 without motor	002-0027-C1432	1

37. SLEWING GEARBOX



Item	Description	Code	Off
-	Planetary gearbox type B2045232 ET3065/MR/208.2/61104600690 V5C5MH RAL 7038- Pinion 3355332000K EM1065/Z11M10/../A32 + RDF Flange for motor size IEC100-112	002-0027-C1431	1

38. GEARBOXES LUBRICATION

General

The gear pairs are oil-bath lubricated, the bearings are either oil bathed or splashed or lubricated «for life» with grease. For some mounting positions with continuous duty at high speed, an expansion tank is foreseen: consult us. Gear reducers are supplied filled with PAO synthetic oil having viscosity 320 cSt (at 40° C).Consider the lubrication interval stated in the table for all re-lubrication operations, emptying the gear reducers from the exhausted oil, executing a wash with clean oil of the same type to be used also for the re-filling of the gear reducer up to level.

OIL TEMPERATURE (°C)	OIL-INTERVAL (h)	
	Synthetic oil	Mineral oil
≤ 65	12500	5600
65 ÷ 80	9000	2800
80 ÷ 95	6300	1400

Oil-change intervals assume pollution-free surroundings. When heavy overloads are present, halve the values. Independently from running times, change the oil every 2 ÷ 4 years (every 1 ÷ 2 years, for mineral oil).The main lubricant manufacturers as well as the ISO viscosity grade to be used are stated in the following tables. Use only lubricants with EP (extreme pressure) additives.

Never mix different makes of synthetic oil; if oil-change involves switching to a type different from that used hitherto, then give the gear reducer a through clean-out. Polyglycol basis synthetic lubricants must not be mixed with other type's lubricants (mineral and PAO lubricants). Before their use is not recommended.

Bearings with independent lubrication, motor bearings

Usually the bearings are automatically and continuously lubricated (oil-bathed or splashed) with the same lubricant of gear reducer. However for certain gear reducer in vertical mounting position V1, V3 and horizontal mounting position B51, B52 the upper bearings have independent lubrication, with special grease for «long life» lubrication in absence of external pollution; this is valid also for motor bearings (excluding some cases where a re-lubrication device is foreseen).

Commissioning

Carry out an overall check, making particularly sure that the gear reducer is filled with lubricant up to level and mounted according to the mounting position stated on name plate. For the first commissioning, before starting with a normal running cycle, it is advisable to run the gear reducer without load in order to verify if it correctly runs. In this circumstance, cause of the elimination of potential residual air, an oil filling up to level could be necessary. Where Y-Δ starting is being used, input voltage must match the motor lower voltage (Δ connection).For asynchronous three-phase motor, if the direction of rotation is not as desired, invert two phases at the terminals.

39. GEARBOXES MAINTENANCE

General

At machine rest, verify at regular intervals (more or less frequently according to environment and use):
a) all external surfaces are clean and air passages to the gear reducer or gear-motor are free, in order that cooling remains fully effective;
b) oil level and deterioration degree (check with cold gear reducer at rest);
c) correct fastening screws tightening.
During operation, check periodically:
– noise level;
– vibrations;
– sealings;
etc.

Attention!

After a running period, gear reducer is subject to a light internal overpressure which may cause burning liquid discharge. Therefore, before loosening whichever (filler plug, included) plug wait until gear reducer has become cold and open it carefully; if not possible, take the necessary protection measures against burning due to warm oil contact. In all cases, always proceed with great care. Maximum oil temperatures indicated in lubrication table do not represent a hindrance to the gear reducer regular running. During oil change operation, after unscrewing also the filler plug in order to facilitate oil draining:
– wash the inside part of gear reducer housing using the same oil type suitable for the running (stated on lubrication nameplate); the oil used for this wash can be applied for further washings after proper filtering by 25 µm of filtration standard.
– clean, using a compressed air stream, all magnetic plugs, taking care to assemble them again in their original position;
– fill in the gear reducer with new oil up to level, using only oil of the same type and viscosity as per lubrication nameplate.
Replace the seal rings in case of dismounting or of periodical check; in this case, the new ring must be positioned so that the new ring does not work on the same sliding race of previous ring.

Seal rings

Duration depends on several factors such as dragging speed, temperature, ambient conditions, etc.; as a rough guide it can vary from 1 600 ÷ 12 500 h.

Motor mounting or replacement

Since gear-motors are realized with standardized, motor mounting and replacement in case of failure is extremely easy. simply observe the following instructions:
– be sure that the mating surfaces are machined under accuracy rating (iec 60072-1, unel 13501-69; din 42955);
– clean surfaces to be fitted thoroughly;
– check and, if necessary, lower the parallel key so as to leave a clearance of 0,1 □ 0,2 mm between its top and the bottom of the keyway of the hole. if shaft keyway is without shoulder, lock the key with a pin.
– lubricate surfaces to be fitted against fretting corrosion.
– insert the motor down to shoulder on gear-motor flange; this operation can be facilitated vertically positioning the gear-motor with motor flange mounted upwards;
– check that motor centering is in the relevant gear-motor flange seat;
– tighten the motor fastening screws to gear reducer flange in order to achieve the tightening torque as per following table:

Bolt - d (ø)	Tigthtening torque - Nm cl.8.8
M8	25
M10	56
M12	85
M14	135
M16	205

40. ELECTRIC MOTORS BRAKE ASSEMBLY – SIZES 90-100-132

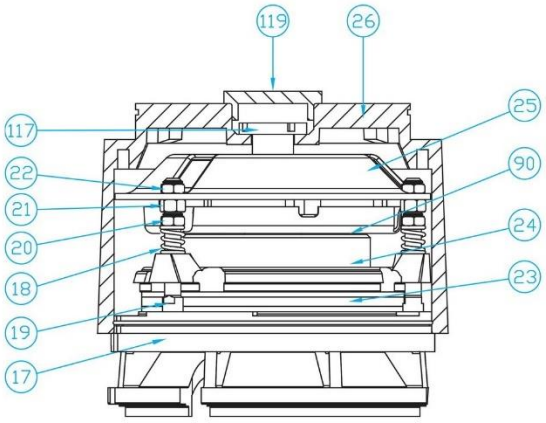
BAH Series 80÷315

BA brake motors are supplied as standard as BAH series starting from the frame size 225 up to 315 mm and on request starting from the frame size 80 up to 200. In the technical data tables the BAH series motors are proposed in the BAHX version for continuous duty with efficiency class IE2 / IE3 (compliant with EU regulation 2019/1781), alternatively they can be supplied in the BAH 'Enhanced Power' version only for intermittent service (S3 60%).

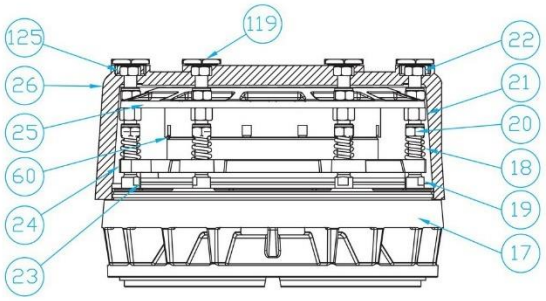
The BAH serie-motors have the same characteristics of the BA-BAX serie-motors. The difference essentially consists in the casing of the brake assembly designed to give greater strenght and protection against the entry of dust and liquids (IP degree). The BAH serie-motors are supplied as standard with IP55 protection degree and, on request, with IP56-65-66 protection degree.

17 - Brake Friction surface
18 - Spring
19 - Brake Adjuster
20 - Brake Torque Adjuster Locknut
21 - Air Gap Adjusting Nut
22 - Brake Coil Locknut
23 - Brake disc
24 - Brake Moving Element
25 - Brake coil
26 - Brake Cover (BAH)
60 - Air Gap
117 - Brake Cover Fixing Screw (BAH 80÷112)
119 - Brake Cover Closing Cap BAH
125 - Brake Cover Fixing Nut (BAH 132÷315)

Brake assembly BAH 80÷112

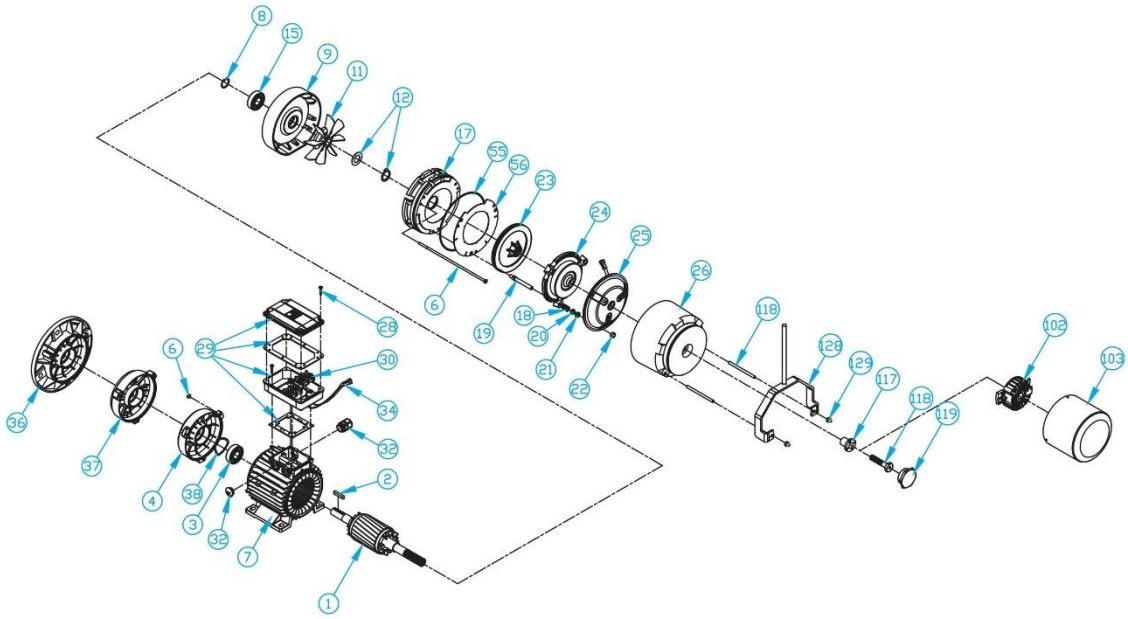


Brake assembly BAH 132÷315



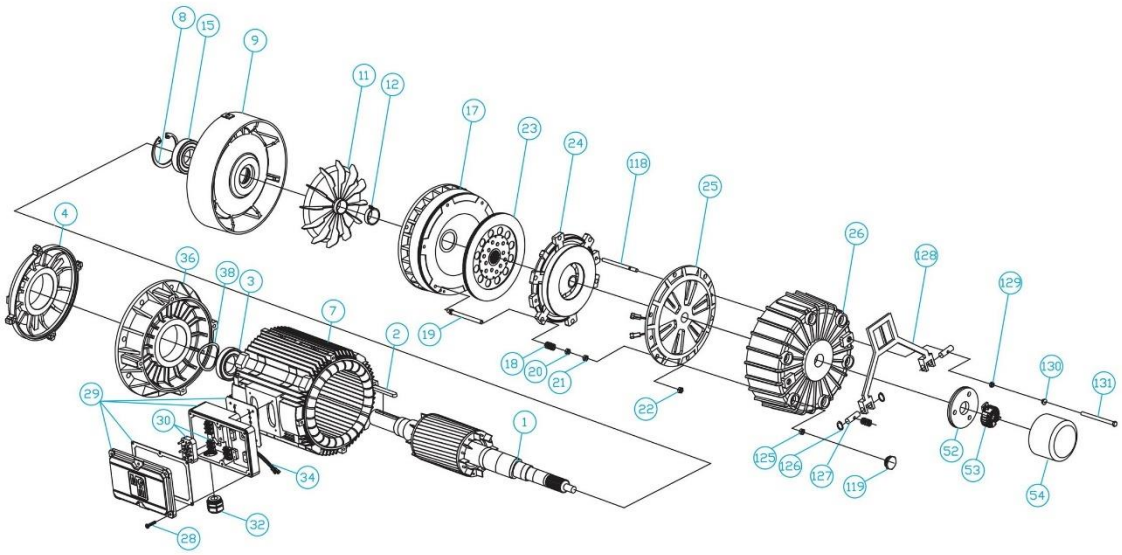
41. ELECTRIC MOTORS SPARE PARTS LIST – SIZES 90-100

BAH-BAHX 80-112 series



1 Rotor
2 Key
3 Front bearing
4 Front cover (B3)
6 Tie rod assembly
7 Frame
8 Circlip
9 Rear cover
11 Fan
12 Fan assembly
15 Rear bearing
17 Rear cover (brake surface)
18 Spring
19 Brake adjuster
20 Braking torque adjusting locknut
21 Air gas adjusting nut
22 Locknut
23 Brake disc
24 Brake moving element
25 Brake coil
26 Brake cover (BAH)
28 Hexagonal rear nut
29 Terminal board box screws
30 Terminal board box (single or double)
32 Terminal board
34 Cable gland
36 Terminal box/brake coil connection
37 Flange cover (B5)
38 Flange cover (B14)
49 Elastic washer
55 Brake assembly O-Ring
56 Inox plate
102 Encoder (BAHE, BAHXE)
103 Encoder cover (BAHE, BAHXE)
117 BAH brake cover fixing cap
118 BAH Brake release screw
119 BAH brake cover screw cap

42. ELECTRIC MOTOR SPARE PARTS LIST – SIZES 132



1 Rotor Shaft	28 Terminal board box screws (6 units)
2 Key	29 Terminal board box
3 Front bearing	30 Terminal board
4 Endshield Drive End	32 Cable gland
7 Frame	34 Terminal box/brake coil connection
8 Circlip	36 Flange cover (B5)
9 Rear cover	38 Elastic washer
11 Fan	52 Encoder fixing plate (BAHE, BAHXE)
12 Rear cover seal	53 Encoder (BAHE, BAHXE)
15 Rear bearing	54 Encoder protective cover (BAHE, BAHXE)
17 Brake friction surface	118 Unlocking type hand brake release screw (2 units)
18 Spring (6 units)	119 Brake Adjuster Plug (6 units)
19 Brake adjuster (6 units)	125 Brake Cover Locknut
20 Brake torque adjuster locknut (6 units)	126 Hinge for unlocking type brake release circlip (optional)
21 Air gap adjusting nut (6 units)	127 Hinge for unlocking type brake release (optional)
22 Brake Coil Locknut (6 units)	128 Unlocking type hand brake release lever (optional)
23 Brake disc	129 Unlocking type hand brake release locknut (optional)
24 Brake moving element	130 Brake release plug
25 Brake coil	131 Locking type brake release screw (2 units)
26 Cast Iron Brake Cover	132 Brake hand release locking screws

43. ATTACHMENTS LIST

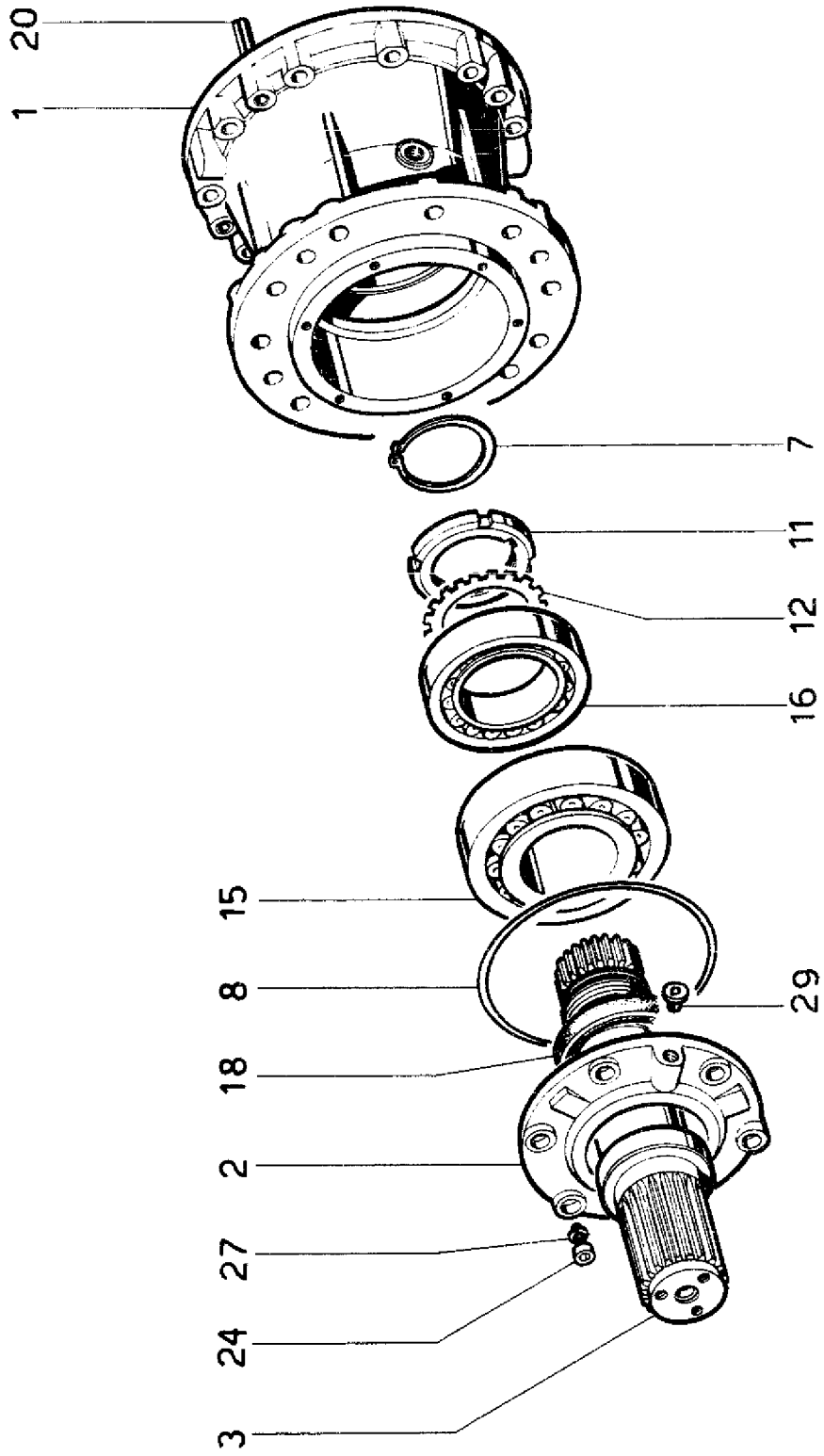
ITEM	TITLE	CODE	N° of sheets
-	SLEWING GEARBOX PARTS LIST	002-0027-C1431	15
-	HOISTING GEARBOX PARTS LIST	002-0027-C1432	1
-	TRAVERSING GEARBOX PARTS LIST	002-0027-C1433	1
-	SHOE BRAKE – INSTALLATION AND MAINTENANCE MANUAL	002-0017-C0396	40

REMAZEL
ENGINEERING

REMAZEL ENGINEERING S.P.A.
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in Remazel Engineering



Mod.			Mod. Date	Modified by	Checked by
Drawn by: A.Neroni	Checked by: W.Bacchelli	Date: 10.07.17	SET11D60002V2		

COMPONENT PART LIST

Num: ***DBT11D60002V2***

Date: ***10.07.2017***

Description: **OUTPUT SUPPORT**
Business Code: **EM1065/MR/../065**
Discriminating: **(Senza Tappi)**

Pos.	Code	Description	Qty.	Notes
1	35206614200	SUPPORT EM1065/MR/../065	1	
2	35417424000	COVER EM1065/../../IF178	1	
3	31113730600	SHAFT EM1065/B32/../B32	1	
7	43107000000	SEEGER CIRCLIP DIN 471-A 70	1	
8	41234100000	O-RING 129,77x3,53 NBR 70Sh	1	
11	47101600000	LOCK NUT KM15 DIN981	1	
12	37211346400	TAB WASHER EM1065/17T/72/2,5	1	
15	42214100000	BEARING 33215 DIN720	1	
16	42213900000	BEARING 30215 DIN720	1	
18	41133500000	OIL SEAL DIN3760 AS 85x110x12 NBR	1	
20	43843040100	PIN Spirol 12x60	4	
24	46107800000	SCREW ISO4017 M8x25 8.8	6	
27	46701000101	WASHER ISO 7092 8,4x14x1,6 St-HV300	6	
29	9010776	PLUG G1/8 DIN908 Magn.Inc_O-Ring_Lanthane	1	

Exploded view: SET11D60002V2

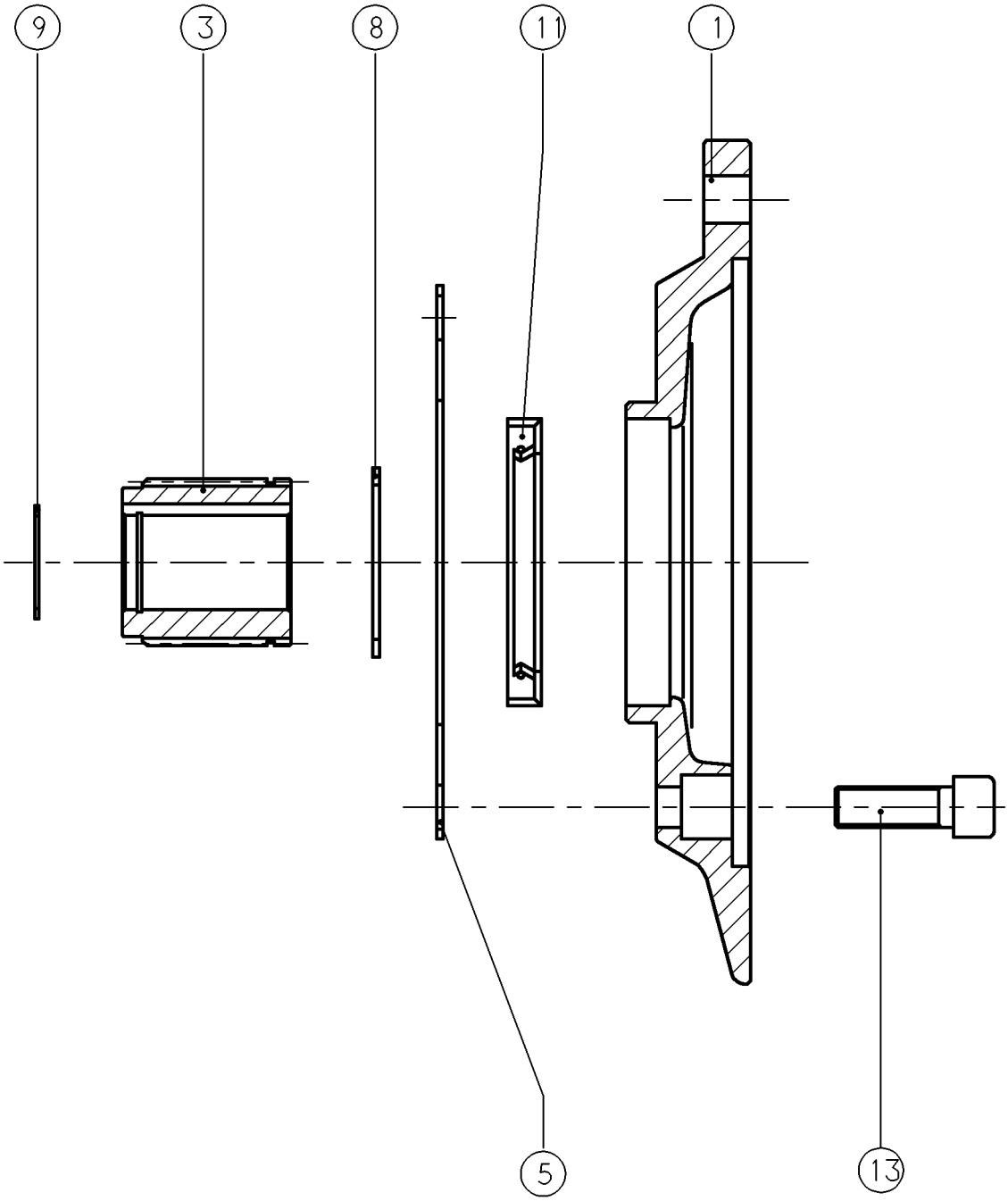
Notes:

Mod.	Description Modifications	Date Mod.

ESPLOSO FLANGIATURA
Exploded view adaptor set – Vue eclatee adaptation
Anbauteile einzeldarstellung – Despiece adaptation

61104600690

Disegnato da: Progettazioni G.G il : 06/05/94	Controllato da: Incerti il : 06/05/94



Mod.	Descrizione modifica	Data	Es./Ct.	Sostituisce il:

Brevini

COMPONENT PART LIST

Num: ***DB61104600690***

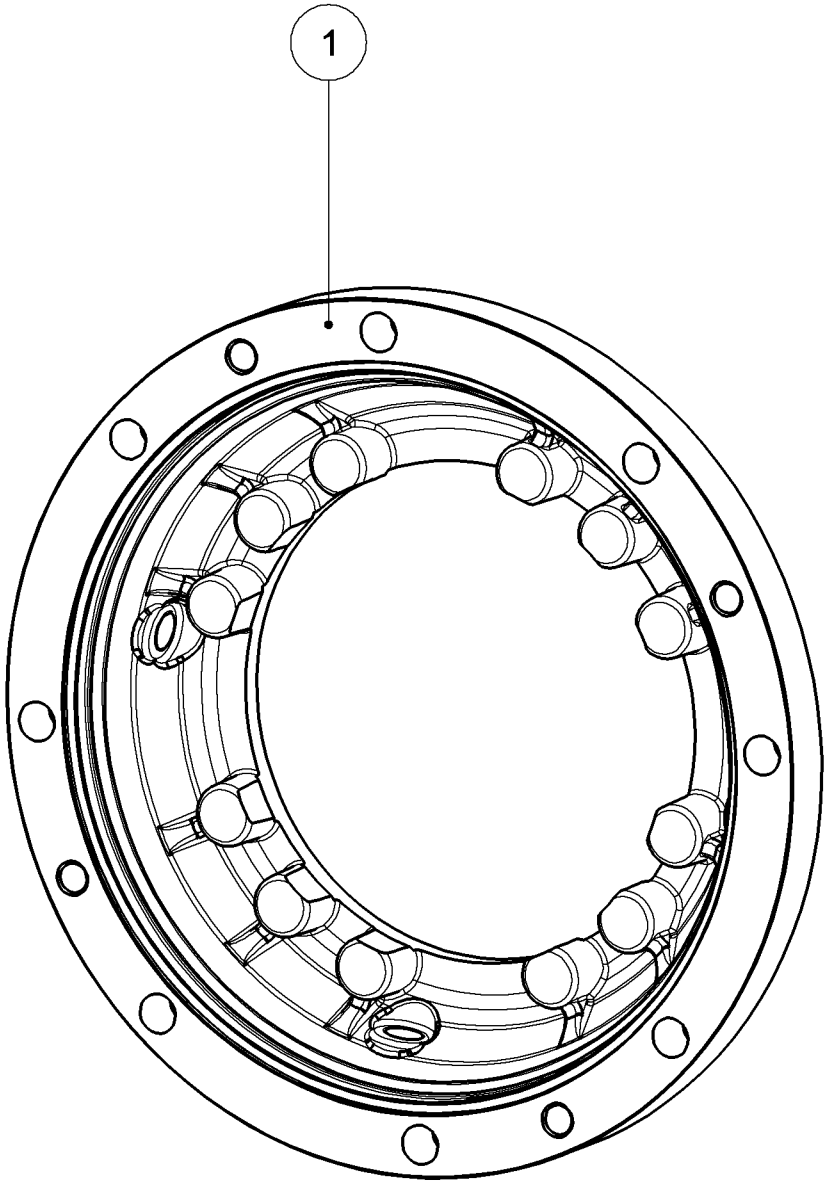
Date: ***03.03.2016***

Description: **UNIVERSAL ADAPTOR**
Business Code: **UNI611.0/B24X00 (X=28)**
Discriminating:

Pos.	Code	Description	Qty.	Notes
001	30104624000	FLANGE UNI/IF145/../To4	1	(X=28)
003	30506940100	COUPLING B24/../D28i	1	
005	36602249000	GASKET UNI/IF145/../To6	1	
008	43105500000	CIRCLIP. Est.50 UNI7435-75	1	
009	43202700000	CIRCLIP. Int.28 UNI7437-75	1	
011	41127900000	OIL SEAL BA60x85x10	1	
013	46213600000	SCREW ISO4762 M12x25 8.8	6	

Exploded view: SE61104600690

Notes:



OFF-HIGHWAY DRIVE AND MOTION TECHNOLOGIES
REGGIO EMILIA

DANA

Mod.		Mod. Date	Modified by	Checked by
A	ELIM.POS.9 (ERANO N.4 SPINE 43839640100) DEL.POS.9 (WERE N.4 PINS 43839640100)	30.04.21	GAGLIANI M.	S.C.

Drawn by:	Checked by:	Date:	
S.CAMPARI	B.LOMBARDI	19.06.02	SE1001396

COMPONENT PART LIST

Num: ***DB1002057***

Date: ***30.04.2021***

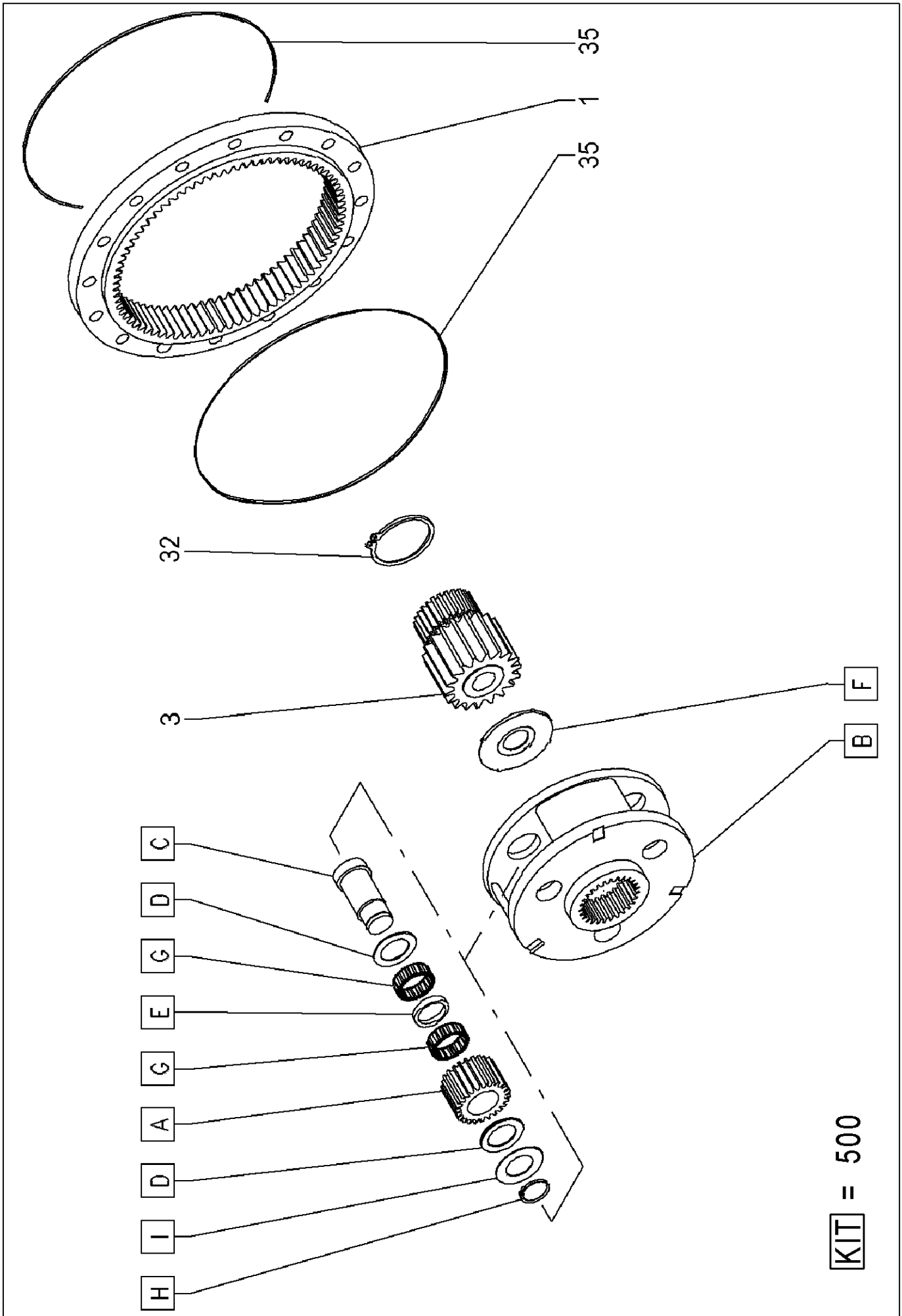
Description: **INTERMEDIATE FLANGE**
Business Code: **EM1065/065/../020**

Pos.	Code	Description	Qty.	Notes
001	34203624000	INTERMEDIATE FLANGE EM1065/065/../020	1	

Exploded view: SE1001396

Notes:

Mod.	Description Modifications	Date Mod.
A	ELIM.POS.9 ERA 43839640100. DEL.POS.9 WAS 43839640100.	30.4.21_MG



Mod.		Mod. Data	Modificato da	Controllato da
A	Variata rappresentaz. grafica ralla posizione "D" (PM373)	05.11.03	A.N.	Fiumanò

DISEGNATO/DRAWN BY:	CONTROLLATO/CHECKED BY:	DATA/DATE:	
S.Campari	R.Incerti	26.11.02	SE111D6220007

brevini riduttori
PLANETARY PARTNER

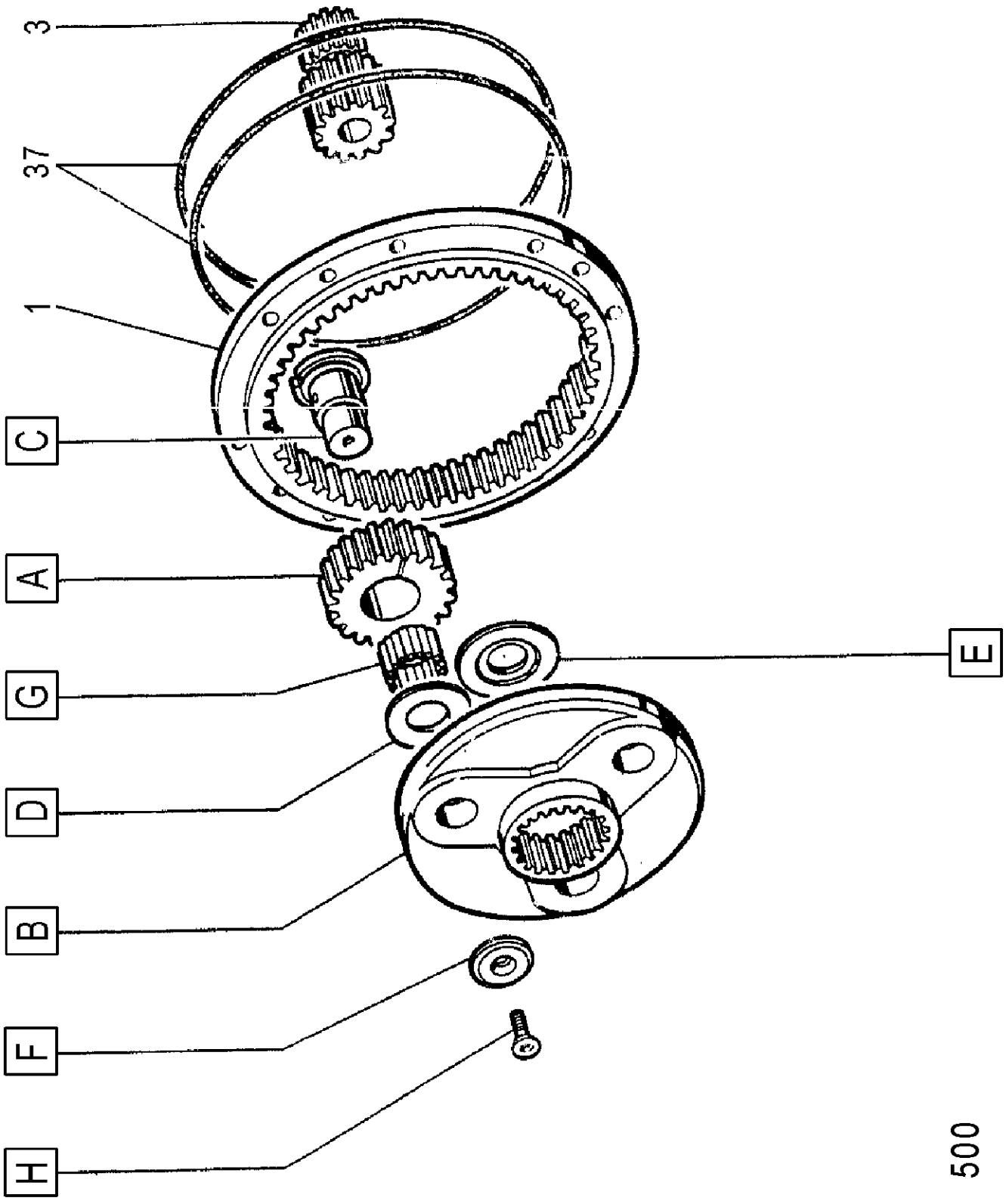
COMPONENT PART LIST

DB111D6250007/A

Date: 19-10-2004

Description: **REDUCTION STAGE**
Business Code: **EM1065/FEc/5/GC27**
Discriminating:

Pos	Code	Denomination	Q.ty	Notes
001	**32001921100**	RING-GEAR EM1065/10F/..Z60M3,5	**1**	
003	**32733530300**	SUN PINION EM1065/Z15M3,5/5/B27	**1**	
032	**43106100000**	CIRCLIP Est.57 UNI7435-75	**1**	
035	**41221700000**	O-RING 2-175 228x2,62	**2**	
500	**211D625000N**	REDUCTION STAGE EM1065/FEc/5/SGC	**1**	
	Exploded View	SE111D6220007		



Mod.		Data mod.	Modificato	Controllato
DISEGNATO: S.Campari	CONTROLLATO: R.Incerti	DATA: 26.11.02	SE111B8210107	

brevini riduttori
PLANETARY PARTNER

COMPONENT PART LIST

Num: ***DB111B8270107/B***

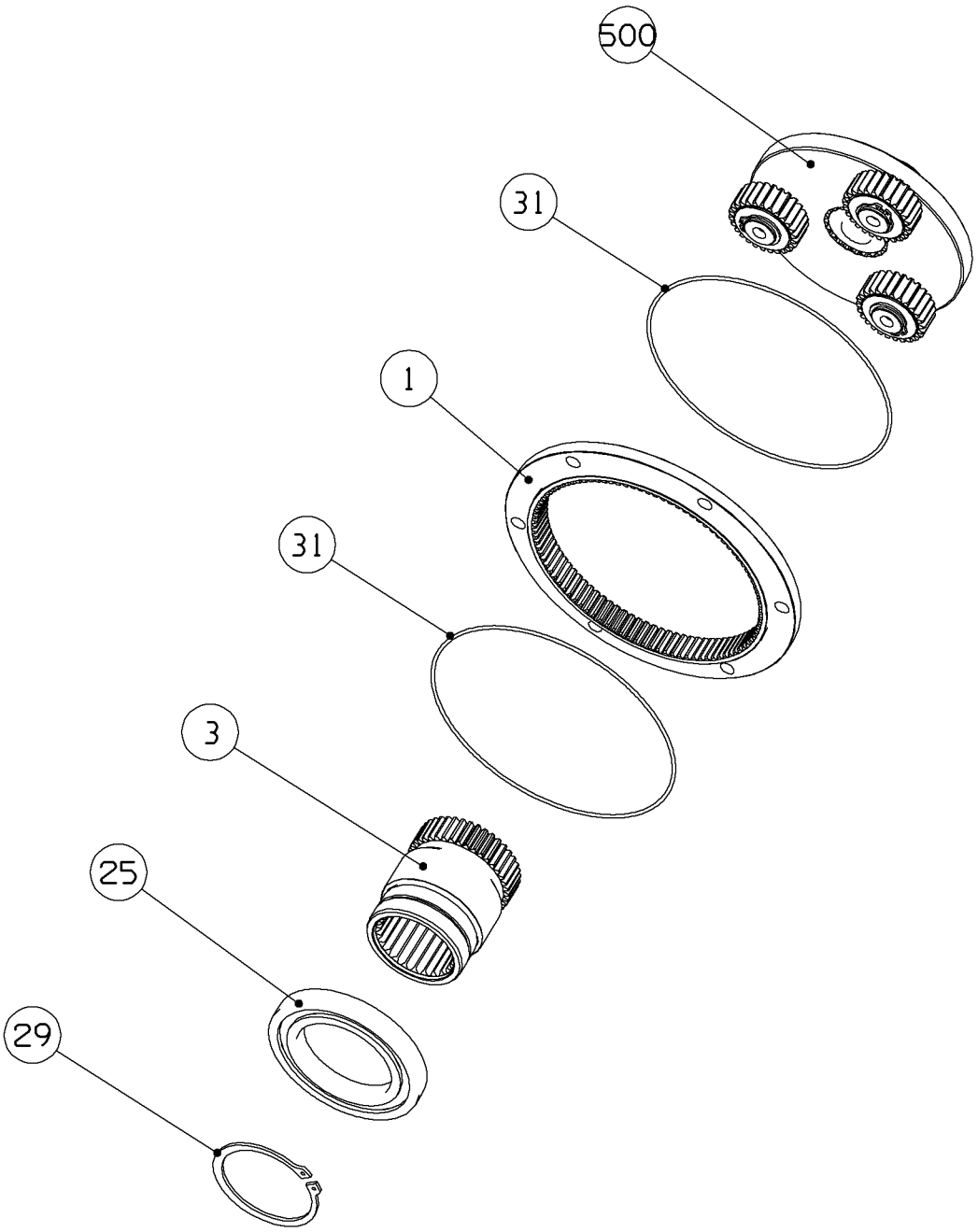
Date: ***10.04.2014***

Description: **REDUCTION STAGE**
Business Code: **EM1020/FEC/6/GC20**
Discriminating:

Pos.	Code	Description	Qty.	Notes
001	32001021100	RING-GEAR EM1020/8F/../Z75M2,5	1	
003	32730430300	SUN PINION EM1020/Z15M2,5/6/B20	1	
037	41220900000	O-RING 2-170 196,52x2,62	2	
500	211B8270000	REDUCTION STAGE EM1020/FEc/6/SGC	1	

Exploded view: SE111B8210107

Notes:



Mod.		Mod. Data	Modificato da	Controllato da
B	Ripristinata numerazione	08/07/14	G.Mariech	Bacchelli

DISEGNATO/DRAWN BY:	CONTROLLATO/CHECKED BY:	DATA/DATE:	
G Mariech	Fiumano'	24/06/14	SE111B4220001

brevini power transmission

COMPONENT PART LIST

Num: ***DB111B4300001***

Date: ***13.05.2016***

Description: **REDUCTION STAGE**
Business Code: **EM1010/FEc/6,94/00**
Discriminating:

Pos.	Code	Description	Qty.	Notes
001	32000538300	RING-GEAR EM1010/6F/../Z95M1,5	1	
003	32603241900	SUN PINION EM1010/Z16M1,5/6,94/A24	1	
025	42119300000	BEARING 16012 DIN625	1	
029	43106300000	CIRCLIP Est.60 UNI7435-75	1	
031	36610340000	O-RING EM1010/150/2/NB	2	
500	211B4300000	REDUCTION STAGE EM1010/FEc/6,94/SGC	1	

Exploded view: SE111B4220001

Notes:

Mod.	Description Modifications	Date Mod.

COMPONENT PART LIST

DB1002525/A

18-03-2004

Description: **SCREW SET**
Business Code:
Discriminating: **VR10x60UNI5737-8.8**

Pos	Code	Denomination	Q.ty	Notes
001	**46111000000**	SCREW M10x60 UNI5737-65-8.8	**1**	
002	**46701100101**	WASHER 10,5x18x2 UNI6592-93-HV300	**1**	

COMPONENT PART LIST

DB1002491/A

11-03-2004

Description: **SCREW SET**
Business Code:
Discriminating: **VDR12x90UNI5931-8.8**

Pos	Code	Denomination	Q.ty	Notes
001	**46214800000**	SCREW M12x90 UNI5931-67-8.8	**1**	
002	**46600900100**	NUT M12 UNI5588-65-10	**1**	
003	**46701200101**	WASHER 13x20x2,5 UNI6592-93-HV300	**2**	

COMPONENT PART LIST

Num: ***DB1002492/A***

Date: ***08.04.2014***

Description: **SCREW SET**
Business Code: **VR8x45UNI5931-10.9**
Discriminating:

Pos.	Code	Description	Qty.	Notes
001	46208200600	SCREW M8x45 UNI5931-67-10.9	1	
002	46701000101	WASHER 8,4x14x1,6 UNI6592-93-HV300	1	

Notes:

DATA DATE	17/07/02	MR ICI 140 U03D U03Dsin	DIS. DWG **2697**
DISEGN. DRAFTMAN		Rossi Habasit Group	REV. DIS. DWG REV. D
			DATA REV. REV. DATE 01/03/2021

IMPORTANTE IMPORTANT

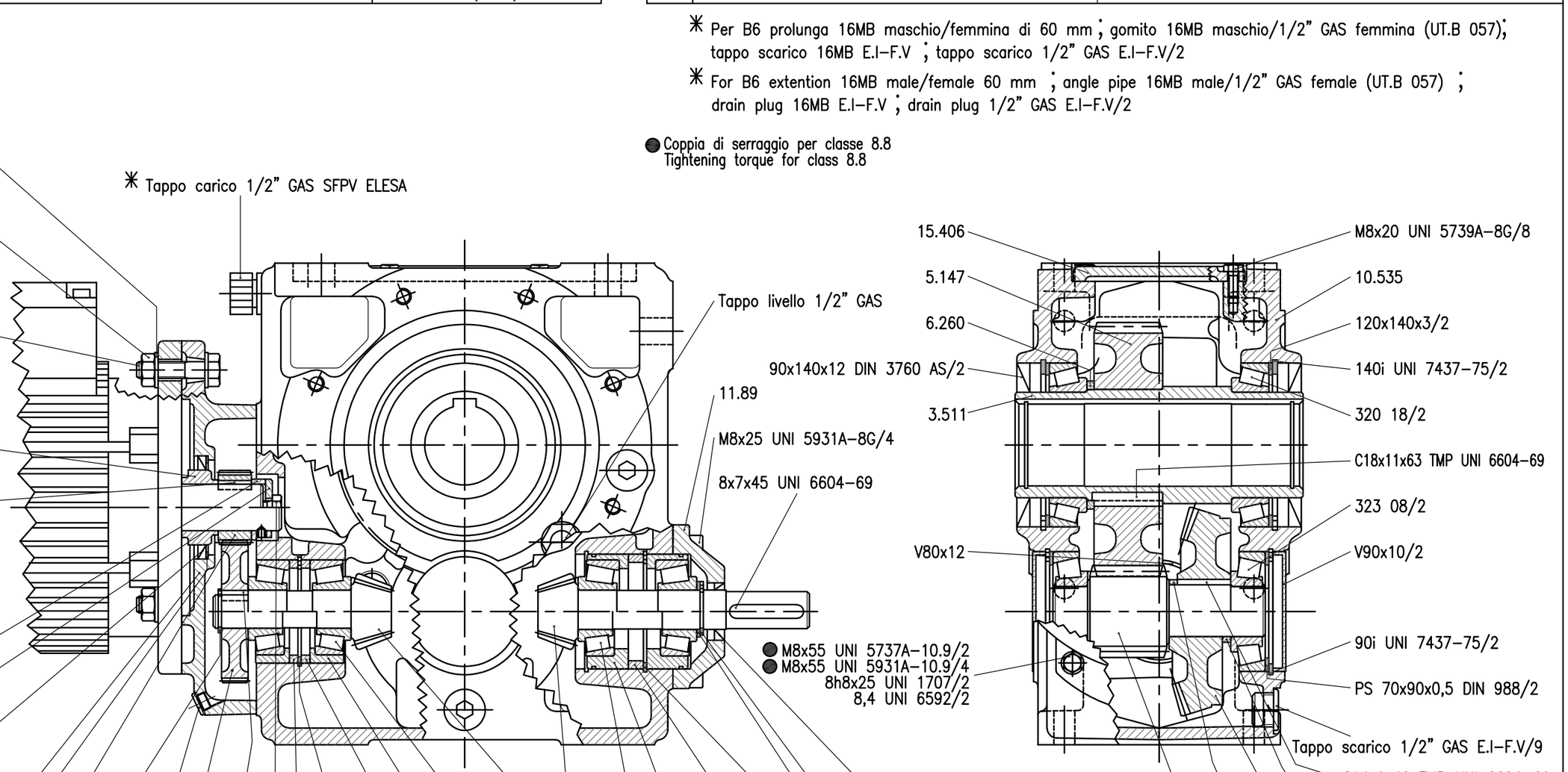
- Il valore dopo la barra indica la quantità maggiore di 1.
- La disposizione dei tappi dipende dalla forma costruttiva.
- Per la richiesta di pezzi di ricambio indicare sempre la realativa designazione, il tipo di riduttore, il numero della tavola e il rapporto di trasmissione.

- Value given after the bar states quantity when it is more than 1.
- The plug arrangement depends on the mounting position.
- When ordering spare parts always state their designation, gear reducer type, this drawing number and transmission ratio.

✳ Per B6 prolunga 16MB maschio/femmina di 60 mm ; gomito 16MB maschio/1/2" GAS femmina (UT.B 057); tappo scarico 16MB E.I–F.V ; tappo scarico 1/2" GAS E.I–F.V/2

✳ For B6 extention 16MB male/female 60 mm ; angle pipe 16MB male/1/2" GAS female (UT.B 057) ; drain plug 16MB E.I–F.V ; drain plug 1/2" GAS E.I–F.V/2

● Coppia di serraggio per classe 8.8
Tightening torque for class 8.8



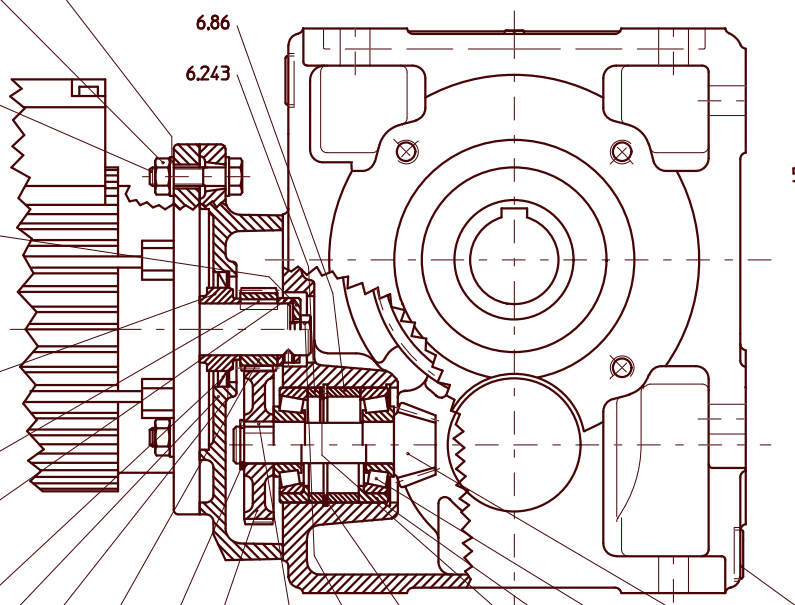
| | | |

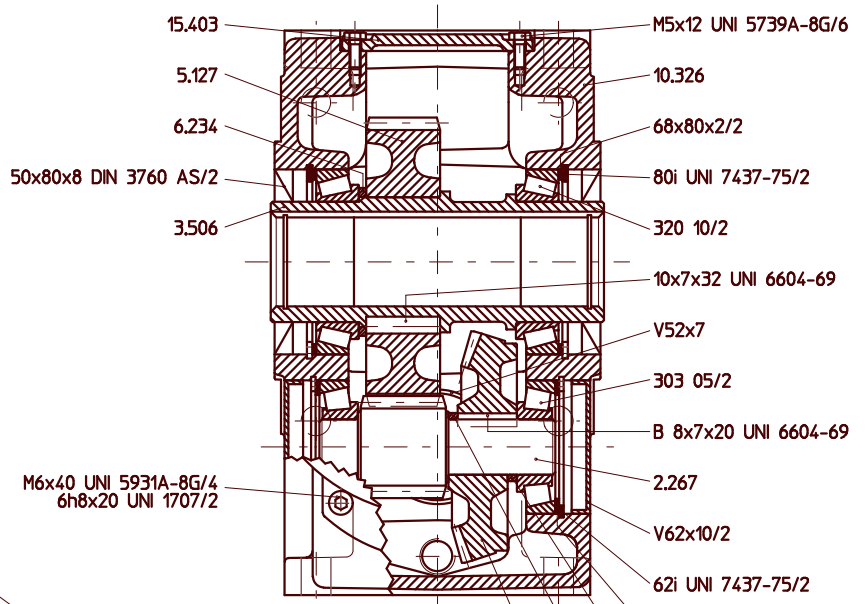
DATA / DATE 22/06/95	MV MR ICI 80 U03A U03Asin	DIS. / DWG 1786	
DISEGN. / DRAFTMAN	Rossi S.p.A MODENA - ITALY a company of the Habasit Group	REV. DIS. / DWG REV. F	
		DATA REV. / REV. DATE 01/01/08	

IMPORTANTE / IMPORTANT

- Il valore dopo la barra indica la quantità maggiore di 1.
  Value given after the bar states quantity when it is more than 1.
- Per la richiesta di pezzi di ricambio indicare sempre la relativa designazione, il tipo di riduttore, il numero della tavola e il rapporto di trasmissione.
  When ordering spare parts always state their designation, gear reducer type, this drawing number and transmission ratio.

- Per quanto non espressamente indicato ved. FAB NM 001
- Lista di distribuzione UPE LDS 002





| | | |

GALVI SHOE BRAKES TYPE NV.HYD
INSTALLATION AND MAINTENANCE MANUAL

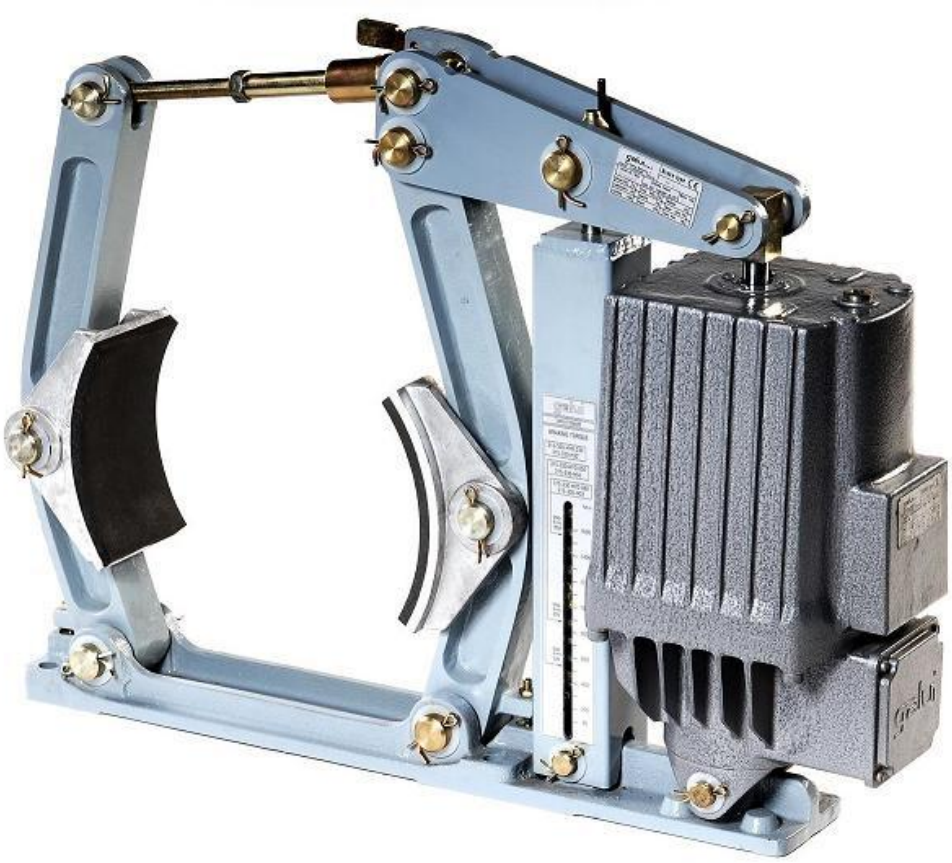


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01.02 - DECLARATION OF INCORPORATION OF PARTLY COMPLETED MACHINERY AS PER MACHINERY DIRECTIVE 2006/42/EC, ANNEX II, POINT B

Manufacturer

NEWCOMEN S.r.l.
Via della Betulla, 7
I-20851 Lissone (MB)
ITALY

Contacts

Tel. +39 039 480891
Fax +39 039 481289
E-Mail info@galvi.com
Internet www.galvi.com

We hereby declare that the following GALVI partly completed machinery

Product Description	Product Code
Failsafe Shoe Brakes	**NV.HYD**, NV.HYD.IS, NV.HYD.TM, NV.H, NV.H.EX, NV.EM, NV.PN NV.HYD.CA, NV.HYD.IS.CA
Positive Shoe Brakes	NV.OL
Failsafe-positive Shoe Brakes	NV.HYD/OL
Thrusters	**HYD**, H, H.EX, EM, PN, OL

eventually combined with following Accessories and Spare Parts

Product Description	Product Code
Brakedrums	PD, PL, PA, PAG
Couplings	GD, GL, GA
Brake Shoes	RF2, RF4, RFA
Other	COV, PO, SB, RSH, RSH.EX, RG

with serial numbers according to delivery notes

are in conformity with the following Standards

DIN 15435 (NV.HYD, NV.HYD.IS, NV.HYD.TM, NV.H, NV.H.EX, NV.EM, NV.PN, NV.OL, NV.HYD/OL, RF2)
DIN 15431 (PD, GD)
AISE 11 (NV.HYD.CA, NV.HYD.IS.CA, PA, PAG, GA, RFA)
Machinery Directive 2006/42/EC, Annex I +
+ 1.1.2, 1.1.3, 1.1.5, 1.1.6, 1.2.1, 1.2.3, 1.2.4.1, 1.2.4.3, 1.3.2, 1.3.4, 1.5.1, 1.5.2, 1.5.8, 1.5.9, 1.6.4,

must not be put into service until the final machinery into which they are to be incorporated has been declared in conformity with the provisions of Machinery Directive 2006/42/CE.

We furthermore declare that the relevant technical documentation is compiled in accordance with part B of Annex VII and we undertake to transmit relevant information on the partly completed machinery in response to a reasoned request by the National Authorities.

This Declaration is invalidated by every modification of the above mentioned GALVI Products.

Place, date

Lissone, 11/04/12

President and Chief Executive Officer

Tommaso Galbiati



01.03 – GENERAL DESCRIPTION OF THE PRODUCT

The GALVI Shoe Brake type NV.HYD is a safety component which, installed on a rotating Brakedrum, decelerates and stops the Brakedrum through pressure and friction, that is to say through a closing spring, a system of levers, a friction material and an electrohydraulic Thruster whose function is to open the Brake with a lifting Force in contrast with the Force of the Brake's main spring.

The Brake is normally installed between motor and gear box, that is to say on high speed shaft, with Brakedrum always installed on gear box side, which is the load side, so that it can brake a lifted mass or a travelling or a rotating mass.

The Brake is combined with the GALVI flexible Coupling with Brakedrum type GD or GL or, in case the Brake is not installed between motor and gear box, with the Brakedrum type PD or PL.

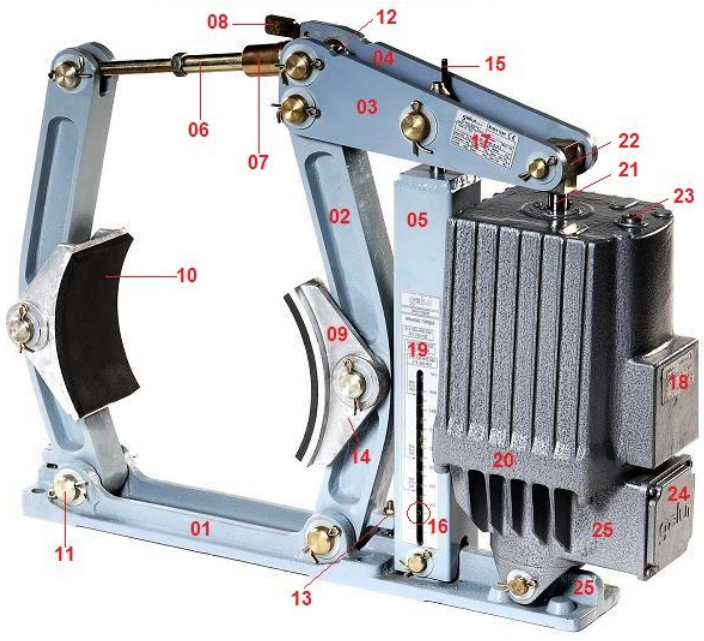
The main dimensional features of the Brake are in conformity with the DIN 15435 Standard, the ones of the Brakedrum are in conformity with DIN 15431 Standard.

The range of Brakes and Brakedrums is available with diameters 160, 200, 250, 315, 400, 500, 630, 710 mm.

The following are the main components of the GALVI Shoe Brake type NV.HYD :

Pos.	Description
01	Cast iron base (or steel base for some models)
02	Cast iron main levers (or steel levers for some models)
03	Cast iron left upper lever (or steel lever for some models)
04	Cast iron right upper lever preset for NV option
05	Main spring set
06	Galvanized main tie rod
07	Optional self adjusting device NV
08	Fork for self adjusting device NV
09	Aluminum brake Shoe with anti-wear steel bushes
10	Asbestos free bonded linings
11	Galvanized pins secured with split pins and washers (or optional SS pins)
12	Self lubricating bushes on main pins
13	Balancing screws
14	Brake Shoes holding screws
15	Elastic pin for locking main spring tie rod
16	Cursor for main spring showing Braking Torque in Nm
17	Aluminum serial number plate for Brake
18	Aluminum serial number plate for Thruster
19	Adhesive Braking Torque plate
20	Aluminum HYDRO electrohydraulic Thruster, a.c., three phase, IP.65, Class F
21	Chromed Thruster shaft
22	Galvanized Thruster push rod
23	Galvanized Thruster screw cap for oil fill and oil drain
24	Aluminum Thruster terminal box cover
25	Polyurethane epoxy antisalt paint

Table 1



Picture 1
Model shown
NV.315.HYD.080/06.CD.42.PS.AU.ZN

01.04 – PACKING AND HANDLING OF THE PRODUCT

The GALVI Shoe Brakes are delivered packed in different ways according to the type of shipment and the Customer's need.

Pallets, ISPM 15 cases for sea freight or air freight and containers are normally used in function of the type of delivery.

It is necessary to pay maximum attention during the handling of the Shoe Brakes in order to avoid any kind of damage.

In case of damage of any component of the Brake we recommend to report to info@galvi.com attaching pictures of the damage in order to decide whether to replace the damaged component only or the whole Product.

⚠	**Never install a Shoe Brake with damaged components. Risk of accident.**

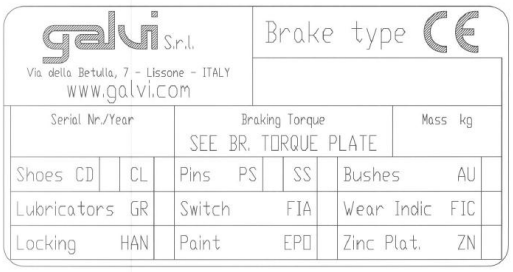
01.05 – IDENTIFICATION AND MARKING OF THE PRODUCT

All the GALVI Shoe Brakes have an aluminum serial number plate fixed to the left upper lever (page 4, Table 1, Picture 1); **the serial number plate must never be removed.**

The following data are printed on the serial number plate :

Description
type and diameter of GALVI Shoe Brake in the "Brake type" cell (N or NV.160, 200, 250, 315, 400, 500, 630, 710)
serial number and year of manufacturing in the "Serial Nr./Year" cell
mass of the GALVI Shoe Brake in the "Mass kg" cell
"X" in the "AU" (self lubricating bushes on main pins) and "ZN" cells (galvanized pins, tie rods, screws and small metallic items)
"X" in the "CD" cell (brake Shoes as per DIN 15435 Standard) or in the "CL" cell (extra-wide brake Shoes, 50 % wider than CD Shoes)
"X" in the "PS" cell (standard pins) or in the "SS" cell (stainless steel pins)
"X" in the "GR", "FIA", "FIC", "HAN" cells if these options are installed

Table 2



Drawing 1
Serial Number Plate for Shoe Brake



Picture 2
Serial Number Plate for Shoe Brake

For a complete identification of the GALVI Shoe Brake it is indispensable to read also the data printed on the serial number plate of the relevant HYDRO GALVI Thruster (page 4, Table 1, Picture 1); **the serial number plate must never be removed**.

The serial number plate of the Thruster is fixed to the vertical frontal part of the Thruster and among its data it is necessary to know the following ones :

Description
Model of HYDRO GALVI Thruster in the "HYDRO type" cell (HYD.023, 024, 030, 031, 050, 051, 080, 081, 121, 201, 301/06 or .../12 + optional codes IS, LO, LI, 90, VIT, HEA if any)
Rated Voltage (V) and Frequency (Hz)

Table 3



Drawing 2
Serial Number Plate for Thruster

01.06 – WARRANTY OF THE PRODUCT

All the GALVI Shoe Brakes if not differently agreed have a warranty period of

12 months from start-up and maximum 18 months from Invoice date.

The warranty does not cover parts subject to wear.

Any modification of the Product made by the User invalidates totally the warranty.

The use of not genuine Spare Parts invalidates in any case the warranty of the Product, especially the use of not genuine brake Shoes and friction material.

The use of GALVI Shoe Brakes combined with Thrusters different from HYDRO GALVI Thrusters is not suggested and limits the warranty to the GALVI Products only.

Repairs under warranty are made in the Manufacturer's Factories after claim to info@galvi.com writing in any case the serial numbers of Brakes and Thrusters (page 5, Drawing 1, Drawing 2).

The Manufacturer case by case will be free to choose between repairing or replacing the Product.

Products received at the Manufacturer's Factories already disassembled and/or modified will be considered in any case out of warranty and will be eventually repaired or replaced at cost price.

	**Never use not genuine Spare Parts, especially brake Shoes. Loss of warranty. Risk of accident.**

	**Never modify the Product. Loss of warranty. Risk of accident.**

02.01 – INSTALLATION

Before installing the GALVI Shoe Brake it is necessary to arrange a horizontal anchor plane on which the base of the Brake (page 4, Table 1, Picture 1) can be in contact at least for the length shown in drawings and Catalogue.

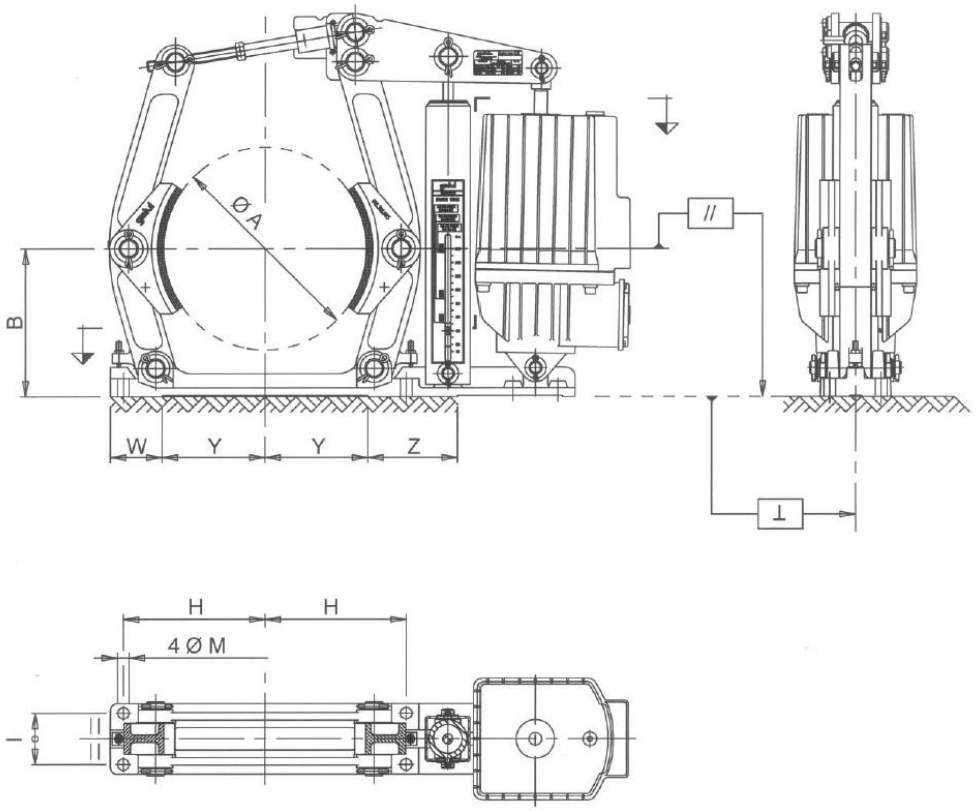
For Brakes with cast iron base it is enough that the portion of base shown with dimensions W, Y, Z is in contact with the anchor base (Drawing 3).

For Brakes with steel base it is instead necessary that the base is totally in contact with the anchor base as per dimensions E, F (Drawing 4).

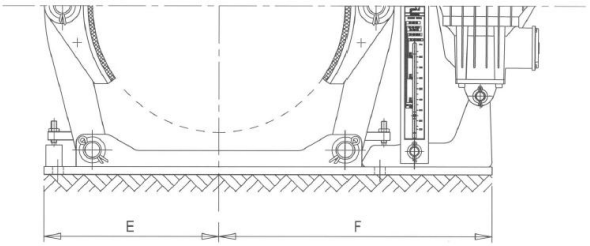
The material of the anchor plane must have a tensile strength ≥ 430 N/mm^2.

The anchor plane of the Brake must be parallel to the brake axis and it must be made observing carefully dimensions A, B, H, I, M (Drawing 3).

The four holes for fastening the Brake to the anchor plane must be made observing carefully dimensions H, I, M (Drawing 3) and the perpendicularity between the average main plane of the Brake and the Brakedrum's rotation axis.



Drawing 3
Shoe Brake with cast iron base
Model shown NV.315.HYD.080/06.CD.42.PS.AU.ZN



Drawing 4
Shoe Brake with steel base
Model shown NV.630.HYD.301/06.CD.42.SS.AU.ZN

In the following Table 4 taken from pages 4 and 5 of the GALVI Shoe Brakes Catalogue all the dimension for the whole range are available; specific drawings of every Shoe Brake in 2D (dwg format) and 3D (sldprt and step formats) can be downloaded from the Products page of the website www.galvi.com or can be required to info@galvi.com :

Freno tipo Brake type Frein type Bremse Typ	Cf [1] (μ=0,42) min-max [N•m]	Ø A	B	C max	D	E	F	G max	H	I	L	Ø M	N	O max	P max	R min	S	T (CD)	T [2] (CL)	W	Y	V	Z	Massa [3] Mass [3] Masse [3] Masse [3] [kg]
N(NV).160.HYD.023/05[2]	25 - 250	160	130	383	480	140	340	530	120	55	100	12	20	132	398	84	5	55	85	55	85	160	92	23
N(NV).160.HYD.024/05[2]	25 - 250	160	130	383	480	140	340	530	120	55	100	12	20	132	398	84	5	55	85	55	85	160	92	22
N(NV).200.HYD.023/05	29 - 310	200	160	402	538	170	368	588	145	55	100	14	23	161	427	106	4	70	105	65	105	160	100	27
N(NV).200.HYD.024/05	29 - 310	200	160	402	538	170	368	588	145	55	100	14	23	161	427	106	4	70	105	65	105	160	100	26
N(NV).200.HYD.030/05	29 - 400	200	160	467	538	170	368	588	145	55	100	14	23	161	427	106	4	70	105	65	105	160	100	31
N(NV).200.HYD.031/05	29 - 400	200	160	467	538	170	368	588	145	55	100	14	23	161	427	106	4	70	105	65	105	160	100	29
N(NV).250.HYD.023/05	43 - 330	250	190	481	615	200	415	671	180	65	100	18	25	197	474	127	3	90	135	76	124	160	114	35
N(NV).250.HYD.024/05	43 - 330	250	190	481	615	200	415	671	180	65	100	18	25	197	474	127	3	90	135	76	124	160	114	34
N(NV).250.HYD.030/05	43 - 440	250	190	481	615	200	415	670	180	65	100	18	25	197	473	127	3	90	135	76	124	160	114	39
N(NV).250.HYD.031/05	43 - 440	250	190	481	615	200	415	670	180	65	100	18	25	197	473	127	3	90	135	76	124	160	114	37
N(NV).250.HYD.050/06	43 - 720	250	190	552	615	200	415	699	180	65	100	18	25	197	502	127	3	90	135	76	124	190	114	51
N(NV).250.HYD.051/06	43 - 720	250	190	552	615	200	415	684	180	65	100	18	25	197	487	127	3	90	135	76	124	190	114	44
N(NV).315.HYD.030/05	95 - 520	315	230	595	722	240	482	784	220	80	110	18	28	244	540	153	1,5	110	165	80	160	160	140	60
N(NV).315.HYD.031/05	95 - 520	315	230	595	722	240	482	784	220	80	110	18	28	244	540	153	1,5	110	165	80	160	160	140	58
N(NV).315.HYD.050/06	95 - 870	315	230	595	722	240	482	812	220	80	110	18	28	244	568	153	1,5	110	165	80	160	190	140	70
N(NV).315.HYD.051/06	95 - 870	315	230	595	722	240	482	797	220	80	110	18	28	244	553	153	1,5	110	165	80	160	190	140	63
N(NV).315.HYD.080/06	95 - 1550	315	230	595	722	240	482	812	220	80	110	18	28	244	568	153	1,5	110	165	80	160	190	140	71
N(NV).315.HYD.081/06	95 - 1550	315	230	595	722	240	482	797	220	80	110	18	28	244	553	153	1,5	110	165	80	160	190	140	64
N(NV).400.HYD.050/06	250 - 860	400	280	731	850	295	555	939	270	100	140	22	33	297	642	188	3	140	210	100	195	190	155	95
N(NV).400.HYD.051/06	250 - 860	400	280	731	850	295	555	924	270	100	140	22	33	297	627	188	3	140	210	100	195	190	155	88
N(NV).400.HYD.080/06	250 - 1620	400	280	731	850	295	555	939	270	100	140	22	33	297	642	188	3	140	210	100	195	190	155	96
N(NV).400.HYD.081/06	250 - 1620	400	280	731	850	295	555	924	270	100	140	22	33	297	627	188	3	140	210	100	195	190	155	89
N(NV).400.HYD.121/06	250 - 2670	400	280	772	850	295	555	938	270	100	140	22	33	297	641	188	3	140	210	100	195	240	155	117
N(NV).500.HYD.080/06	350 - 1600	500	340	811	1037	360	677	1081	325	130	180	22	35	362	719	236	3	180	270	115	245	190	185	150
N(NV).500.HYD.081/06	350 - 1600	500	340	811	1037	360	677	1066	325	130	180	22	35	362	704	236	3	180	270	115	245	190	185	143
N(NV).500.HYD.121/06	350 - 2910	500	340	811	1037	360	677	1080	325	130	180	22	35	362	718	236	3	180	270	115	245	240	185	161
N(NV).500.HYD.201/06	350 - 5220	500	340	811	1037	360	677	1080	325	130	180	22	35	362	718	236	3	180	270	115	245	240	185	161
N(NV).630.HYD.121/06	1200 - 3700	630	420	974	1114	435	679	1249	400	170	220	27	20	437	812	287	5	225	335	-	-	240	-	242
N(NV).630.HYD.201/06	1200 - 5900	630	420	974	1114	435	679	1249	400	170	220	27	20	437	812	287	5	225	335	-	-	240	-	242
N(NV).630.HYD.301/06	1200 - 7900	630	420	974	1114	435	679	1249	400	170	220	27	20	437	812	287	5	225	335	-	-	240	-	243
N(NV).710.HYD.121/06	660 - 3620	710	470	1091	1286	480	806	1361	450	190	250	27	20	492	869	323	5	255	380	-	-	240	-	307
N(NV).710.HYD.201/06	870 - 5800	710	470	1091	1286	480	806	1361	450	190	250	27	20	492	869	323	5	255	380	-	-	240	-	307
N(NV).710.HYD.301/06	1250 - 8700	710	470	1091	1286	480	806	1361	450	190	250	27	20	492	869	323	5	255	380	-	-	240	-	308

Table 4

Once the horizontal anchor plane as per dimensions A, B, H, I, M of Table 4 is ready, it is possible to proceed with the installation of the GALVI Shoe Brake.

The GALVI Shoe Brakes are supplied ready for installation, with Thrusters complete with oil and with main spring not compressed (page 4, Table 1, Picture 1).

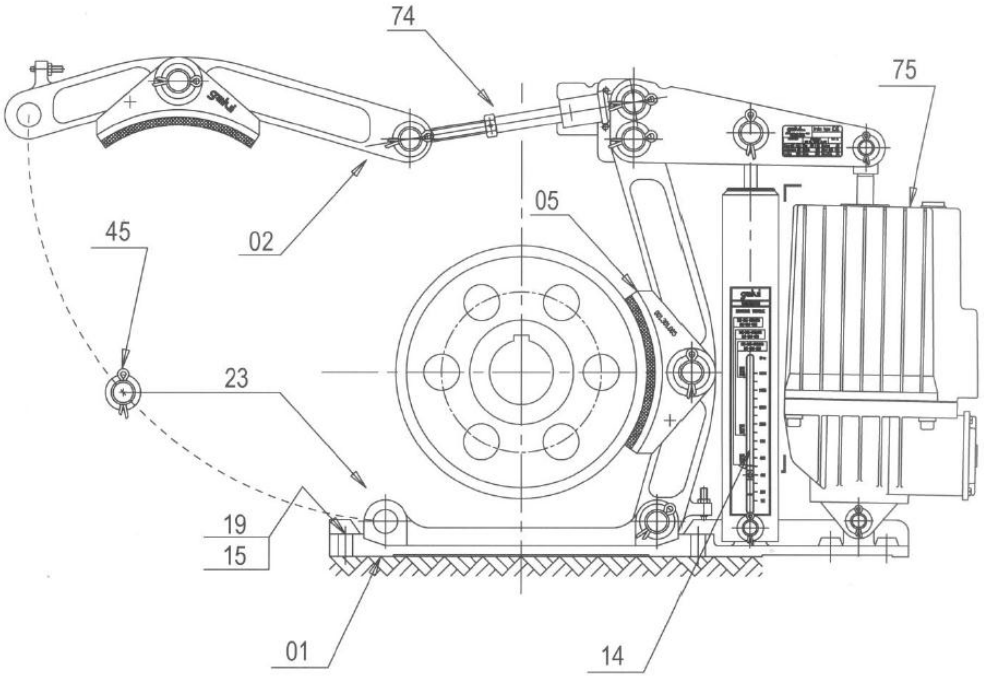
With reference to the Bill of Materials at page 40 of this document and following Drawing 5, it is necessary to remove the lower pin item 23 from the external main lever item 02 after removing its two split pins item 45 or its seegers in case the Brake has optional lubricators on main pins (GR).

Once pin item 23 has been removed, external main lever item 02 can be lifted and rotated on its upper pin tied up to the upper tie rod item 06 for "N" Brakes without self adjusting device or upper tie rod item 74 for "NV" Brakes with self adjusting device.

In this way the internal brake Shoe item 05 can be put in contact with the brakedrum and the base item 01 can be put under the brakedrum and it can be screwed to the anchor plane.

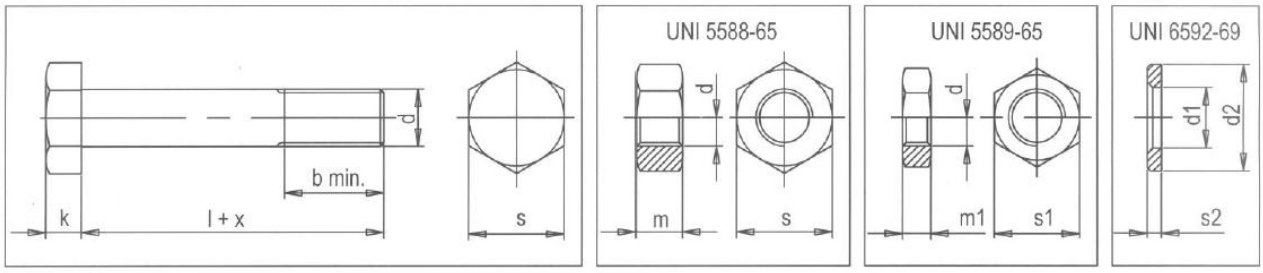
During this operation it is important not to lose disc item 19 and balancing spring item 15.

The base item 01 must be screwed to the anchor plane with four screws in the holes of the same base and in the holes of the face as per dimensions H, I, M (page 7, Drawing 3).



Drawing 5
Model shown NV.315.HYD.080/06.CD.42.PS.AU.ZN

The features of the screws and nuts necessary for the fastening of the Brake are shown in the following Drawing 6 and Table 5 :



Drawing 6

Dia. Brake mm	Q.ty screws & nuts	Tightening Torque Nm	d	b min	d1	d2	k	l	m	m1	s	s1	s2
160	4	50	M10	26	10,5	21	6,4	28	8	6	16	16	2
200	4	85	M12	30	13	24	7,5	33	10	7	18	18	2,5
250	4	210	M16	38	17	30	10	41	13	8	24	24	3
315	4	210	M16	38	17	30	10	41	13	8	24	24	3
400	4	410	M20	46	21	37	12,5	50	16	9	30	30	3
500	4	410	M20	46	21	37	12,5	50	16	9	30	30	3
630	4	711	M24	54	25	44	15	55	21,5	12	36	36	4
710	4	711	M24	54	25	44	15	55	21,5	12	36	36	4
Use screws with resistance class ≥ 8.8 and nuts with resistance class ≥ 6S													

Table 5

Once the Shoe Brake is screwed to the anchor base with four screws as per Drawing 6 and Table 5, it is possible to fasten again the lower part of the main lever item 02 (opposite to Thruster item 75) to the base item 01 (Drawing 5).

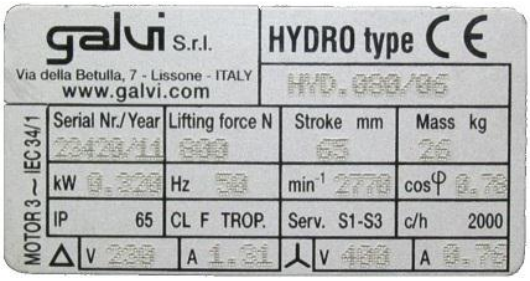
The lower part of the main lever item 02 opposite to Thruster item 75 must be put back in its original position in the Shoe Brake's base item 01, the lower pin item 23 must be put back in its original position with its two split pins item 45 or with its two seegers in case the Brake has optional lubricators on main pins (GR).

02.02 – ELECTRICAL CONNECTION

After installation of the GALVI Shoe Brake it is necessary to proceed with the electrical connection of the HYDRO GALVI Thruster.

The HYDRO GALVI Thrusters are available for any rated Voltage both Hz 50 and Hz 60, they have three phase electric motor, IP.65, insulation Class F, which can rotate in both directions.

As per following Picture 3, the main data of the electric motor of the Thruster are printed on the serial number plate placed on the frontal vertical part of the Thruster (page 4, Picture 1; page 5, Drawing 2).



Picture 3
Serial Number Plate for Thruster

The following are the main data of the electric motors of the HYDRO GALVI Thrusters for the most common rated Voltages **Hz 50** :

Thruster	kW	Volt Δ	A Δ	Volt Y	A Y	rpm	Cos. Φ	Hz
023 – 024	0,16	220	0.69	380	0,40	2689	0,85	50
030 – 031	0,20	220	0.85	380	0,49	2752	0,82	50
050 – 051	0,21	220	1.00	380	0,58	2802	0,84	50
080 – 081	0,32	220	1.31	380	0,76	2695	0,84	50
121	0,32	220	1.64	380	0,95	2733	0,84	50
201	0,45	220	1.87	380	1,08	2723	0,88	50
301	0,56	220	2.30	380	1,40	2703	0,91	50

Table 6
Thrusters V. 220/380 – Hz 50

Thruster	kW	Volt Δ	A Δ	Volt Y	A Y	rpm	Cos. Φ	Hz
023 – 024	0,16	290	0.52	500	0,30	2757	0,78	50
030 – 031	0,20	290	0.64	500	0,37	2767	0,79	50
050 – 051	0,21	290	0.75	500	0,44	2802	0,84	50
080 – 081	0,32	290	0.99	500	0,58	2695	0,84	50
121	0,32	290	1.24	500	0,72	2676	0,84	50
201	0,45	290	1.41	500	0,82	2666	0,88	50
301	0,56	290	1.73	500	1,07	2646	0,87	50

Table 9
Thrusters V. 290/500 – Hz 50

Thruster	kW	Volt Δ	A Δ	Volt Y	A Y	rpm	Cos. Φ	Hz
023 – 024	0,16	230	0.69	400	0,40	2716	0,81	50
030 – 031	0,20	230	0.85	400	0,49	2752	0,82	50
050 – 051	0,21	230	1.00	400	0,58	2830	0,80	50
080 – 081	0,32	230	1.31	400	0,76	2722	0,80	50
121	0,32	230	1.64	400	0,95	2761	0,80	50
201	0,45	230	1.87	400	1,08	2750	0,84	50
301	0,56	230	2.30	400	1,40	2730	0,86	50

Table 7
Thrusters V. 230/400 – Hz 50

Thruster	kW	Volt Δ	A Δ	Volt Y	A Y	rpm	Cos. Φ	Hz
023 – 024	0,16	305	0.52	525	0,30	2716	0,81	50
030 – 031	0,20	305	0.64	525	0,37	2780	0,78	50
050 – 051	0,21	305	0.75	525	0,44	2830	0,80	50
080 – 081	0,32	305	0.99	525	0,58	2722	0,80	50
121	0,32	305	1.24	525	0,72	2761	0,80	50
201	0,45	305	1.41	525	0,82	2750	0,84	50
301	0,56	305	1.73	525	1,07	2730	0,86	50

Table 10
Thrusters V. 305/525 – Hz 50

Thruster	kW	Volt Δ	A Δ	Volt Y	A Y	rpm	Cos. Φ	Hz
023 – 024	0,16	240	0.69	415	0,40	2727	0,78	50
030 – 031	0,20	240	0.85	415	0,49	2791	0,75	50
050 – 051	0,21	240	1.00	415	0,58	2841	0,77	50
080 – 081	0,32	240	1.31	415	0,76	2733	0,77	50
121	0,32	240	1.64	415	0,95	2772	0,77	50
201	0,45	240	1.87	415	1,08	2761	0,81	50
301	0,56	240	2.30	415	1,40	2741	0,83	50

Table 8
Thrusters V. 240/415 – Hz 50

Thruster	kW	Volt Δ	A Δ	Volt Y	A Y	rpm	Cos. Φ	Hz
023 – 024	0,16	380	0.40	660	0,23	2716	0,81	50
030 – 031	0,20	380	0.49	660	0,28	2780	0,78	50
050 – 051	0,21	380	0.58	660	0,33	2830	0,80	50
080 – 081	0,32	380	0.76	660	0,44	2722	0,80	50
121	0,32	380	0.95	660	0,55	2761	0,80	50
201	0,45	380	1.08	660	0,62	2750	0,84	50
301	0,56	380	1.40	660	0,81	2730	0,86	50

Table 11
Thrusters V. 380/660 – Hz 50

The following are the main data of the electric motors of the HYDRO GALVI Thrusters for the most common rated Voltages **Hz 60** :

Thruster	kW	Volt Δ	A Δ	Volt Y	A Y	rpm	Cos. Φ	Hz
023 – 024	0,16	220	0.69	380	0,40	3335	0,80	60
030 – 031	0,20	220	0.85	380	0,49	3366	0,80	60
050 – 051	0,21	220	1.00	380	0,58	3461	0,78	60
080 – 081	0,32	220	1.31	380	0,76	3368	0,78	60
121	0,32	220	1.64	380	0,95	3313	0,84	60
201	0,45	220	1.87	380	1,08	3299	0,87	60
301	0,56	220	2.30	380	1,40	3272	0,88	60

Table 12
Thrusters V. 220/380 – Hz 60

Thruster	kW	Volt Δ	A Δ	Volt Y	A Y	rpm	Cos. Φ	Hz
023 – 024	0,16	230	0.69	400	0,40	3369	0,76	60
030 – 031	0,20	230	0.85	400	0,49	3400	0,76	60
050 – 051	0,21	230	1.00	400	0,58	3496	0,74	60
080 – 081	0,32	230	1.31	400	0,76	3402	0,74	60
121	0,32	230	1.64	400	0,95	3346	0,80	60
201	0,45	230	1.87	400	1,08	3332	0,83	60
301	0,56	230	2.30	400	1,40	3305	0,84	60

Table 13
Thrusters V. 230/400 – Hz 60

Thruster	kW	Volt Δ	A Δ	Volt Y	A Y	rpm	Cos. Φ	Hz
023 – 024	0,16	255	0.60	440	0,35	3369	0,79	60
030 – 031	0,20	255	0.74	440	0,43	3400	0,79	60
050 – 051	0,21	255	0.87	440	0,50	3496	0,77	60
080 – 081	0,32	255	1.14	440	0,66	3402	0,77	60
121	0,32	255	1.42	440	0,83	3346	0,84	60
201	0,45	255	1.62	440	0,94	3332	0,87	60
301	0,56	255	2.00	440	1,22	3305	0,88	60

Table 14
Thrusters V. 255/440 – Hz 60

Thruster	kW	Volt Δ	A Δ	Volt Y	A Y	rpm	Cos. Φ	Hz
023 – 024	0,16	265	0,60	460	0,35	3369	0,77	60
030 – 031	0,20	265	0,74	460	0,43	3390	0,75	60
050 – 051	0,21	265	0,87	460	0,50	3501	0,77	60
080 – 081	0,32	265	1,14	460	0,66	3367	0,77	60
121	0,32	265	1,42	460	0,83	3352	0,77	60
201	0,45	265	1,62	460	0,94	3339	0,81	60
301	0,56	265	2,00	460	1,22	3315	0,83	60

Table 15
Thrusters V. 265/460 – Hz 60

Thruster	kW	Volt Δ	A Δ	Volt Y	A Y	rpm	Cos. Φ	Hz
023 – 024	0,16	280	0,60	480	0,35	3386	0,74	60
030 – 031	0,20	280	0,74	480	0,43	3417	0,72	60
050 – 051	0,21	280	0,87	480	0,50	3513	0,74	60
080 – 081	0,32	280	1,14	480	0,66	3419	0,74	60
121	0,32	280	1,42	480	0,83	3363	0,74	60
201	0,45	280	1,62	480	0,94	3349	0,78	60
301	0,56	265	2,00	460	1,22	3322	0,80	60

Table 16
Thrusters V. 280/480 – Hz 60

Thruster	kW	Volt Δ	A Δ	Volt Y	A Y	rpm	Cos. Φ	Hz
023 – 024	0,16	330	0,48	575	0,28	3369	0,76	60
030 – 031	0,20	330	0,59	575	0,34	3400	0,76	60
050 – 051	0,21	330	0,70	575	0,40	496	0,74	60
080 – 081	0,32	330	0,91	575	0,53	3402	0,74	60
121	0,32	330	1,14	575	0,66	3346	0,80	60
201	0,45	330	1,30	575	0,75	3332	0,83	60
301	0,56	330	1,60	575	0,97	3305	0,84	60

Table 17
Thrusters V. 330/575 – Hz 60

On request it will be possible to supply also the electrical data of Thrusters electric motors for rated Voltages different from the listed ones.

In no case a Thruster for Hz 50 can be used at Hz 60, also if rated Voltage is the same, because the Thruster's impeller for Hz 50 is different from the Thruster's impeller for Hz 60.

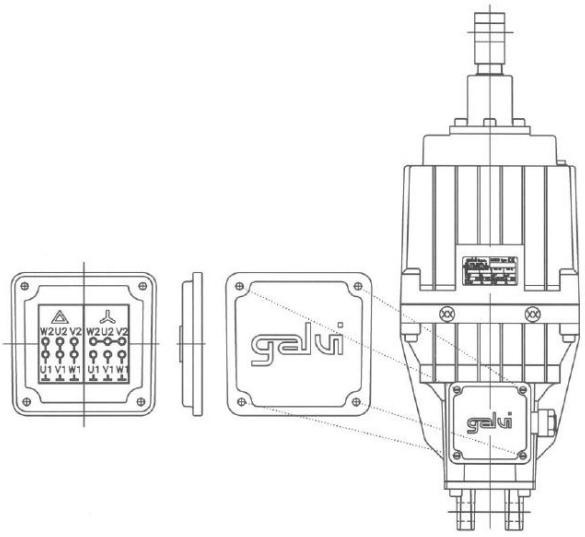
⚠	**Never use a Thruster for Hz 50 at Hz 60.** **Never use a Thruster for Hz 60 at Hz 50.** **Risk of accident.**

For the cables connection it is necessary to remove the terminal box cover of the Thruster by unscrewing its four screws, and to remove the cable gland of the Thruster (Table 18, Picture 4).

Pos.	Description
01	Terminal box cover of Thruster
02	Screws for terminal box cover of Thruster
03	Cable gland of Thruster
04	Motor housing

Table 18

The wiring instructions are printed on the internal part of the terminal box cover, wiring can be of delta type or star type. (Drawing 7, Picture 5).



Drawing 7



Picture 4
Model shown HYD.301/06

The HYDRO GALVI Thrusters if not differently required are star connected.

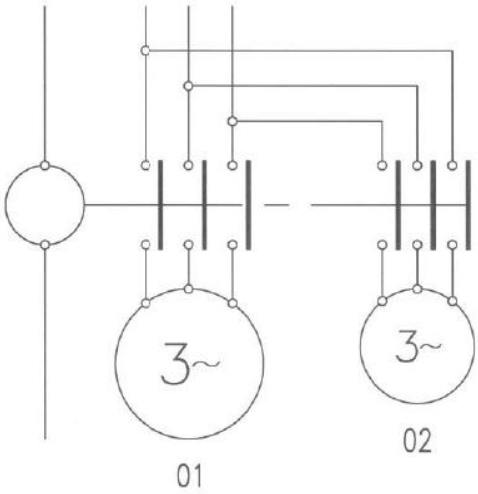
The Thruster motor must be connected to the main motor of the machine as per following suggested wiring diagram (Table 19, Drawing 8).



Picture 5

Pos.	Description
01	Main motor
02	Thruster motor

Table 19



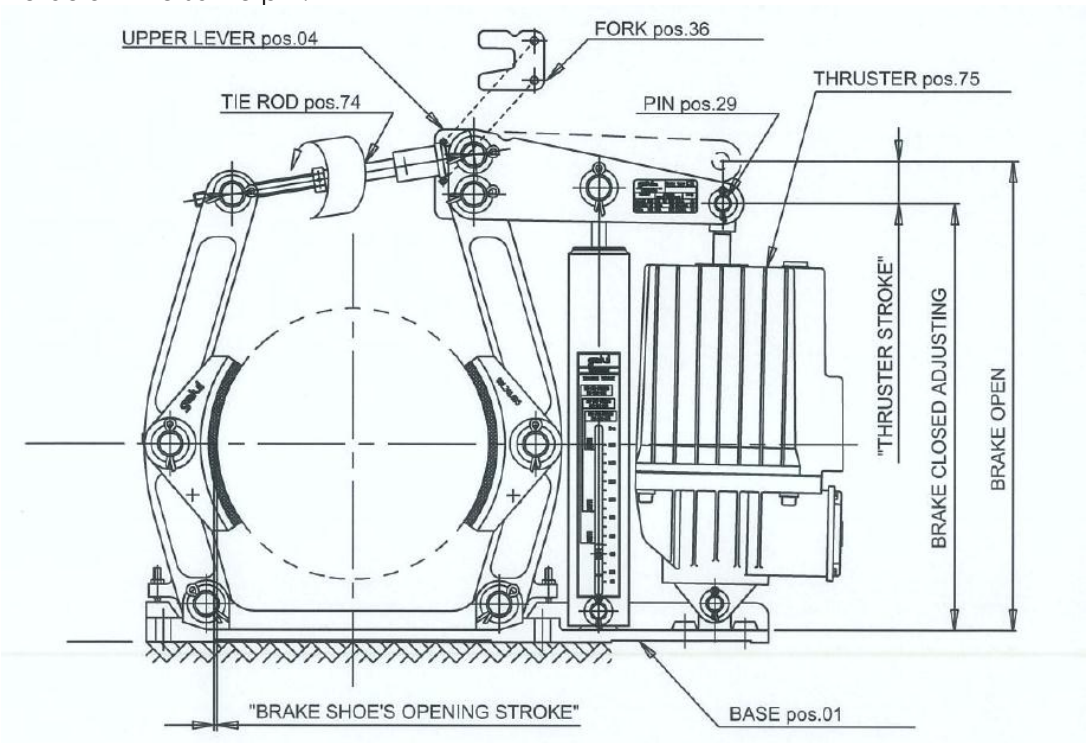
Drawing 8
Suggested wiring diagram

02.03 - ADJUSTMENT OF OPENING STROKES & BALANCING SCREWS

After installation of the GALVI Shoe Brake and electrical connection of the HYDRO GALVI Thruster it is necessary to proceed with the adjustment of the opening strokes of brake Shoes and Thruster.

With Shoe Brake in closed position, in "NV" version with self adjusting device, it is necessary to remove temporarily fork item 36 from self adjusting device for rotating the upper tie rod item 74 until the Thruster item 75 is totally open, without forcing beyond the normal opening stroke (Drawing 9).

With Brake in open position it is necessary to measure the distance between the axis of pin item 29 and plane below the same pin.



Drawing 9
Model shown NV.315.HYD.080/06.CD.42.PS.AU.ZN

Rotate back in opposite direction the upper tie rod item 74 until pin item 29 is lowered in a measure equal to the "Thruster stroke" as per following Table 20, that is to say the opening stroke of the Brake at Thruster axis.

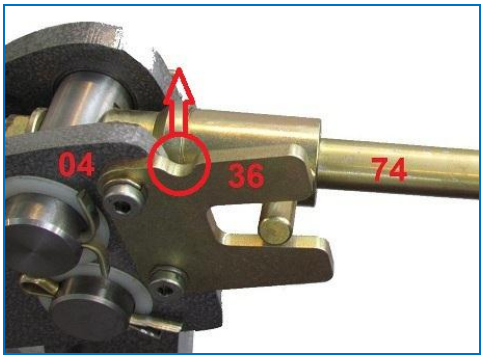
Brake diameter	160 mm not DIN Standard	200 mm	250 mm	315 mm	400 mm	500 mm	630 mm	710 mm
Thruster stroke	30 mm	30 mm	38 mm	38 mm	42 mm	48 mm	50 mm	35 mm

Table 20

After this operation **the fork item 36 of the self adjusting device must be screwed again to the upper lever item 04, always paying attention to install it again with reference mark A upwards** (Table 21, Picture 6).

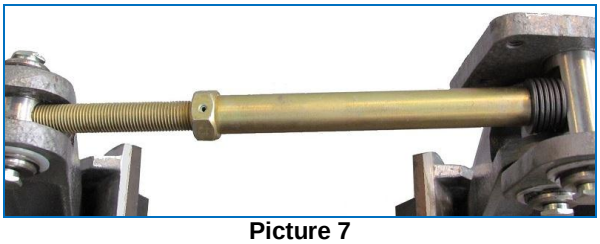
Pos.	Description
04	Upper right lever
36	Fork
74	Upper tie rod
A	Reference mark for fork 36

Table 21



Picture 6

In Shoe Brakes in "N" version without self adjusting device there is no fork item 36 and the adjusting procedure with the upper tie rod is the same as per "NV" Shoe Brakes (Picture 7).



Picture 7

Adjusting the opening stroke of the Thruster the brake Shoes will have an opening stroke equal to the "brake Shoe stroke" as per following Table 22 and DIN Standard 15435, where the "brake Shoe stroke" is the gap between each lining and the brakedrum :

Brake diameter	**160 mm** not DIN Standard	**200 mm**	**250 mm**	**315 mm**	**400 mm**	**500 mm**	**630 mm**	**710 mm**
Brake Shoe stroke	0,80 mm	1,00 mm	1,25 mm	1,25 mm	1,60 mm	1,60 mm	2,00 mm	2,00 mm

Table 22

In Shoe Brakes in "NV" version with self adjusting device the brake Shoes opening stroke remains constant also during the linings wear, so that also the Braking Torque remains constant.

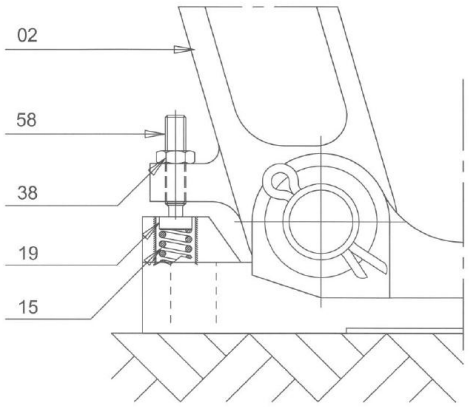
In Shoe Brakes in "N" version without self adjusting device the opening stroke of the brake Shoes increases during linings wear, so that there is a progressive loss of Braking Torque during the use of the Brake, for such reason it is necessary to screw periodically the upper tie rod of the Brake for resetting the correct opening stroke of the brake Shoes.

After adjusting the opening strokes of the brake Shoes and of the Thruster it is necessary to proceed with the adjustment of the balancing screws item 58 of the main levers item 02 of the GALVI Shoe Brake (Drawing 10, Picture 8).

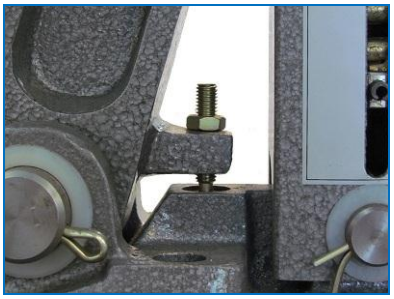
The function of this adjustment if to have an equal opening of the main levers.

It is necessary to open the GALVI Shoe Brake and to keep it in open position using the lifting Force of the HYDRO GALVI Thruster.

During this phase the balancing screws item 58 at the base of the main levers item 02 must be conveniently screwed or unscrewed until main levers item 02 can open equally.



Drawing 10



Picture 8

Once this last operation is completed and nuts item 38 are fastened on balancing screws item 58 the GALVI Shoe Brake is ready for working and for the adjustment of the Braking Torque.

02.04 – ADJUSTMENT OF THE BRAKING TORQUE

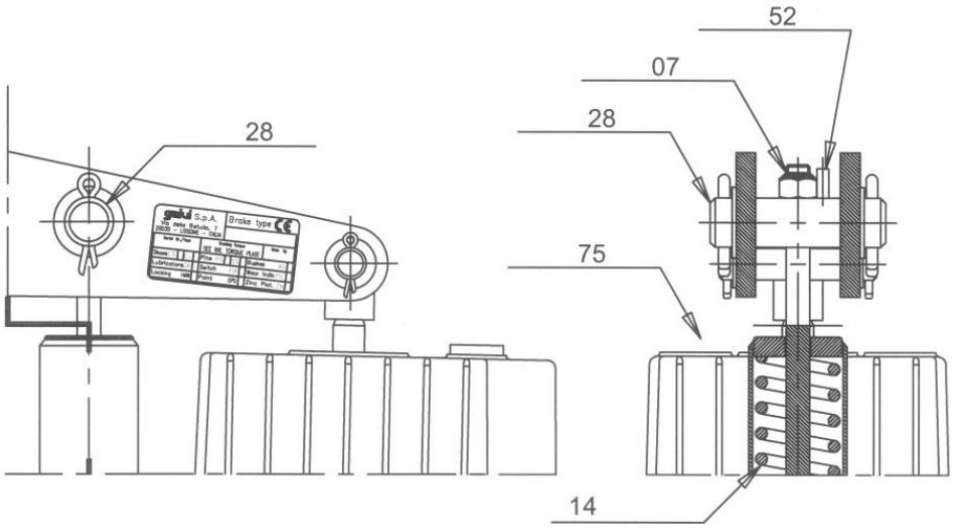
After installation, electrical connection and adjustment of opening strokes and balancing screws of the Brake it is necessary to proceed with the adjustment of the Braking Torque.

This operation must be made with HYDRO GALVI Thruster item 75 in closed position, that is to say with brake Shoes item 05 in contact with the brakedrum (page 9, Drawing 5).

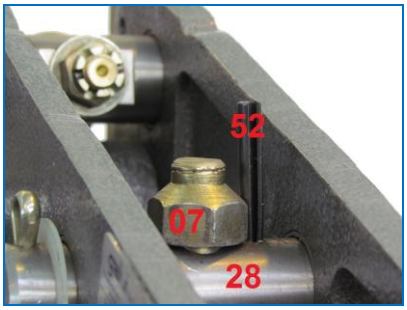
The adjustment of the Braking Torque is substantially made compressing the Brake's main spring item 14 by screwing the nut at the top of the main spring's tie rod item 07 (Drawing 11).

For rotating this nut it is necessary to remove temporarily the elastic pin item 52 from its hole in pin item 28 above the main spring set (Picture 9).

It is necessary to keep the elastic pin item 52 and to put it back in its original position at the end of the operation in order to avoid the rotation of the above mentioned nut.

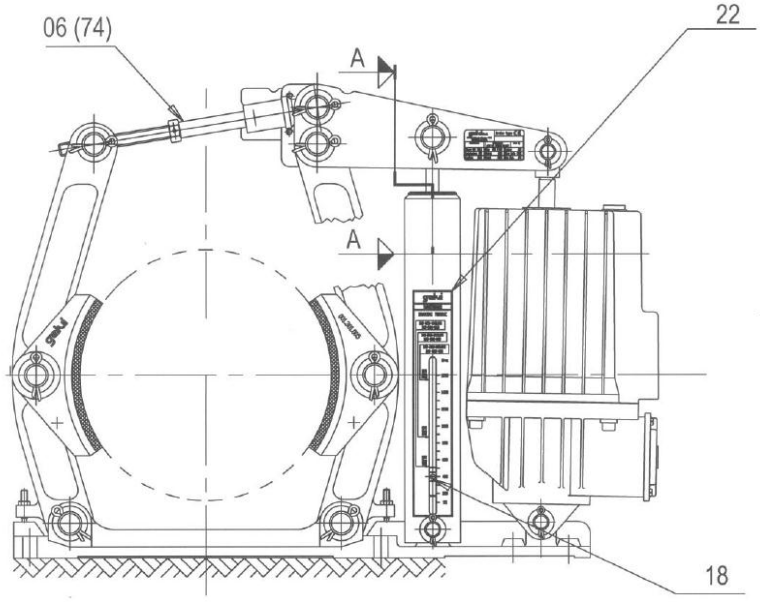


Drawing 11

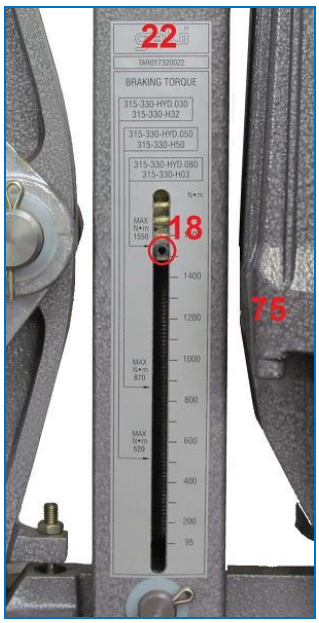


Picture 9

Screw the nut of tie rod item 07 until the pointer (that is to say the elastic pin item 18) in the slit of the main spring set reaches the estimated value of Braking Torque expressed in Nm on the Braking Torque plate item 22 (Drawing 12, Picture 10).



Drawing 12
Model shown NV.315.HYD.080/06.CD.42.PS.AU.ZN



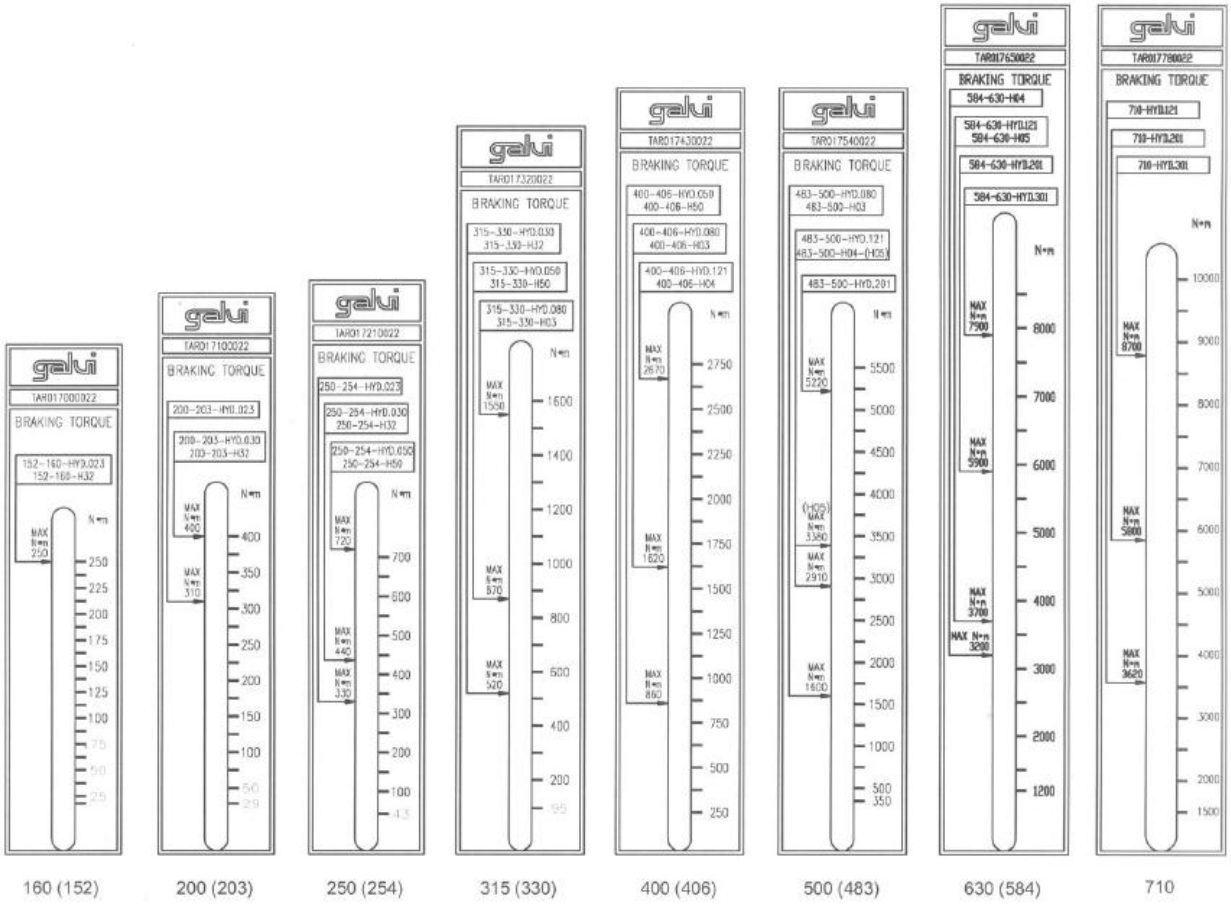
Picture 10

As per following Drawing 13, the GALVI Shoe Brakes' Braking Torque plate item 22 shows for each diameter of Brake more than one maximum Braking Torque to which the Brake can be set in function of the model of HYDRO GALVI Thruster item 75.

More precisely, the Braking Torque plate item 22 shows two different maximum Braking Torques for Brake dia. 160 mm and three different maximum Braking Torques for Brakes from dia. 200 mm to dia. 710 mm included.

As an example, a GALVI Shoe Brake type NV.315… can be set up to a maximum Braking Torque of 520 Nm with HYDRO GALVI Thruster type HYD.030/05 or up to a maximum Braking Torque of 1550 Nm with HYDRO GALVI Thruster type HYD.080/06, as shown also at page 8 in Table 4.

The following Drawing 13 shows the eight Braking Torque plates item 22 for GALVI Shoe Brakes from dia. 160 mm to dia. 710 mm :



Drawing 13

It is always necessary to know which model of HYDRO Thruster is installed for knowing which maximum Braking Torque each Brake can be set to.

	**Never set the Braking Torque beyond the maximum limit shown in the Braking Torque plate in function of the installed Thruster. Risk of malfunctioning.**

If the Shoe Brake has been selected by the Manufacturer, its Braking Torque is always written in the "Btt" line of the calculations report for the Brake's selection, selection which can be made by filling the data sheets in the Inquiries page of the website www.galvi.com .

If the Shoe Brake hasn't been selected by the Manufacturer and if the User doesn't know which Braking Torque is necessary, it is suggested to initially set the Brake to its maximum Braking Torque and then eventually decrease the Braking Torque in function of the results of the first test brakings, until optimal braking time and braking space are reached, after an adequate running in of the linings and of the brakedrums which must be perfectly clean.

Once the GALVI Shoe Brake has been set to a satisfactory Braking Torque it is necessary to put the elastic pin item 52 back in its hole in pin item 28 above the main spring set in order to avoid accidental unscrewing of the nut of tie rod item 07 with possible loss of Braking Torque.

In GALVI Shoe Brakes in "NV" version with self adjusting device the Braking Torque remains constant during the linings wear.

In GALVI Shoe Brakes in "N" version without self adjusting device the Braking Torque decreases progressively during linings wear and during increase of brake Shoes opening stroke, for such reason it is necessary to screw periodically the upper tie rod of the Brake for resetting the correct opening stroke of the brake Shoes.

A correct selection of the Shoe Brake is at the base of a lasting and reliable installation, the Manufacturer for such reason is available to make without obligation and free of charge the selection of GALVI Brakes supplying calculations report, it is therefore suggested to let the Manufacturer select the Brake.

03.01 – OPTIONAL ITEMS

The GALVI Shoe Brakes with HYDRO GALVI Thrusters can be supplied with optional items as per following Table 23 :

Description	Code
Self adjusting device	**NV**
Extra-wide brake Shoes, 1,5 times wider than the DIN 15435 Standard brake Shoes	**CL**
Stainless steel pins	**SS**
Lubricators on main pins	**GR**
Open position microswitch	**FIA**
Linings wear microswitch	**FIC**
Manual opening system	**HAN**
Supporting spheres for vertical brake axis	**ORZ**
Protection cover	**COV**
Lowering valve for Thruster	**LO**
Lifting valve for Thruster	**LI**
Foot rotated 90° for Thruster	**90**
VITON seals for Thruster	**VIT**
Heaters for Thruster	**HEA**
Special Voltage for Thruster	**V-Hz**

Table 23

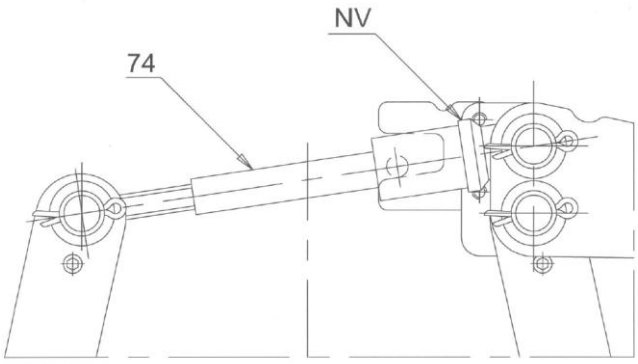
03.02 – SELF ADJUSTING DEVICE (NV)

The GALVI Shoe Brakes with self adjusting device have "NV" code instead of "N" code typical of standard Shoe Brakes.

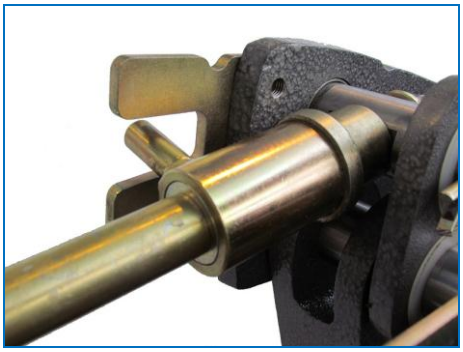
The self adjusting device is now installed on all GALVI Brakes and it is considered indispensable for all the hoist drive Brakes and for heavy duty Brakes.

In Shoe Brakes in "NV" version the self adjusting device automatically adjusts the Brake with repeated and minimum rotations of the upper tie rod during the progressive linings wear, so that the Braking Torque and the opening stroke of the brake Shoes remain constant.

The self adjusting device is substantially a unidirectional needle bearing installed on the upper tie rod which works also through its pin and its fork (Drawing 14, Picture 11).



Drawing 14



Picture 11
Self adjusting device (NV)

03.03 – BRAKE SHOES 1,5 TIMES WIDER THAN DIN 15435 STANDARD BRAKE SHOES (CL)

The GALVI Shoe Brakes with brake Shoes item 05 1,5 times wider than DIN 15435 Standard brake Shoes have "CL" code instead of "CD" code typical of standard brake Shoes.

The brake Shoes item 05 1,5 times wider than DIN 15435 Standard brake Shoes are an option suggested by the Manufacturer for all the heavy duty GALVI Shoe Brakes.

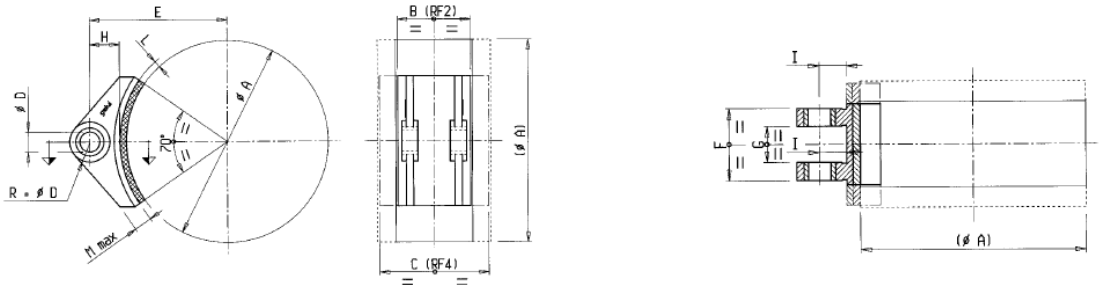
In case the Manufacturer has made the technical selection of the GALVI Shoe Brake it is possible that the brake Shoes item 05 1,5 times wider than DIN 15435 Standard brakes Shoes are indispensable for the service required by the Customer.

The brake Shoes item 05 1,5 times wider than DIN 15435 Standard brakes Shoes allow a better dissipation of thermal energy and a better use of the lining.

The brake Shoes item 05 1,5 times wider than DIN 15435 Standard brakes Shoes must be used with Brakedrums or Couplings with Brakedrums 1,5 times wider than the DIN 15431 Standard Brakedrums respectively named "PL" and "GL" in the GALVI range.

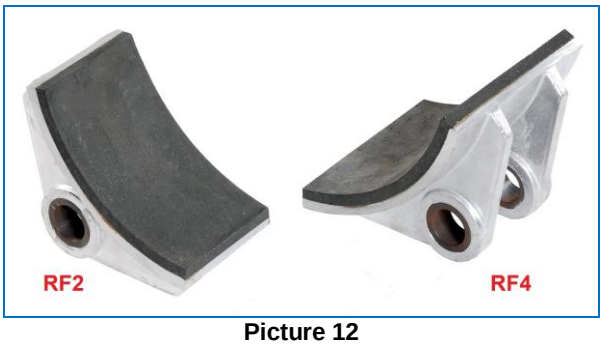
The DIN 15435 Standard brake Shoes item 05 are named "RF2" while the brakes Shoes 1,5 times wider than the DIN 15435 Standard brake Shoes are named "RF4".

All the brake Shoes "RF2" and "RF4" are listed in the following Table 24 taken from pages 36 and 37 of the GALVI Shoe Brakes Catalogue :



Ceppo freno tipo Brake Shoe type Sabots de frein type Bremsbacke Durchm. Typ		Ø A	B RF2	C [1] RF4	Ø D D10	E	F 0 - 0,2	G + 0,2 0	H	I	L	M max	Massa [2] Mass [2] Masse [2] Masse [2] [kg]	
													Ceppo DIN DIN Shoe Sabot DIN Backe DIN	Ceppo largo [1] Extra-wide Shoe [1] Sabot large [1] Breite Backe [1]
CD	CL [1]												RF2	RF4
RF2.160[1]	RF4.160[1]	160	55	85	16	115	52	28	29	23	6	13	0,31	0,77
RF2.200	RF4.200[1]	200	70	105	20	140	65	35	32	24	8	17	0,60	0,76
RF2.250	RF4.250[1]	250	90	135	25	170	80	40	37	29	8	22	0,99	1,24
RF2.315	RF4.315[1]	315	110	165	30	212	100	50	44,5	34,5	10	25	1,83	2,34
RF2.400	RF4.400[1]	400	140	210	35	260	125	62	50	40	10	30	3,06	3,88
RF2.500	RF4.500[1]	500	180	270	40	320	160	80	58	46	12	33	5,30	6,90
RF2.630	RF4.630[1]	630	225	335	45	390	200	100	63	51	12	38	17,5	22,0
RF2.710	RF4.710[1]	710	255	380	50	440	224	112	70	56	15	40	24,5	33,5

Table 24



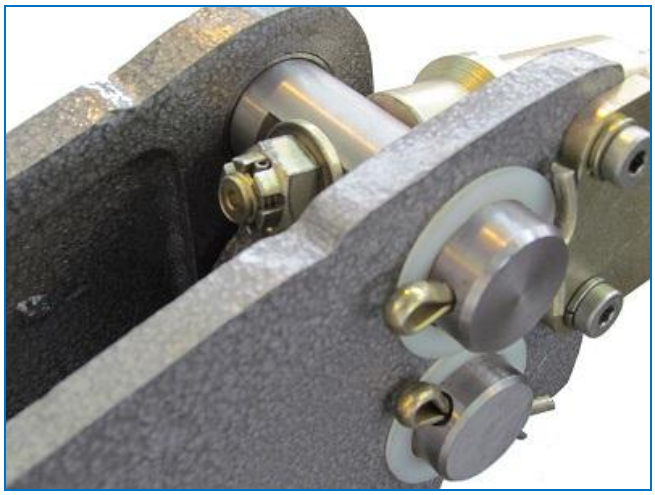
Picture 12
Standard brake Shoes "RF2" and 1,5 times wider brake Shoes "RF4"

03.04 - STAINLESS STEEL PINS (SS)

The GALVI Shoe Brakes with stainless steel pins have "SS" code instead of "PS" code typical of standard pins.

The stainless steel pins are an option suggested by the Manufacturer for all the GALVI Shoe Brakes installed outdoors or in salty and humid environments.

The stainless steel pins are made in AISI 420 HARDENED AND TEMPERED (Picture 13).



Picture 13
Stainless steel pins "SS"

03.05 – LUBRICATORS ON MAIN PINS (GR)

The GALVI Shoe Brakes with lubricators on main pins have "GR" code.

The lubricators on main pins are an option suggested by the Manufacturer for all the GALVI Shoe Brakes installed outdoors or in salty and humid environments.

The lubricators on main pins are available only combined with the optional stainless steel pins (SS).

The pins with lubricators are secured with seegers instead of split pins and washers used for securing the standard pins (PS) and the stainless steel pins (SS) (Picture 14).

The lubrication with lubricators on main pins is made with injection of grease (as an example grease EXXON Beacon 2) with specific guns for lubricators Tecalemit UNI 7662.



Picture 14
Lubricators on main pins "GR"

03.06 – OPEN POSITION MICROSWITCH (FIA)

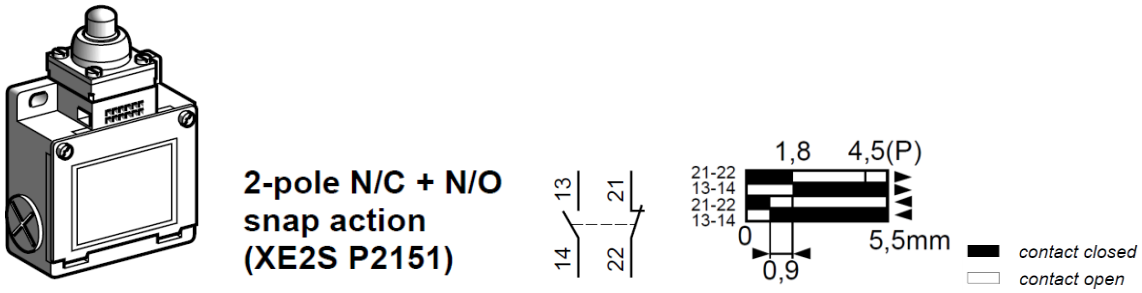
The GALVI Shoe Brakes with open position microswitch have "FIA" code.

The open position microswitch is an option suggested by the Manufacturer for avoiding the accidental start of the machine's main motor before the GALVI Shoe Brake is completely open.

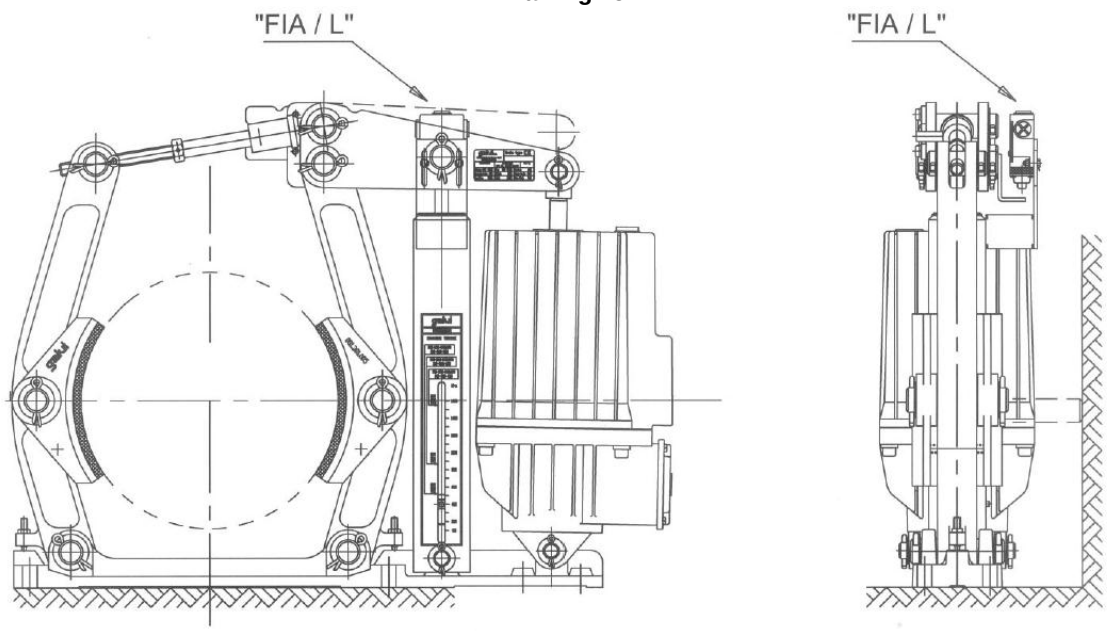
The option can be installed on left side ("FIA/L", Drawing 16) or on right side ("FIA/R"), in any case always opposite to eventual "HAN" option's side.

The microswitch normally used is Telemecanique brand, type XCK.M110 (Drawing 15, Picture 15), preset for cable gland Pg.11 (cable gland normally not included); on request it is possible to supply the microswitch model XCK.M110.H20 preset for cable gland M20 x 1,5 mm.

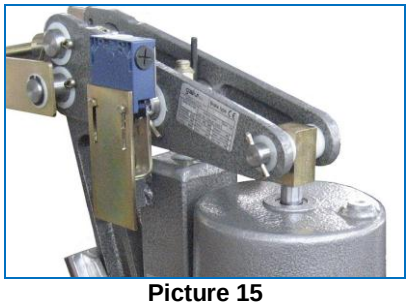
On request it is possible to supply also the cable gland, both Pg.11 and M20 x 1,5 mm, both in nylon and in stainless steel (Picture 16).



Drawing 15



Drawing 16
Model shown NV.315.HYD.080/06.CD.42.PS.AU.ZN.FIA/L



Picture 15
Open position microswitch "FIA/L"



Picture 16
Nylon and stainless steel cable glands Pg.11 and M20

03.07 – LININGS WEAR MICROSWITCH (FIC)

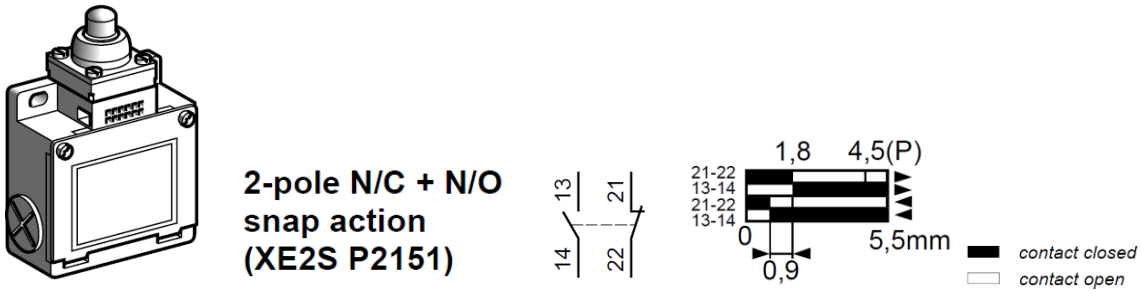
The GALVI Shoe Brakes with linings wear microswitch have "FIC" code.

The linings wear microswitch is an option suggested by the Manufacturer for detecting and signalling the linings wear.

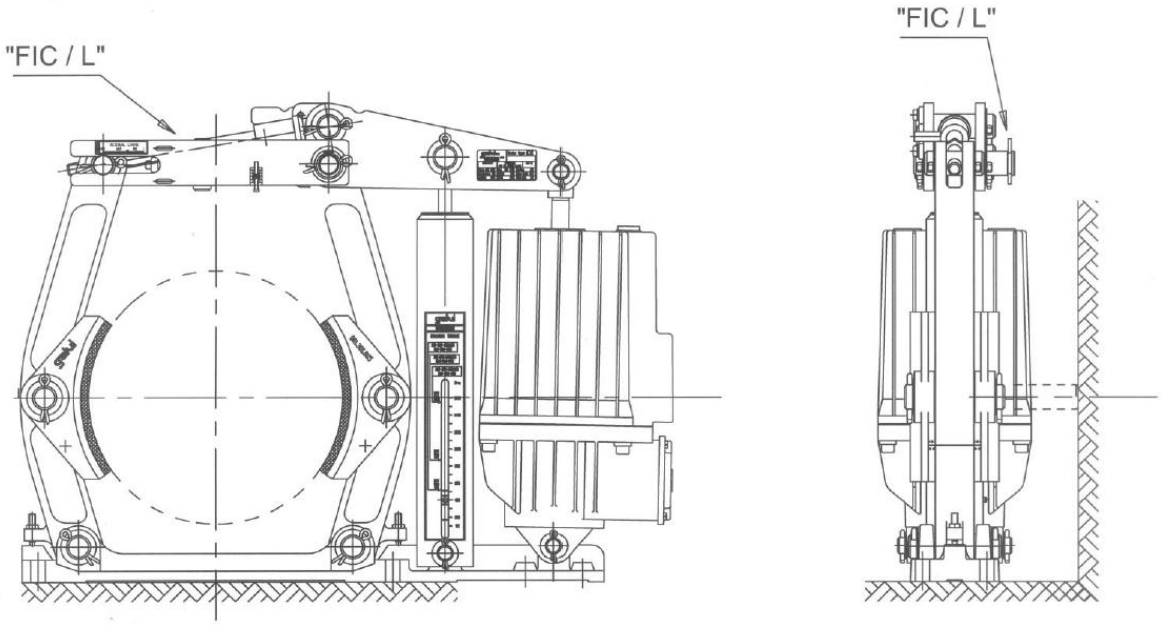
The option can be installed on left side ("FIC/L", Drawing 18) or on right side ("FIC/R").

The microswitch normally used is Telemecanique brand, type XCK.M110 (Drawing 17, Picture 17), preset for cable gland Pg.11 (cable gland normally not included); on request it is possible to supply the microswitch model XCK.M110.H20 preset for cable gland M20 x 1,5 mm.

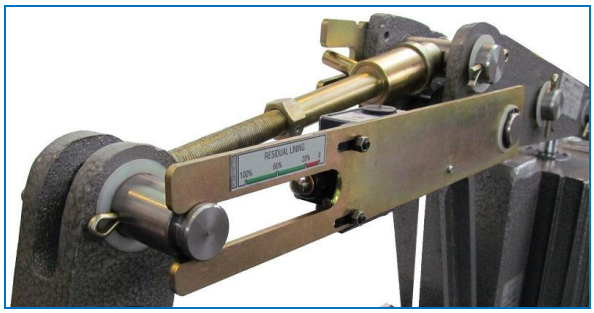
On request it is possible to supply also the cable gland, both Pg.11 and M20 x 1,5 mm, both in nylon and in stainless steel (Picture 18).



Drawing 17



Drawing 18
Model shown NV.315.HYD.080/06.CD.42.PS.AU.ZN.FIC/L



Picture 17
Linings wear microswitch "FIC/L"



Picture 18
Nylon and stainless steel cable glands Pg.11 and M20

03.08 – MANUAL OPENING SYSTEM (HAN)

The GALVI Shoe Brakes with manual opening system have “HAN” code.

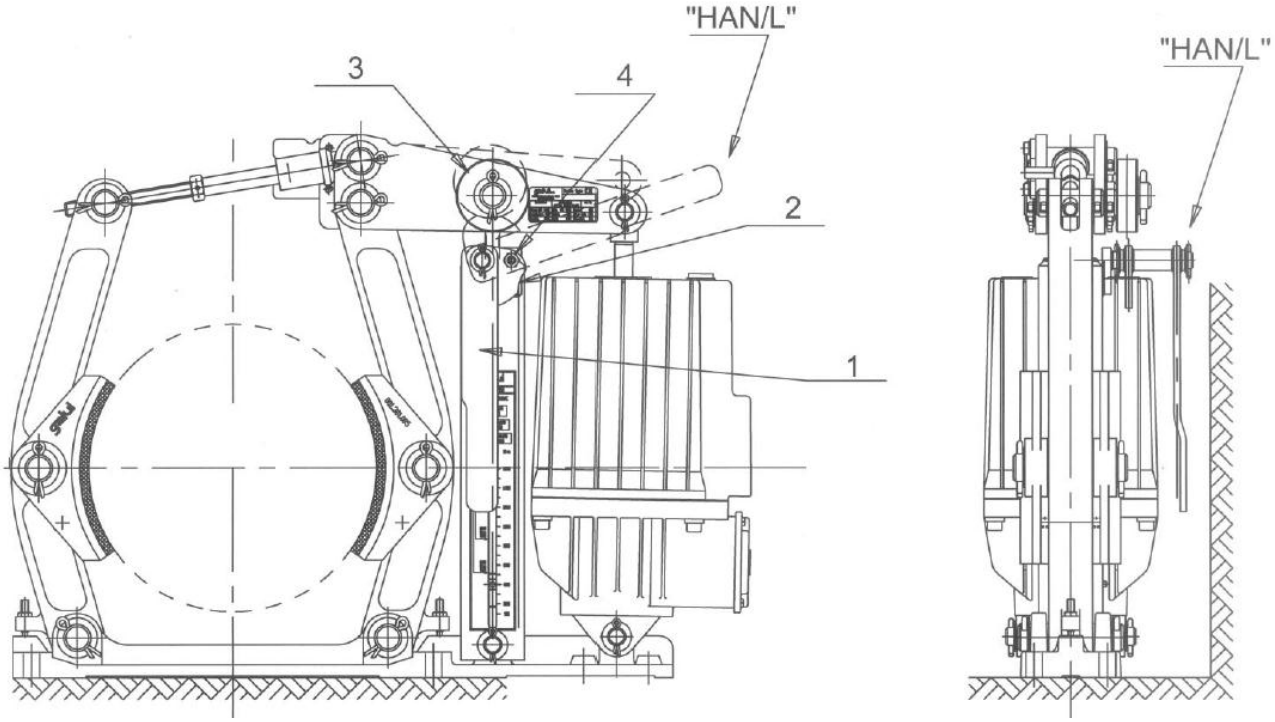
The manual opening system is an option suggested by the Manufacturer for facilitating maintenance and/or for some special installations which require the possibility to open the Brake manually and eventually to lock it in open position, as it happens with Brakes for boom rotation for port cranes.

The system is made with a lever with eccentric cam which, held and lifted, working on a wheel allows to open the GALVI Shoe Brake and to eventually lock it in open position.

The system is designed for being automatically disengaged going back to closed position as soon as the Thruster starts working opening electrically the Brake.

For closing the Brake it is necessary to put the lever back in vertical position.

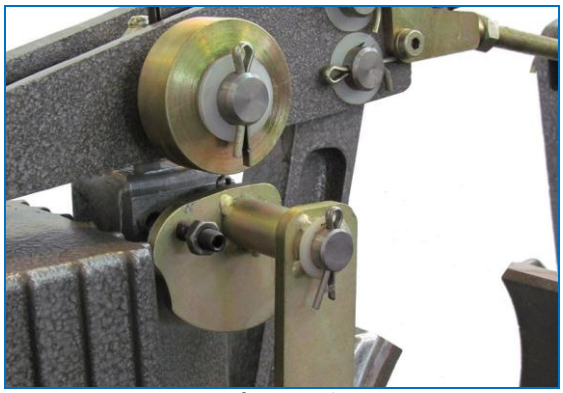
The option can be installed on left side (“HAN/L”, Drawing 19) or on right side (“HAN/R”).



Drawing 19
Model shown NV.315.HYD.080/06.CD.42.PS.AU.ZN.HAN/L

Pos.	Description
01	Lever
02	Eccentric cam
03	Wheel
04	Setscrew

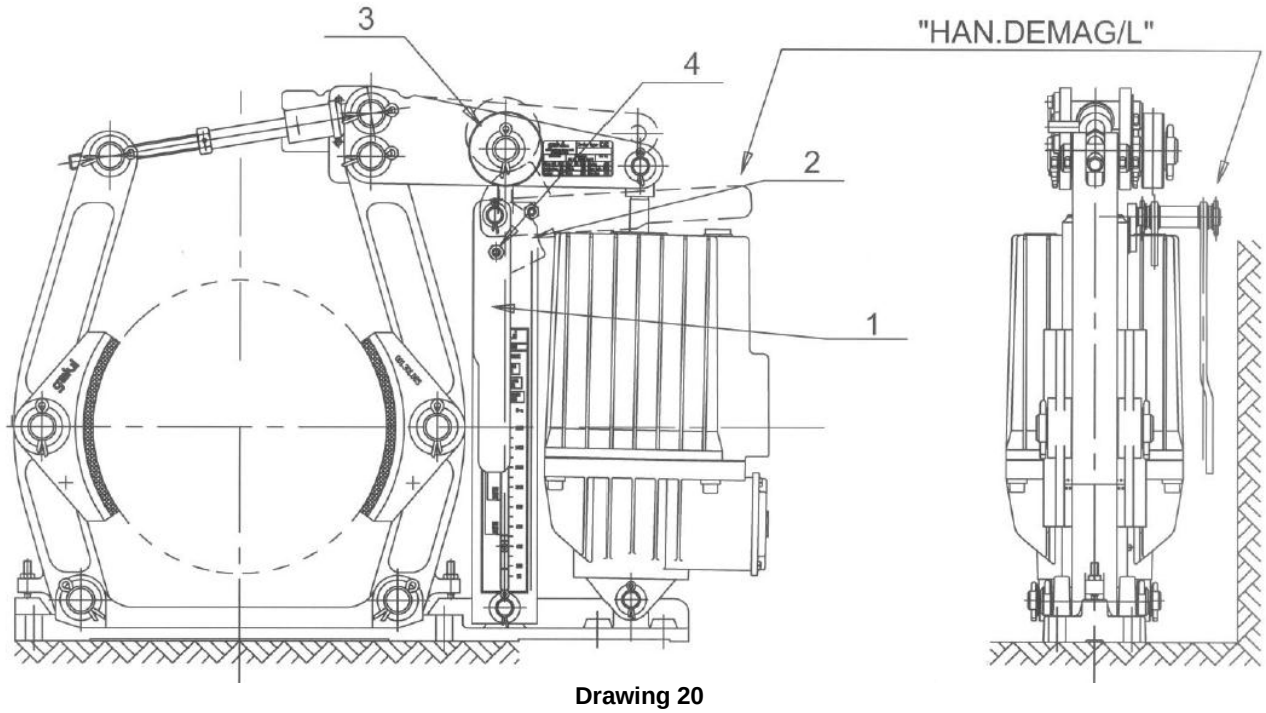
Table 25



Picture 19
Manual opening system “HAN/R”

On specification of Customer Demag Cranes & Components GmbH the manual opening system is made also in special version which, unlike the standard version, doesn't allow to lock the Brake in open position, in this special version the option is named "HAN.DEMAG".

The option also in this version can be installed on left side ("HAN.DEMAG/L", Drawing 20) or on right side ("HAN.DEMAG/R", Picture 20).



Drawing 20
Model shown NV.315.HYD.080/06.CD.42.PS.AU.ZN.HAN.DEMAG/L

Pos.	Description
01	HAN.Demag lever
02	Eccentric cam HAN.Demag
03	Wheel
04	Setscrew HAN.Demag with spring

Table 26



Picture 20
Manual opening system "HAN.DEMAG/R"

03.09 – SUPPORTING SPHERES FOR VERTICAL BRAKE AXIS (ORZ)

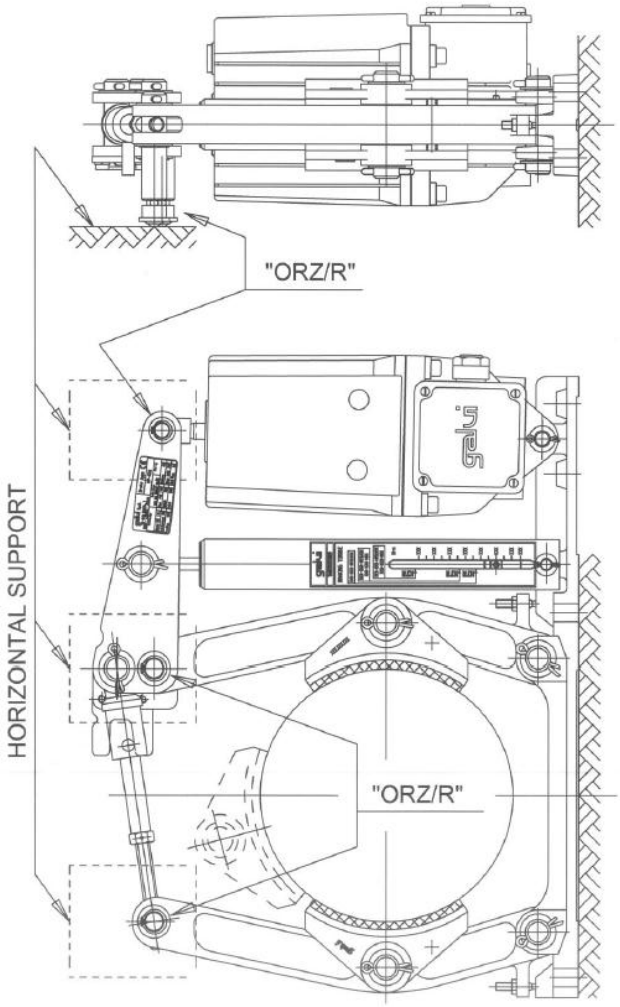
The GALVI Shoe Brakes with supporting spheres for vertical brake axis have "ORZ" code.

The supporting spheres for vertical brake axis are an option considered by the Manufacturer as indispensable for all the GALVI Shoe Brakes installed in horizontal position, that is to say with vertical brake axis.

These spheres support the GALVI Shoe Brake with vertical brake axis rolling on a horizontal support preset under the Brake.

In all the cases in which the Brake is installed in horizontal position, that is to say with vertical brake axis, it is indispensable to add the following "90" option to the "ORZ" option, that is to say it is indispensable for the HYDRO GALVI Thruster to have the foot rotated of 90 degrees so that the frontal part of the Thruster is facing upwards (Drawing 21).

The GALVI Shoe Brakes with "ORZ" option cannot be supplied with HYDRO GALVI Thrusters model HYD.024/05, 031/05, 081/06, 051/06 because these Thrusters are not available with option "90".



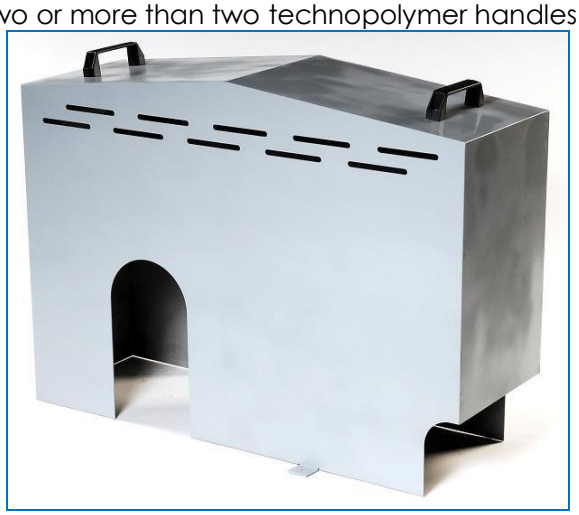
Drawing 21
Model shown NV.315.HYD.080/06.90.CD.42.PS.AU.ZN.ORZ/R

03.10 – PROTECTION COVER (COV)

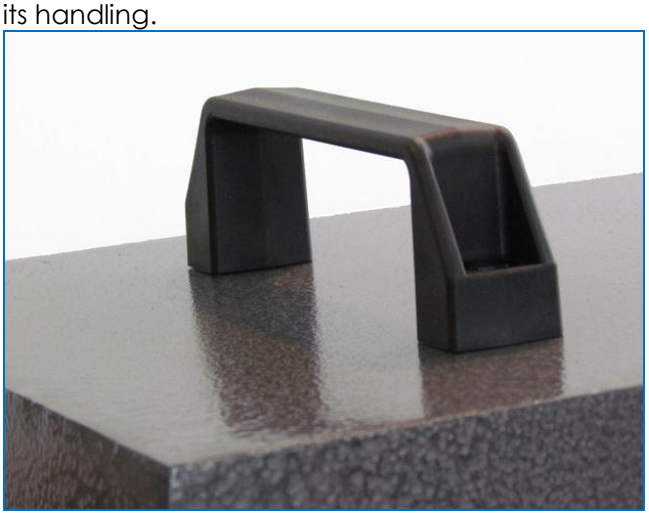
The protection cover is an option identified with "COV" code.

The protection cover is an option considered by the Manufacturer as sometimes suggested and sometimes indispensable for all the GALVI Shoe Brakes installed outdoors.

The protection cover is made of laser cut steel and in function of the diameter of Shoe Brakes it has two or more than two technopolymer handles for its handling.



Picture 21
Protection cover "COV"



Picture 22
Technopolymer handle for cover "COV"

03.11 – LOWERING VALVE FOR THRUSTER (LO)

The HYDRO GALVI Thrusters, excluding models HYD.024/05, 031/05, 051/06, 081/06, can be supplied with optional lowering valve identified with "LO" code.

The lowering valve is an option considered by the Manufacturer as indispensable for all the GALVI Shoe Brakes whose application requires adjustment of closing time, with effects on braking time and braking space.

Normally this option is common on Brakes for horizontal movements (cranes' bridge travelling, cranes' trolley traversing, belt conveyors drives), while it shouldn't be installed on Brakes for vertical movements (hoist drives).

Externally the lowering valve can be used screwing its tie rod on the frontal part of the Thruster (protected by a screw cap) and increasing the normal closing time of Thruster and Brake.

The average closing time of a GALVI Shoe Brake with standard Thruster is 0,3 seconds, using the lowering valve this closing time can be increased up to maximum 15 times the standard average time, on the other hand the presence of the "LO" valve normally increases slightly the minimum closing time of the Brake.

The "LO" option is considered by the Manufacturer as not compatible with Thrusters installed in horizontal position, because its effectiveness is reduced on Shoe Brakes installed on vertical brake axis.



Picture 23
Lowering valve for Thruster "LO"

03.12 – LIFTING VALVE FOR THRUSTER (LI)

The HYDRO GALVI Thrusters, excluding models HYD.024/05, 031/05, 051/06, 081/06, can be supplied with optional lifting valve identified with "LI" code.

The lifting valve is an option suggested by the Manufacturer for all the GALVI Shoe Brakes whose application requires adjustment of the opening time.

Externally the lifting valve can be used screwing its tie rod on the frontal part of the Thruster (protected by a screw cap) and increasing the normal opening time of Thruster and Brake.

The average opening time of a GALVI Shoe Brake with standard Thruster is 0,3 seconds, using the lifting valve this opening time can be increased up to maximum 15 times the standard average time, on the other hand the presence of the "LI" valve normally increases slightly the minimum opening time of the Brake.

The "LI" option is considered by the Manufacturer as not compatible with Thrusters installed in horizontal position, because its effectiveness is reduced on Shoe Brakes installed on vertical brake axis.



Picture 24
Lifting valve for Thruster "LI"

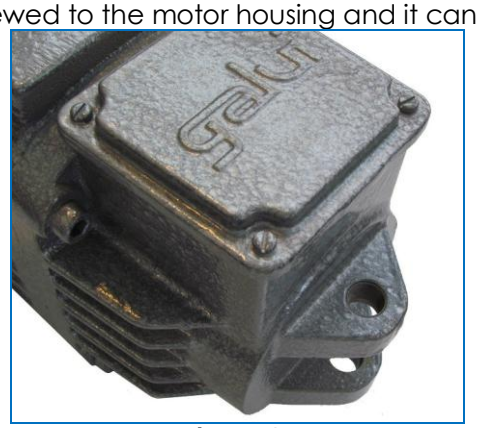
03.13 – FOOT ROTATED 90° FOR THRUSTER (90)

The HYDRO GALVI Thrusters, excluding models HYD.024/05, 031/05, 051/06, 081/06, can be supplied with foot rotated of 90° identified with "90" code.

The foot rotated of 90° is an option considered by the Manufacturer as indispensable for all the GALVI Shoe Brakes installed in horizontal position, that is to say installed with vertical brake axis and with "ORZ" option.

The function of "90" option is to position upwards the frontal part of the Thruster in cases where the Thruster is installed in horizontal position.

In Thrusters model HYD.023/05, 030/05, 050/06, 080/06 the "90" option is made with a special casting of the motor housing of the Thruster, while in models HYD.121/06(12), 201/06(12), 301/06(12) the foot is screwed to the motor housing and it can be easily rotated by the User if necessary.



Picture 25
Foot rotated 90° for Thrusters 023,030,050,080 "90"



Picture 26
Foot rotatable 90° for Thrusters 121,201,301

03.14 – VITON SEALS FOR THRUSTER (VIT)

The HYDRO GALVI Thrusters, excluding models HYD.024/05, 031/05, 051/06, 081/06, can be supplied with VITON seals identified with "VIT" code.

The VITON seals are an option considered by the Manufacturer as indispensable for all the GALVI Shoe Brakes installed at ambient temperature higher than +70 °C.

In function of the ambient temperature it could be necessary to use also a special oil for the Thruster besides the "VIT" option.

03.15 – HEATERS FOR THRUSTER (HEA)

The HYDRO GALVI Thrusters can be supplied with heaters identified with "HEA" code.

The heaters are an option considered by the Manufacturer as indispensable for all the GALVI Shoe Brakes installed at ambient temperature lower than -20 °C and in any case suggested for all the GALVI Shoe Brakes installed at ambient temperature lower than 0 °C.

In function of the ambient temperature it could be necessary to use also a special oil for the Thruster besides the "HEA" option.

03.16 – SPECIAL VOLTAGE FOR THRUSTER (V-Hz)

The HYDRO GALVI Thrusters are available for any rated Voltage both Hz 50 and Hz 60, they have three phase electric motor, IP.65, insulation Class F, which can rotate in both directions.

The data of the most common rated Voltages both Hz 50 and Hz 60 are listed in chapter 02.02 of this document.

In no case a Thruster for Hz 50 can be used at Hz 60, also if rated Voltage is the same, because the Thruster's impeller for Hz 50 is different from the Thruster's impeller for Hz 60.

	**Never use a Thruster for Hz 50 at Hz 60.** **Never use a Thruster for Hz 60 at Hz 50.** **Risk of accident.**

04.01 - MAINTENANCE

As it is fundamental to install correctly the GALVI Shoe Brake following the instructions of this document, it is equally important to follow scrupulously the following maintenance instructions.

A periodical and correct maintenance will ensure the best and correct functioning of the GALVI Shoe Brake, increasing its lifetime and ensuring safety.

For a correct and timely maintenance of the GALVI Shoe Brakes it is indispensable to have a stock of the following GALVI Genuine Spare Parts, in absence of these Spare Parts the User is exposed to risk of machine stop, production stop and possible damage of the Brake and its brakedrum.

⚠	**Never operate without strategic spare parts. Risk of machine stop.**

04.02 – REPLACEMENT OF BRAKE SHOES

All the brake Shoes item 05 of the GALVI Shoe Brakes are made of aluminum with anti-wear steel bushes and have asbestosfree bonded linings of exclusive GALVI formula and with a special substrate for maximizing the bonding (Table 27, Picture 27).

The lining is subject to wear in function of the type of service of the GALVI Shoe Brakes and also in function of the type of environment where the Brake is installed.

It is in any case indispensable to check periodically the wear level of the linings in order to replace the brake Shoes item 05 before the lining is totally worn.

The total wear of the linings must be avoided for avoiding the direct contact between the brakedrum and the aluminum casting of the brake Shoe with possible consequent damages and possible total loss of friction and Braking Torque.

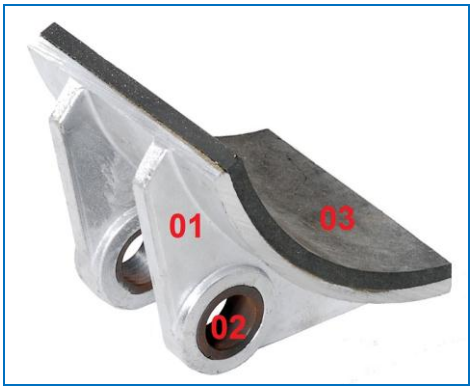
⚠	**Never wear totally the linings of the brake Shoes. Risk of accident. Inspect periodically the brake Shoes.**

The brake Shoes item 05, both in DIN 15435 Standard version (CD) named "RF2" and in extra-wide version (CL) named "RF4", can be easily replaced without disassembling the GALVI Shoe Brake.

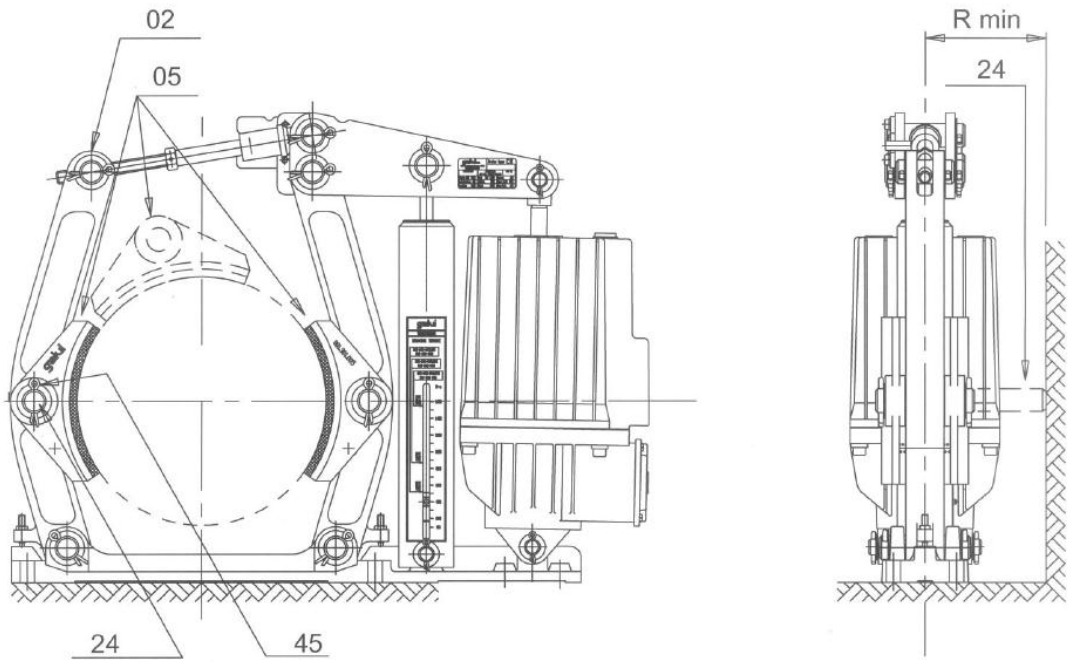
For replacing the brake Shoes item 05 it is in fact necessary to open the Brake, also using "HAN" option if installed, to remove the two split pins item 45 from their pin item 24 or the two seegers if the Brake has optional lubricators on main pins (GR), to remove pin item 24 in order to release the brake Shoes from the main levers item 02 and to rotate them upwards sliding them on the brakedrum (Drawing 22).

Pos.	Description
01	Aluminum brake Shoe
02	Anti-wear steel bushes
03	Asbestosfree bonded linings, with substrate for bonding

Table 27



Picture 27
Genuine GALVI brake Shoe "RF2" or "RF4"



Drawing 22
Model shown NV.315.HYD.080/06.CD.42.PS.AU.ZN

The "R_{min}" dimension in above Drawing 22 and in Table 4 at page 9 of this document, table taken from pages 4 and 5 of the GALVI Shoe Brakes Catalogue, shows the minimum distance between the vertical axis of the GALVI Shoe Brake and eventual lateral obstacle for removing towards the same obstacle the pin item 24 which fastens the brake Shoe item 05 to the main lever item 02.

The brake Shoes item 05 with worn lining can be replaced with identical new brake Shoes or they can be regenerated, that is to say they can be sent to the Manufacturer who will remove the worn lining and will bond the new lining.

The linings of the GALVI brake Shoes are never riveted because this fixing technique is worse and outdated by thermal bonding.

Riveting the brake Shoes, that is to say fixing any lining with metallic rivets and making holes in the brake Shoes, is strongly unwary, as there is risk of possible disjunction of the lining during the braking phase.

We strongly do not recommend the regeneration of the brake Shoes made by the User because this procedure changes friction material and fixing technique of the friction material.

We recommend to use only genuine GALVI brake Shoes with genuine linings.

The use of not genuine brake Shoes and of not genuine friction material invalidates the Declaration of chapter 01.02 and the Product warranty terms of chapter 01.06 of this document.

⚠	**Never use not genuine Spare Parts, especially brake Shoes. Loss of warranty. Risk of accident.**

⚠	**Never modify the Product. Loss of warranty. Risk of accident.**

04.03 – OIL CHANGE FOR THRUSTER

All the HYDRO GALVI Thrusters are supplied complete with oil and ready for operation.

If not differently required, the following type of hydraulic oil is used for ambient temperature included between -20 °C and +55 °C :

HLP32, DIN 51525
for Thrusters model HYD.023/05, 024/05, 030/05, 031/05, 050/06, 051/06, 081/06

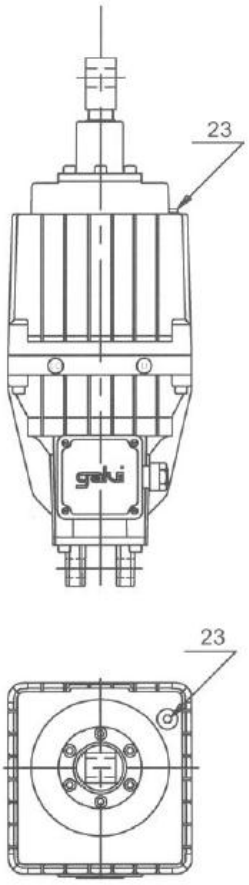
HL10, DIN 51524, part. 1
for Thrusters model HYD.121/06(12), 201/06(12), 301/06(12)

The HYDRO GALVI Thrusters can work also with water-glycol fluid instead of hydraulic oil; the Manufacturer has made successful tests with fluid Agip Arnica 104/FR, a non-flammable biodegradable hydraulic fluid made of solution of propylene-glycol and additive-treated water with anti-corrosive products.

The hydraulic oil of the HYDRO GALVI Thrusters must be replaced at least every twelve months.

The water-glycol fluid of the HYDRO GALVI Thrusters must be replaced at least every six months.

Every HYDRO GALVI Thruster has a screw cap item 23 for oil fill and oil drain (Drawing 23, Picture 28).



Drawing 23
Model shown HYD.201/06



Picture 28
Screw cap for Thruster's oil fill and oil drain

After unscrewing cap item 23 proceed with emptying totally the Thruster with repeated overturnings.

After emptying totally the Thruster, proceed with oil fill through the hole of cap item 23 as per data of following Table 28, where level is measured from the base of cap item 23 :

Thruster	Oil quantity liters	Oil level mm
HYD.023/05	1,75	17
HYD.024/05	1,45	17
HYD.030/05	2,70	20
HYD.031/05	1,90	20
HYD.050/06	5,15	22
HYD.051/06	3,75	22
HYD.080/06	5,15	22
HYD.081/06	3,75	22
HYD.121/06-201/06-301/06	7,80	28
HYD.121/12-201/12-301/12	7,70	28
Table 28		

A too low oil level can cause a loss of lifting Force of the Thruster with consequent difficult or missed opening of the Brakes.

A too high oil level can cause expulsion of oil in excess through the shaft of the Thruster.

For applications with particularly heavy duties, that is to say with Thruster working continuously, it is possible that a different oil level is required, normally slightly lower compared to the standard level as per Table 28.

After completing the operation the cap item 23 must be screwed with a tightening Torque of 25 Nm.

In case the Thruster has options like internal springs (IS, option not available for NV.HYD Brakes of this document) and/or lowering valve (LO) and lifting valve (LI), the quantity of oil inside the Thruster is smaller compared to the quantity shown in Table 28, more precisely it would be necessary to remove the quantity shown in the following Table 29 and Table 30 from the standard quantity shown in Table 28 :

Thruster with internal springs "IS"	Reduction oil quantity liters
HYD.023/05.IS	0,025
HYD.024/05.IS	0,025
HYD.030/05.IS	0,045
HYD.031/05.IS	0,045
HYD.050/06.IS	0,100
HYD.051/06.IS	0,100
HYD.080/06.IS	0,190
HYD.081/06.IS	0,190
HYD.121/06.IS	0,250
HYD.201/06.IS	0,400
HYD.301/06.IS	0,650
Table 29	

Thruster with valve/s LO/LI	Reduction oil quantity liters
HYD.023/05.LO	0,080
HYD.030/05.LO	0,085
HYD.050/06.LO	0,160
HYD.080/06.LO	0,160
HYD.121/06.LO-201/06.LO-301/06.LO	0,220
HYD.121/12.LO-201/12.LO-301/12.LO	0,220
Table 30	

04.04 – REPLACEMENT OF THRUSTER

In case it is necessary to replace the HYDRO GALVI Thruster item 75 it is necessary first of all to disconnect it from the power line after putting the machine in total safety conditions.

It is also necessary to note the Braking Torque the GALVI Shoe Brake is set to, because for replacing the Thruster item 75 it is necessary to set to zero the Braking Torque of the Brake.

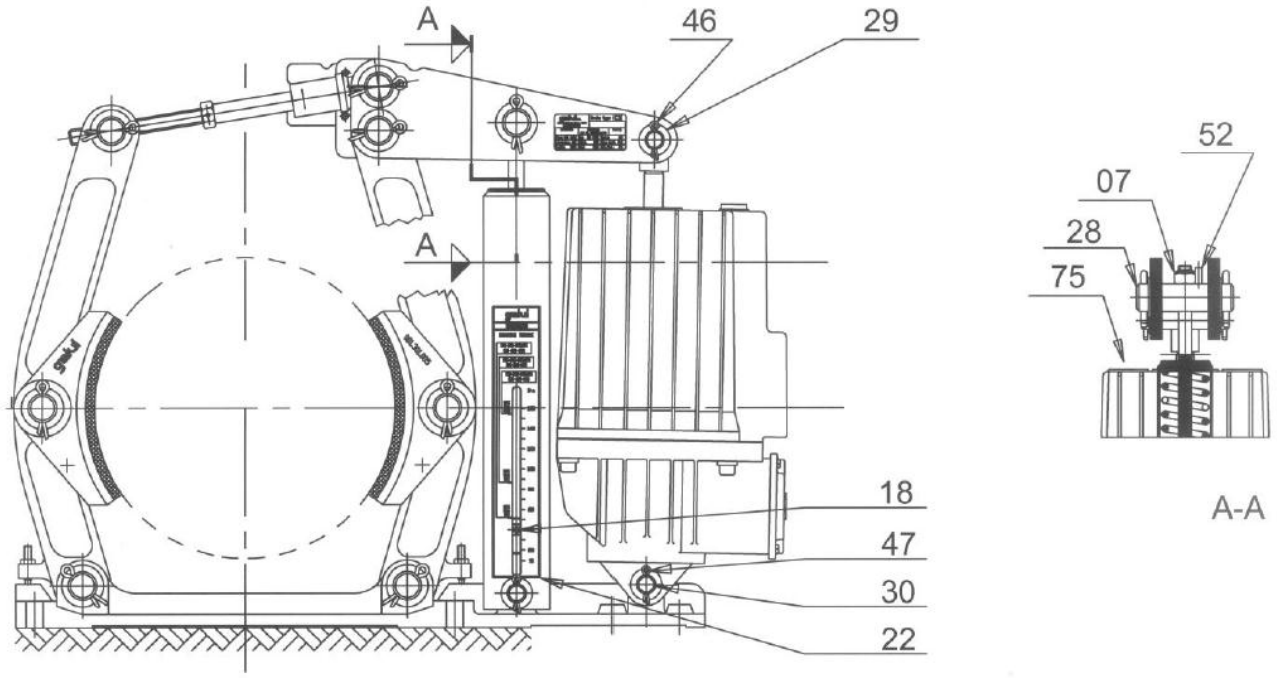
Remove temporarily the elastic pin item 52 from its hole in pin item 28 above the main spring set then rotate counterclockwise the nut at the top of the main spring tie rod item 07 until the pointer (elastic pin item 18) in the slit of the main spring set reaches the minimum Braking Torque value (Drawing 24).

It is necessary to keep elastic pin item 52 because at the end of the operation it will have the important function to prevent the rotation of the nut of tie rod item 07.

Remove the four split pins items 46 and 47 of Thruster's upper pin item 29 and lower pin item 30, remove the two same pins and release the Thruster from the Brake.

Once the Thruster item 75 has been replaced with a new HYDRO GALVI Thruster of same model, insert again upper pin item 29 and lower pin item 30, insert again their four split pins items 46 and 47 and connect again to the power line.

Once the GALVI Shoe Brake's Braking Torque has been reset to the same value noted before replacing the Thruster item 75 following the instructions of this document, it is necessary to put the elastic pin item 52 back in its hole in pin item 28 above the main spring set in order to avoid the accidental rotation of the nut of tie rod item 07 with consequent possible loss of Braking Torque.



Drawing 24
Model shown NV.315.HYD.080/06.CD.42.PS.AU.ZN

04.05 – DISASSEMBLY AND ASSEMBLY OF THE THRUSTER

The HYDRO GALVI Thruster doesn't need maintenance apart from the oil change suggested every twelve months or the water-glycol fluid change suggested every six months.

The HYDRO GALVI Thruster must not be disassembled unless it is necessary to repair it and when possible it is always suggested to let the Manufacturer repair it in order to make any operation in a workmanlike manner and with final test.

The eventual disassembly and assembly of the Thruster made by the User invalidates the warranty of the Thruster itself.

In case for any reason the HYDRO GALVI Thruster has been disassembled it is in any case necessary to comply with the following instructions for reassembling the Thruster.

The disassembly of HYDRO GALVI Thrusters model 023, 030, 050, 080 (Picture 29) and 121, 201, 301 (Picture 30) requires necessarily to remove and replace gasket item 36 between the two aluminum castings the body of the Thruster is made of, then anyone who wants to disassemble and reassemble must have a new spare gasket item 36.

Thrusters model 024, 031, 051, 081 (Picture 31) are instead without gasket item 36.



Picture 29
Thruster 023, 030, 050, 080



Picture 30
Thruster 121, 201, 301



Picture 31
Thruster 024, 031, 051, 081

Before joining the lower half of the Thruster, called motor housing, to the upper half, called reservoir, it is necessary to clean perfectly the surfaces of the two castings which come into contact.

Then it is necessary to check the clearance between the two castings putting them together, initially without gasket item 36, by means of screws item 69 and tightening them with a tightening Torque of 5 Nm (Drawing 25).

A correct clearance in this initial phase is included between 0,5 and 0,75 mm (Drawing 25).

Once this check has been made it is necessary to separate temporarily the motor housing from the reservoir for preparing their definitive union with sealant and gasket item 36.

On both contact surfaces strew a strip 3-4 mm wide of liquid gasketing (the Manufacturer uses and suggests Loxeal type 58-31) code KKSEAL5831.

Strew uniformly the sealant on both contact surfaces, putting the sealant also around the four holes.

Insert the two pins item 83 in their holes in the reservoir, then position gasket item 36 placing it on the two pins item 83 (Drawing 25).

Join motor housing and reservoir, checking that the two pins item 83 go adequately in their holes.

Insert the four screws item 69 after putting three drops of threadlocker on their threads (the Manufacturer uses and suggests Loxeal type 54-03) code KKSEAL5403, tightening them partially just for joining the two castings.

Then tighten them definitively in three phases with procedure and tightening Torque as per following Table :

Thruster	First phase Sequence and tightening Torque	Second phase Sequence and tightening Torque	Third phase Sequence and tightening Torque
023-024-030-031	Screws 1, 3, 2, 4 10 Nm	Screws 4, 2, 3, 1 17 Nm	Screws 2, 4, 1, 3 25 Nm
050-051-080-081	Screws 1, 3, 2, 4 12 Nm	Screws 4, 2, 3, 1 20 Nm	Screws 2, 4, 1, 3 30 Nm
121-201-301	Screws 1, 3, 2, 4 20 Nm	Screws 4, 2, 3, 1 35 Nm	Screws 2, 4, 1, 3 50 Nm

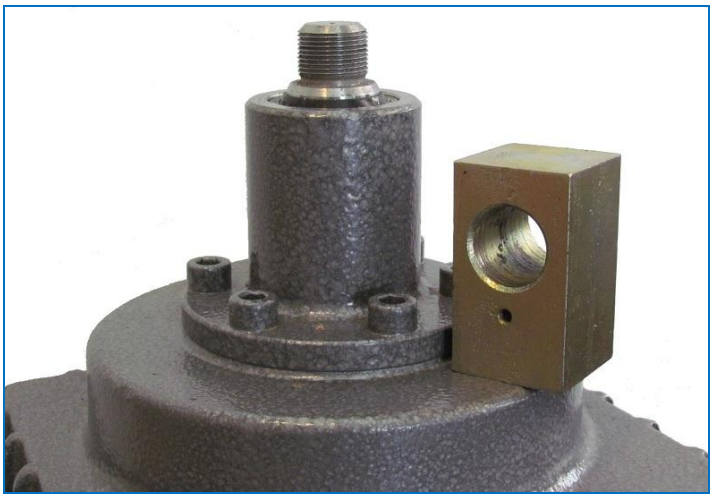
Table 31

75 minutes after completing this operation it is possible to proceed with oil filling of the HYDRO GALVI Thruster following the instructions of this document.

It is extremely important to manage correctly also the push rod of the Thruster, being it the component of connection of the Thruster with the Brake; this component should never be unscrewed from the shaft of the Thruster, should it be unscrewed and removed from the shaft during disassembly or in any other circumstance it would be indispensable to rescrew it again to the shaft fixing it with the specific screw properly positioned in order not to damage the thread of the shaft (Picture 32, Picture 33).

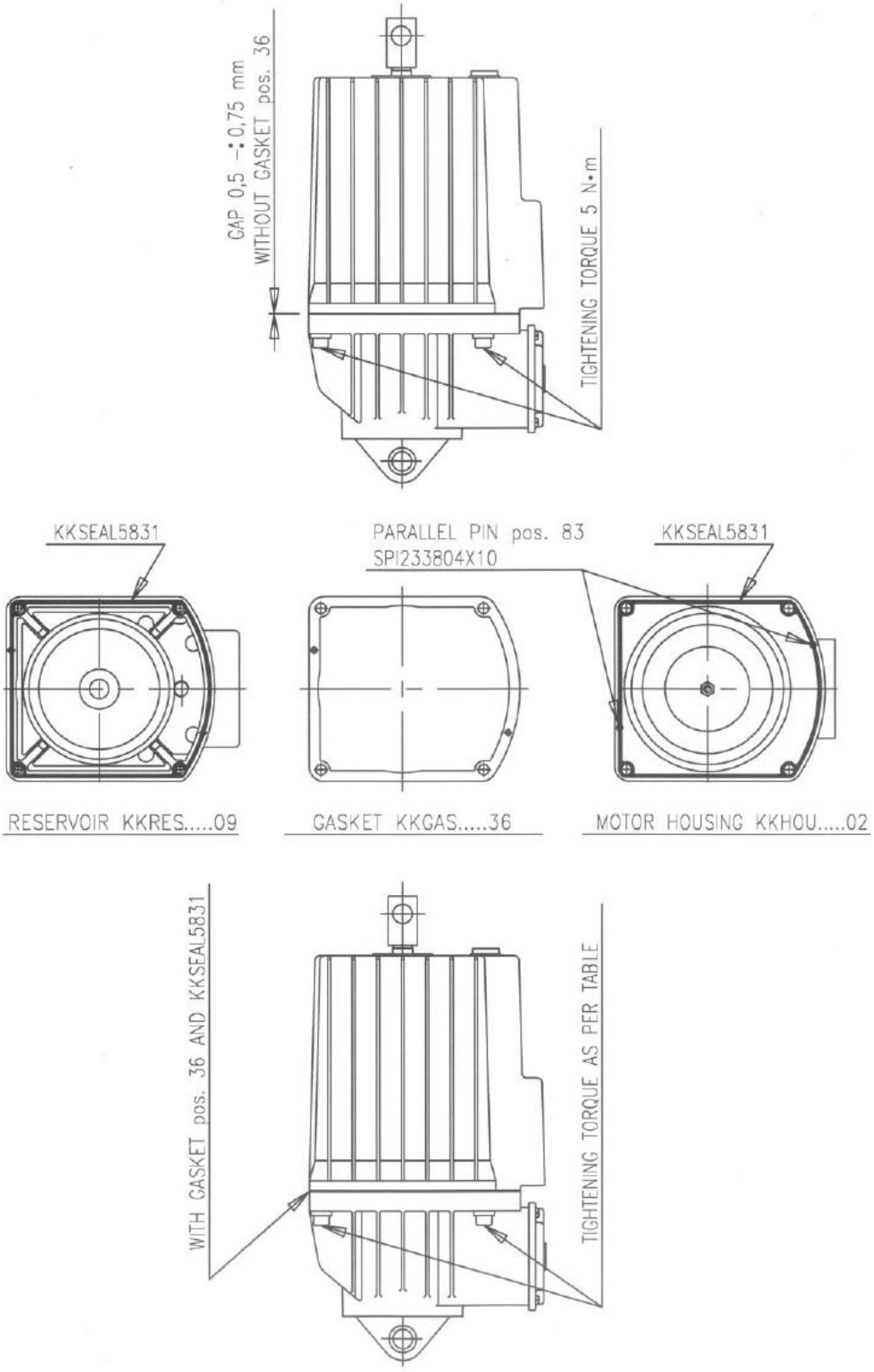


Picture 32
Thruster's shaft complete with push rod

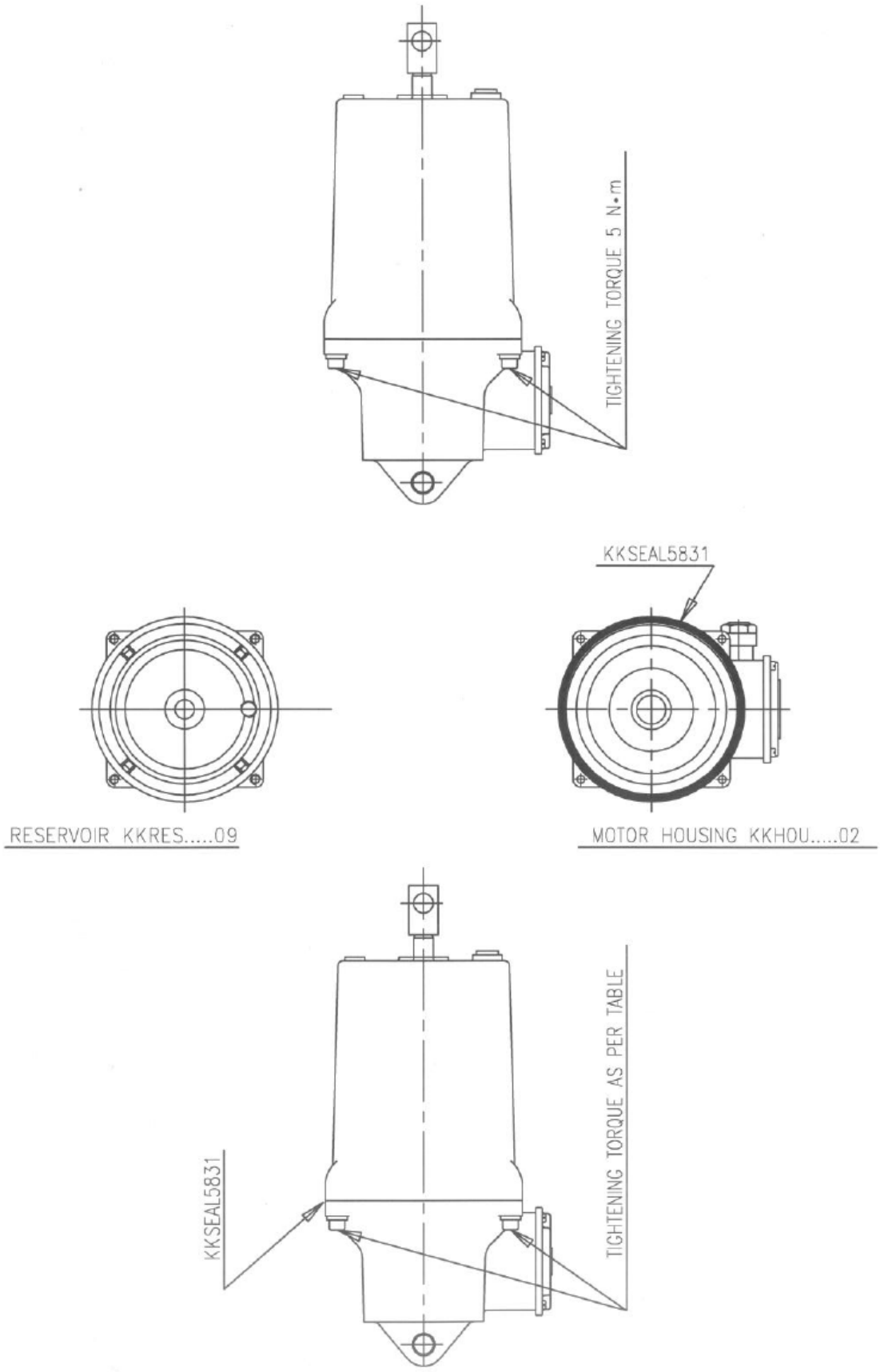


Picture 33
Thruster's shaft without push rod

⚠	**Never unscrew the push rod of the Thruster. If unscrewed, be sure to rescrew and fix the push rod of the Thruster. Risk of accident.**



Drawing 25
Instructions valid for models HYD.023/05, 030/05, 050/06, 080/06, 121/06(12), 201/06(12), 301/06(12)



Drawing 26
Instructions valid for models HYD.024/05, 031/05, 051/06, 081/06

05.01 – SPARE PARTS

For an adequate maintenance of the GALVI Shoe Brakes it is indispensable to have always the strategic Genuine GALVI Spare Parts as per following Table 32 :

Strategic Spare Part 1	Strategic Spare Part 2	Strategic Spare Part 3
nr. 4 brake Shoes RF2.XXX or RF4.XXX	nr. 1 Thruster HYD.XXX/XX	nr. 1 upper Tie rod RIP002XXX100
		

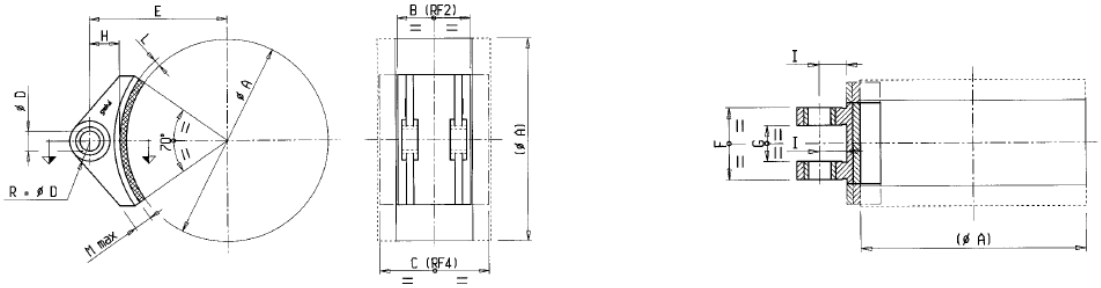
Table 32

The User who works without the strategic Spare Parts is exposed to risk of machine stop.

The User who uses not genuine Spare Parts, especially brake Shoes and their friction material, is exposed to risk of malfunctioning and, modifying substantially the Product, invalidates totally the warranty of the Product itself.

⚠	**Never use not genuine Spare Parts, especially brake Shoes. Loss of warranty. Risk of accident.**

All the brake Shoes type "RF2" and "RF4" are listed in the following Table 33 taken from pages 36 and 37 of the GALVI Shoe Brakes Catalogue :

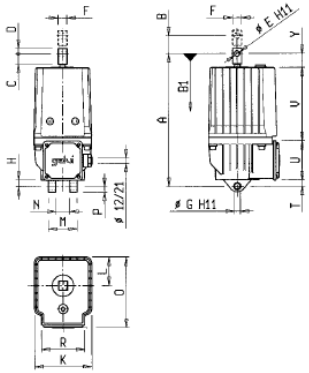


Ceppo freno tipo Brake Shoe type Sabots de frein type Bremsbacke Durchm. Typ		Ø A	B RF2	C [1] RF4	Ø D D10	E	F 0 - 0,2	G + 0,2 0	H	I	L	M max	Massa [2] Mass [2] Masse [2] Masse [2] [kg]	
CD	CL [1]												Ceppo DIN DIN Shoe Sabot DIN Backe DIN RF2	Ceppo largo [1] Extra-wide Shoe [1] Sabot large [1] Breite Backe [1] RF4
RF2.160[1]	RF4.160[1]	160	55	85	16	115	52	28	29	23	6	13	0,31	0,77
RF2.200	RF4.200[1]	200	70	105	20	140	65	35	32	24	8	17	0,60	0,76
RF2.250	RF4.250[1]	250	90	135	25	170	80	40	37	29	8	22	0,99	1,24
RF2.315	RF4.315[1]	315	110	165	30	212	100	50	44,5	34,5	10	25	1,83	2,34
RF2.400	RF4.400[1]	400	140	210	35	260	125	62	50	40	10	30	3,06	3,88
RF2.500	RF4.500[1]	500	180	270	40	320	160	80	58	46	12	33	5,30	6,90
RF2.630	RF4.630[1]	630	225	335	45	390	200	100	63	51	12	38	17,5	22,0
RF2.710	RF4.710[1]	710	255	380	50	440	224	112	70	56	15	40	24,5	33,5

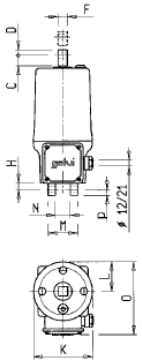
Table 33

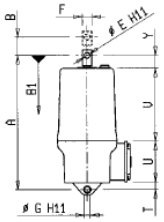
All the short stroke HYDRO GALVI Thrusters are listed in the following Table 34 taken from pages 30 and 31 of the GALVI Shoe Brakes Catalogue :

023-030-050-080

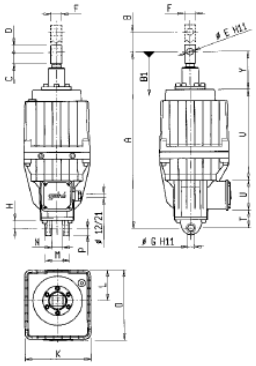


024-031-051-081





121-201-301



HYDRO tipo HYDRO type HYDRO type HYDRO Typ	Spinta a Lifting Force at Poussée à Druck bei + 20 °C [N]	Corsa Stroke Course Hub [mm]	Forza Molla Interna opzionale Optional Internal Spring Force Force Ressort Interne optionnel Kraft Opt. Innenfeder (IS) [N]	Potenza a Power at Puissance à Leistung bei + 20 °C [W]	Corrente a Current at Courant à Strom bei + 20 °C V. 400 - Hz 50 [A]	Numero max cicli orari con temperatura ambiente Max cycles per hour with ambient temperature of Nombre max cycles horaires avec température ambiante Max. Schaltzyklenanzahl bei Raumtemperatur + 50 °C [n°]	Max temperatura ambiente per servizio continuo Max ambient temperature for continuous operation Température ambiante max pour service continu Max Raumtemperatur für Dauerbetrieb [°C]	Massa (compreso olio) Mass (oil included) Masse (huile incluse) Masse (inkl. Öl) [kg]
HYD.023/05	220	50	140 - 235	160	0,40	2000	50	11
HYD.024/05	220	50	140 - 235	160	0,40	2000	50	10
HYD.030/05	300	50+5	230 - 300	195	0,49	2000	50	15
HYD.031/05	300	50+5	230 - 300	195	0,49	2000	50	13
HYD.050/06	500	60+5	375 - 550	210	0,58	2000	50	25
HYD.051/06	500	60+5	375 - 550	210	0,58	2000	50	18
HYD.080/06	800	60+5	570 - 820	320	0,76	2000	50	26
HYD.081/06	800	60+5	570 - 820	320	0,76	2000	50	19
HYD.121/06	1250	60+10	900 - 1290	320	0,95	2000	50	43
HYD.201/06	2000	60+10	1460 - 2010	450	1,08	2000	50	43
HYD.301/06	3000	60+10	2060 - 2920	560	1,30	1500	50	44

	HYDRO 023/05	HYDRO 024/05	HYDRO 030/05	HYDRO 031/05	HYDRO 050/06	HYDRO 051/06	HYDRO 080/06	HYDRO 081/06	HYDRO 121/06 201/06 301/06
A	286	286	370	370	435	435	450	450	645
B	50	50	50	50	60	60	60	60	60
B1	-	-	5	5	5	5	5	5	10
C	23	23	28,5	28,5	32,5	32,5	32,5	32,5	42
D	12	12	15	15	18	18	18	18	26
Ø E H11	12,05	12,05	16,05	16,05	20,05	20,05	20,05	20,05	25,05
F	20	20	25	25	30	30	30	30	40
Ø G H11	16,05	16,05	16,05	16,05	20,05	20,05	20,05	20,05	25,05
H	18	18	18	18	23	23	23	23	31
K	160	160	160	160	190	190	190	190	240
L	80	80	80	80	95	95	95	95	112
M	80	80	80	80	120	120	120	120	90
N	40	40	40	40	60	60	60	60	40
O	198	198	198	198	241	226	241	226	258
P	16	16	16	16	22	22	22	22	24
R	112	-	112	-	120	-	120	-	-
T	17	21	17	21	29	29	29	29	65
U	110	110	110	110	110	110	110	110	110
V	133,5	129,5	206	203	255	256	255	256	334
Y	25,5	25,5	37	36	41	40	56	55	136

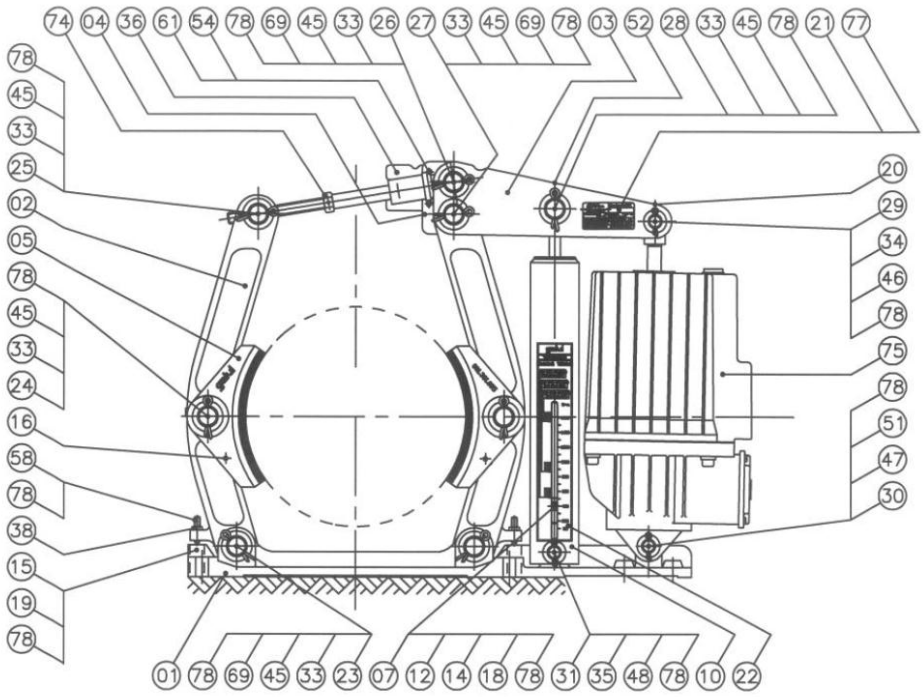
Table 34

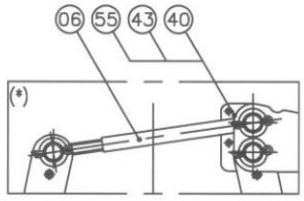
The Manufacturer suggests to use always and only HYDRO GALVI Thrusters.

The Manufacturer is not liable for eventual malfunctioning caused by the use of Thrusters which are not HYDRO GALVI Thrusters.

06.01 – BILL OF MATERIALS

The following is a numbered list of the main components of the GALVI Shoe Brakes.





(*) = VALID ONLY FOR "N" VERSION

POS.	CODE	ITEMS	Q.TY	POS.	CODE	ITEMS	Q.TY
01	BAS001XXX001	BASE	NR 1	31	PER001XXX031	PIN	NR 1
02	LEV001XXX002	MAIN LEVER	NR 2	33	ROS001XXX033	SPECIAL WASHER	NR 18
03	LEV001XXX003	UPPER LEVER	NR 2	34	ROS001XXX034	SPECIAL WASHER	NR 2
04	LEV002XXX004	UPPER LEVER NV	NR 1	35	ROS001XXX035	SPECIAL WASHER	NR 2
05	RFX.XXX	BRAKE SHOE	NR 2	36 **	FOR001XXX036	FORK	NR 1
06 *	TIR001XXX006	TIE ROD	NR 1	38	DAD5589MXX-6	NUT	NR 2
07	TIR001XXX007	TIE ROD	NR 1	40 *	DAD5593MXX-6	NUT	NR 1
10	CON001XXX010	SPRING FENDER	NR 1	43 *	MODXXXXXXXXX	DISC SPRING	NR 12
12	FON001XXX012	BOTTOM	NR 1	45	COF36UXXXXX	SPLIT PIN	NR 16
14	MOL017XXX014	MAIN SPRING	NR 1	46	COF36UXXXXX	SPLIT PIN	NR 2
15	MOL017XXX015	SPRING	NR 2	47	COF36UXXXXX	SPLIT PIN	NR 2
16	MOL0XXXXX016	HOLDER SPRING	NR 2	48	COF36UXXXXX	SPLIT PIN	NR 2
18	SPI6873XXXXX	ELASTIC PIN	NR 1	51	ROS001XXX033	SPECIAL WASHER	NR 4
19	DIS001XXX019	DISC	NR 2	52	SPI6873XXXXX	ELASTIC PIN	NR 1
20	ROSXXXXXX020	WASHER	NR X	54 **	ROS1751AXX	ELASTIC WASHER	NR 2
21	TAR001XXX021	SERIAL NUMBER PLATE	NR 1	55 *	SPI6873XXXXX	ELASTIC PIN	NR 1
22	TAR017XXX022	BRAKING TORQUE PLATE	NR 1	58	VIT25GXXXXXX	SCREW	NR 2
23	PER001XXX023	PIN	NR 2	61 **	VIT84GXXXXXX	SCREW	NR 2
24	PER001XXX024	PIN	NR 2	69	BOC.KUXXXXXX	SELF LUBRICATING BUSH	NR 8
25	PER001XXX025	PIN	NR 1	70	BOC.KUXXXXXX	SELF LUBRICATING BUSH	NR 2
26	PER001XXX026	PIN	NR 1	74 **	RIP002XXX100	AUTOMATIC WEAR ADJUSTING DEVICE	NR 1
27	PER001XXX027	PIN	NR 1	75	HYDXXXXXX	HYDRO GALVI THRUSTER	NR 1
28	PER001XXX028	PIN	NR 1	77	VARBOS.5242C	BOSTIK	–
29	PER001XXX029	PIN	NR 1	78	VARGRA.BEA2	GREASE	–
30	PER0XXXXX030	PIN	NR 1		–	–	–

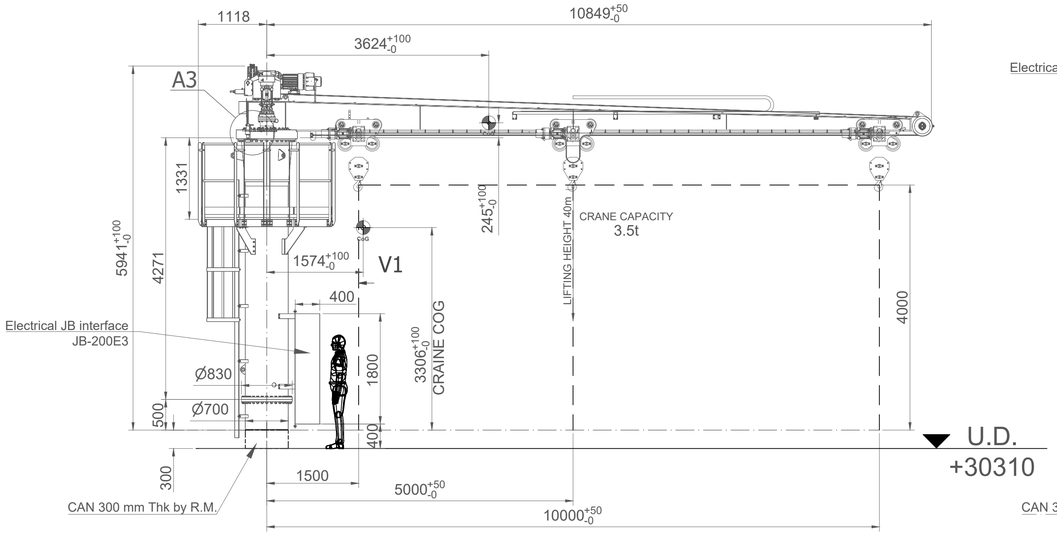
* = VALID ONLY "N" VERSION

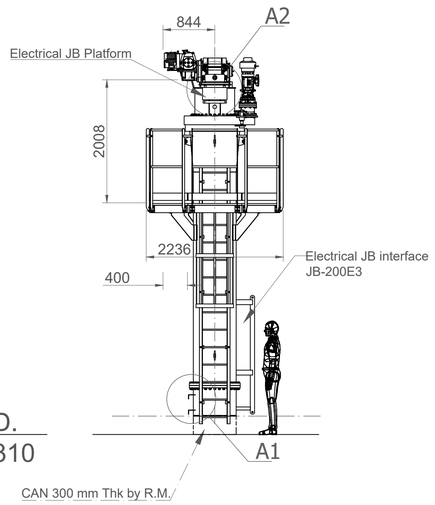
** = VALIDO ONLY FOR "NV" VERSION

N.B. The letters "X" which appears in the code numbers replaces any other letter or number mentioned only in the specific lists

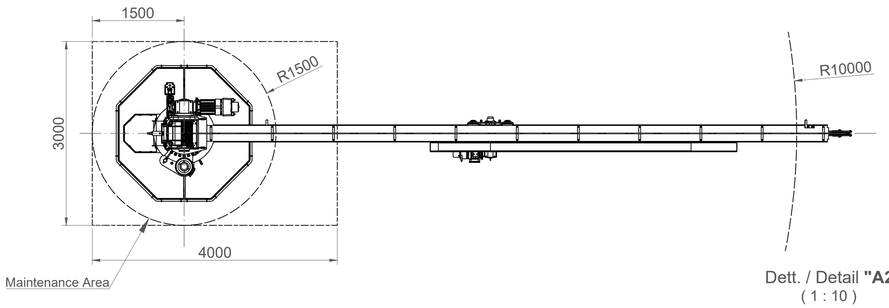
Drawing 27
Model shown NV.315.HYD.080/06.CD.42.PS.AU.ZN

DRAWING NO. 1724001010-MAC-DA-00009 REV. 3

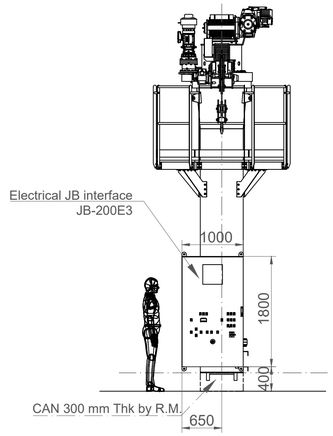




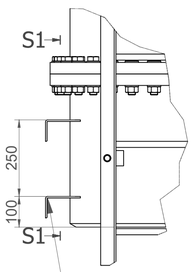
Vista da / View from **"V1"**
(1 : 50)



Dett. / Detail **"A2"**
(1 : 10)

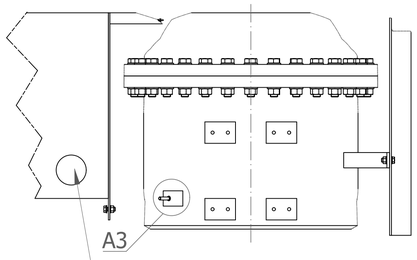


Dett. / Detail **"A1"**
(1 : 10)



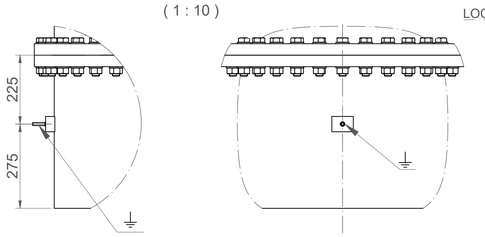
WELDED "L" PROFILE
For supports cable ladder

Sez. / Sec. **"S1-S1"**
(1 : 10)

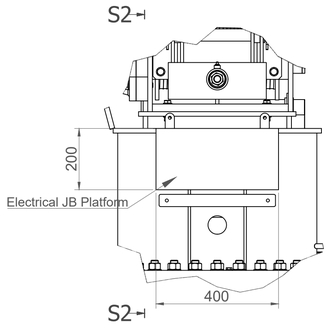


EL. CABLE IN
For cable by R.M.

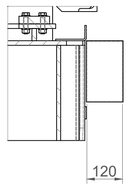
Dett. / Detail **"A3"**
(1 : 10)



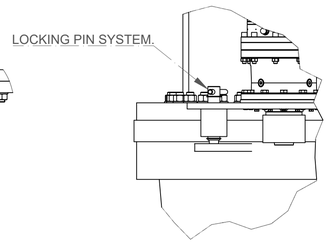
EARTING POINT
Threaded stud, ∅16mm, L.30mm, material S355J2+N

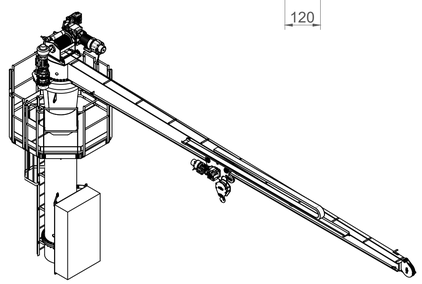


Sez. / Sec. **"S2-S2"**
(1 : 10)



Dett. / Detail **"A3"**
(1 : 10)





3	Travelling Trolley Assembly	S 355 J2+N UNI EN 10025	1	256,01 kg
2	Boom Assembly	S 355 J2+N UNI EN 10025	1	2542,26 kg
1	Fixed Column Ass.	S 355 J2+N UNI EN 10025	1	1241 kg
EL.	Description Eng	MATERIAL	Q.TY	WEIGHT

Material :	***Painting Color :***
S355 J2+N	**RAL Code: 7038.**

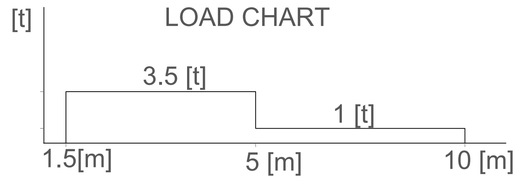
Load at deck interface

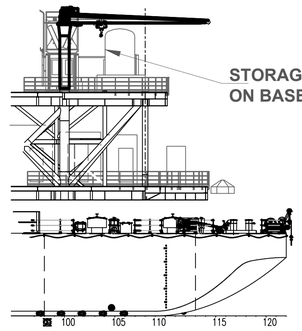
MAX FORCE ON DECK	
F_{Vmax}	-120[kN]
F_{Rmax}	15[kN]
M_{Zmax}	±45[kNm]
M_{Rmax}	520[kNm]

Forces on the table are calculated with 3.5[t]x5[m] outreach.
Forces to be applied at deck level in center of adapter.
DAF= 1.7 (Outboard Lift in Offshore)
Contingency Factor=1.05 (included)
F_{Vmax}: vertical load on deck.
F_{Rmax}: max radial load on deck in any direction (plane x-y)
M_{Zmax}: max Torsion moment in z direction.
M_{Rmax}: max tilting moment (perp. to the boom line)

Test load:

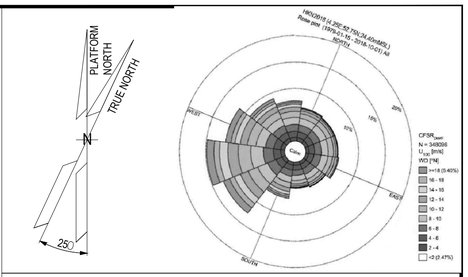
5.6[t]x5[m] - 1.6[t]x10[m]
in according to DNV-ST-0378 rules





STORAGE POSITION
ON BASE LOAD POWER HUB

Description	Q.ty	Notes
CRANE TYPE		PLATFORM CRANE OFF-SHORE
LIFTING CAPACITY	3.5[t] 1.5-5[m] 1[t] 1.5-10[m]	STEEL ROPE HOIST WINCH
HOOK STROKE	40[m]	Electric driven by gearbox Brake on the El. Motor
LIFTING SPEED	3.75/15[m/min]	Variable speed motor
Hoist winch stroke (radial movement)	1.5-10[m]	Eletric driven rack - pinion system
RADIAL SPEED	2-8[m/min]	
PRELIMINARY WEIGHT	6000[kg]	
ROTATIONAL MOVEMENT	0-180°	By electric Motor Geqarbox Pinion on slewing bearing
ROTATIONAL SPEED	0.25/0.5[rpm]	Variable speed motor
WORKING TEMPERATURE	-9/45[°C]	
HAZAEDOUS AREA:		SAFE AREA
PERSONEL LIFT		NO
POWER SUPPLY	400[v]/3Ph/50[hZ] (3Ph+N)	
TOTAL POWER ABS.	20[kW]	



NOTES

LEGEND

HOLDS

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e-mail: info@remazel.com / website: www.remazel.com

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
3	20/09/24	R.S.	M.P.	A.T.	ACCEPTED FOR CONSTRUCTION
2	21/08/24	R.S.	M.P.	A.T.	ACCEPTED FOR CONSTRUCTION
1	03/07/24	R.S.	M.P.	A.T.	ACCEPTED FOR CONSTRUCTION
0	18/06/24	R.S.	M.P.	A.T.	ISSUE FOR REVIEW (IFR)

CROSSWIND

ROSETTI MARINO

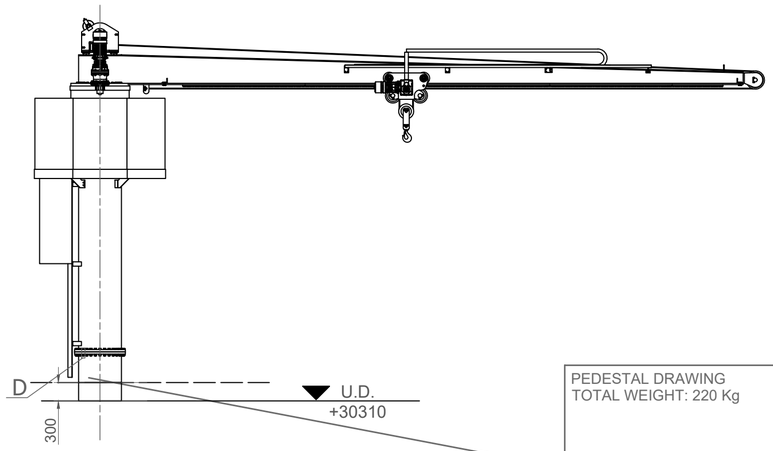
TITLE : 123A90A – Base Load Power Hub Platform
CRANE GENERAL ARRANGEMENT DRAWINGS
DAVIT CRANE

CONTRACT NO./TITLE	CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK	SCALE	1:50
DRAWN R.S.	CHECKED M.P.	APPROVED A.T.	DATE 18/06/24
A1	DRAWING NO. 1724001010-MAC-DA-00009	SHEET 001	REV. 3

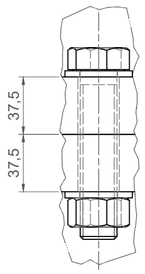
File Name : 1724001010-MAC-DA-00009

DRAWING NO. 1724001010-MAC-DA-00010

REV. 1

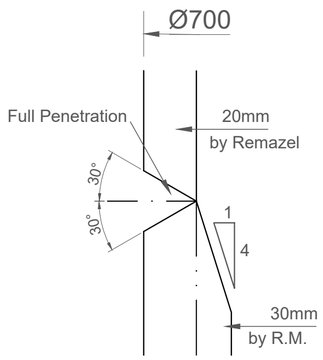


Dett. / Detail **"D"**
(1 : 2)

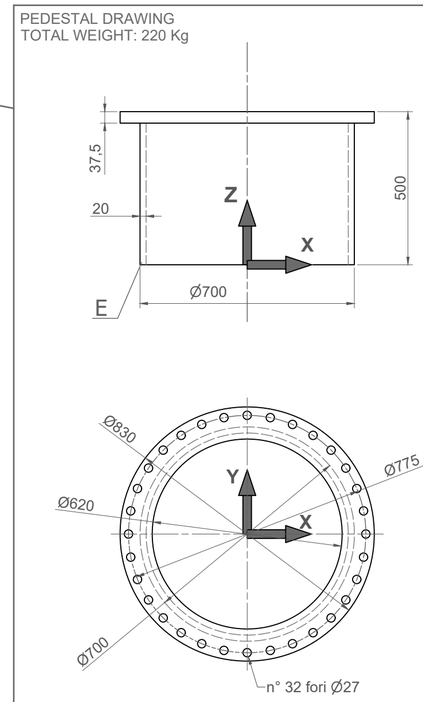


-n° 32 screws M24 - class 10.9

Dett. / Detail **"E"**



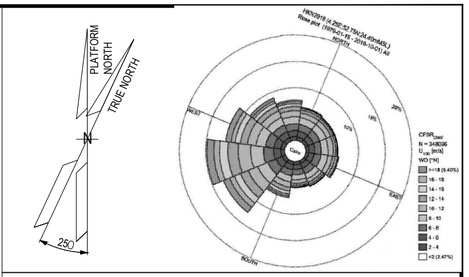
PEDESTAL DRAWING
TOTAL WEIGHT: 220 Kg



Load at deck interface

MAX FORCE ON DECK	
F_{Vmax}	-120[kN]
F_{Rmax}	15[kN]
M_{Zmax}	±45[kNm]
M_{Rmax}	520[kNm]

Forces on the table are calculated with 3.5[t]x5[m] outreach.
Forces to be applied at deck level in center of adapter.
DAF= 1.7 (Outboard Lift in Offshore)
Contingency Factor=1.05 (included)
F_{Vmax}: vertical load on deck.
F_{Rmax}: max radial load on deck in any direction (plane x-y)
M_{Zmax}: max Torsion moment in z direction.
M_{Rmax}: max tilting moment (perp. to the boom line)



NOTES

LEGEND

HOLDS

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e-mail : info@remazel.com / website : www.remazel.com

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
1	03/07/24	R.S.	M.P.	A.T.	ACCEPTED FOR CONSTRUCTION
0	18/06/24	R.S.	M.P.	A.T.	ISSUE FOR REVIEW (IFR)

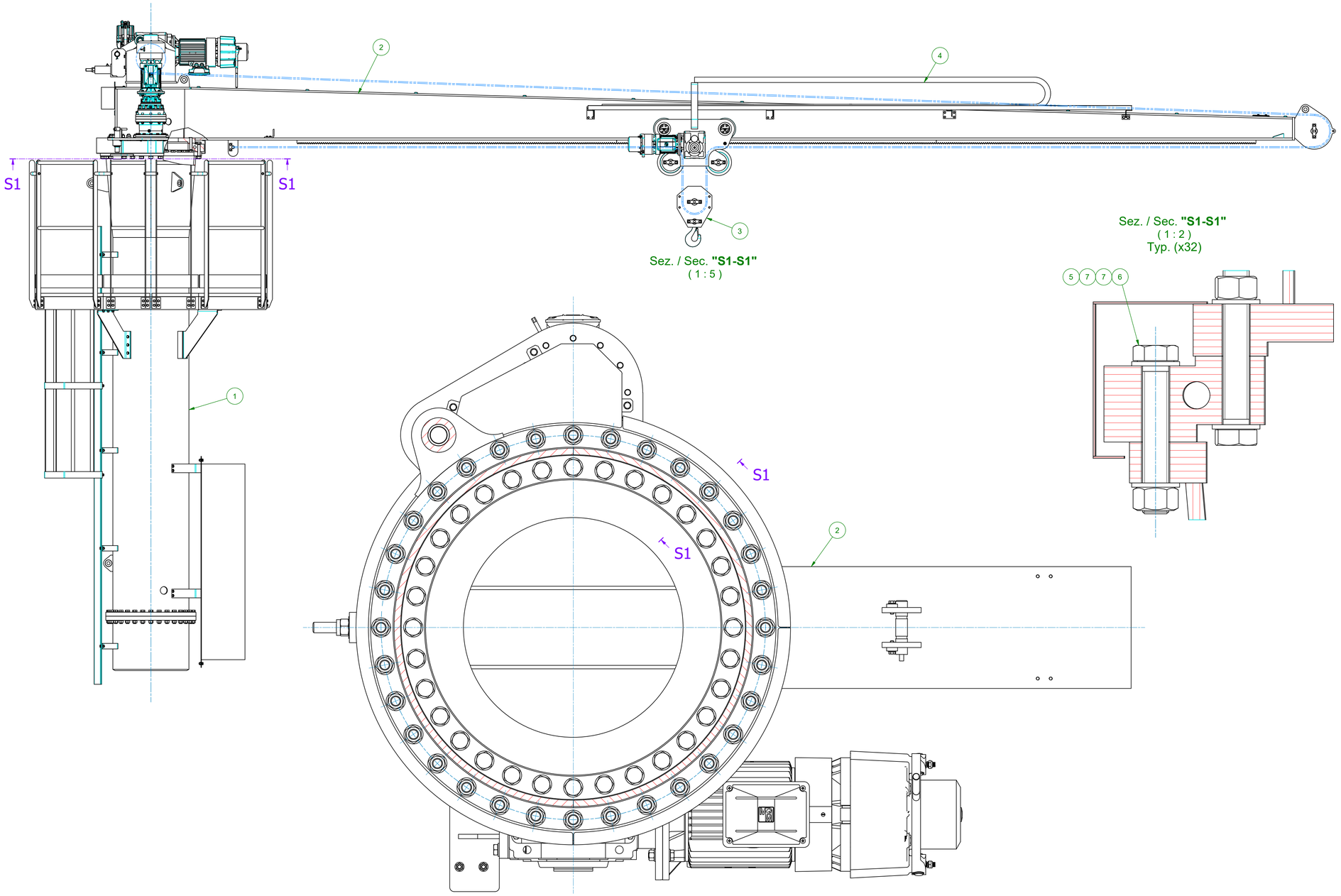
CROSSWIND

ROSETTI MARINO

TITLE : 123A90A – Base Load Power Hub Platform
PEDESTAL ADAPTOR CRANE GENERAL ARRANGEMENT DRAWINGS
DAVIT CRANE

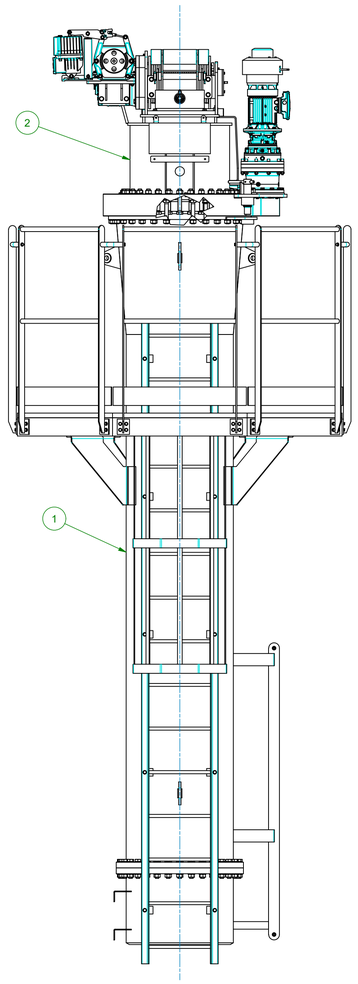
CONTRACT NO./TITLE	CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK		SCALE 1:50
DRAWN R.S.	CHECKED M.P.	APPROVED A.T.	DATE 18/06/24
A1	DRAWING NO. 1724001010-MAC-DA-00010	SHEET 001	REV. 1

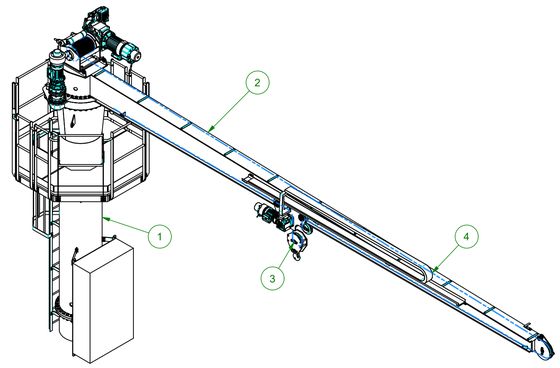
File Name : 1724001010-MAC-DA-00010

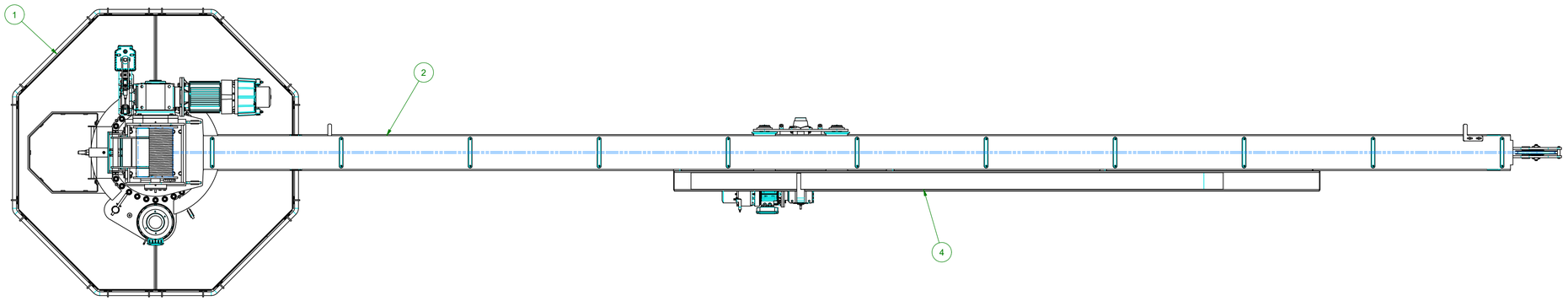


Sez. / Sec. **"S1-S1"**
(1 : 5)

Sez. / Sec. **"S1-S1"**
(1 : 2)
Typ. (x32)







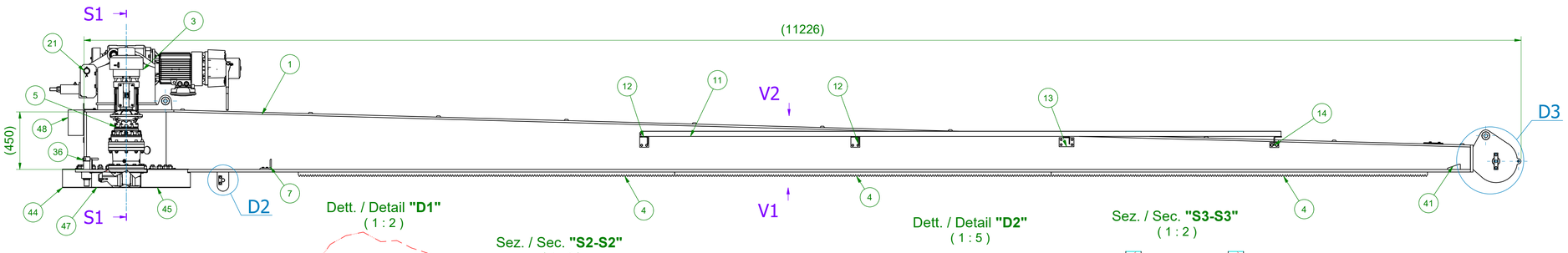
EL.	PART NUMBER	DESCRIPTION ENG	Q.TY	WEIGHT
7	004-0023-C0523	Plain washer	64	0 kg
6	004-0175-C0215	Hex head screw fully threaded	32	0,6 kg
5	DA CODIFICARE	Hexagonal nut	32	0,1 kg
4	R-000347885	Cable Tray	1	0 kg
1	C09-0001-A0006	Fixed Column Ass.	1	2722,9 kg
3	C09-0001-A0005	Travelling Trolley Assembly	1	298,5 kg
2	C09-0001-A0003	Boom Assembly	1	2567,6 kg

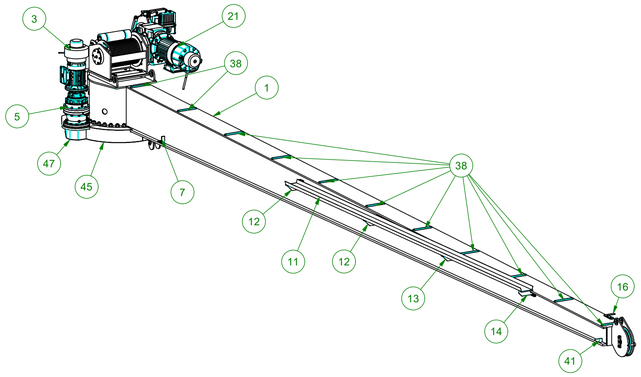
REV	DATE	DESCRIPTION	DRAFTMAN	DESIGNER	CALCULATION ENG.	P.E.
A	01/10/2024	Prima emissione / First issued	riccardo.sobani	Sobani R.	De Fazio F.	–

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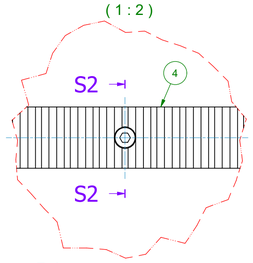
Project / Equipment : **C09-0001**
Weight : N/A
Title : Assieme Meccanico / Mechanical Assembly
Scale : 1 : 50
Sheet : 2 of 2
A1
Drawing State: **Work in Progress** / ***FOR CONSTRUCTION***
Q.C.L. : C3
Drawing N° : C09-0001-A0002
Revision : A

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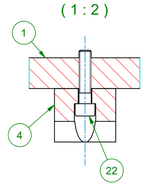




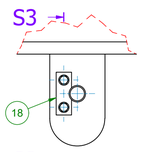
Dett. / Detail **"D1"**
(1 : 2)



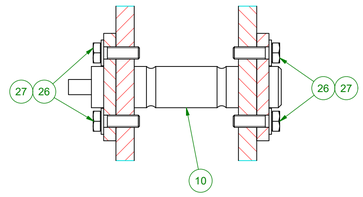
Sez. / Sec. **"S2-S2"**
(1 : 2)

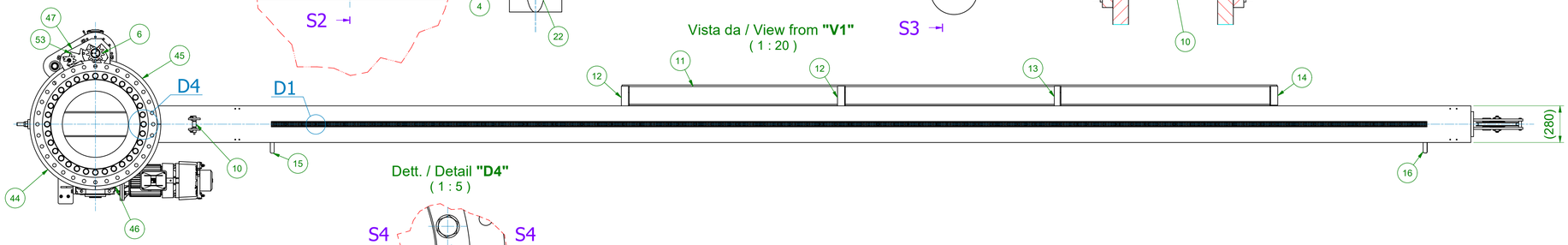


Dett. / Detail **"D2"**
(1 : 5)

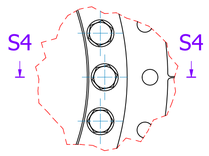


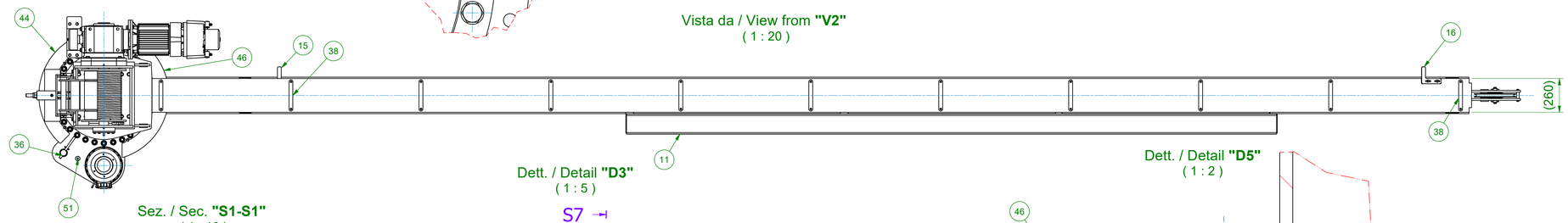
Sez. / Sec. **"S3-S3"**
(1 : 2)



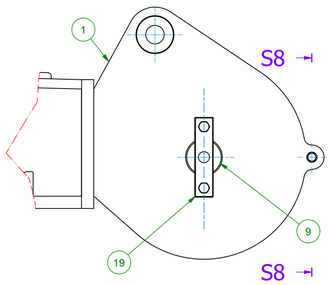


Dett. / Detail **"D4"**
(1 : 5)

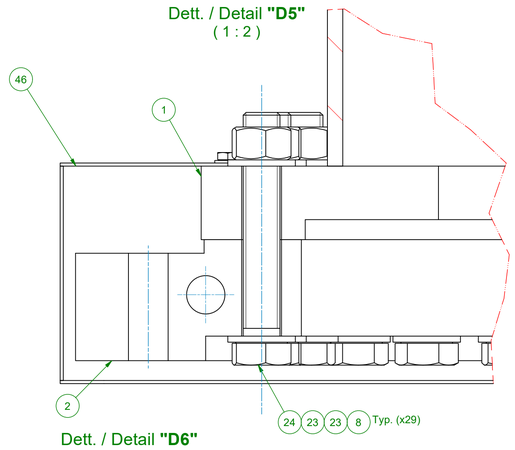




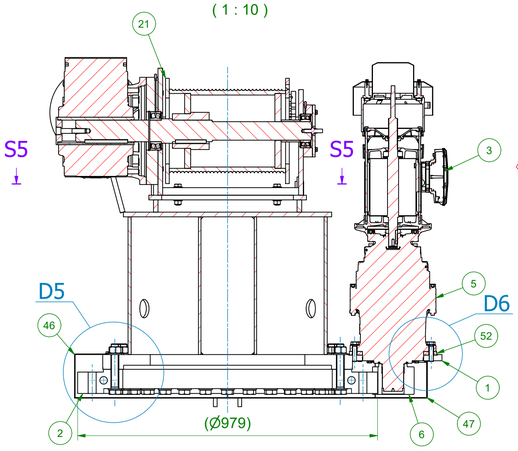
Dett. / Detail **"D3"**
(1 : 5)



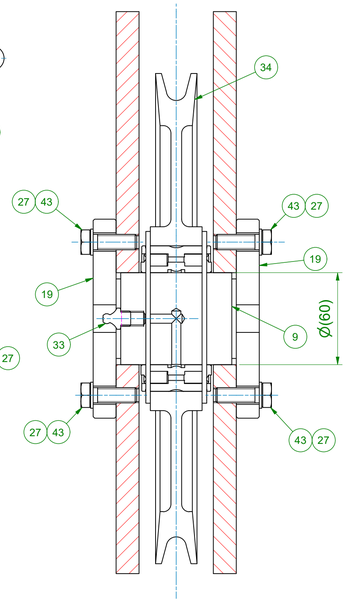
Dett. / Detail **"D5"**
(1 : 2)



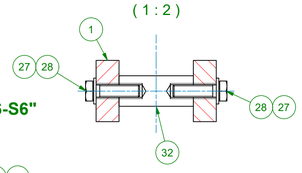
Sez. / Sec. **"S1-S1"**
(1 : 10)



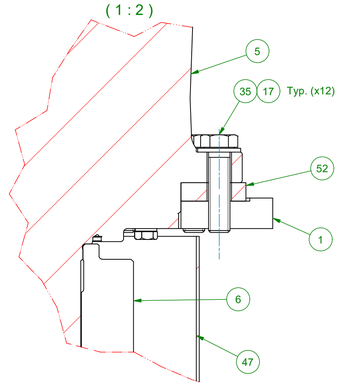
Sez. / Sec. **"S7-S7"**
(1 : 2)



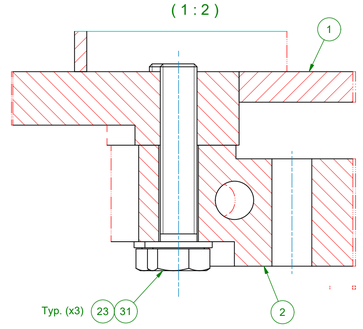
Sez. / Sec. **"S8-S8"**
(1 : 2)



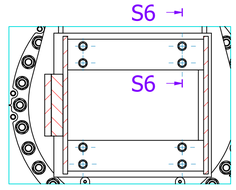
Dett. / Detail **"D6"**
(1 : 2)



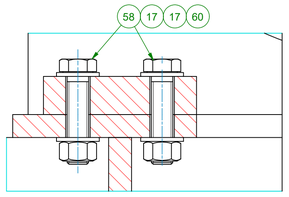
Sez. / Sec. **"S4-S4"**
(1 : 2)



Sez. / Sec. **"S5-S5"**
(1 : 10)



Sez. / Sec. **"S6-S6"**
(1 : 2)
Typ. (x4)



60	004-0147-C0021	Hexagonal nut	8	0 kg
59	004-0147-C0002	Hexagonal nut	4	0 kg
58	004-0149-C0138	Hex head screw fully threaded	8	0,1 kg
57	004-0011-C0040	Hex head screw fully threaded	3	0 kg
56	004-0011-C0012	Hex head screw fully threaded	11	0 kg
55	004-0021-C0007	Hexagonal nut	1	0 kg
54	004-0023-C0598	Plain washer	1	0 kg
53	C09-0001-P0089	Rotation Slewing encoder pinion M9 Z10	1	0,5 kg
52	C09-0001-P0086	Rotation motor centering disc	1	2,8 kg
51	C09-0001-P0083	Rotation Encoder Shaft	1	0,4 kg
50	006-0005-C0283	Flanged Cylindrical Bushing	1	0 kg
49	C09-0001-P0081	Fix El. Jb Platform	2	0,2 kg
48	C09-0001-P0035	El. Box on Platform	1	4,7 kg
47	C09-0001-P0073	Cover Gearbox 4	1	2,2 kg
46	C09-0001-P0072	Cover Gearbox 3	1	3,1 kg
45	C09-0001-P0039	Cover Bearing 2	1	2,5 kg
44	C09-0001-P0031	Cover Bearing	1	5,3 kg
43	004-0011-C0001	Hex head screw fully threaded	4	0 kg
42	004-0012-C0015	Hex socket head cap screw	2	0 kg
41	C09-0001-P0070	Wheel Block	2	0,7 kg
40	004-0012-C0006	Hex socket cilindrical head screw	2	0 kg
39	004-0043-C0006	Hex socket cilindrical head screw	22	0 kg
38	C09-0001-P0069	Rope protection	11	0,1 kg
37	006-0005-C0104	Cylindrical Bushing	2	0,1 kg
36	C09-0001-A0014	Locking pin assembly	1	3,6 kg
35	004-0175-C0120	Hex head screw fully threaded	12	0,1 kg
34	C09-0001-A0013	Pulley Assembly Øc285 -rope Ø11	1	8,6 kg
33	004-0035-C0029	Greaser	1	0 kg
32	C09-0001-P0065	Boom Anti-Skid	1	0,1 kg
31	004-0175-C0213	Hex head screw fully threaded	3	0,6 kg
30	004-0023-C0498	Plain washer	8	0 kg
29	004-0011-C0060	Hex head screw fully threaded	2	0 kg
28	004-0011-C0046	Hex head screw fully threaded	18	0 kg
27	004-0023-C0049	Plain washer	44	0 kg
26	004-0011-C0013	Hex head screw fully threaded	8	0 kg
25	004-0023-C0083	Plain washer	2	0 kg
24	004-0175-C0216	Hex head screw fully threaded	29	0,7 kg
23	004-0023-C0523	Plain washer	61	0 kg
22	004-0012-C0048	Hex socket head cap screw	39	0 kg
21	C09-0001-A0004	Winch Assembly	1	540,5 kg
20	004-0149-C0008	Hex head screw fully threaded	4	0,1 kg
19	C09-0001-P0033	Anti-rotation plate	2	0,4 kg
18	C09-0001-P0032	Anti-rotation plate to load cell	2	0,1 kg
17	004-0023-C0630	Plain washer	28	0 kg
16	C09-0001-P0027	Fixed buffer for limiter	1	0,2 kg
15	C09-0001-P0026	Fixed buffer for limiter	1	0,2 kg
14	C09-0001-P0025	Bracket tray 3	1	1 kg
13	C09-0001-P0024	Bracket tray 2	1	1,3 kg
12	C09-0001-P0023	Bracket tray 1	2	1,5 kg
11	C09-0001-P0022		1	12,7 kg
10	C09-0001-P0021	HOISTING LOAD CELL	1	0,6 kg
9	C09-0001-P0014	Pulley Axis Ø60	1	1,8 kg
8	DA CODIFICARE	Hexagonal nut	29	0,1 kg
7	C09-0001-P0020	Trolley Wheel Retainer Plate	2	0,4 kg
6	R-000347882	SLEWING PINION M10 Z11	1	4,8 kg
5	002-0027-C1431	Gearbox for rotation	1	134,3 kg
4	C09-0001-P0009	Rack M6 40x35 L.2940	3	26,2 kg
3	007-0006-C1220	El. Motor for Rotation MGM BAHK2 100 LB4 Enhanced Power (E.P.)	1	36 kg
2	006-0006-C0123	Ball bearing with internal teeth	1	176,5 kg
1	C09-0001-P0004	Boom Carpentry	1	1494,5 kg
EL.	PART NUMBER	DESCRIPTION ENG	Q.TY	WEIGHT

REV	DATE	DESCRIPTION				
A	30/09/2024	Prima emissione / First issued	riccardo.sobani	Sobani R.	De Fazio F.	–
			DRAFTMAN	DESIGNER	CALCULATION ENG.	P.E.

REMAZEL ENGINEERING
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Phone : +39-035-68.44.14 - Fax : +39-035-68.78.23
e-mail : info@remazel.com / website : www.remazel.com

Project / Equipment :
C09-0001

Weight :
2567,6 kg

Title :
Assieme Braccio
Boom Assembly

Scale : 1 : 33,3333

Sheet 4 of 6

A1

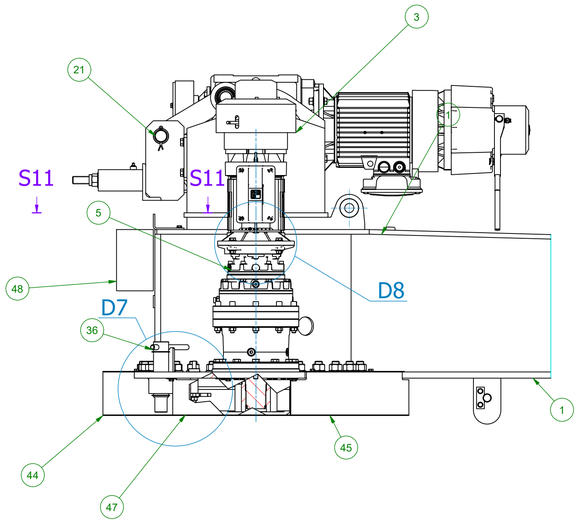
Drawing State: **Work in Progress** / ***FOR CONSTRUCTION***

Q.C.L. : C3

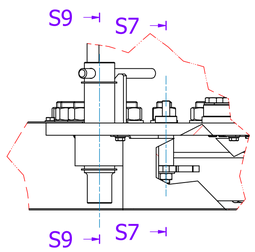
Drawing N° :
C09-0001-A0003

Revision :
A

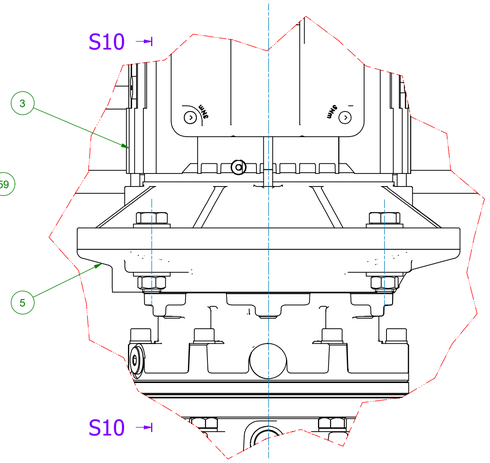
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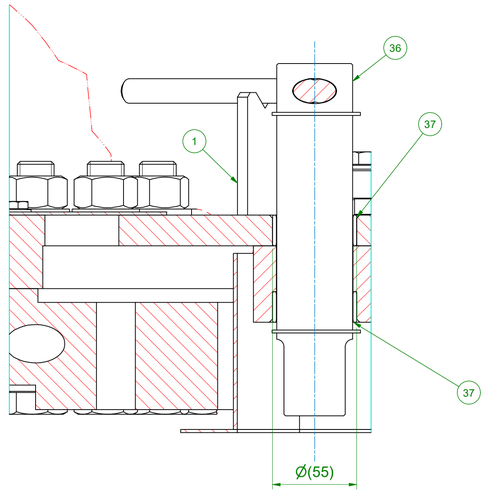
Dett. / Detail **"D7"**
(1 : 5)



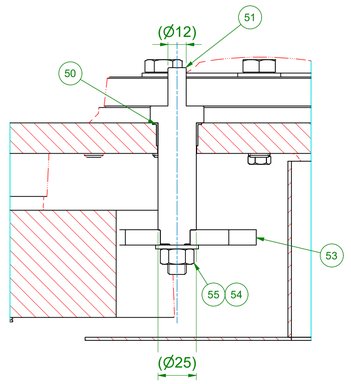
Dett. / Detail **"D8"**
(1 : 2)

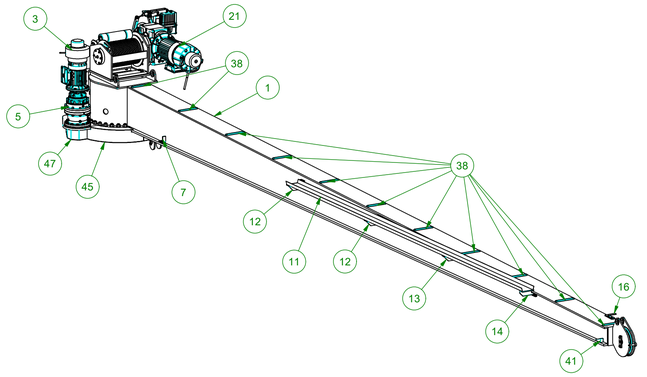


Sez. / Sec. **"S9-S9"**
(1 : 2)

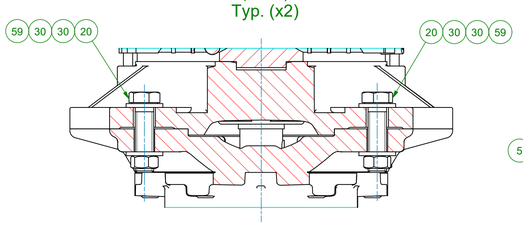


Sez. / Sec. **"S7-S7"**
(1 : 2)

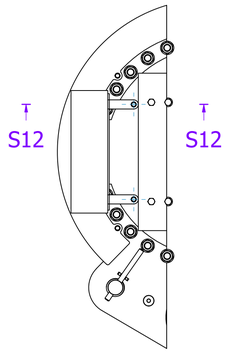




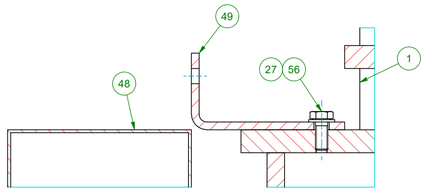
Sez. / Sec. **"S10-S10"**
(1 : 2)
Typ. (x2)

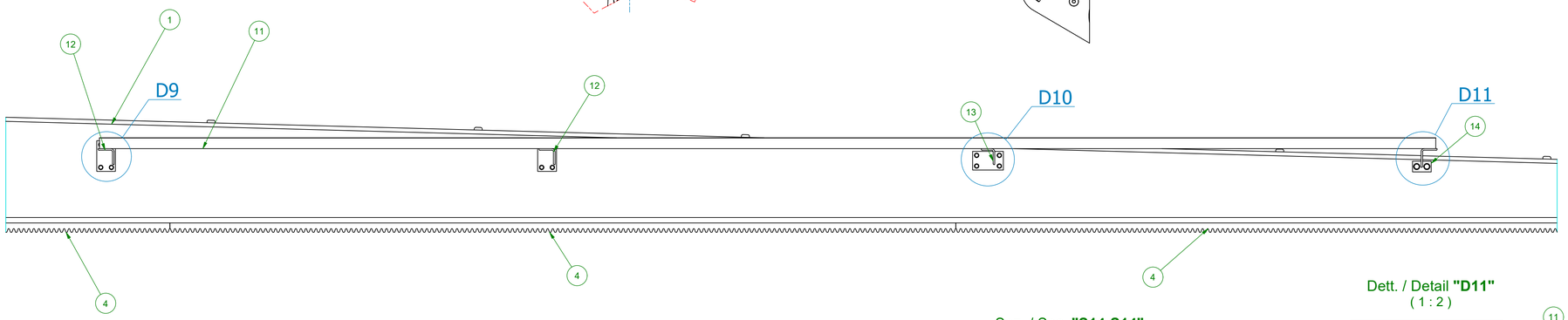


Sez. / Sec. **"S11-S11"**
(1 : 10)

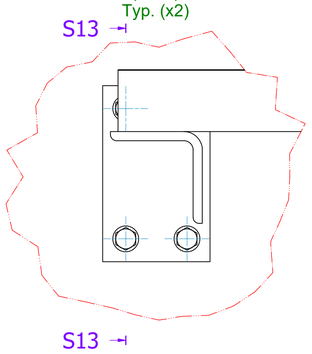


Sez. / Sec. **"S12-S12"**
(1 : 2)

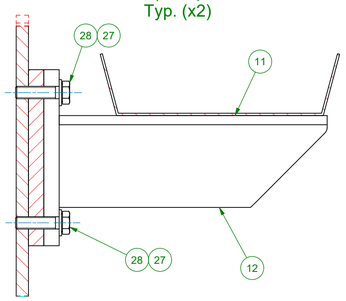




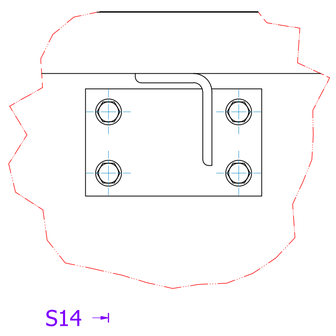
Dett. / Detail **"D9"**
(1 : 2)
Typ. (x2)



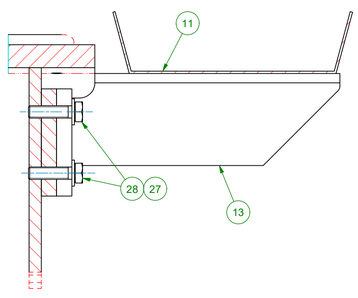
Sez. / Sec. **"S13-S13"**
(1 : 2)
Typ. (x2)



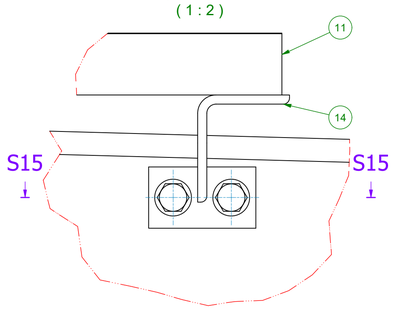
Dett. / Detail **"D10"**
(1 : 2)



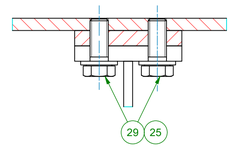
Sez. / Sec. **"S14-S14"**
(1 : 2)
Typ. (x2)



Dett. / Detail **"D11"**
(1 : 2)



Sez. / Sec. **"S15-S15"**
(1 : 2)



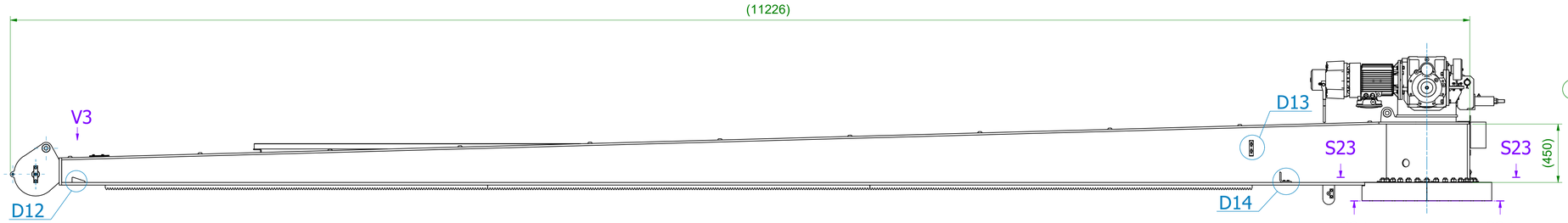
60	004-0147-C0021	Hexagonal nut	8	0 kg
59	004-0147-C0002	Hexagonal nut	4	0 kg
58	004-0149-C0138	Hex head screw fully threaded	8	0,1 kg
57	004-0011-C0040	Hex head screw fully threaded	3	0 kg
56	004-0011-C0012	Hex head screw fully threaded	11	0 kg
55	004-0021-C0007	Hexagonal nut	1	0 kg
54	004-0023-C0598	Plain washer	1	0 kg
53	C09-0001-P0089	Rotation Slewing encoder pinion M9 Z10	1	0,5 kg
52	C09-0001-P0086	Rotation motor centering disc	1	2,8 kg
51	C09-0001-P0083	Rotation Encoder Shaft	1	0,4 kg
50	006-0005-C0283	Flanged Cylindrical Bushing	1	0 kg
49	C09-0001-P0081	Fix El. Jb Platform	2	0,2 kg
48	C09-0001-P0035	El. Box on Platform	1	4,7 kg
47	C09-0001-P0073	Cover Gearbox 4	1	2,2 kg
46	C09-0001-P0072	Cover Gearbox 3	1	3,1 kg
45	C09-0001-P0039	Cover Bearing 2	1	2,5 kg
44	C09-0001-P0031	Cover Bearing	1	5,3 kg
43	004-0011-C0001	Hex head screw fully threaded	4	0 kg
42	004-0012-C0015	Hex socket head cap screw	2	0 kg
41	C09-0001-P0070	Wheel Block	2	0,7 kg
40	004-0012-C0006	Hex socket cilindrical head screw	2	0 kg
39	004-0043-C0006	Hex socket cilindrical head screw	22	0 kg
38	C09-0001-P0069	Rope protection	11	0,1 kg
37	006-0005-C0104	Cylindrical Bushing	2	0,1 kg
36	C09-0001-A0014	Locking pin assembly	1	3,6 kg
35	004-0175-C0120	Hex head screw fully threaded	12	0,1 kg
34	C09-0001-A0013	Pulley Assembly Øc285 -rope Ø11	1	8,6 kg
33	004-0035-C0029	Greaser	1	0 kg
32	C09-0001-P0065	Boom Anti-Skid	1	0,1 kg
31	004-0175-C0213	Hex head screw fully threaded	3	0,6 kg
30	004-0023-C0488	Plain washer	8	0 kg
29	004-0011-C0060	Hex head screw fully threaded	2	0 kg
28	004-0011-C0046	Hex head screw fully threaded	18	0 kg
27	004-0023-C0049	Plain washer	44	0 kg
26	004-0011-C0013	Hex head screw fully threaded	8	0 kg
25	004-0023-C0083	Plain washer	2	0 kg
24	004-0175-C0216	Hex head screw fully threaded	29	0,7 kg
23	004-0023-C0523	Plain washer	61	0 kg
22	004-0012-C0048	Hex socket head cap screw	39	0 kg
21	C09-0001-A0004	Winch Assembly	1	540,5 kg
20	004-0149-C0008	Hex head screw fully threaded	4	0,1 kg
19	C09-0001-P0033	Anti-rotation plate	2	0,4 kg
18	C09-0001-P0032	Anti-rotation plate to load cell	2	0,1 kg
17	004-0023-C0630	Plain washer	28	0 kg
16	C09-0001-P0027	Fixed buffer for limiter	1	0,2 kg
15	C09-0001-P0026	Fixed buffer for limiter	1	0,2 kg
14	C09-0001-P0025	Bracket tray 3	1	1 kg
13	C09-0001-P0024	Bracket tray 2	1	1,3 kg
12	C09-0001-P0023	Bracket tray 1	2	1,5 kg
11	C09-0001-P0022		1	12,7 kg
10	C09-0001-P0021	HOISTING LOAD CELL	1	0,6 kg
9	C09-0001-P0014	Pulley Axis Ø60	1	1,8 kg
8	DA CODIFICARE	Hexagonal nut	29	0,1 kg
7	C09-0001-P0020	Trolley Wheel Retainer Plate	2	0,4 kg
6	R-000347882	SLEWING PINION M10 Z11	1	4,8 kg
5	002-0027-C1431	Gearbox for rotation	1	134,3 kg
4	C09-0001-P0009	Rack M6 40x35 L.2940	3	26,2 kg
3	007-0006-C1220	El. Motor for Rotation MGM BAHK2 100 LB4 Enhanced Power (E.P.)	1	36 kg
2	006-0006-C0123	Ball bearing with internal teeth	1	176,5 kg
1	C09-0001-P0004	Boom Carpentry	1	1494,5 kg
EL.	PART NUMBER	DESCRIPTION ENG	Q.TY	WEIGHT

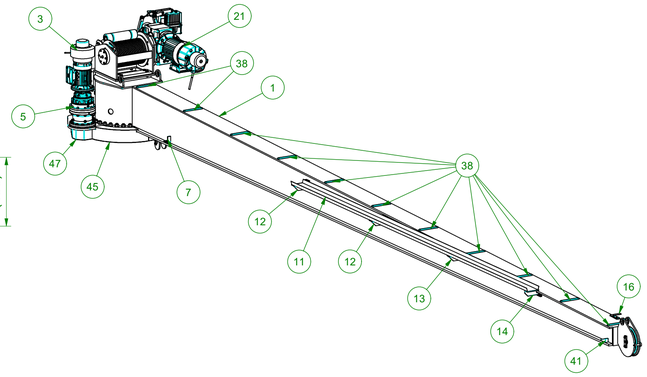
REV	DATE	DESCRIPTION	DRAFTMAN	DESIGNER	CALCULATION ENG.	P.E.
A	30/09/2024	Prima emissione / First issued	riccardo.sobani	Sobani R.	De Fazio F.	–

REMAZEL ENGINEERING
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Phone : +39-035-68.44.14 - Fax : +39-035-68.78.23
e-mail : info@remazel.com / website : www.remazel.com

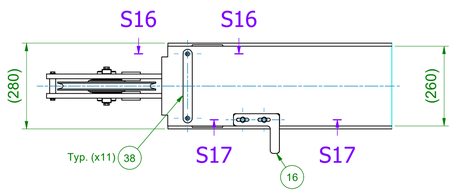
Project / Equipment : **C09-0001**
Weight : 2567,6 kg
Title : Assieme Braccio Boom Assembly
Scale : 1 : 33,3333
Sheet : 5 of 6
A1
Drawing State: **Work in Progress** / **FOR CONSTRUCTION**
Q.C.L. : C3
Drawing N° : C09-0001-A0003
Revision : A

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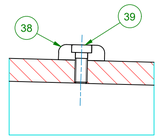




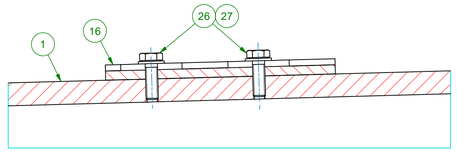
Vista da / View from **"V3"**
(1 : 10)



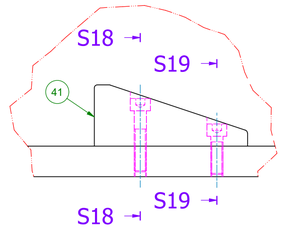
Sez. / Sec. **"S16-S16"**
(1 : 2)
Typ. (x2)



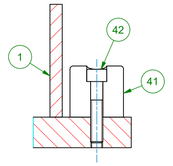
Sez. / Sec. **"S17-S17"**
(1 : 2)



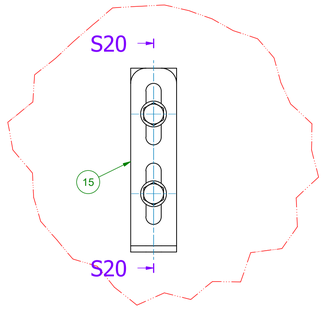
Dett. / Detail **"D12"**
(1 : 2)
Typ. (x2)



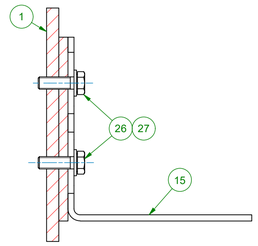
Sez. / Sec. **"S18-S18"**
(1 : 2)



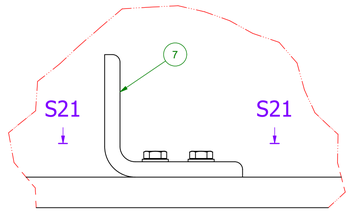
Dett. / Detail **"D13"**
(1 : 2)



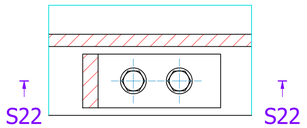
Sez. / Sec. **"S20-S20"**
(1 : 2)



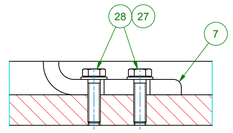
Dett. / Detail **"D14"**
(1 : 2)
Typ. (x2)



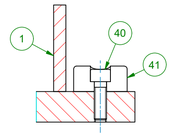
Sez. / Sec. **"S21-S21"**
(1 : 2)



Sez. / Sec. **"S22-S22"**
(1 : 2)

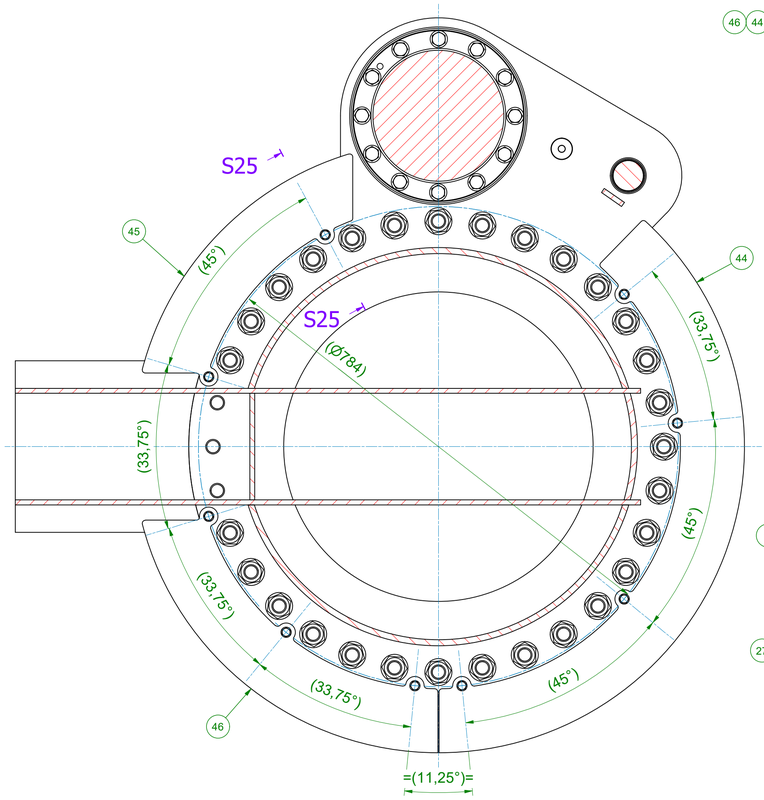


Sez. / Sec. **"S19-S19"**
(1 : 2)

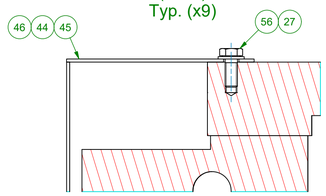


60	004-0147-C0021	Hexagonal nut	8	0 kg
59	004-0147-C0002	Hexagonal nut	4	0 kg
58	004-0149-C0138	Hex head screw fully threaded	8	0,1 kg
57	004-0011-C0040	Hex head screw fully threaded	3	0 kg
56	004-0011-C0012	Hex head screw fully threaded	11	0 kg
55	004-0021-C0007	Hexagonal nut	1	0 kg
54	004-0023-C0598	Plain washer	1	0 kg
53	C09-0001-P0089	Rotation Slewing encoder pinion M9 Z10	1	0,5 kg
52	C09-0001-P0086	Rotation motor centering disc	1	2,8 kg
51	C09-0001-P0083	Rotation Encoder Shaft	1	0,4 kg
50	006-0005-C0283	Flanged Cylindrical Bushing	1	0 kg
49	C09-0001-P0081	Fix El. Jb Platform	2	0,2 kg
48	C09-0001-P0035	El. Box on Platform	1	4,7 kg
47	C09-0001-P0073	Cover Gearbox 4	1	2,2 kg
46	C09-0001-P0072	Cover Gearbox 3	1	3,1 kg
45	C09-0001-P0039	Cover Bearing 2	1	2,5 kg
44	C09-0001-P0031	Cover Bearing	1	5,3 kg
43	004-0011-C0001	Hex head screw fully threaded	4	0 kg
42	004-0012-C0015	Hex socket head cap screw	2	0 kg
41	C09-0001-P0070	Wheel Block	2	0,7 kg
40	004-0012-C0006	Hex socket cilindrical head screw	2	0 kg
39	004-0043-C0006	Hex socket cilindrical head screw	22	0 kg
38	C09-0001-P0069	Rope protection	11	0,1 kg
37	006-0005-C0104	Cylindrical Bushing	2	0,1 kg
36	C09-0001-A0014	Locking pin assembly	1	3,6 kg
35	004-0175-C0120	Hex head screw fully threaded	12	0,1 kg
34	C09-0001-A0013	Pulley Assembly Øc285 -rope Ø11	1	8,6 kg
33	004-0035-C0029	Greaser	1	0 kg
32	C09-0001-P0065	Boom Anti-Skid	1	0,1 kg
31	004-0175-C0213	Hex head screw fully threaded	3	0,6 kg
30	004-0023-C0488	Plain washer	8	0 kg
29	004-0011-C0060	Hex head screw fully threaded	2	0 kg
28	004-0011-C0046	Hex head screw fully threaded	18	0 kg
27	004-0023-C0049	Plain washer	44	0 kg
26	004-0011-C0013	Hex head screw fully threaded	8	0 kg
25	004-0023-C0083	Plain washer	2	0 kg
24	004-0175-C0216	Hex head screw fully threaded	29	0,7 kg
23	004-0023-C0523	Plain washer	61	0 kg
22	004-0012-C0048	Hex socket head cap screw	39	0 kg
21	C09-0001-A0004	Winch Assembly	1	540,5 kg
20	004-0149-C0008	Hex head screw fully threaded	4	0,1 kg
19	C09-0001-P0033	Anti-rotation plate	2	0,4 kg
18	C09-0001-P0032	Anti-rotation plate to load cell	2	0,1 kg
17	004-0023-C0630	Plain washer	28	0 kg
16	C09-0001-P0027	Fixed buffer for limiter	1	0,2 kg
15	C09-0001-P0026	Fixed buffer for limiter	1	0,2 kg
14	C09-0001-P0025	Bracket tray 3	1	1 kg
13	C09-0001-P0024	Bracket tray 2	1	1,3 kg
12	C09-0001-P0023	Bracket tray 1	2	1,5 kg
11	C09-0001-P0022		1	12,7 kg
10	C09-0001-P0021	HOISTING LOAD CELL	1	0,6 kg
9	C09-0001-P0014	Pulley Axis Ø60	1	1,8 kg
8	DA CODIFICARE	Hexagonal nut	29	0,1 kg
7	C09-0001-P0020	Trolley Wheel Retainer Plate	2	0,4 kg
6	R-000347882	SLEWING PINION M10 Z11	1	4,8 kg
5	002-0027-C1431	Gearbox for rotation	1	134,3 kg
4	C09-0001-P0009	Rack M6 40x35 L.2940	3	26,2 kg
3	007-0006-C1220	El. Motor for Rotation MGM BAHK2 100 LB4 Enhanced Power (E.P.)	1	36 kg
2	006-0006-C0123	Ball bearing with internal teeth	1	176,5 kg
1	C09-0001-P0004	Boom Carpentry	1	1494,5 kg
EL.	PART NUMBER	DESCRIPTION ENG	Q.TY	WEIGHT

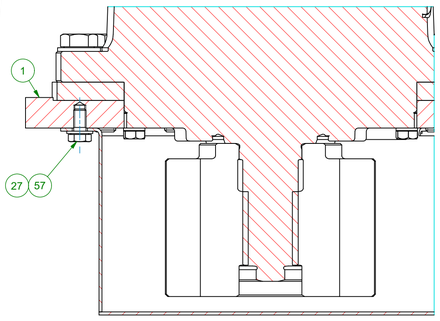
Sez. / Sec. **"S23-S23"**
(1 : 5)



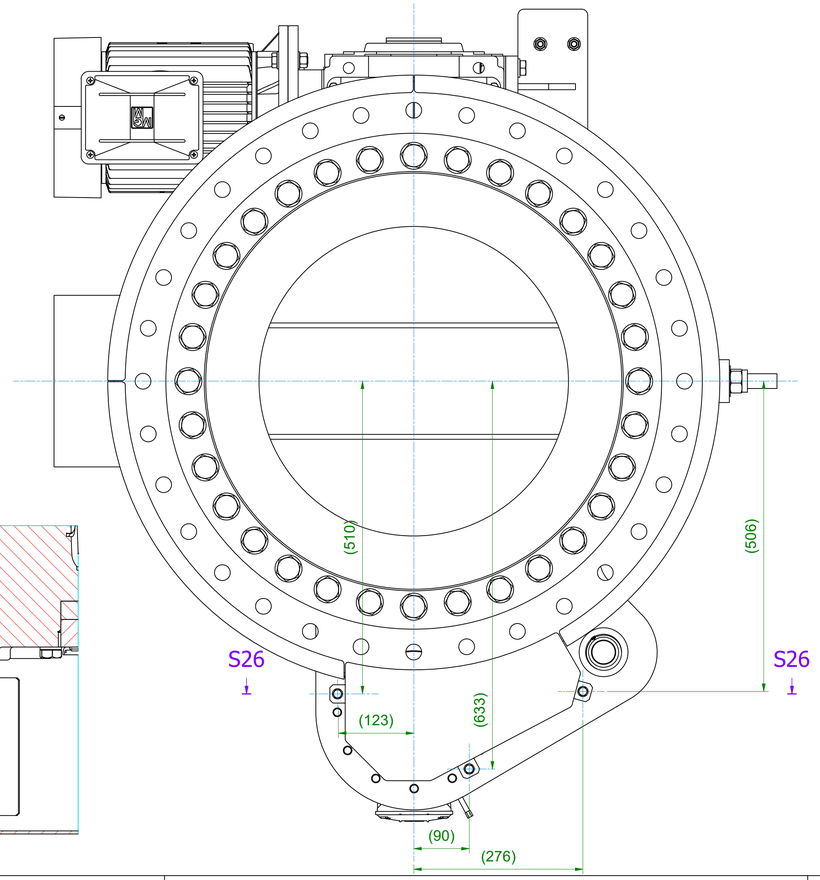
Sez. / Sec. **"S25-S25"**
(1 : 2)
Typ. (x9)



Sez. / Sec. **"S26-S26"**
(1 : 2)
Typ. (x3)



Sez. / Sec. **"S24-S24"**
(1 : 5)

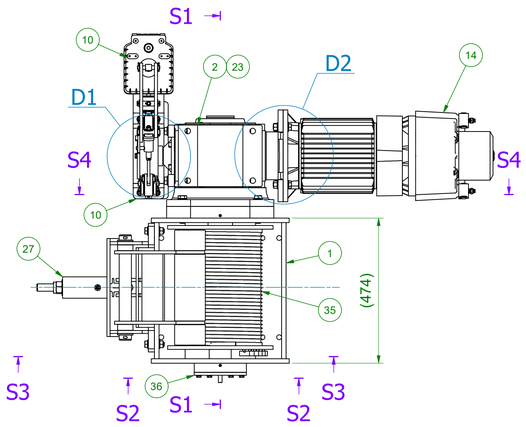


REV	DATE	DESCRIPTION	DRAFTMAN	DESIGNER	CALCULATION ENG.	P.E.
A	30/09/2024	Prima emissione / First issued	riccardo.sobani	Sobani R.	De Fazio F.	–

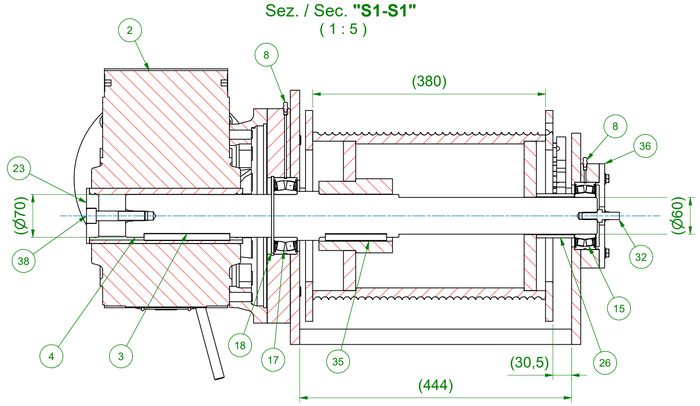
REMAZEL ENGINEERING
Chiuduno (BG) - 24060 - ITALY
Phone : +39-035-68.44.14 - Fax : +39-035-68.78.23
e-mail : info@remazel.com / website : www.remazel.com

Project / Equipment : **C09-0001**
Weight : 2567,6 kg
Title : Assieme Braccio / Boom Assembly
Scale : 1 : 33,3333
Sheet : 6 of 6
A1
Drawing State: **Work in Progress** / **FOR CONSTRUCTION**
Q.C.L. : C3
Drawing N° : C09-0001-A0003
Revision : A

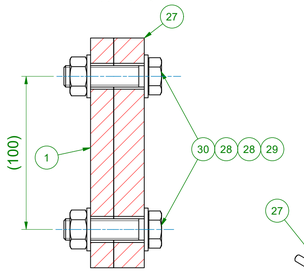
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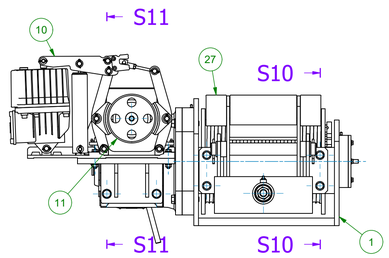


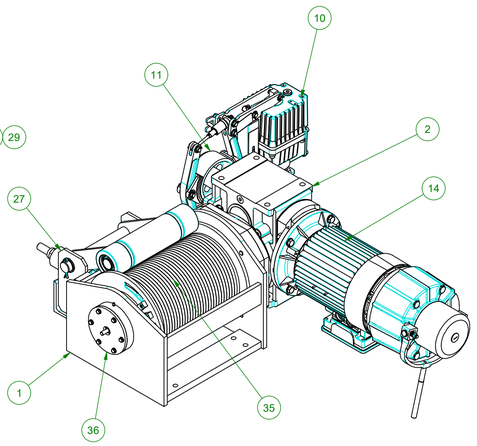
Sez. / Sec. **"S1-S1"**
(1 : 5)



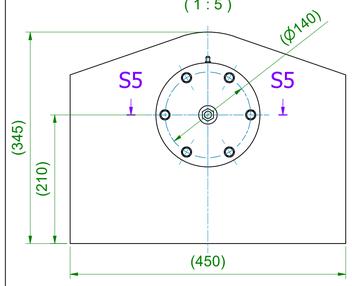
Sez. / Sec. **"S10-S10"**
(1 : 2)
Typ. (x2)



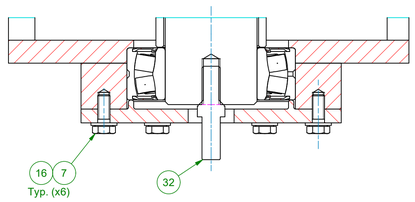




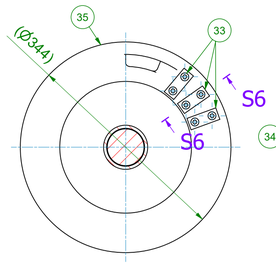
Sez. / Sec. **"S2-S2"**
(1 : 5)



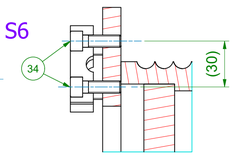
Sez. / Sec. **"S5-S5"**
(1 : 2)



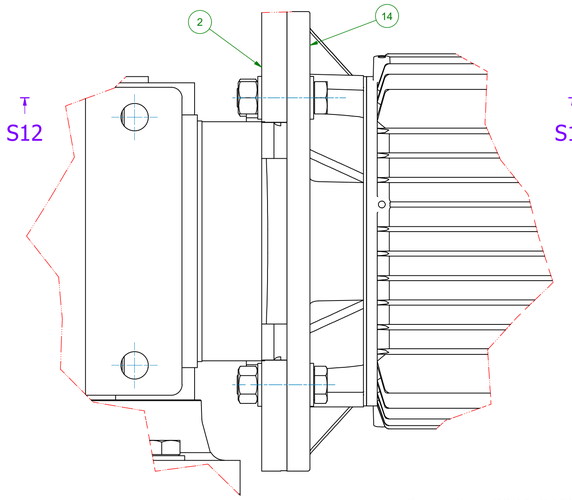
Sez. / Sec. **"S3-S3"**
(1 : 5)



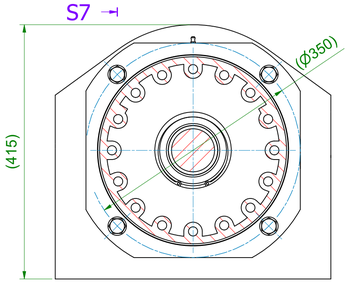
Sez. / Sec. **"S6-S6"**
(1 : 2)
Typ. (x3)



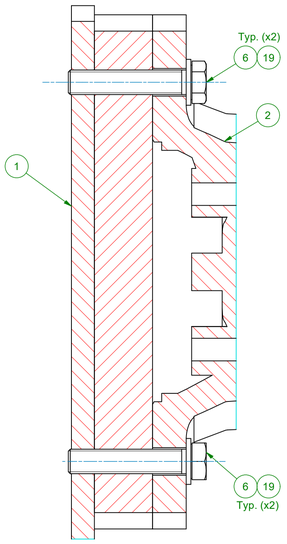
Dett. / Detail **"D2"**
(1 : 2)



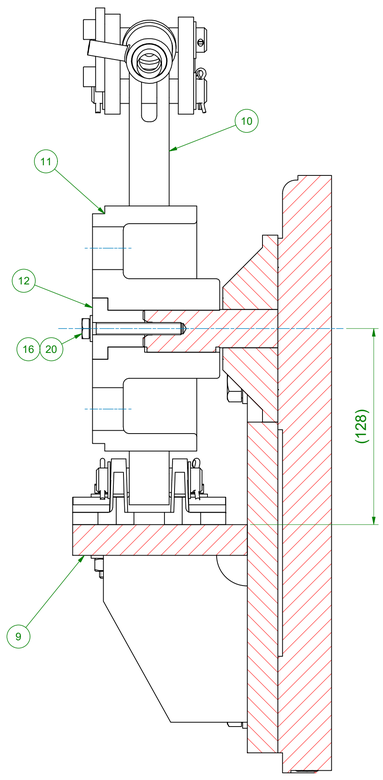
Sez. / Sec. **"S4-S4"**
(1 : 5)



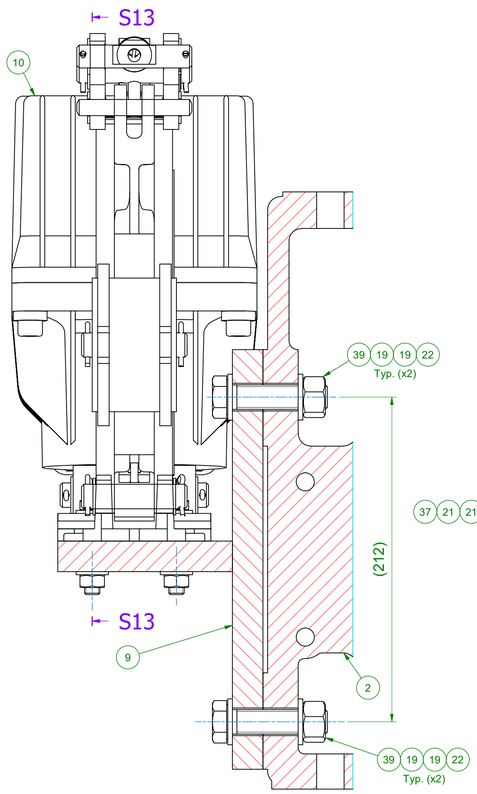
Sez. / Sec. **"S7-S7"**
(1 : 2)



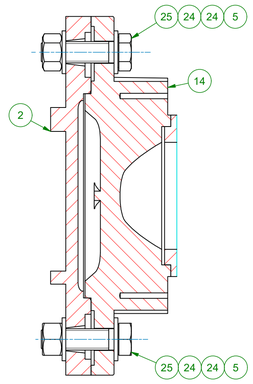
Sez. / Sec. **"S8-S8"**
(1 : 2)



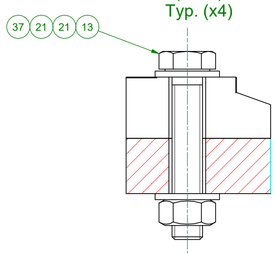
Sez. / Sec. **"S11-S11"**
(1 : 2)



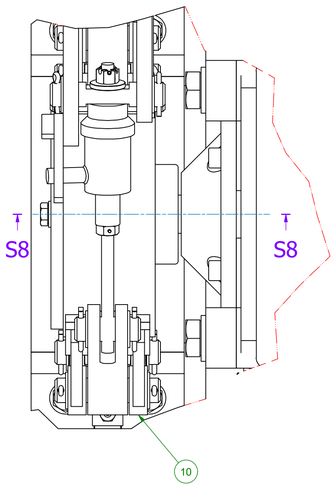
Sez. / Sec. **"S12-S12"**
(1 : 2)
Typ. (x2)



Sez. / Sec. **"S13-S13"**
(1 : 1)
Typ. (x4)



Dett. / Detail **"D1"**
(1 : 2)



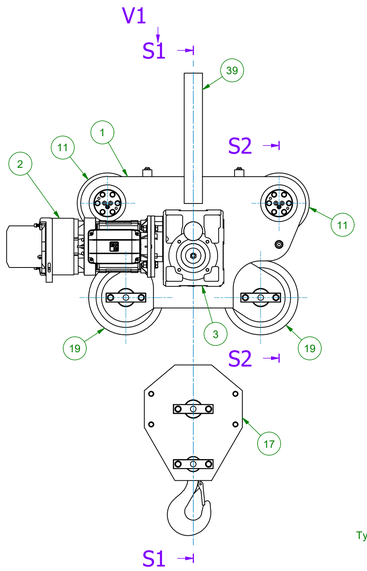
39	004-0147-C0001	Hexagonal nut	4	0 kg
38	004-0012-C0117	Hex socket head cap screw	1	0,2 kg
37	004-0147-C0002	Hexagonal nut	4	0 kg
36	C09-0001-P0087	Lateral Cap Winch	1	1,6 kg
35	C09-0001-P0085	Winch Box	1	64,1 kg
34	004-0012-C0006	Hex socket cilindrical head screw	6	0 kg
33	C09-0001-P0003	Stop rope	3	0,1 kg
32	C09-0001-P0071	Encoder winch Axis	1	0,1 kg
31	002-0020-C0006	Key	1	0,2 kg
30	004-0011-C0227	Hex head screw fully threaded	4	0,1 kg
29	004-0021-C0014	Hexagonal nut	4	0 kg
28	004-0023-C0598	Plain washer	8	0 kg
27	C09-0001-A0012	Rope presser assembly	1	38,4 kg
26	C09-0001-P0044	Winch Spacer	1	0,5 kg
25	004-0149-C0136	Hex head screw fully threaded	4	0,1 kg
24	004-0023-C0630	Plain washer	8	0 kg
23	C09-0001-P0029	Cover Gearbox Winch	1	0,6 kg
22	004-0149-C0023	Hex head screw fully threaded	4	0,1 kg
21	004-0023-C0489	Plain washer	8	0 kg
20	004-0011-C0218	Hex head screw fully threaded	1	0 kg
19	004-0023-C0486	Plain washer	12	0 kg
18	004-0123-C0034	Seeger ring for holes	1	0,1 kg
17	R-000358542	Spherical roller bearing	1	1,8 kg
16	004-0023-C0049	Plain washer	7	0 kg
15	R-000358537	Spherical roller bearing	1	1,3 kg
14	007-0006-C1221	Hoist El.Motor	1	95 kg
13	004-0149-C0011	Hex head screw fully threaded	4	0 kg
12	C09-0001-P0042	Cap Brakedrums	1	0,2 kg
11	C09-0001-P0041	Machining Brakedrums	1	5,9 kg
10	R-000354503	Failsafe Shoe Brake	1	0 kg
9	C09-0001-P0028	Brake winch support	1	14,3 kg
8	004-0035-C0027	Greaser	2	0 kg
7	004-0011-C0012	Hex head screw fully threaded	6	0 kg
6	004-0175-C0140	Hex head screw fully threaded	4	0,2 kg
5	004-0147-C0021	Hexagonal nut	4	0 kg
4	C09-0001-P0040	Shaft Winch	1	21,3 kg
3	002-0020-C0033	Key	1	0,3 kg
2	002-0027-C1432	Gearbox	1	195,7 kg
1	C09-0001-P0005	Chassis Winch Carpentry	1	95,8 kg
EL.	PART NUMBER	DESCRIPTION ENG	Q.TY	WEIGHT

REV	DATE	DESCRIPTION	DRAFTMAN	DESIGNER	CALCULATION ENG.	P.E.
A		Prima emissione / First issued	riccardo.sobani	Sobani R.	De Fazio F.	–

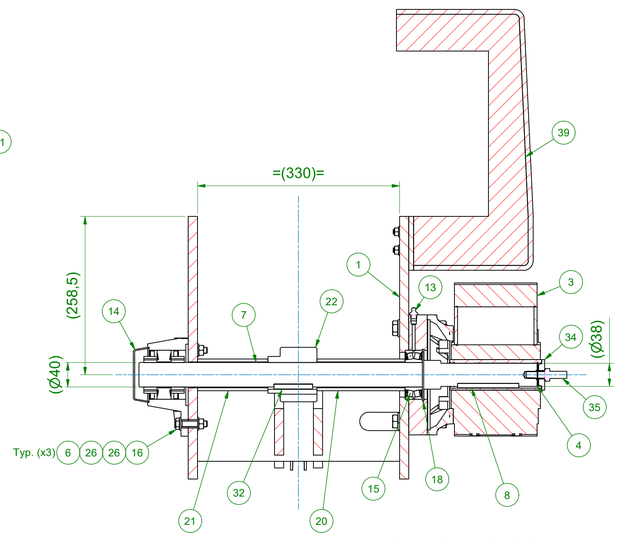
REMAZEL ENGINEERING
Chiuduno (BG) - 24060 - ITALY
Phone : +39-035-68.44.14 - Fax : +39-035-68.78.23
e-mail : info@remazel.com / website : www.remazel.com

Project / Equipment : **C09-0001**
Weight : 540,5 kg
Title : Assieme Winch / Winch Assembly
Scale : 1 : 10
Sheet : 2 of 2 **A1**
Drawing State: **Work in Progress** / ***FOR CONSTRUCTION***
Q.C.L. : C3
Drawing N° : C09-0001-A0004
Revision : A

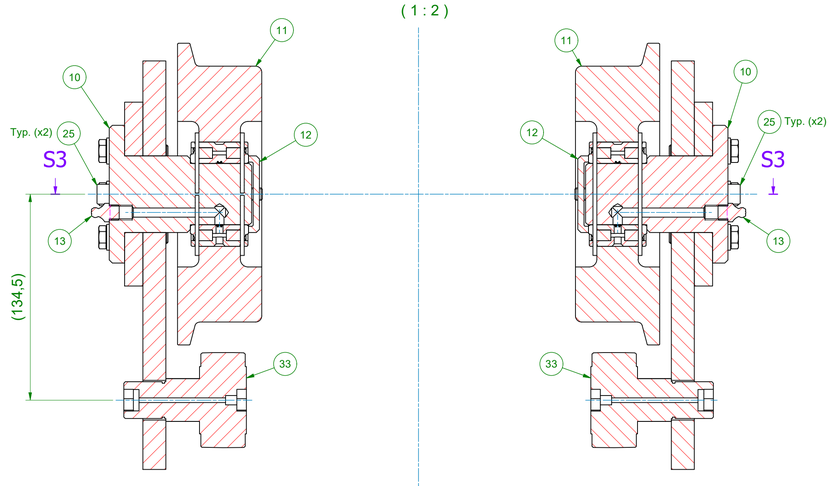
This drawing is property of REMAZEL ENGINEERING S.p.A. It is strictly forbidden to copy, reproduce, modify or distribute the drawing to third persons without owner's written permission.

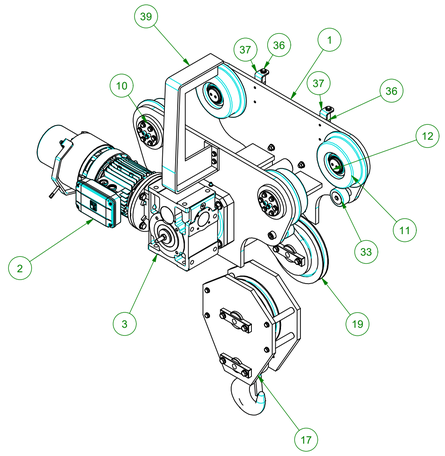


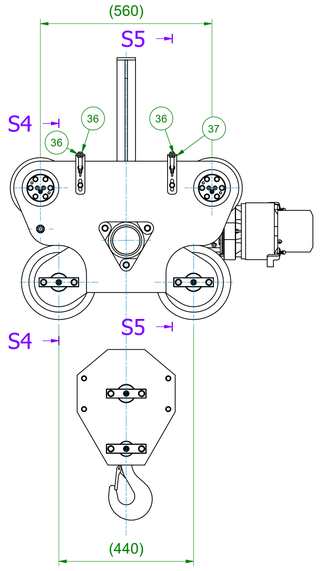
Sez. / Sec. **"S1-S1"**
(1 : 5)



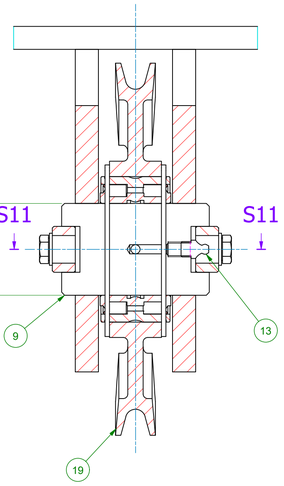
Sez. / Sec. **"S2-S2"**
(1 : 2)



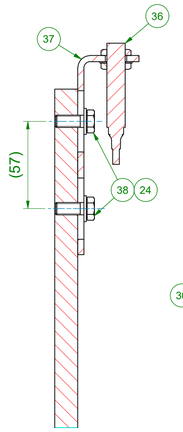




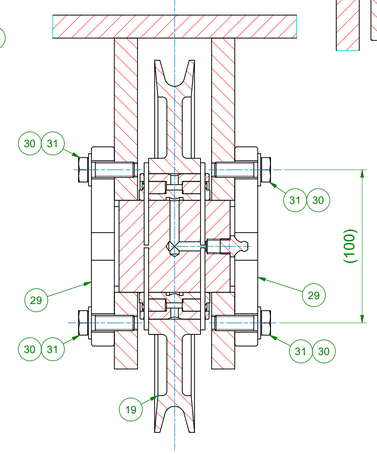
Sez. / Sec. **"S4-S4"**
(1 : 2)



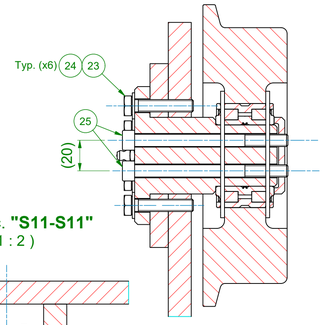
Sez. / Sec. **"S5-S5"**
(1 : 2)

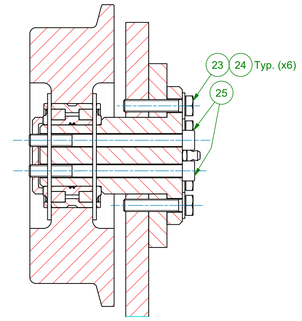


Sez. / Sec. **"S11-S11"**
(1 : 2)

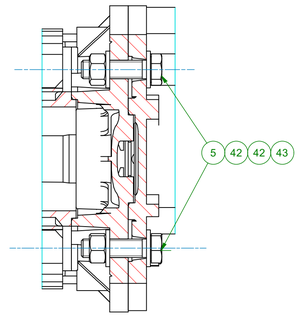


Sez. / Sec. **"S3-S3"**
(1 : 2)
Typ. (x2)

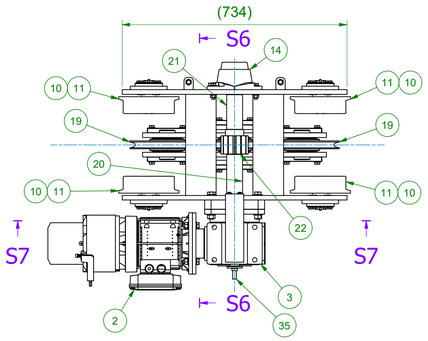




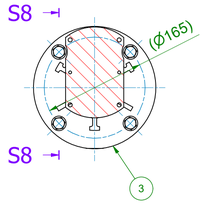
Sez. / Sec. **"S8-S8"**
(1 : 2)
Typ. (x2)



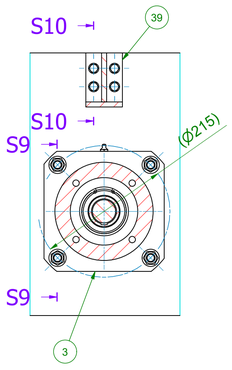
Vista da / View from **"V1"**
(1 : 10)



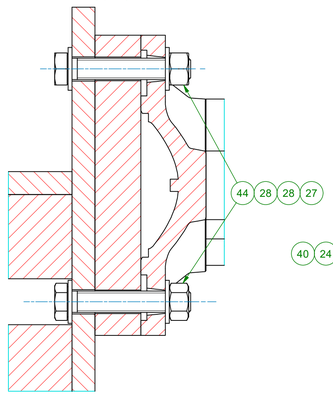
Sez. / Sec. **"S6-S6"**
(1 : 5)



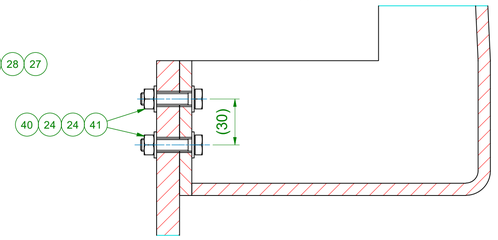
Sez. / Sec. **"S7-S7"**
(1 : 5)



Sez. / Sec. **"S9-S9"**
(1 : 2)
Typ. (x2)



Sez. / Sec. **"S10-S10"**
(1 : 2)
Typ. (x2)



44	004-0147-C0021	Hexagonal nut	4	0 kg
43	004-0147-C0003	Hexagonal nut	4	0 kg
42	004-0023-C0488	Plain washer	8	0 kg
41	004-0021-C0010	Hexagonal nut	4	0 kg
40	004-0011-C0048	Hex head screw fully threaded	4	0 kg
39	C09-0001-P0084	El. Cable Fix For Trolley	1	6 kg
38	004-0011-C0012	Hex head screw fully threaded	4	0 kg
37	C09-0001-P0082	Fixed buffer for limiter	2	0,1 kg
36	R-000360016	Inductive Sensors	2	0,1 kg
35	C09-0001-P0018	Encoder Axis Trolley	1	0,1 kg
34	C09-0001-P0019	Cover Gearbox Trolley	1	0,1 kg
33	R-000358943	Cam Followers (stud-type track rollers)	2	0,9 kg
32	002-0020-C0129	Key	1	0,1 kg
31	004-0011-C0001	Hex head screw fully threaded	8	0 kg
30	004-0023-C0082	Plain washer	8	0 kg
29	C09-0001-P0033	Anti-rotation plate	4	0,4 kg
28	004-0023-C0630	Plain washer	8	0 kg
27	004-0149-C0141	Hex head screw fully threaded	4	0,1 kg
26	004-0023-C0489	Plain washer	6	0 kg
25	004-0012-C0441	Hex socket head cap screw	8	0 kg
24	004-0023-C0049	Plain washer	36	0 kg
23	004-0011-C0023	Hex head screw fully threaded	24	0 kg
22	C09-0001-P0050	Trolley Pinion M=6 Z=13	1	1,8 kg
21	C09-0001-P0049	Spacer Trolley 1	1	0,7 kg
20	C09-0001-P0048	Spacer Trolley 2	1	0,9 kg
19	C09-0001-A0011	Pulley Assembly Øc209 -rope Ø11	2	5,6 kg
18	004-0123-C0048	Seeger ring for holes	1	0 kg
17	C09-0001-A0007	Hook Assembly	1	45,2 kg
16	004-0149-C0018	Hex head screw fully threaded	3	0 kg
15	R-000353721	Spherical roller bearing	1	0,6 kg
14	R-000350882	Triangular flanged roller bearing unit	1	4,6 kg
13	004-0035-C0029	Greaser	7	0 kg
12	C09-0001-P0017	Wheel bearing cover	4	0,1 kg
11	C09-0001-A0008	Wheel Assembly Ø 167	4	8,4 kg
10	C09-0001-P0016	Axis for Wheel Ø167	4	1,4 kg
9	C09-0001-P0014	Pulley Axis Ø60	2	1,8 kg
8	002-0020-C0292	Key	1	0,1 kg
7	C09-0001-P0013	Shaft travveling trolley	1	6,5 kg
6	004-0147-C0002	Hexagonal nut	3	0 kg
5	004-0149-C0008	Hex head screw fully threaded	4	0,1 kg
4	DA CODIFICARE	Seeger ring for holes	1	0 kg
3	002-0027-C1433	Gearbox Rossi Series_G_MR_ICI_80_UO3A_24x200_52_B3__F1	1	48,8 kg
2	007-0006-C1222	El.Motor Traslation MGM BAHK2 90 SA4 Enhanced Power (E.P.)	1	24 kg
1	C09-0001-P0006	Traveling Trolley Carpentry	1	98,2 kg
EL.	PART NUMBER	DESCRIPTION ENG	Q.TY	WEIGHT

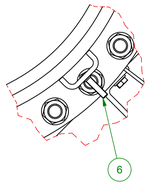
REV	DATE	DESCRIPTION	DRAFTMAN	DESIGNER	CALCULATION ENG.	P.E.
A		Prima emissione / First issued	riccardo.sobani	Sobani R.	De Fazio F.	–

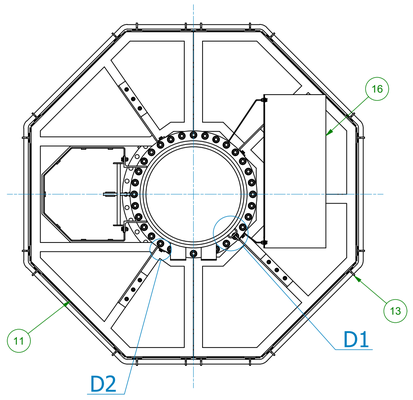
REMAZEL ENGINEERING
Chiuduno (BG) - 24060 - ITALY
Phone : +39-035-68.44.14 - Fax : +39-035-68.78.23
e-mail : info@remazel.com / website : www.remazel.com

Project / Equipment : **C09-0001**
Weight : N/A
Title : Assieme Carrello Travelling Trolley Assembly
Scale : 1 : 10
Sheet : 2 of 2 **A1**
Drawing State: **Work in Progress** / ***FOR CONSTRUCTION***
Q.C.L. : C3
Drawing N° : C09-0001-A0005
Revision : A

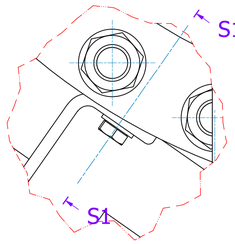
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Dett. / Detail **"D1"**
(1 : 5)

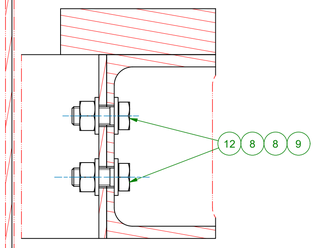


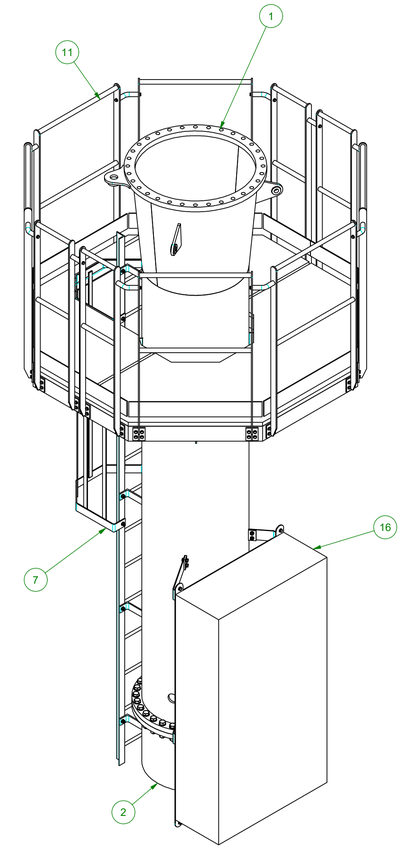


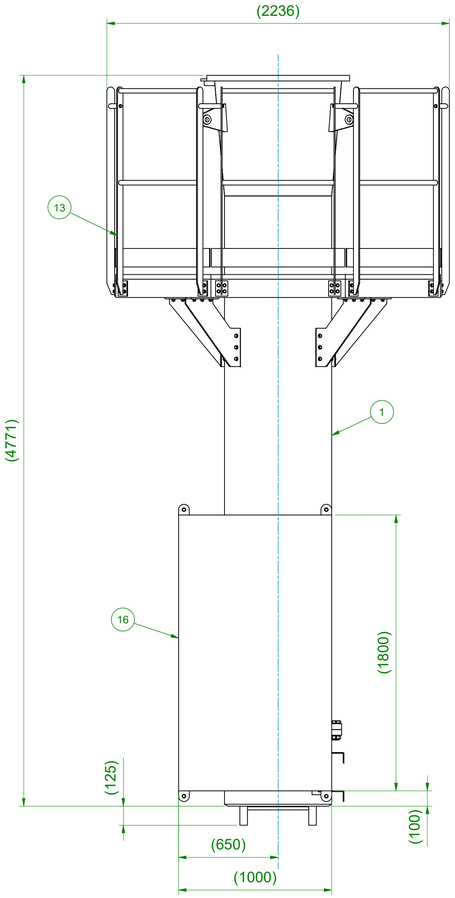
Dett. / Detail **"D2"**
(1 : 2)

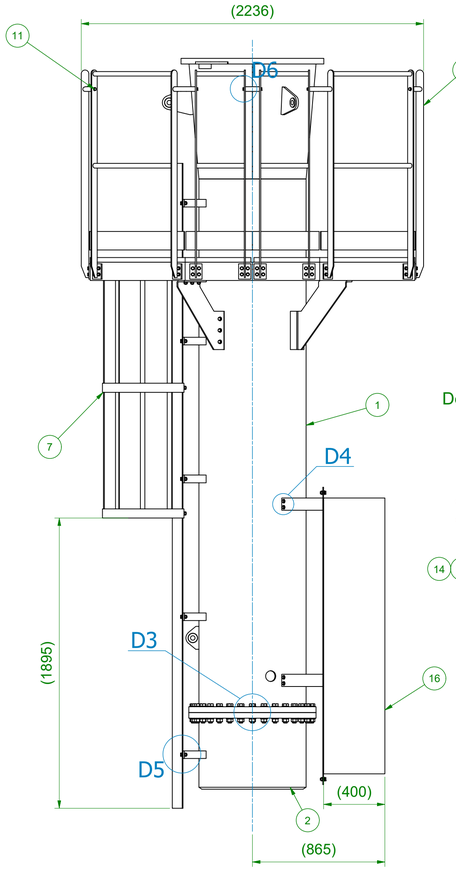


Sez. / Sec. **"S1-S1"**
(1 : 2)
Typ. (x4)

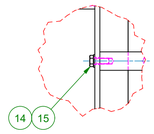


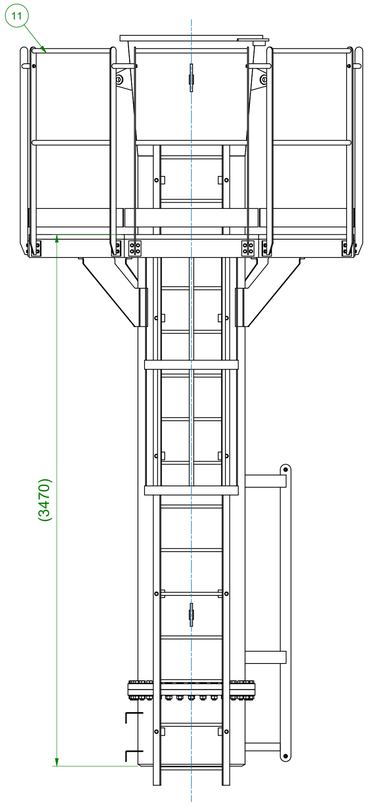


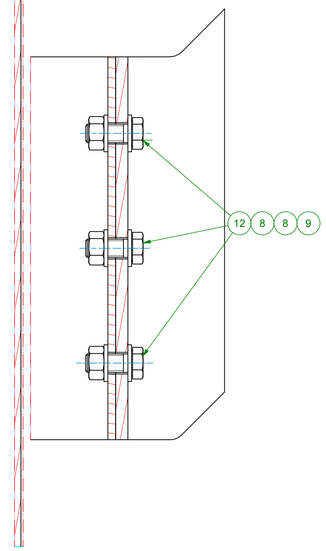




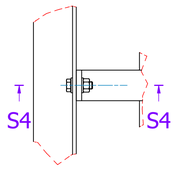
Dett. / Detail **"D6"**
(1 : 5)
Typ. (x2)



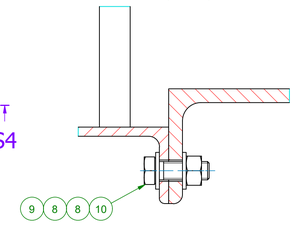




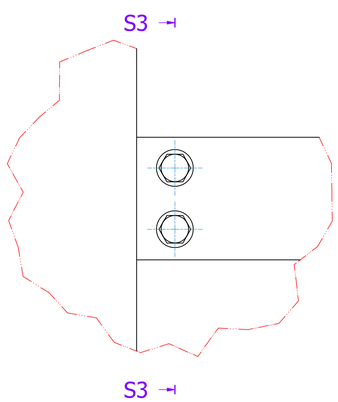
Dett. / Detail **"D5"**
(1 : 5)



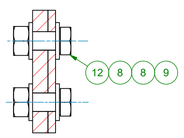
Sez. / Sec. **"S4-S4"**
(1 : 2)

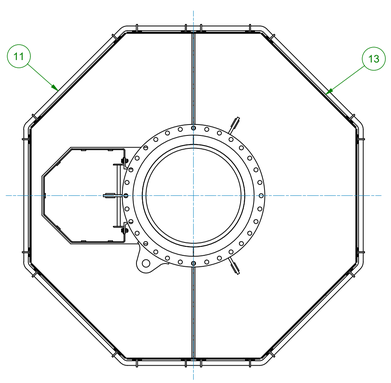


Dett. / Detail **"D4"**
(1 : 2)

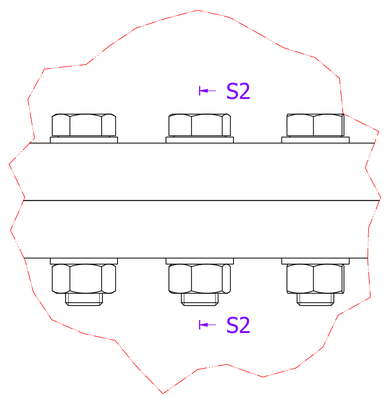


Sez. / Sec. **"S3-S3"**
(1 : 2)
Typ. (x4)

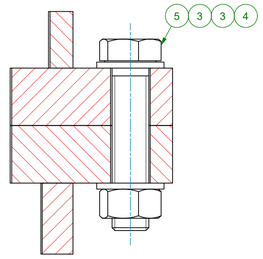




Dett. / Detail **"D3"**
(1 : 2)



Sez. / Sec. **"S2-S2"**
(1 : 2)
Typ. (x26)



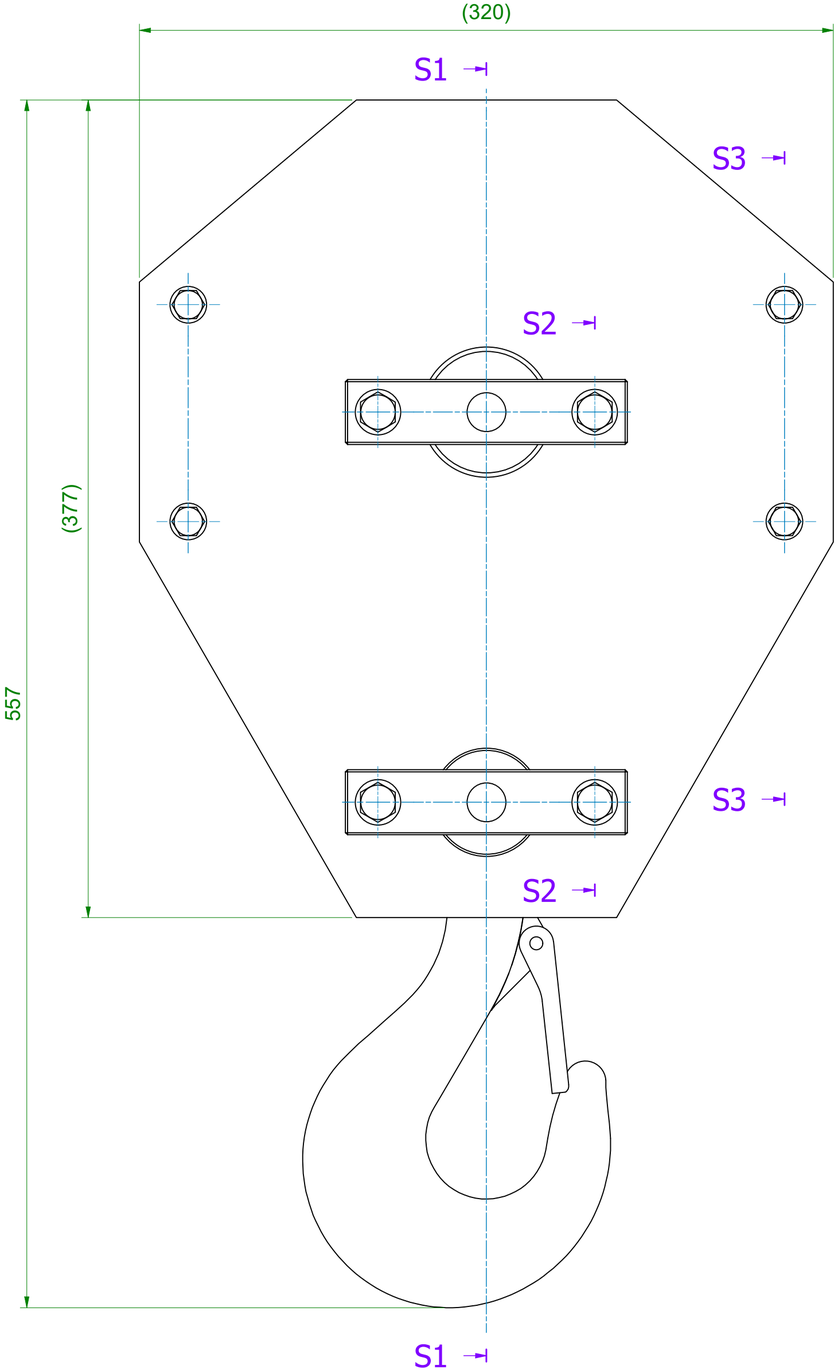
16	C09-0001-A0016	Eletric JB Assembly	1	88,7 kg
15	004-0011-C0008	Hex head screw fully threaded	2	0 kg
14	004-0023-C0082	Plain washer	2	0 kg
13	C09-0001-A0015	Fore Gangway Assembly	1	574,1 kg
12	004-0011-C0060	Hex head screw fully threaded	54	0 kg
11	C09-0001-A0010	Aft Gangway Assembly	1	487,4 kg
10	004-0011-C0024	Hex head screw fully threaded	10	0 kg
9	004-0021-C0007	Hexagonal nut	64	0 kg
8	004-0023-C0083	Plain washer	128	0 kg
7	C09-0001-A0009	Stair Assembly	1	93,2 kg
6	013-0018-C0822	Nottolino di messa a terra	1	0 kg
5	004-0039-C0258	Hex head screw fully threaded	32	0,5 kg
4	004-0110-C0005	Hexagonal nut	32	0,1 kg
3	004-0023-C0112	Plain washer	64	0 kg
2	C09-0001-P0001	Pedestal Carpentry	1	223,2 kg
1	C09-0001-P0002	Fixed Column Carpentry	1	1228,9 kg
EL.	PART NUMBER	DESCRIPTION ENG	Q.TY	WEIGHT

REV	DATE	DESCRIPTION	DRAFTMAN	DESIGNER	CALCULATION ENG.	P.E.
A	27/09/2024	Prima emissione / First issued	riccardo.sobani	Sobani R.	De Fazio F.	–

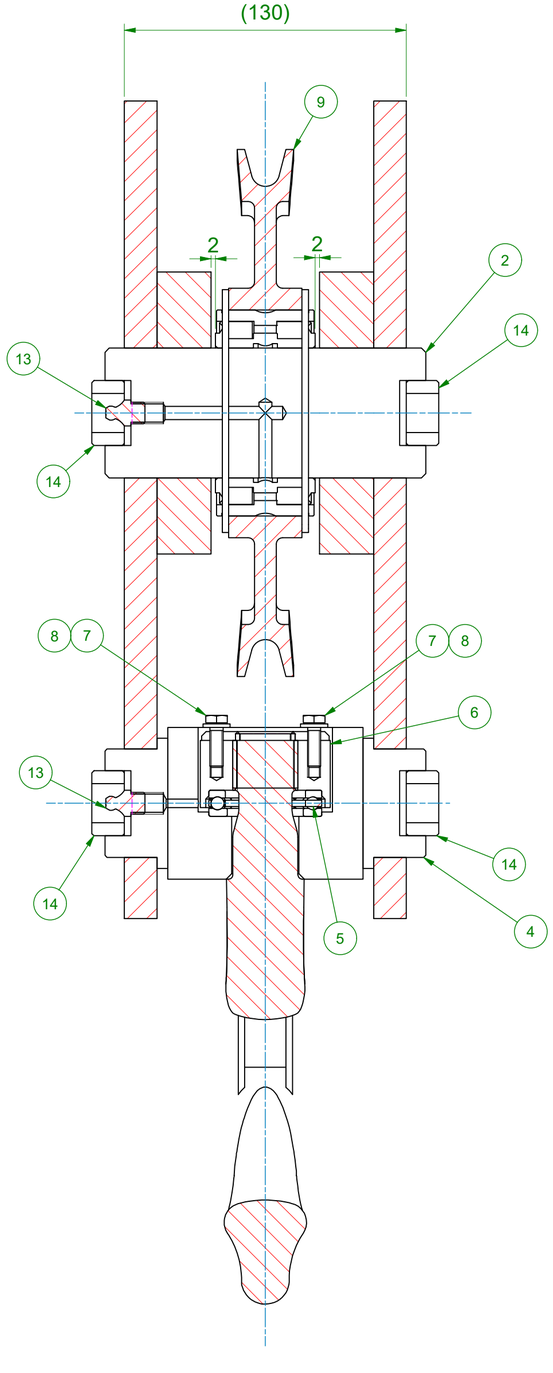
REMAZEL ENGINEERING
Chiuduno (BG) - 24060 - ITALY
Phone : +39-035-68.44.14 - Fax : +39-035-68.78.23
e-mail : info@remazel.com - website : www.remazel.com

Project / Equipment : **C09-0001**
Weight : 2722,9 kg
Title : Assieme Colonna fissa / Fixed Column Ass.
Scale : 1 : 20
Sheet : 2 of 2 — **A1**
Drawing State: **Work in Progress** / ***FOR CONSTRUCTION***
Q.C.L. : C3
Drawing N° : C09-0001-A0006
Revision : A

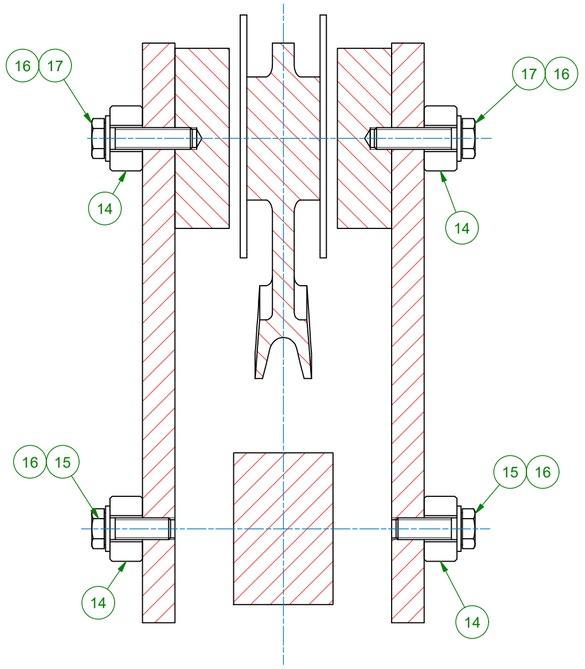
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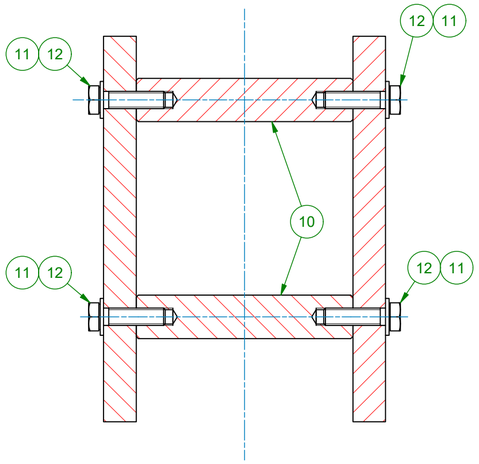
Sez. / Sec. **"S1-S1"**
(1 : 2)

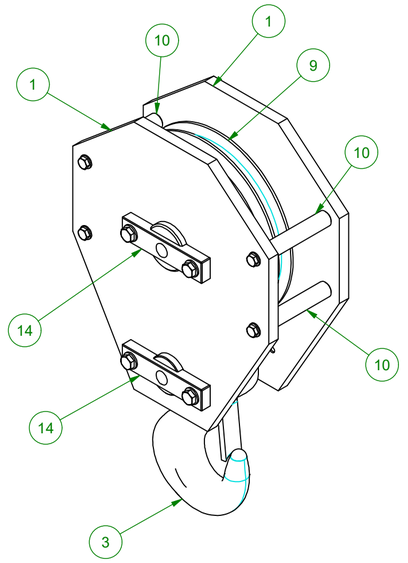


Sez. / Sec. **"S2-S2"**
(1 : 2)



Sez. / Sec. **"S3-S3"**
(1 : 2)





EL.	PART NUMBER	DESCRIPTION ENG	Q.TY	WEIGHT
17	004-0011-C0003	Hex head screw fully threaded	4	0 kg
16	004-0023-C0082	Plain washer	8	0 kg
15	004-0011-C0001	Hex head screw fully threaded	4	0 kg
14	C09-0001-P0033	Anti-rotation plate	4	0,4 kg
13	004-0035-C0029	Greaser	2	0 kg
12	004-0011-C0046	Hex head screw fully threaded	8	0 kg
11	004-0023-C0049	Plain washer	8	0 kg
10	C09-0001-P0046	Hook Anti-Skid	4	0,2 kg
9	C09-0001-A0011	Pulley Assembly Øc209 -rope Ø11	1	5,6 kg
8	004-0023-C0433	Plain washer	2	0 kg
7	004-0007-C0015	Hex head screw fully threaded	2	0 kg
6	C09-0001-P0047	Block Roller Bearing Swivels	1	0,5 kg
5	002-0027-C1348	Thrust ball bearing	1	0,1 kg
4	C09-0001-P0038	Roller Bearing Swivels	1	4,3 kg
3	C09-0001-P0036	Hook 3.5ton	1	3,4 kg
2	C09-0001-P0037	Shaft Pulley Hook	1	3 kg
1	C09-0001-P0011	Hook Pulley Plate Carpentry	2	12,6 kg

REV	DATE	DESCRIPTION	DRAFTMAN	DESIGNER	CALCULATION ENG.	P.E.
A	27/09/2024	Prima emissione / First issued	riccardo.sobani	Sobani R.	De Fazio F.	–

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Chiuduno (BG) - 24060 - ITALY
Phone : +39-035-68.44.14 - Fax : +39-035-68.78.23
e-mail : info@remazel.com / website : www.remazel.com

Project / Equipment : **C09-0001**

Weight : 45,2 kg

Title : Assieme Gancio / Hook Assembly

Scale : 1 : 2

Sheet : 2 of 2 — **A2**

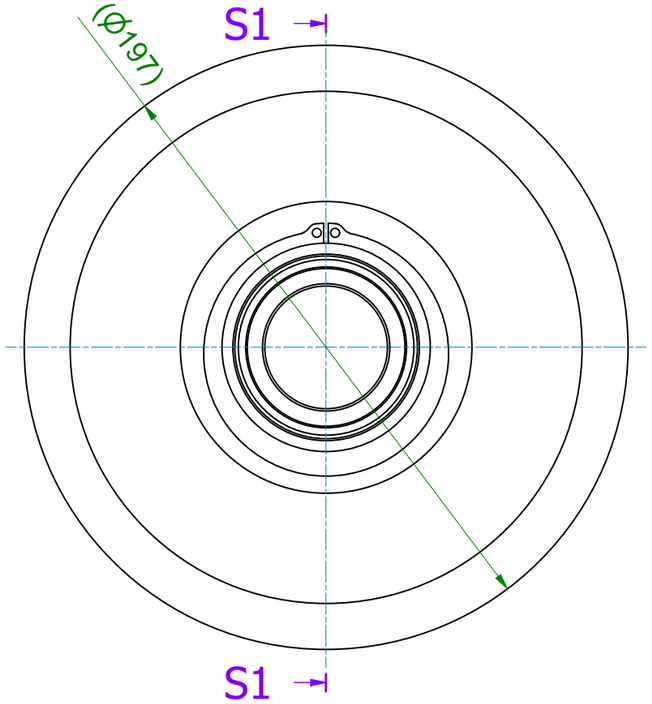
Drawing State: **Work in Progress** / ***FOR CONSTRUCTION***

Q.C.L. : C3

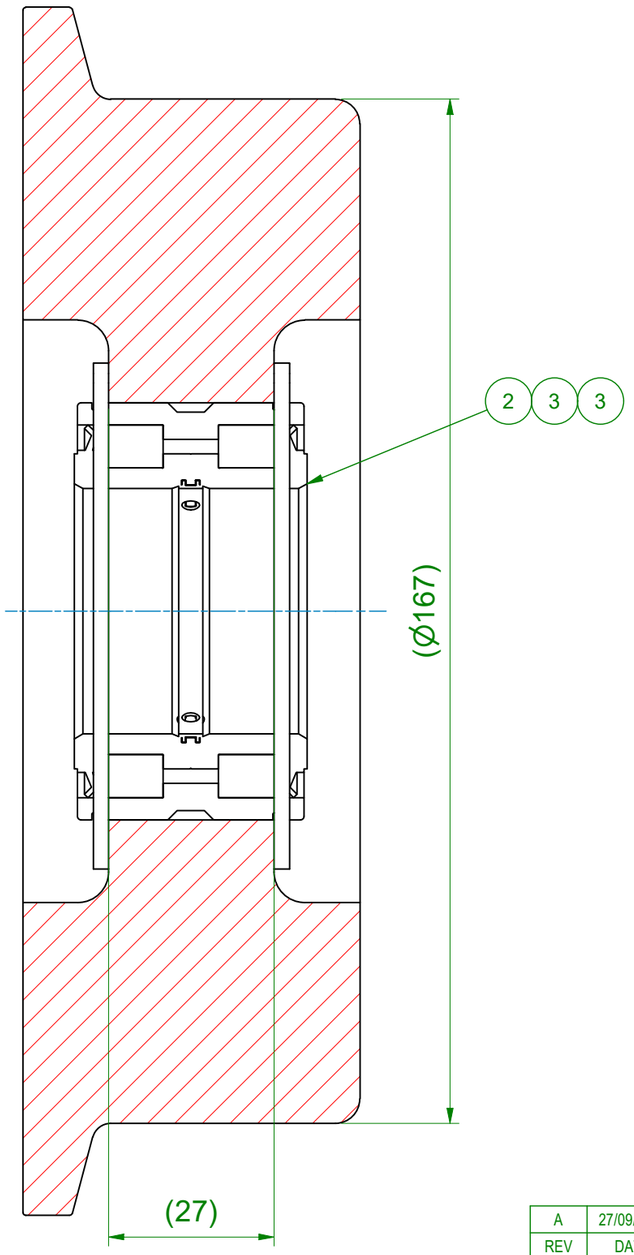
Drawing N° : C09-0001-A0007

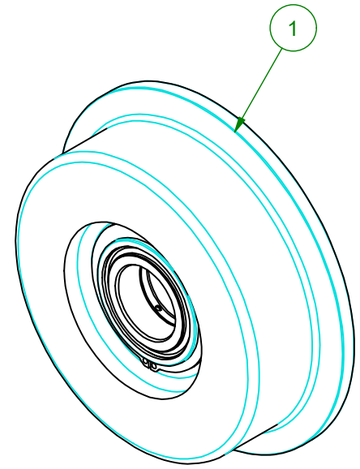
Revision : A

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Sez. / Sec. **"S1-S1"**
(1 : 1)





3	004-0029-C0074	Seeger ring for shaft	2	0 kg
2	006-0003-C0210	Cylindrical roller bearing	1	0,5 kg
1	C09-0001-P0015	Wheel Ø 167	1	7,8 kg
EL.	PART NUMBER	DESCRIPTION ENG	Q.TY	WEIGHT

REV	DATE	DESCRIPTION	DRAFTMAN	DESIGNER	CALCULATION ENG.	P.E.
A	27/09/2024	Prima emissione / First issued	riccardo.sobani	Sobani R.	De Fazio F.	–

PROD. DI PRECISIONE PER GIOTI LINEARI E ANGOLARI NON VOLVENTI
PRECISION PRODUCTS FOR LINEAR AND ANGULAR NON ROLLING JOINTS
LAVORAZIONI MECCANICHE / MECHANICALS MACHININGS
Lineari-Angolari / Linear-Angular UNI EN 22768/1-1996 - m
Generiche / General UNI EN 22768/2-1996 - L
CARPENTERIA / WELDING STRUCTURE UNI EN ISO 13920/2000 - A
Lineari-Angolari / Linear-Angular UNI EN ISO 13920/2000 - A
Generiche / General UNI EN ISO 13920/2000 - E

REMAZEL ENGINEERING
Chiuduno (BG) - 24060 - ITALY
Phone : +39-035-68.44.14 - Fax : +39-035-68.78.23
e-mail : info@remazel.com / website : www.remazel.com

Project / Equipment :
C09-0001

Weight :
8,4 kg

Title :
Assieme Ruota Ø167
Wheel Assembly Ø 167

Scale :
1 : 2

Sheet :
2 of 2

A3

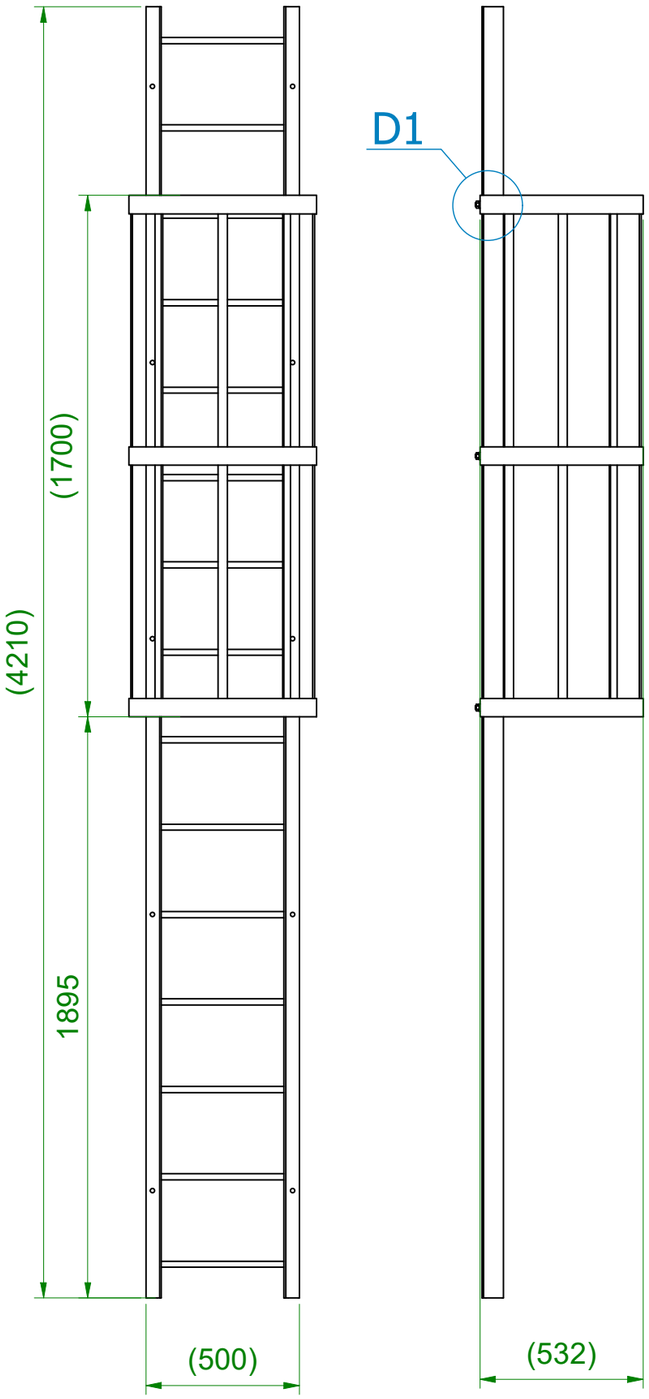
Drawing State:
Work in Progress
FOR CONSTRUCTION

Q.C.L. :
C3

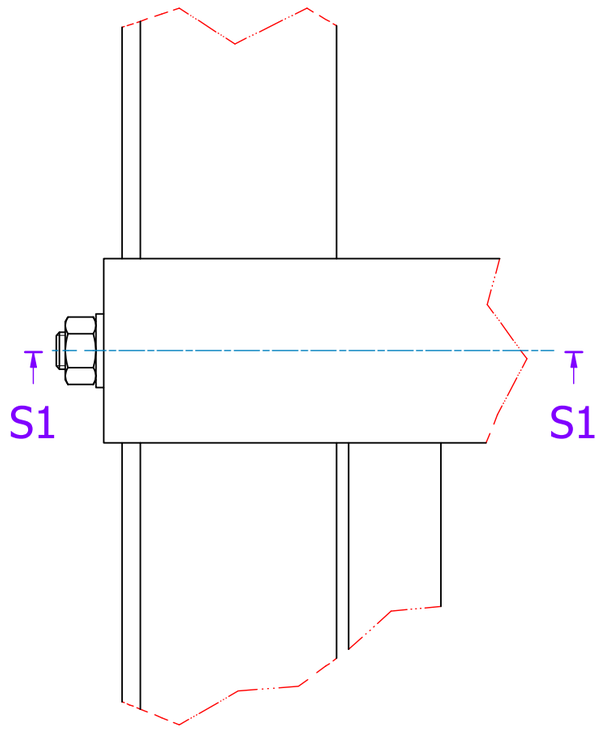
Drawing N° :
C09-0001-A0008

Revision :
A

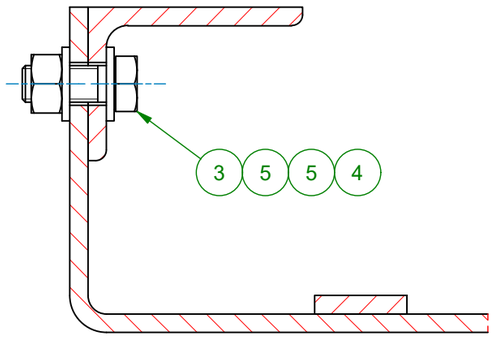
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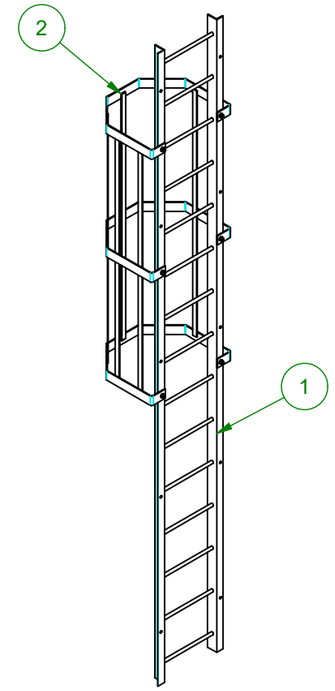


Dett. / Detail **"D1"**
(1 : 2)



Sez. / Sec. **"S1-S1"**
(1 : 2)
Typ. (x6)





EL.	PART NUMBER	DESCRIPTION ENG	Q.TY	WEIGHT
5	004-0023-C0083	Plain washer	12	0 kg
4	004-0021-C0007	Hexagonal nut	6	0 kg
3	004-0011-C0060	Hex head screw fully threaded	6	0 kg
2	C09-0001-P0010	Cage Ladder Carpentry	1	32,5 kg
1	C09-0001-P0008	Stairs	1	60,3 kg

REV	DATE	DESCRIPTION	DRAFTMAN	DESIGNER	CALCULATION ENG.	P.E.
A	27/09/2024	Prima emissione / First issued	riccardo.sobani	Sobani R.	De Fazio F.	–

GRADO DI PRECISIONE PER QUOTE LINEARI E ANGOLARI NON TOLLERATE
DEGREE OF PRECISION FOR LINEAR AND ANGULAR DIMENSIONS NOT TOLERATED
LAVORAZIONI MECCANICHE / MECHANICALS MACHININGS
Lineari-Angolari / Linear-Angular : UNI EN 22768-1:1996 - m
Generiche / Generals : UNI EN ISO 2768-1:1996 - L
CARPENTERIA / WELDING STRUCTURE
Lineari-Angolari / Linear-Angular : UNI EN ISO 13920:2000 - A
Generiche / Generals : UNI EN ISO 13920:2000 - E

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e-mail : info@remazel.com / website : www.remazel.com

Project / Equipment :
C09-0001

Weight :
93,2 kg

Title :
Assieme Scala
Stair Assembly

Scale :
1 : 20

Sheet :
2 of 2

A3

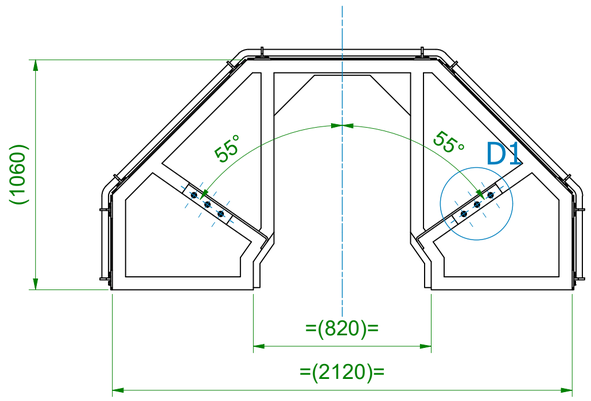
Drawing State:
Work in Progress
FOR CONSTRUCTION

Q.C.L. :
C3

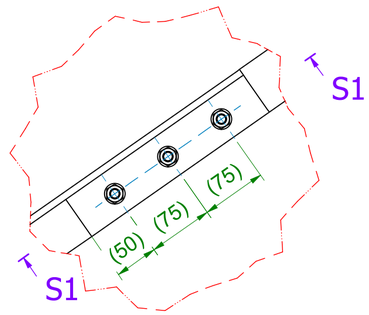
Drawing N° :
C09-0001-A0009

Revision :
A

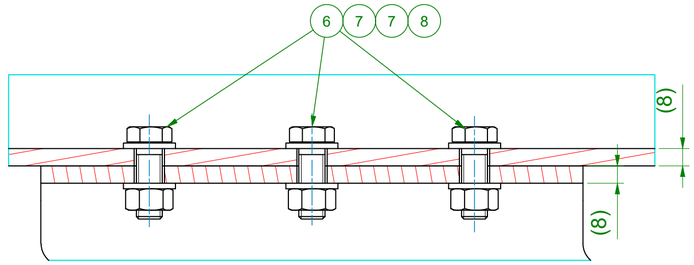
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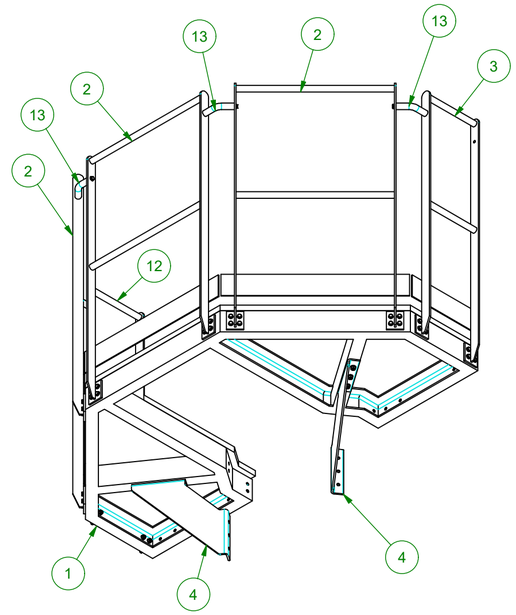


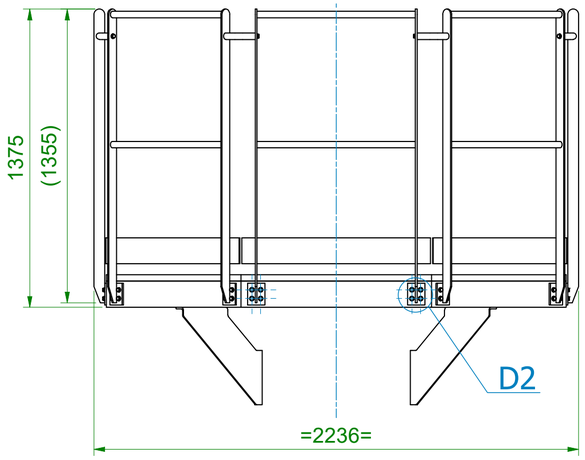
Dett. / Detail **"D1"**
(1 : 5)

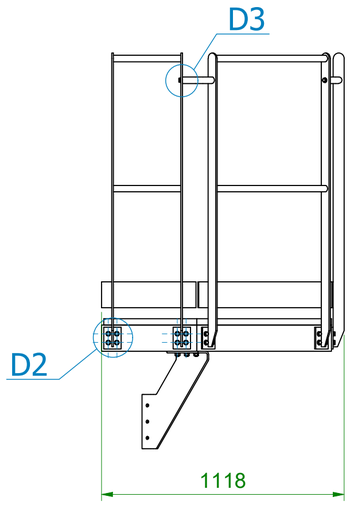


Sez. / Sec. **"S1-S1"**
(1 : 2)

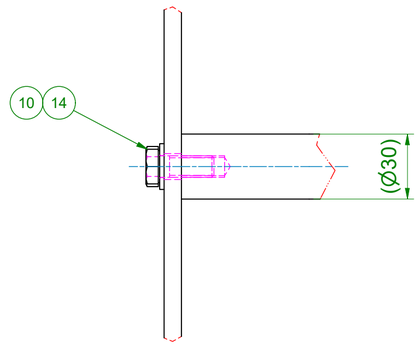




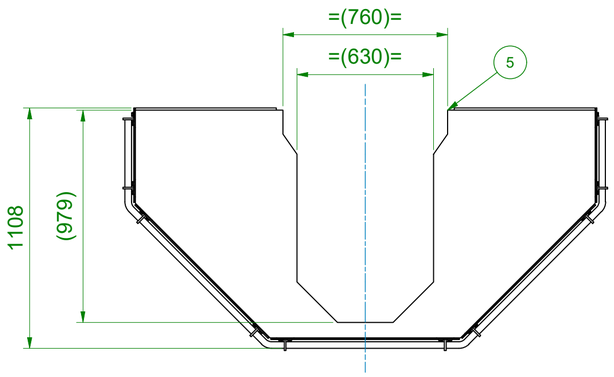




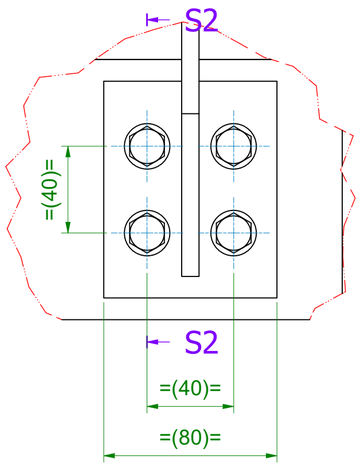
Dett. / Detail **"D3"**
(1 : 2)



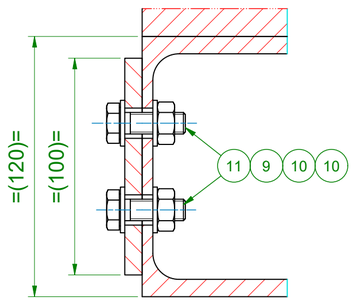
EL.	PART NUMBER	DESCRIPTION ENG	Q.TY	WEIGHT
14	004-0011-C0008	Hex head screw fully threaded	8	0 kg
13	C09-0001-P0079	Handrail Angular Fix	4	0,9 kg
12	C09-0001-P0078	Handrail 3	1	13,2 kg
11	004-0011-C0001	Hex head screw fully threaded	40	0 kg
10	004-0023-C0082	Plain washer	88	0 kg
9	004-0021-C0012	Hexagonal nut	40	0 kg
8	004-0021-C0007	Hexagonal nut	6	0 kg
7	004-0023-C0083	Plain washer	12	0 kg
6	004-0011-C0024	Hex head screw fully threaded	6	0 kg
5	C09-0001-P0077	Floor Gangway	1	292 kg
4	C09-0001-P0076	Fix Gangway	2	7,1 kg
3	C09-0001-P0075	Handrail 2	1	13,2 kg
2	C09-0001-P0074	Handrail 1	3	17,9 kg
1	C09-0001-P0007	Aft Octagonal Gangway	1	94,9 kg



Dett. / Detail **"D2"**
(1 : 2)



Sez. / Sec. **"S2-S2"**
(1 : 2)



REV	DATE	DESCRIPTION	DRAFTMAN	DESIGNER	CALCULATION ENG.	P.E.
A	27/09/2024	Prima emissione / First issued	riccardo.sobani	Sobani R.	De Fazio F.	–

UNI EN ISO 13920:2000 - A
UNI EN ISO 13920:2006 - A
UNI EN ISO 3834:2006 - B
UNI EN ISO 5817:2014 - C
UNI EN 1090-2:2018 - EXC2
UNI EN 15085-2:2021 - CL1
UNI EN 1090-3:2019 - EXC2
UNI EN 1090-4:2018 - EXC2
UNI EN 1090-5:2017 - EXC2
UNI EN 1090-6:2018 - EXC2

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e-mail : info@remazel.com / website : www.remazel.com

Project / Equipment :
C09-0001

Weight :
487,4 kg

Title :
Assieme Passerella Posteriore
Aft Gangway Assembly

Scale :
1 : 20

Sheet :
2 of 2

A2

Drawing State:
Work in Progress
FOR CONSTRUCTION

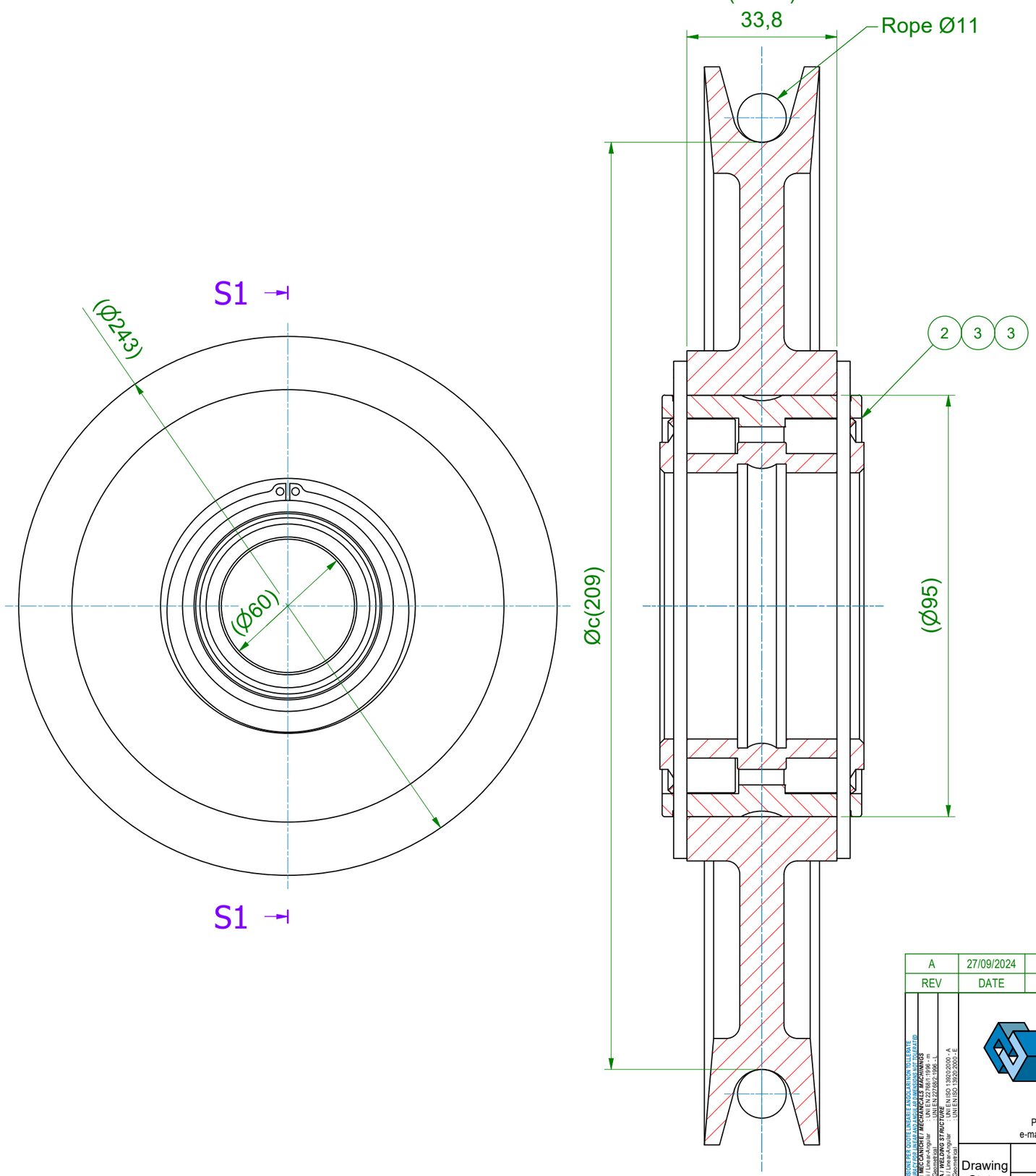
Q.C.L. :
C3

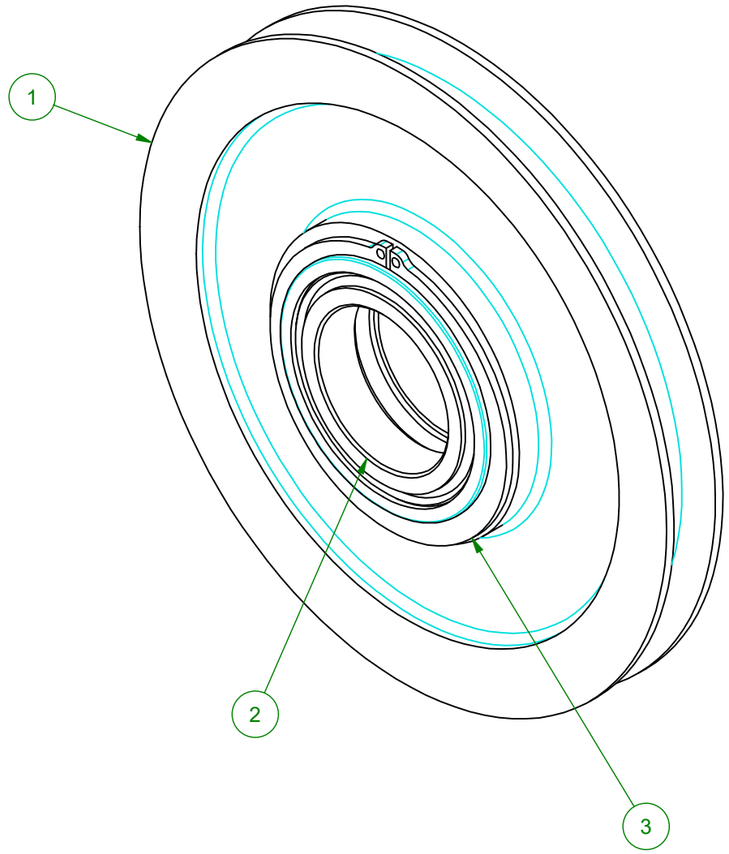
Drawing N° :
C09-0001-A0010

Revision :
A

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Sez. / Sec. **"S1-S1"**
(1 : 1)





3	DA CODIFICARE	Seeger ring for shaft	2	0,1 kg
2	R-000361911	Cylindrical roller bearing	1	1,2 kg
1	C09-0001-P0045	Pulley Ø209 for rope Ø11	1	4,2 kg
EL.	PART NUMBER	DESCRIPTION ENG	Q.TY	WEIGHT

REV	DATE	DESCRIPTION	DRAFTMAN	DESIGNER	CALCULATION ENG.	P.E.
A	27/09/2024	Prima emissione / First issued	riccardo.sobani	Sobani R.	De Fazio F.	–

GRADI DI PRECISIONE PER QUOTE LINEARI E ANGOLARI NON TOLLERATE
DEGREES OF ACCURACY FOR LINEAR AND ANGULAR NOT TOLERATED
LAVORAZIONI MECCANICHE / MECHANICALS MACHININGS
Linear-Angular / Linear-Angular : UNI EN 22768/1-1996 - m
Geometriche / Geometrical : UNI EN 22768/2-1996 - L
CARPENTERIA / WELDING STRUCTURE
Linear-Angular / Linear-Angular : UNI EN ISO 13920:2000 - A
Geometriche / Geometrical : UNI EN ISO 13920:2000 - E

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Phone : +39-035-68.44.14 - Fax : +39-035-68.78.23
e-mail : info@remazel.com / website : www.remazel.com

Project / Equipment :
C09-0001

Weight :
5,6 kg

Title :
Assieme Puleggia Øc209 -fune Ø11
Pulley Assembly Øc209 -rope Ø11

Scale :
1 : 2

Sheet :
2 of 2

A3

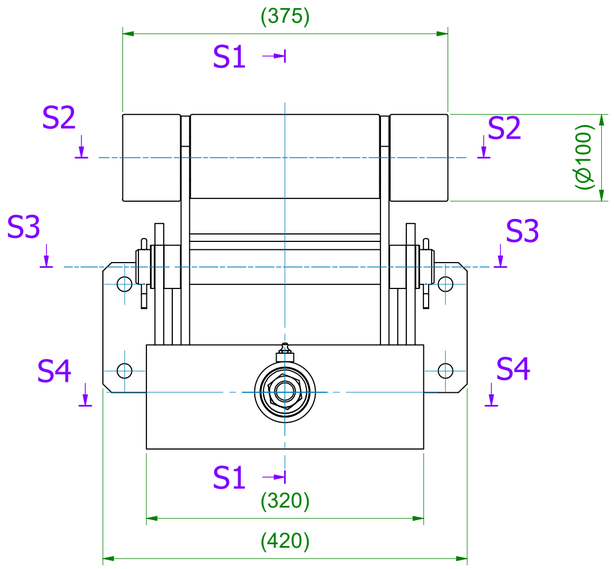
Drawing State:
Work in Progress
FOR CONSTRUCTION

Q.C.L. :
C3

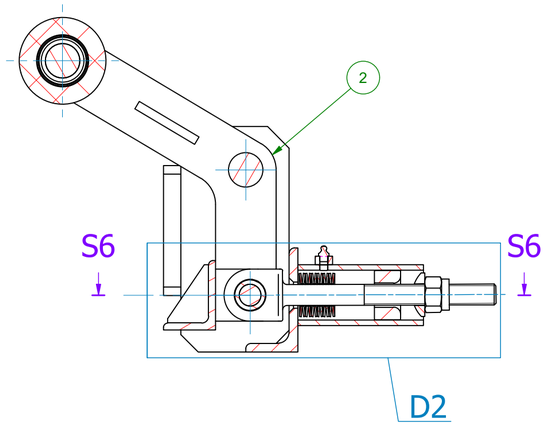
Drawing N° :
C09-0001-A0011

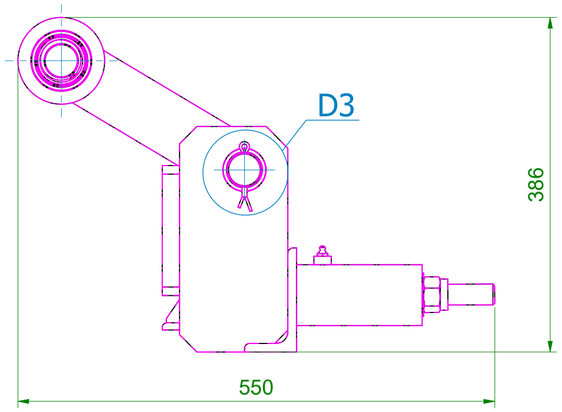
Revision :
A

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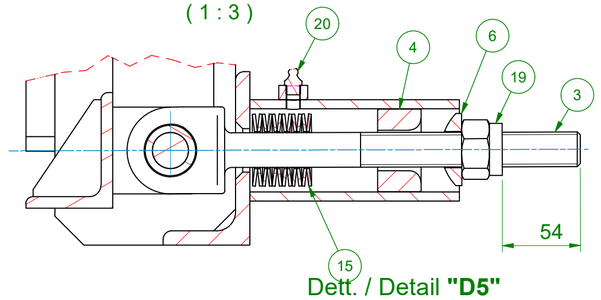


Sez. / Sec. **"S1-S1"**
(1 : 5)
ROPE PRESSING ROLLER ASSEMBLY
FIRST LAYER OF ROPE

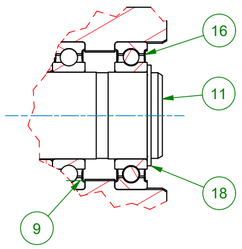




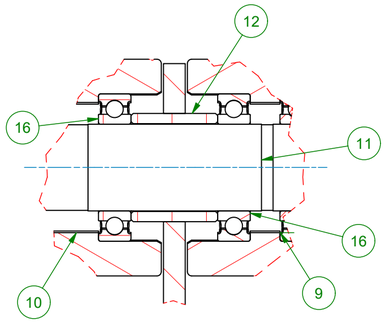
Dett. / Detail **"D2"**
(1 : 3)

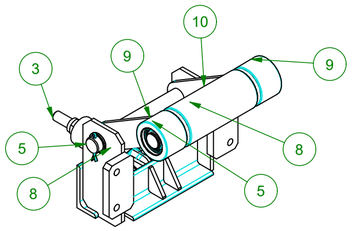


Dett. / Detail **"D4"**
(1 : 2)
Tipico / Typical

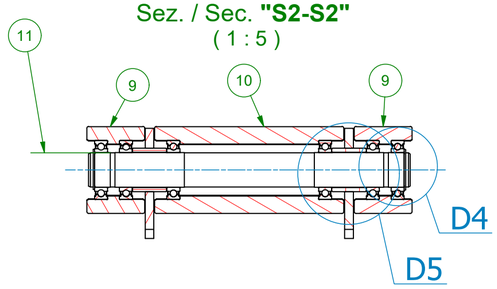


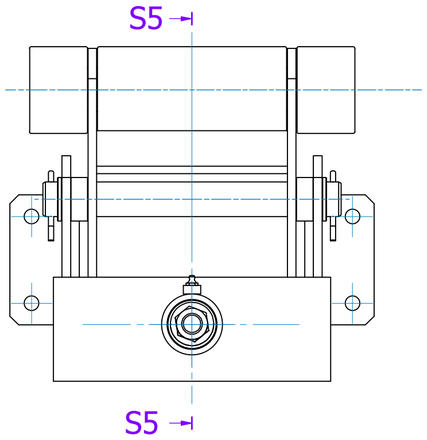
Dett. / Detail **"D5"**
(1 : 2)
Tipico / Typical



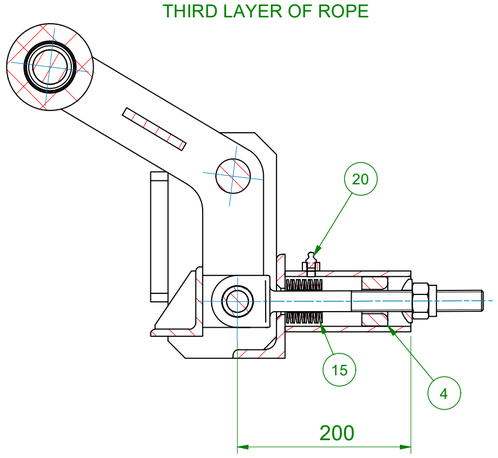


Sez. / Sec. **"S2-S2"**
(1 : 5)

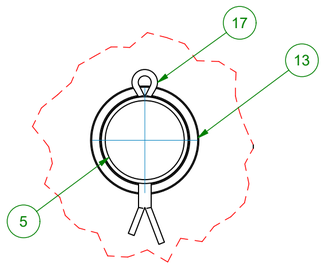




Sez. / Sec. **"S5-S5"**
(1 : 5)
ROPE PRESSING ROLLER ASSEMBLY
THIRD LAYER OF ROPE

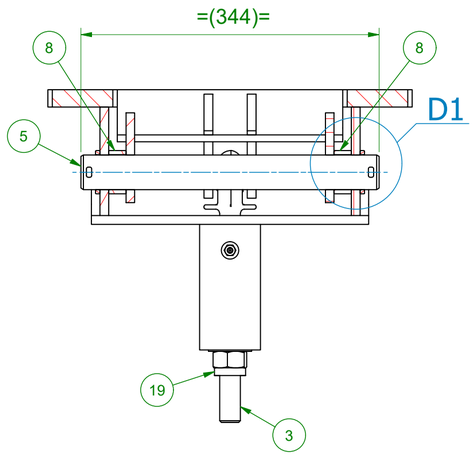


Dett. / Detail **"D3"**
(1 : 2)
Tipico / Typical

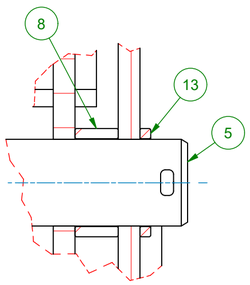


21	004-0029-C0090	Seeger ring for shaft	2	0 kg
20	004-0035-C0029	Greaser	1	0 kg
19	004-0032-C0060	Hexagonal nut	1	0,2 kg
18	004-0029-C0118	Seeger ring for shaft	2	0 kg
17	004-0028-C0120	Cotter pin	2	0 kg
16	R-000358589	Deep groove ball bearing	6	0,2 kg
15	R-000358588	Belleville Washer	12	0 kg
14	C09-0001-P0059	Rope presser bush	1	0,1 kg
13	C09-0001-P0064	Spacer	2	0 kg
12	C09-0001-P0063	Spacer	2	0,2 kg
11	C09-0001-P0055	Rope presser rolls shaft	1	3,7 kg
10	C09-0001-P0051	Rope presser big roll	1	2,1 kg
9	C09-0001-P0052	Rope presser Small roll	2	0,6 kg
8	C09-0001-P0053	Spacer	2	0,1 kg
7	C09-0001-P0062	Rope presser hinge shaft	1	0,3 kg
6	C09-0001-P0058	Rope presser sferical washer	1	0,1 kg
5	C09-0001-P0054	Rope presser lever shaft	1	3,5 kg
4	C09-0001-P0060	Springs pressing disc	1	0,5 kg
3	C09-0001-P0061	Rope presser threaded rod	1	1,4 kg
2	C09-0001-P0057	Rope presser support	1	9,1 kg
1	C09-0001-P0056	Rope presser support	1	14 kg
EL.	PART NUMBER	DESCRIPTION ENG	Q.TY	WEIGHT

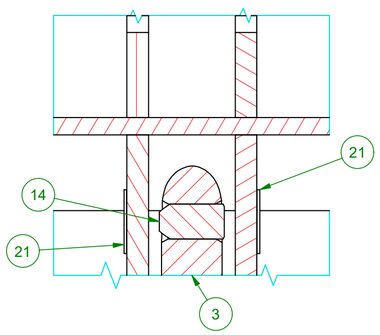
Sez. / Sec. **"S3-S3"**
(1 : 5)



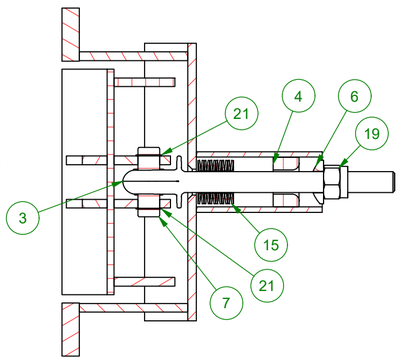
Dett. / Detail **"D1"**
(1 : 2)
Tipico / Typical



Sez. / Sec. **"S4-S4"**
(1 : 2)



Sez. / Sec. **"S6-S6"**
(1 : 5)

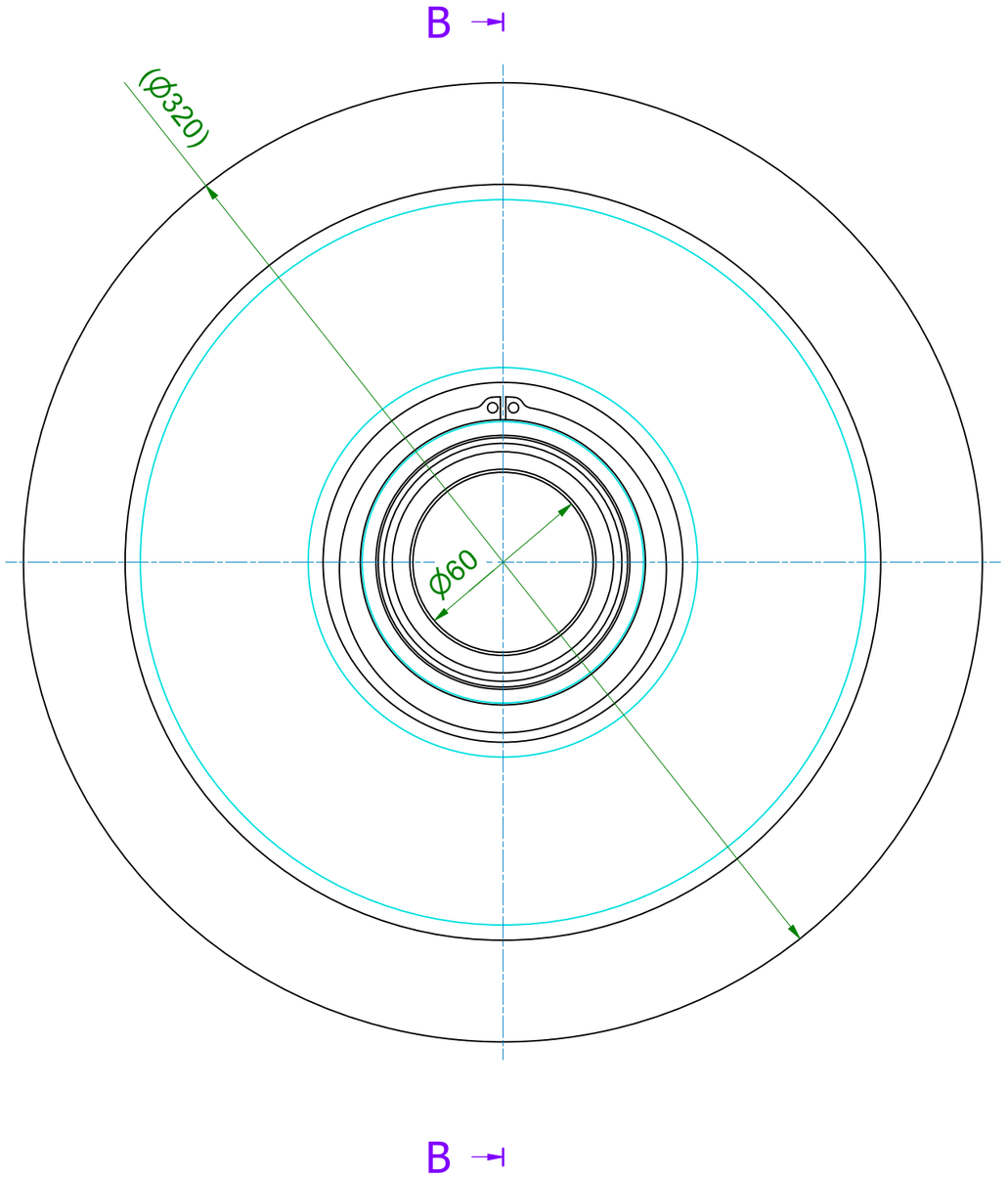


REV	DATE	DESCRIPTION	DRAFTMAN	DESIGNER	CALCULATION ENG.	
A	28/03/2022	Prima emissione / First issued	CONCRANESrl-Alppolit	Pittana A.	–	Boric M.

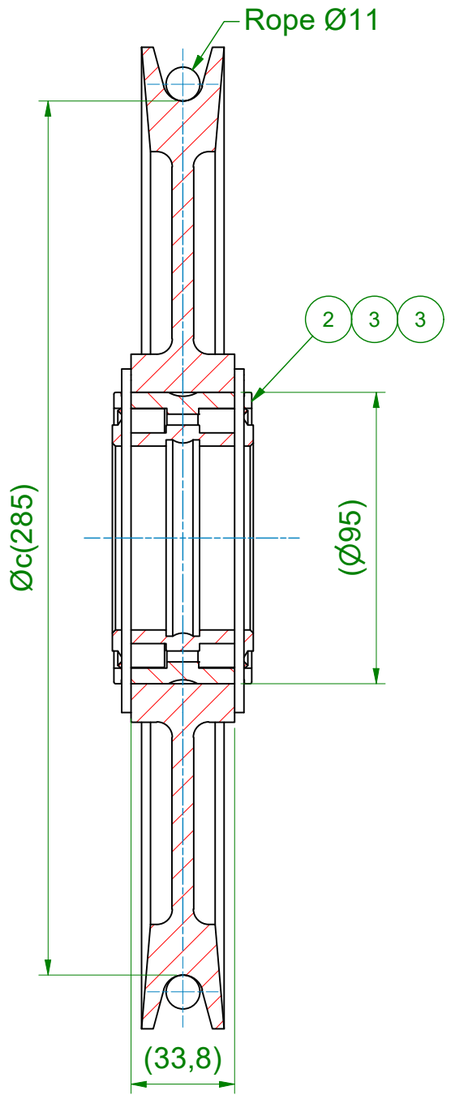
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e-mail : info@remazel.com / website : www.remazel.com

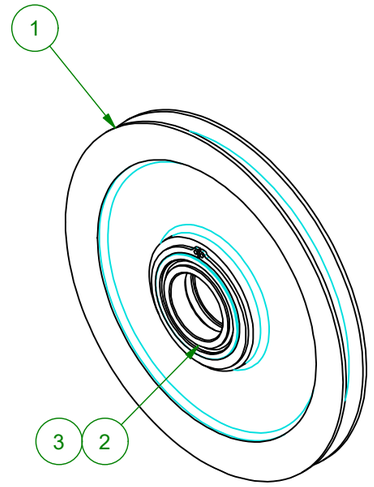
Project / Equipment : **C09-0001**
Weight : 38,4 kg
Title : Assieme premifune / Rope presser assembly
Scale : 1 : 5
Sheet : 2 of 2 — A2
Drawing State: **Work in Progress** / ***FOR CONSTRUCTION***
Q.C.L. : C3
Drawing N° : C09-0001-A0012
Revision : A

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Sez. / Sec. **"B-B"**
(1 : 2)





EL.	PART NUMBER	DESCRIPTION ENG	Q.TY	WEIGHT
3	004-0029-C0221	Seeger ring for shaft	2	0,1 kg
2	006-0003-C0849	Cylindrical roller bearing	1	1,2 kg
1	C09-0001-P0066	Pulley Boom	1	7,3 kg

REV	DATE	DESCRIPTION	DRAFTMAN	DESIGNER	CALCULATION ENG.	P.E.
A	27/09/2024	Prima emissione / First issued	riccardo.sobani	Sobani R.	De Fazio F.	–

GRADO DI PRECISIONE PER QUOTE LINEARI E ANGOLARI NON TOLLERATE
DEGREE OF PRECISION FOR LINEAR AND ANGULAR DIMENSIONS NOT TOLERATED
LAVORAZIONI MECCANICHE / MECHANICALS MACHININGS
Linear+Angular / Lineal+Angular : UNI EN 22768/1-1996 - m
Geometriche / Geometrical : UNI EN 22768/2-1996 - L
CARPENTERIA / WELDING STRUCTURE
Linear+Angular / Lineal+Angular : UNI EN ISO 13920:2000 - A
Geometriche / Geometrical : UNI EN ISO 13920:2000 - E

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e-mail : info@remazel.com / website : www.remazel.com

Project / Equipment :
C09-0001

Weight :
8,6 kg

Title :
Assieme Puleggia Øc285 -fune Ø11
Pulley Assembly Øc285 -rope Ø11

Scale :
1 : 2

Sheet :
2 of 2

A3

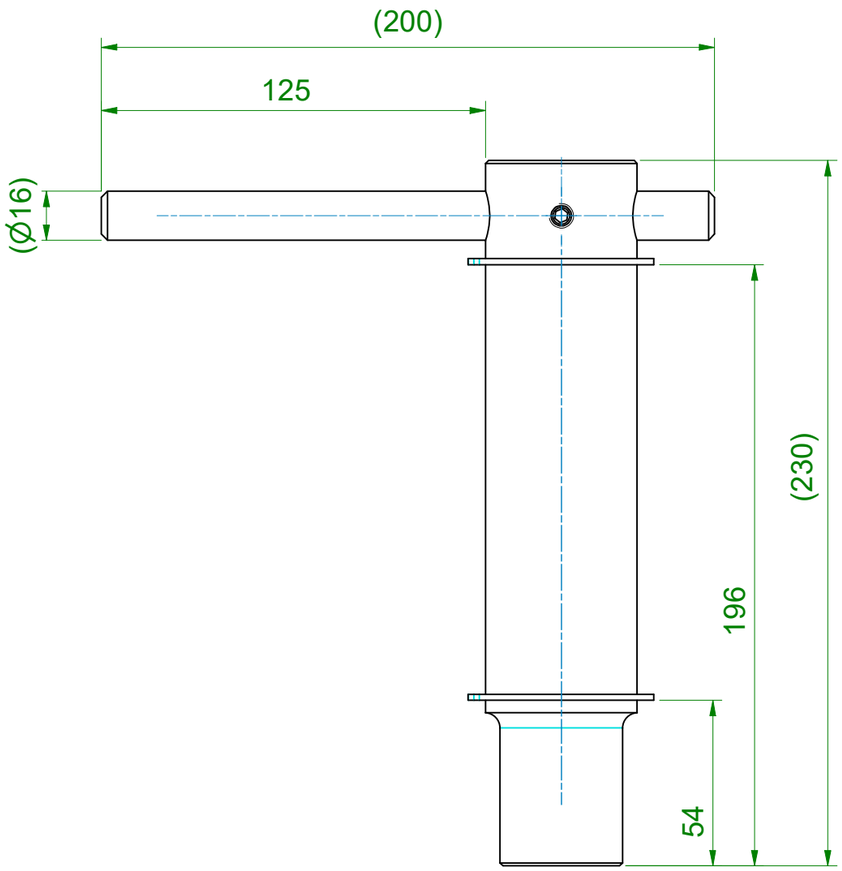
Drawing State:
Work in Progress
FOR CONSTRUCTION

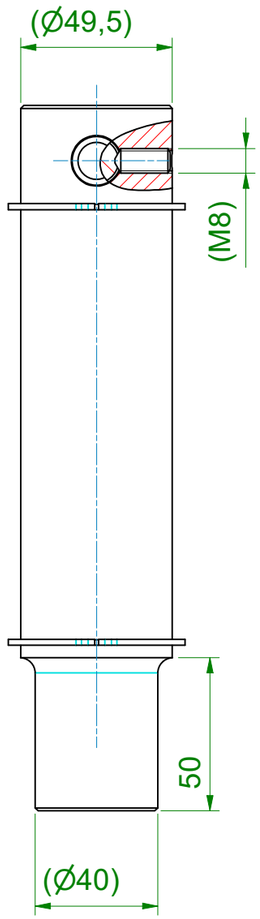
Q.C.L. :
C3

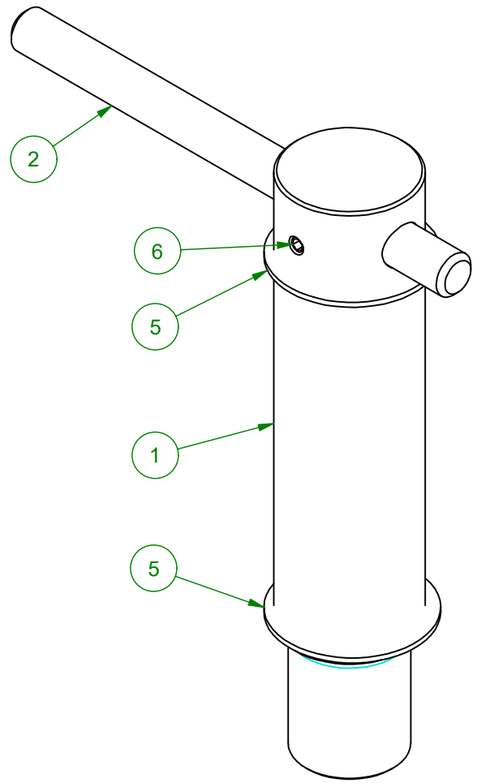
Drawing N° :
C09-0001-A0013

Revision :
A

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EL.	PART NUMBER	DESCRIPTION ENG	Q.TY	WEIGHT
6	DA CODIFICARE	Headless screw conical point	1	0 kg
5	004-0029-C0071	Seeger ring for shaft	2	0 kg
2	C09-0001-P0068	Handle	1	0,3 kg
1	C09-0001-P0067	Locking pin	1	3,2 kg

REV	DATE	DESCRIPTION	DRAFTMAN	DESIGNER	CALCULATION ENG.	P.E.
A	03/06/2024	Prima emissione / First issued	CPI-ENG	Sobani R.	De Fazio F.	–

PRIMO DI PRECISIONE PER CIOTE E INGRANE ANGOLARI NON ROLLEATE
LAVORAZIONE MECCANICHE E MACHINING
Lineari-Angolari / Lineal-Angular — UNI EN 22768/1:1996 - m
Geometriche / Geometrical — UNI EN 22768/2:1996 - L
CARPENTERIA / WELDING STRUCTURE — UNI EN ISO 13920/2000 - A
Lineari-Angolari / Lineal-Angular — UNI EN ISO 13920/2000 - E
Geometriche / Geometrical — UNI EN ISO 13920/2000 - E

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e-mail : info@remazel.com / website : www.remazel.com

Project / Equipment :
C09-0001

Weight :
3,6 kg

Title :
Assieme perno blocco
Locking pin assembly

Scale :
1 : 2

Sheet :
2 of 2

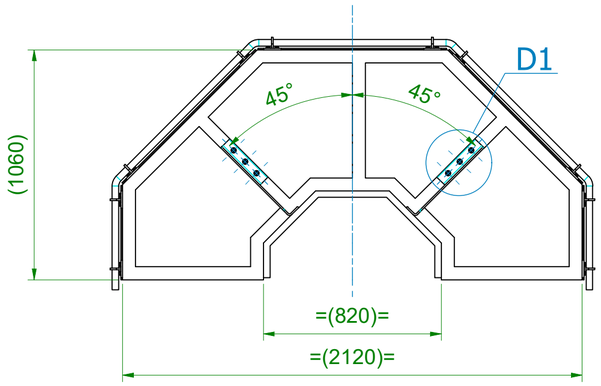
Drawing State:
Work in Progress
FOR CONSTRUCTION

Q.C.L. :
C3

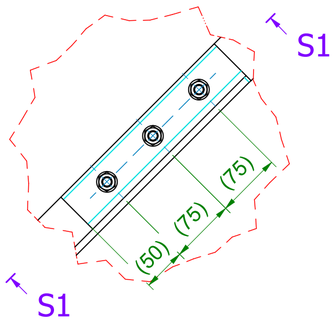
Drawing N° :
C09-0001-A0014

Revision :
A

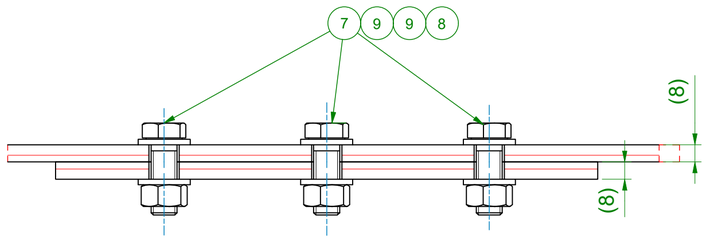
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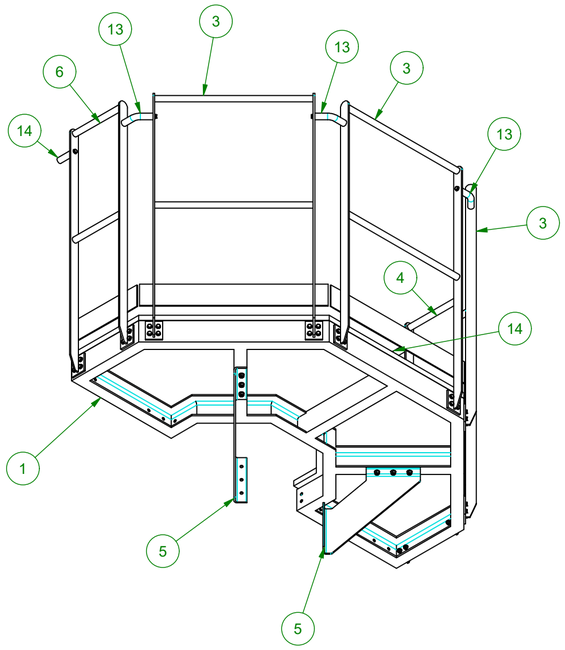


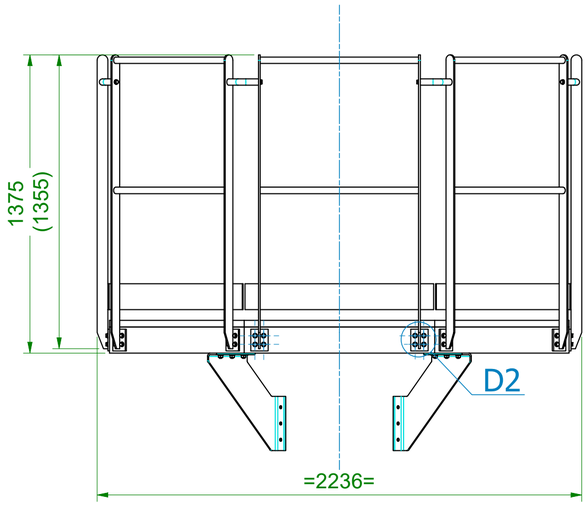
Dett. / Detail **"D1"**
(1 : 5)
Typ. (x2)

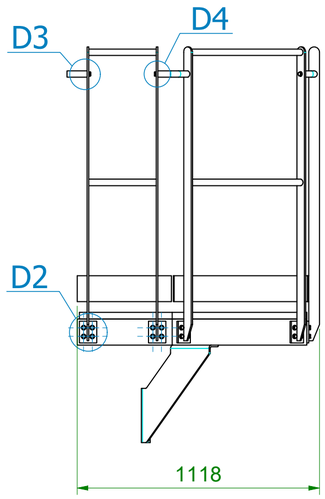


Sez. / Sec. **"S1-S1"**
(1 : 2)

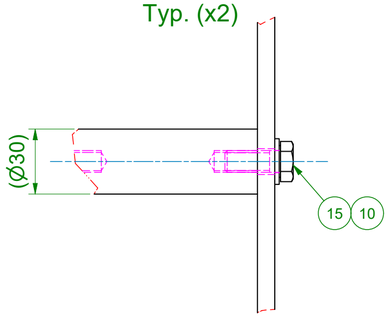




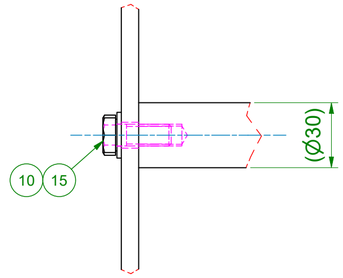


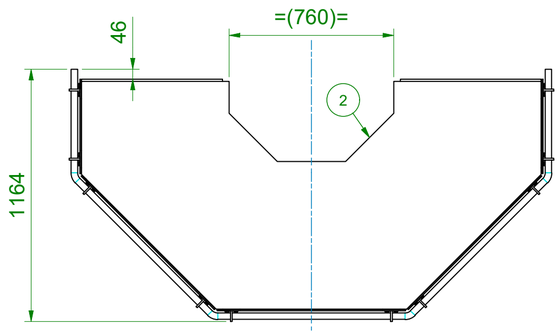


Dett. / Detail **"D3"**
(1 : 2)
Typ. (x2)

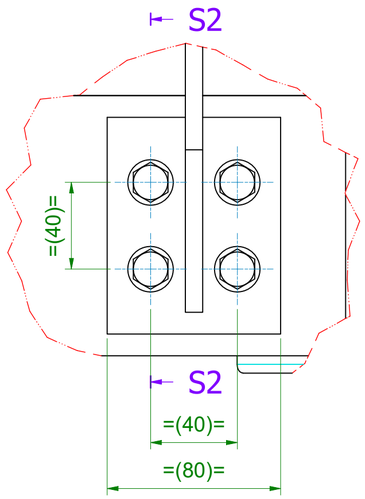


Dett. / Detail **"D4"**
(1 : 2)
Typ. (x8)

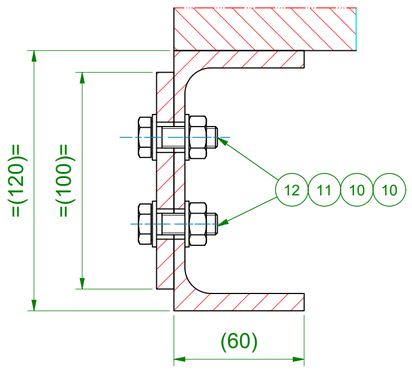




Dett. / Detail **"D2"**
(1 : 2)
Typ. (x10)



Sez. / Sec. **"S2-S2"**
(1 : 2)



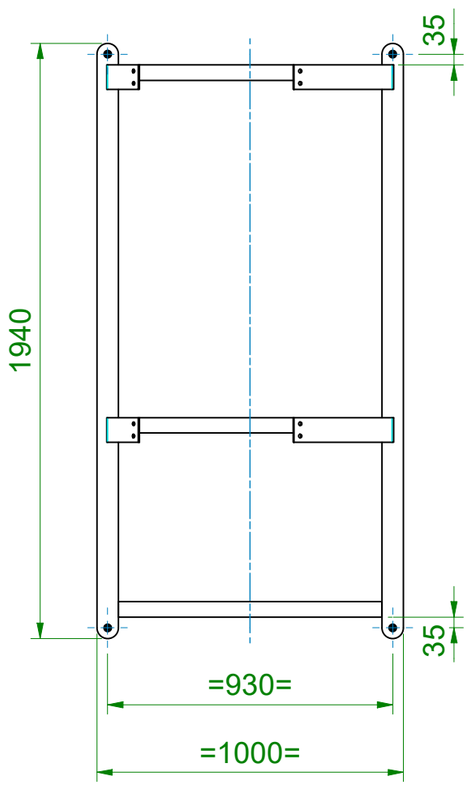
EL.	PART NUMBER	DESCRIPTION ENG	Q.TY	WEIGHT
15	004-0011-C0008	Hex head screw fully threaded	10	0 kg
14	C09-0001-P0080	Handrail Fix	2	0,5 kg
13	C09-0001-P0079	Handrail Angular Fix	4	0,9 kg
12	004-0011-C0001	Hex head screw fully threaded	40	0 kg
11	004-0021-C0012	Hexagonal nut	40	0 kg
10	004-0023-C0082	Plain washer	90	0 kg
9	004-0023-C0083	Plain washer	12	0 kg
8	004-0021-C0007	Hexagonal nut	6	0 kg
7	004-0011-C0024	Hex head screw fully threaded	6	0 kg
6	C09-0001-P0078	Handrail 3	1	13,2 kg
5	C09-0001-P0076	Fix Gangway	2	7,1 kg
4	C09-0001-P0075	Handrail 2	1	13,2 kg
3	C09-0001-P0074	Handrail 1	3	17,9 kg
2	C09-0001-P0043	Fore Floor Gangway	1	379,4 kg
1	C09-0001-P0034	Fore Octagonal Gangway	1	93,2 kg

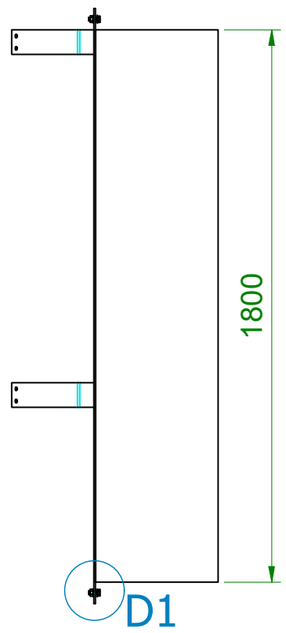
REV	DATE	DESCRIPTION	DRAFTMAN	DESIGNER	CALCULATION ENG.	P.E.
A	27/09/2024	Prima emissione / First issued	riccardo.sobani	Sobani R.	De Fazio F.	–

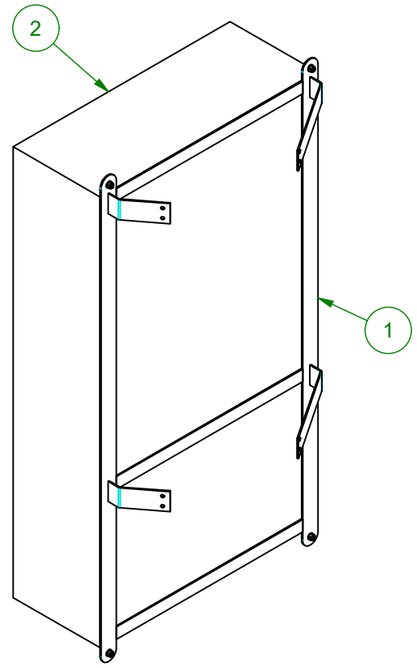
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e-mail : info@remazel.com / website : www.remazel.com

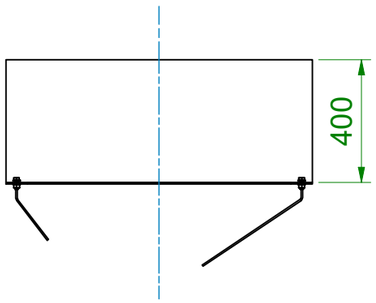
Project / Equipment : **C09-0001**
Weight : 574,1 kg
Title : Assieme Passerrella Anteriore / Fore Gangway Assembly
Scale : 1 : 20
Sheet : 2 of 2 **A2**
Drawing State: **Work in Progress** / ***FOR CONSTRUCTION***
Q.C.L. : C3
Drawing N° : C09-0001-A0015
Revision : A

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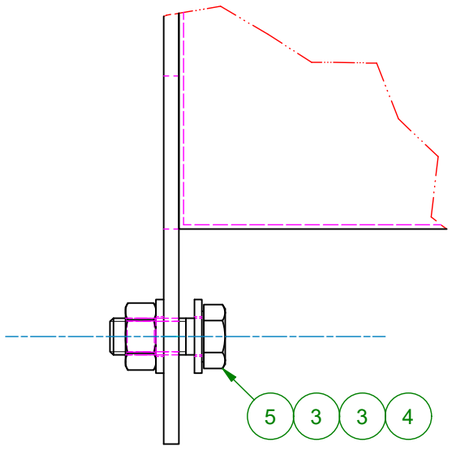








Dett. / Detail **"D1"**
(1 : 2)



EL.	PART NUMBER	DESCRIPTION ENG	Q.TY	WEIGHT
5	004-0011-C0060	Hex head screw fully threaded	4	0 kg
4	004-0021-C0007	Hexagonal nut	4	0 kg
3	004-0023-C0083	Plain washer	8	0 kg
2	C09-0001-P0012	Eletric box	1	68,6 kg
1	C09-0001-P0088	Chassis El. JB	1	19,7 kg

REV	DATE	DESCRIPTION	DRAFTMAN	DESIGNER	CALCULATION ENG.	P.E.
A	27/09/2024	Prima emissione / First issued	riccardo.sobani	Sobani R.	De Fazio F.	–

GRADO DI PRECISIONE PER QUOTE LINEARI E ANGOLARI NON TOLLERATE
DEGREE OF ACCURACY FOR LINEAR AND ANGULAR DIMENSIONS WITHOUT TOLERANCE
LAVORAZIONI MECCANICHE / MECHANICALS MACHINING
Lineari-Angolari / Linear-Angular : UNI EN 22768/1-1996 - m
Geometriche / Geometrical : UNI EN 22768/2-1996 - L
CARPENTERIA / WELDING STRUCTURE
Lineari-Angolari / Linear-Angular : UNI EN ISO 13920:2000 - A
Geometriche / Geometrical : UNI EN ISO 13920:2000 - E

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e-mail : info@remazel.com / website : www.remazel.com

Project / Equipment :
C09-0001

Weight :
88,7 kg

Title :
Assieme Quadro Elettrico
Eletric JB Assembly

Scale :
1 : 20

Sheet :
2 of 2

A3

Drawing State:
Work in Progress
FOR CONSTRUCTION

Q.C.L. :
C3

Drawing N° :
C09-0001-A0016

Revision :
A

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BASE LOAD POWER HUB (BLPH)

DAVIT CRANE

BLOCK DIAGRAM

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CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	08/08/24	MPR	GBA	ATR	ISSUE FOR REVIEW (IFR)
00	26/07/24	MPR	GBA	ATR	ISSUE FOR REVIEW (IFR)

TITLE : BASE LOAD POWER HUB (BLPH)
BLOCK DIAGRAM
FRONT PAGE

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

DRAWING NO. 24-27012-BD-001

SHEET 001

REV. 00

F.to UNI A3: 420mmx297mm

File Name : 24-27012-BD-001 Rev. 01

REV.	SHEET NUMBER	DESCRIPTION	REF. CODE
01	001	FRONT PAGE	
01	002	SUMMARY and GENERAL NOTES	
01	003	LEGEND SYMBOL	
01	004	MAIN ELECTRICAL PANEL	
00	005	HOISTING DEVICES	
00	006	ROTATION DEVICES	
00	007	TROLLEY DEVICES	

GENERAL NOTES

1:

2:

3:

4:

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CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	08/08/24	MPR	GBA	ATR	ISSUE FOR REVIEW (IFR)
00	26/07/24	MPR	GBA	ATR	ISSUE FOR REVIEW (IFR)

TITLE : BASE LOAD POWER HUB (BLPH)
BLOCK DIAGRAM
SUMMARY and GENERAL NOTES

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

DRAWING NO. 24-27012-BD-001

SHEET 002

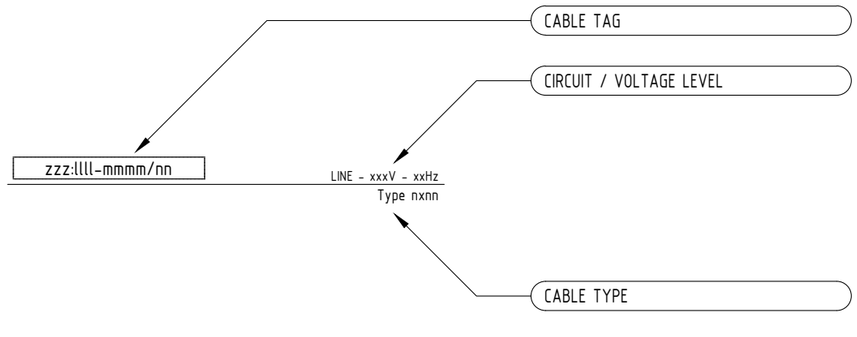
REV. 00

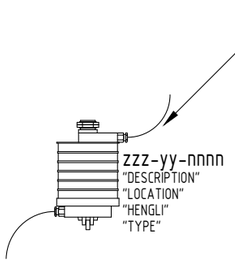
F.to UNI A3: 420mmx297mm

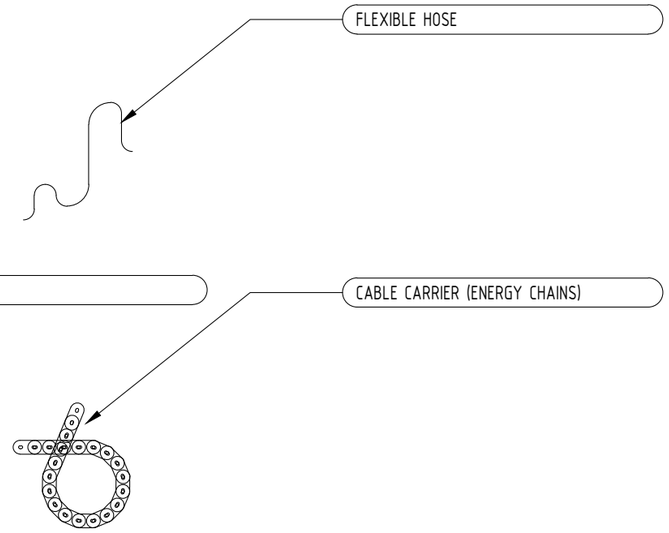
File Name : 24-27012-BD-001 Rev. 01

DAVIT CRANE: 24-27012
BLOCK DIAGRAM

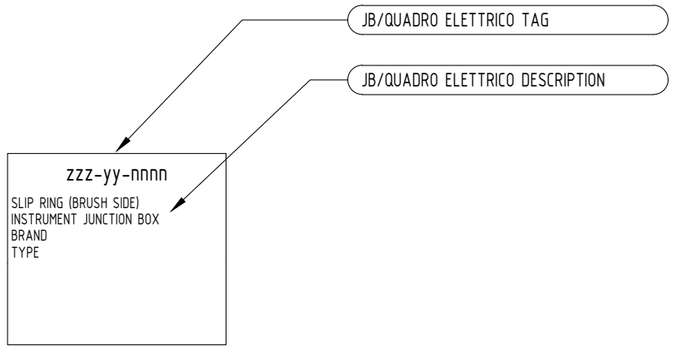
LEGEND SYMBOL

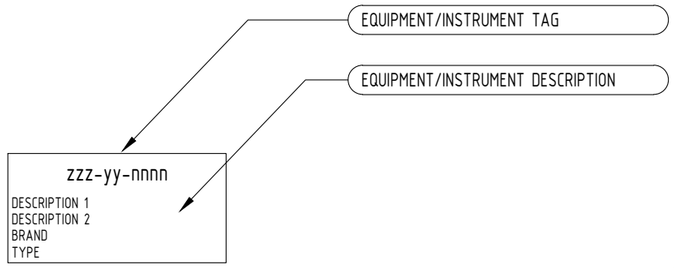


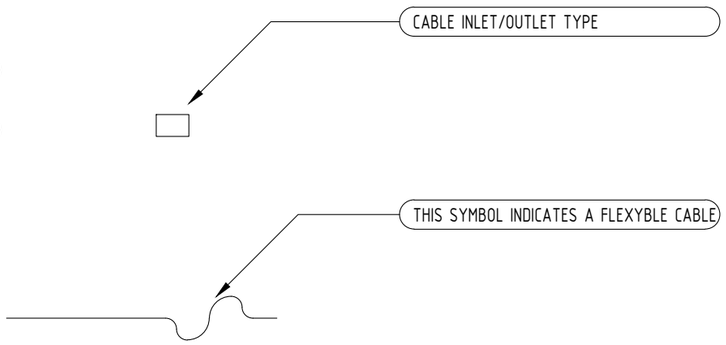




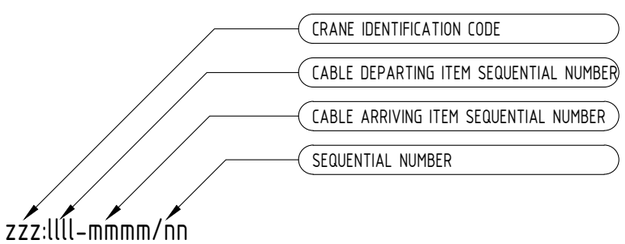
SHIPYARD SCOPE OF SUPPLY CABLE
CONNECTIONS TO BE MADE BY THE SHIPYARD



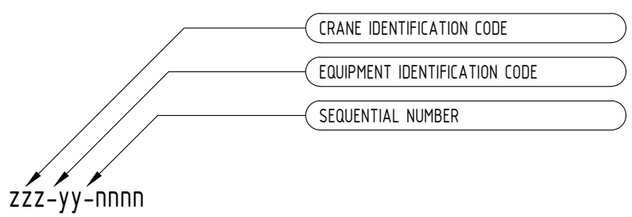




CABLE TAG LEGEND



EQUIPMENT TAG LEGEND



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e-mail : info@remazel.com / website : www.remazel.com

CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	08/08/24	MPR	GBA	ATR	ISSUE FOR REVIEW (IFR)
00	26/07/24	MPR	GBA	ATR	ISSUE FOR REVIEW (IFR)

TITLE : BASE LOAD POWER HUB (BLPH)
BLOCK DIAGRAM
LEGEND SYMBOL

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

DRAWING NO. 24-27012-BD-001

SHEET 003

REV. 00

F.to UNI A3: 420mmx297mm

File Name : 24-27012-BD-001 Rev. 01

POWER SOURCE
400 V - 3ph + N + PE - 50 Hz

20 kW

MAIN POWER - 400 V / 50 Hz
5G16 mm²
M40

PE - PROTECTION EARTH
1G16
M12

C01-EP-0001

MAIN ELECTRICAL PANEL
AT BASE OF CRANE

C01-RES-001

HOISTING BRAKE RESISTOR

C01:0001-0015 — BRAKE RESISTOR - 24Vdc, 3G10 — M25

C01-RES-002

ROTATION AND TROLLEY
BRAKE RESISTOR

C01:0001-0016 — BRAKE RESISTOR - 24Vdc, 3G2,5 — M20

C01-CHB-0014

ACOUSTIC&VISUAL SIGNALING DEVICE

C01:0001-0014 — CONTROL - 24Vdc, 5G1 — M16

M32	C01:0001-0010/01	MOTOR - 400 V / 50 Hz, 4G10	TO P.005 C01-M-0010
M16	C01:0001-0010/02	STANDSTILL HEATER- 230 V / 50 Hz, 3G1,5	TO P.005 C01-M-0010
M16	C01:0001-0010/03	PTC, 2x1	TO P.005 C01-M-0010
M16	C01:0001-0011	MOTOR BRAKE - 230V / 50 Hz, 3G1,5	TO P.005 C01-BR-0011
M20	C01:0001-0020/01	MOTOR - 400 V / 50 Hz, 4G2,5	TO P.6 C01-M-0020
M16	C01:0001-0020/02	STANDSTILL HEATER- 230 V / 50 Hz, 3G1,5	TO P.6 C01-M-0020
M16	C01:0001-0020/03	PTC, 2x1	TO P.6 C01-M-0020
M16	C01:0001-0021	MOTOR BRAKE - 400V / 50 Hz, 4G1,5	TO P.6 C01-BR-0021
M20	C01:0001-0030/01	MOTOR - 400 V / 50 Hz, 4G2,5	TO P.7 C01-M-0030
M16	C01:0001-0030/02	STANDSTILL HEATER- 230 V / 50 Hz, 3G1,5	TO P.7 C01-M-0030
M16	C01:0001-0030/03	PTC, 2x1	TO P.7 C01-M-0030
M16	C01:0001-0031	MOTOR BRAKE - 400V / 50 Hz, 4G1,5	TO P.7 C01-BR-0031
M20	C01:0001-0012	24Vdc, 5x2x0.5 Shielded	TO P.005 C01-ENC-0012
M32	C01:0001-0002/01	24Vdc, 19G1	TO P.005 C01-JB-0002
M16	C01:0001-0002/02	4.20mA, 2X1	TO P.005 C01-JB-0002
M16	C01:0001-0013	CANOpen, 5x0,5	TO P.5 C01-ENC-0013
M16	C01:0001-0017	MOTOR BRAKE - 230V / 50 Hz, 3G1,5	TO P.005 C01-BR-0017

SHIPYARD SCOPE OF SUPPLY CABLE
CONNECTIONS TO BE MADE BY THE SHIPYARD

SHIYARD SCOPE OF SUPPLY — REMAZEL SCOPE OF SUPPLY

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CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	08/08/24	MPR	GBA	ATR	ISSUE FOR REVIEW (IFR)
00	26/07/24	MPR	GBA	ATR	ISSUE FOR REVIEW (IFR)

TITLE : BASE LOAD POWER HUB (BLPH)
BLOCK DIAGRAM
MAIN ELECTRICAL PANEL

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

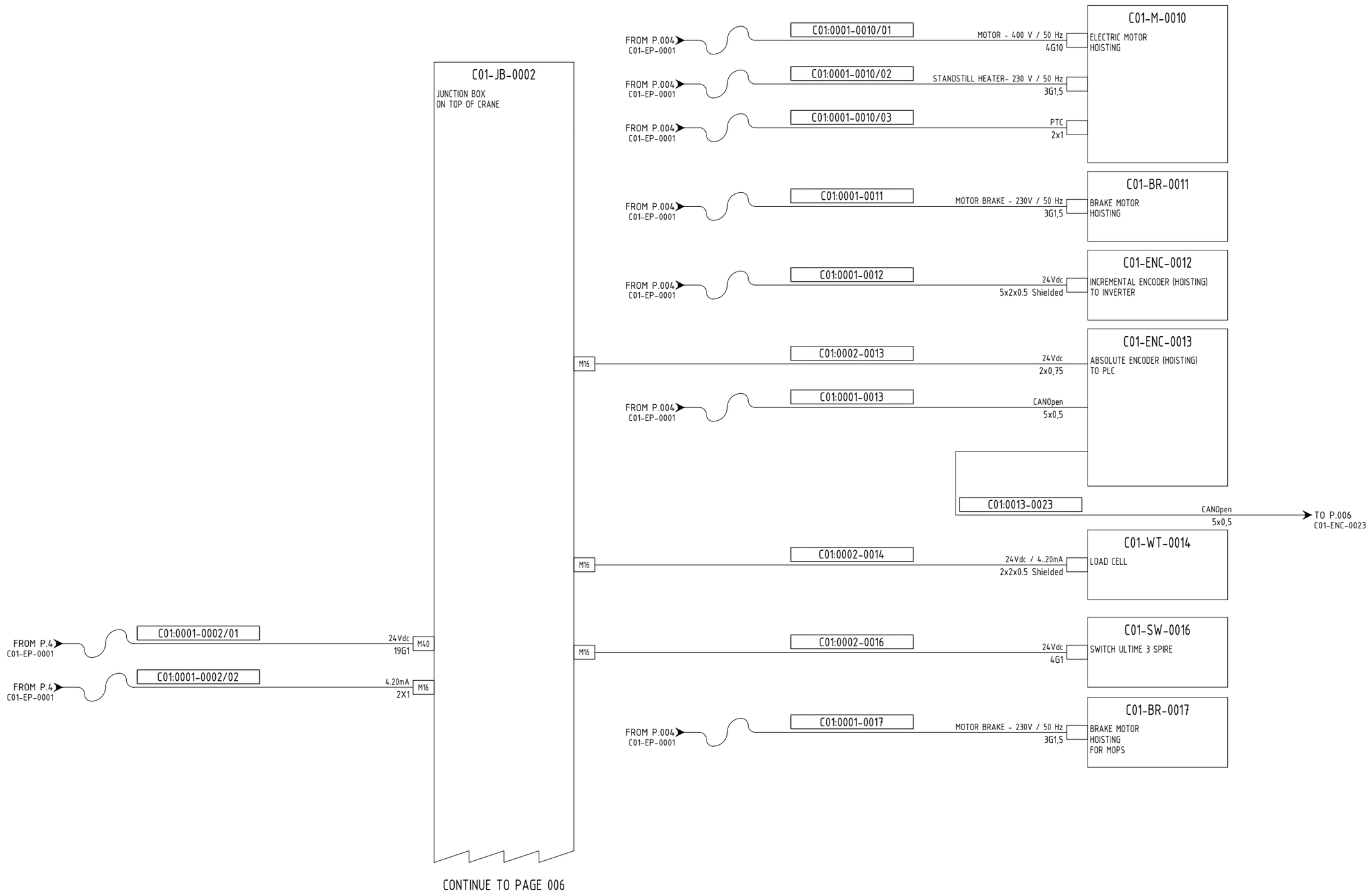
DRAWING NO. 24-27012-BD-001

SHEET 004

REV. 00

F.to UNI A3: 420mmx297mm

File Name : 24-27012-BD-001 Rev. 01



CONTINUE TO PAGE 006

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01	08/08/24	MPR	GBA	ATR	ISSUE FOR REVIEW (IFR)
00	26/07/24	MPR	GBA	ATR	ISSUE FOR REVIEW (IFR)

TITLE : BASE LOAD POWER HUB (BLPH)
BLOCK DIAGRAM
HOISTING DEVICES

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

DRAWING NO. 24-27012-BD-001

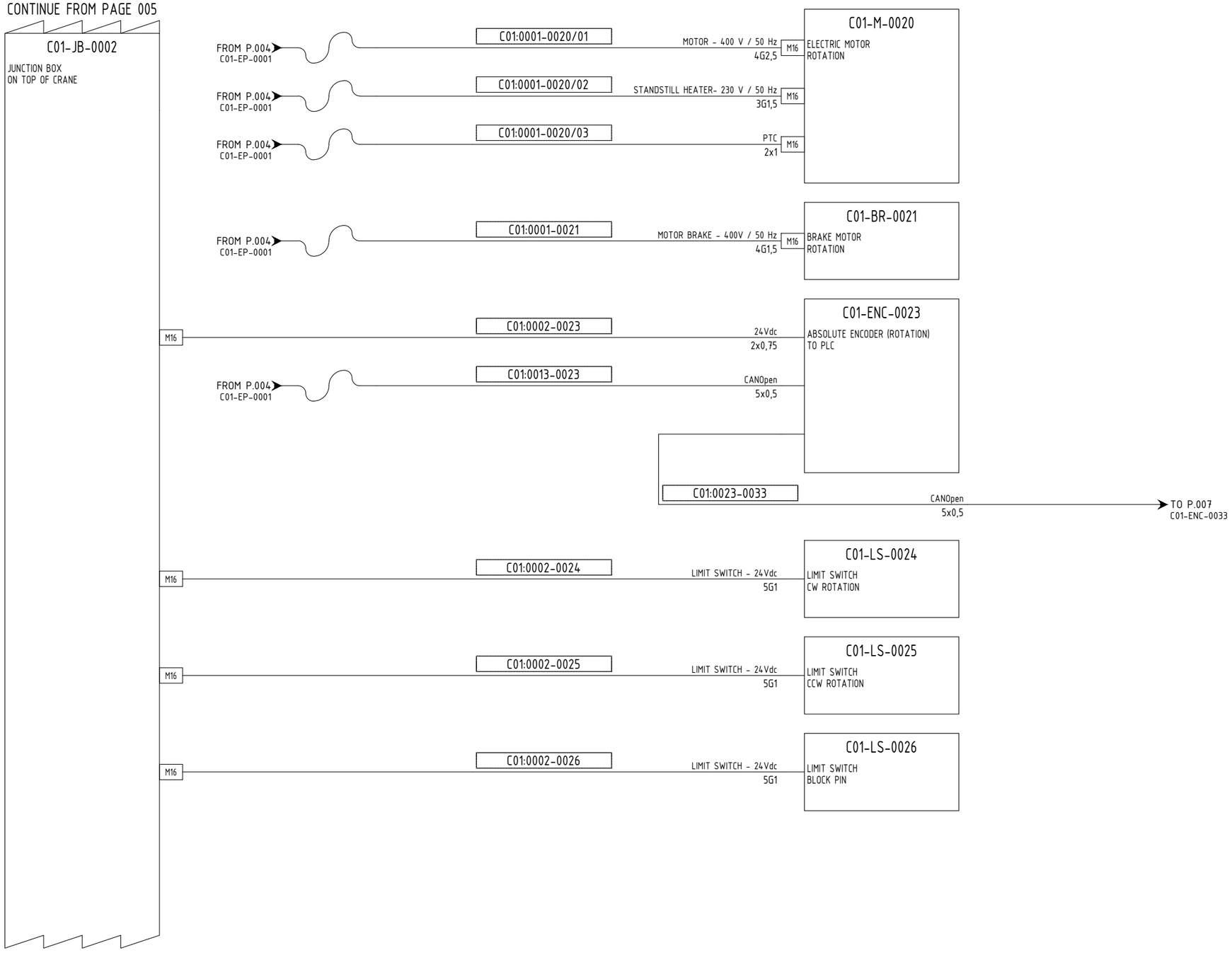
SHEET 005

REV. 00

F.to UNI A3: 420mmx297mm

File Name : 24-27012-BD-001 Rev. 01

CONTINUE FROM PAGE 005



CONTINUE TO PAGE 007

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REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	08/08/24	MPR	GBA	ATR	ISSUE FOR REVIEW (IFR)
00	26/07/24	MPR	GBA	ATR	ISSUE FOR REVIEW (IFR)

TITLE : BASE LOAD POWER HUB (BLPH)
BLOCK DIAGRAM
ROTATION DEVICES

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

DRAWING NO. 24-27012-BD-001

SHEET 006

REV. 00

F.to UNI A3: 420mmx297mm

File Name : 24-27012-BD-001 Rev. 01

CONTINUE FROM PAGE 006

C01-JB-0002

JUNCTION BOX
ON TOP OF CRANE

FROM P.004 C01-EP-0001 → C01:0001-0030/01 — MOTOR - 400 V / 50 Hz — 4G2,5

FROM P.004 C01-EP-0001 → C01:0001-0030/02 — STANDSTILL HEATER- 230 V / 50 Hz — 2x1

FROM P.004 C01-EP-0001 → C01:0001-0030/03 — PTC — 2x1

FROM P.004 C01-EP-0001 → C01:0001-0031 — MOTOR BRAKE - 400V / 50 Hz — 4G1

M16 → C01:0002-0033 — 24Vdc — 2x0,75

FROM P.004 C01-ENC-0023 → C01:0023-0033 — CANPpen — 5x0,5

M16 → C01:0002-0034 — LIMIT SWITCH - 24Vdc — 5G1

M16 → C01:0002-0035 — LIMIT SWITCH - 24Vdc — 5G1

M16 → C01:0002-0036 — LIMIT SWITCH - 24Vdc — 4G1

CABLE CHAIN

C01:0001-0030/01 — MOTOR - 400 V / 50 Hz — 4G2,5 — M16 → C01-M-0030
ELECTRIC MOTOR
TROLLEY

C01:0001-0030/02 — STANDSTILL HEATER- 230 V / 50 Hz — 3G1,5 — M16

C01:0001-0030/03 — PTC — 2x1 — M16

C01:0001-0031 — MOTOR BRAKE - 400V / 50 Hz — 4G1,5 — M16 → C01-BR-0031
BRAKE MOTOR
TROLLEY

C01:0002-0033 — 24Vdc — 2x0,75 → C01-ENC-0033
ABSOLUTE ENCODER (TROLLEY)
TO PLC

C01:0023-0033 — CANPpen — 5x0,5

C01:0002-0034 — LIMIT SWITCH - 24Vdc — 5G1 → C01-LS-0034
LIMIT SWITCH
0 POS

C01:0002-0035 — LIMIT SWITCH - 24Vdc — 5G1 → C01-LS-0035
LIMIT SWITCH
OFFBOARD POSITION

C01:0002-0036 — 24Vdc — 4G1 → C01-SW-0036
SWITCH A2B

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00	26/07/24	MPR	GBA	ATR	ISSUE FOR REVIEW (IFR)

TITLE : BASE LOAD POWER HUB (BLPH)
BLOCK DIAGRAM
TROLLEY DEVICES

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

DRAWING NO. 24-27012-BD-001

SHEET 007

REV. 00

F.to UNI A3: 420mmx297mm

File Name : 24-27012-BD-001 Rev. 01

BASE LOAD POWER HUB (BLPH)

DAVIT CRANE

WIRING DIAGRAM

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01	03/09/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)
00	26/07/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)

TITLE : BASE LOAD POWER HUB (BLPH)
DAVIT CRANE WIRING DIAGRAM

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

DRAWING NO. 1724001010-MAC-DG-00012

SHEET 1

REV. 01

File Name : 24-27012-WD-001 Rev. 00

F.to UNI A3: 420mmx297mm

REV.	SHEET NUMBER	DESCRIPTION	REF. CODE
01	1	FRONT PAGE	
01	2	SUMMARY and GENERAL NOTES	
01	10	SYMBOLS LEGEND	
01	30	INCOMING POWER LINE	
01	32	ENCLOSURE SERVICE	
01	34	UPS AND STANDSTILL HEATERS	
01	40	24Vdc SUPPLY	
01	50	HOISTING VFD CONNECTIONS	
01	52	ROTATION AND TROLLEY VFD CONNECTIONS	
01	54	ROTATION AND TROLLEY MOTORS	
01	56	MOTOR BRAKES	
01	60	CPU	
01	62	SAFETY MODULES	
01	64	SAFETY MODULES	
01	66	DIGITAL INPUT	
01	68	DIGITAL INPUT	
01	70	DIGITAL INPUT	
01	72	DIGITAL INPUT	
01	74	DIGITAL OUTPUT	
01	76	DIGITAL OUTPUT	
01	78	ANALOG INPUT AND OUTPUT	
01	80	LOAD CELL	
01	82	HOISTING AND ROTATION ENCODERS	
01	84	TROLLEY ENCODER	
01	86	MOPS COMMAND	
01	90	TERMINAL STRIP X01	
01	92	TERMINAL STRIP XS1	
01	94	TERMINAL STRIP JB / X02	

GENERAL NOTES

1:

2:

3:

4:

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01	03/09/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)
00	26/07/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)

TITLE : BASE LOAD POWER HUB (BLPH)
DAVIT CRANE WIRING DIAGRAM

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

DRAWING NO. 1724001010-MAC-DG-00012

SHEET 2

REV. 01

File Name : 24-27012-WD-001 Rev. 00

F.to UNI A3: 420mmx297mm

	MANUAL POWER DISCONNECTING SWITCH		FAN		
	FUSE POWER DISCONNECTING SWITCH		STANDSTILL HEATER		
	THERMAL-MAGNETIC CIRCUIT BREAKER		NORMALLY OPEN THERMOSTAT		
	DIFFERENTIAL THERMAL-MAGNETIC CIRCUIT BREAKER		NORMALLY CLOSE THERMOSTAT		
	CONTACTOR / RELE' COIL		LAMP		
	POWER CONTACT		EMERGENCY PUSH BUTTON		
	NORMALLY OPEN CONTACT		NORMALLY OPEN PUSH BUTTON		
	NORMALLY CLOSE CONTACT		NORMALLY OPEN KEY SELECTOR		
	SWITCHING POWER SUPPLY		NORMALLY CLOSE LIMIT SWITCH		
	MOTOR		INDUCTIVE LIMIT SWITCH		
	MOTOR THERMAL PROTECTION		HORN		
	ENCODER		LOAD CELL		
	MOTOR BRAKE		PROTECTIVE EARTH		
	SERVICE SOCKET				

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01	03/09/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)
00	26/07/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)

TITLE : BASE LOAD POWER HUB (BLPH)
DAVIT CRANE WIRING DIAGRAM
SYMBOLS LEGEND

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

DRAWING NO. 1724001010-MAC-DG-00012

SHEET 10

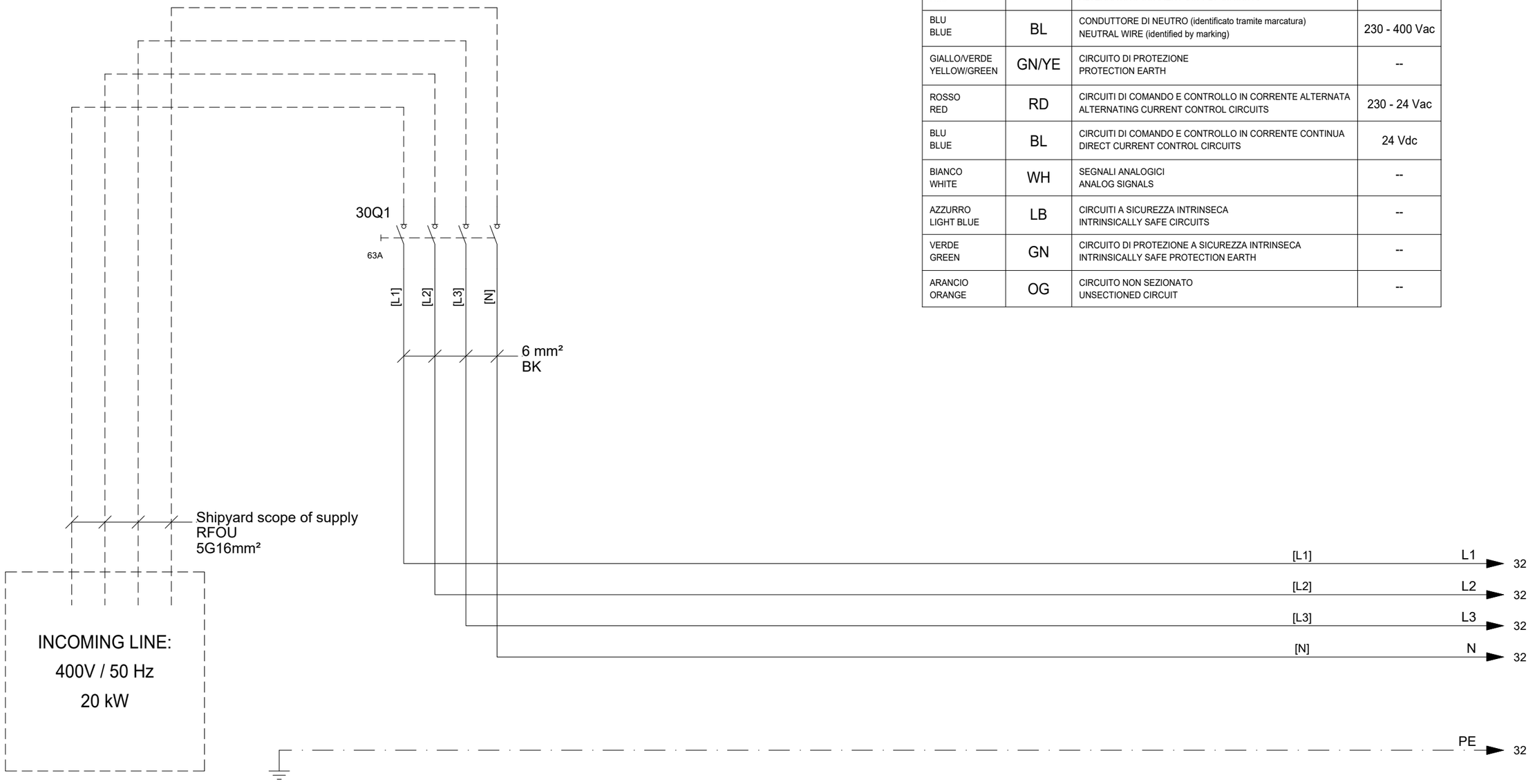
REV. 01

File Name : 24-27012-WD-001 Rev. 00

F.to UNI A3: 420mmx297mm

IDENTIFICAZIONE CONDUTTORI (CEI EN 60204-32)
WIRES IDENTIFICATION

COLORE COLOR	LEGENDA LEGEND	TIPO DI CIRCUITO CIRCUIT TYPE	TENSIONE VOLTAGE
NERO BLACK	BK	CIRCUITI DI ALIMENTAZIONE IN CORRENTE ALTERNATA ALTERNATING CURRENT SUPPLY CIRCUITS	690 - 400 Vac
ROSSO RED	RD	CIRCUITI DI ALIMENTAZIONE IN CORRENTE ALTERNATA ALTERNATING CURRENT SUPPLY CIRCUITS	230 Vac
BLU BLUE	BL	CONDUTTORE DI NEUTRO (identificato tramite marcatura) NEUTRAL WIRE (identified by marking)	230 - 400 Vac
GIALLO/VERDE YELLOW/GREEN	GN/YE	CIRCUITO DI PROTEZIONE PROTECTION EARTH	--
ROSSO RED	RD	CIRCUITI DI COMANDO E CONTROLLO IN CORRENTE ALTERNATA ALTERNATING CURRENT CONTROL CIRCUITS	230 - 24 Vac
BLU BLUE	BL	CIRCUITI DI COMANDO E CONTROLLO IN CORRENTE CONTINUA DIRECT CURRENT CONTROL CIRCUITS	24 Vdc
BIANCO WHITE	WH	SEGNALI ANALOGICI ANALOG SIGNALS	--
AZZURRO LIGHT BLUE	LB	CIRCUITI A SICUREZZA INTRINSECA INTRINSICALLY SAFE CIRCUITS	--
VERDE GREEN	GN	CIRCUITO DI PROTEZIONE A SICUREZZA INTRINSECA INTRINSICALLY SAFE PROTECTION EARTH	--
ARANCIO ORANGE	OG	CIRCUITO NON SEZIONATO UNSECTIONED CIRCUIT	--



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01	03/09/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)
00	26/07/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)

TITLE : BASE LOAD POWER HUB (BLPH)
DAVIT CRANE WIRING DIAGRAM
INCOMING POWER LINE

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

DRAWING NO. 1724001010-MAC-DG-00012

SHEET 30

REV. 01

File Name : 24-27012-WD-001 Rev. 00

F.to UNI A3: 420mmx297mm

30 L1 [L1] [L1] L1 34
30 L2 [L2] [L2] L2 34
30 L3 [L3] [L3] L3 34
30 N [N] [N] N 34
30 PE PE 34

[L1] [L2] [L3] [N] 1,5 mm² BK x 3 + BL

[L1] [N] 1,5 mm² RD + BL + GN/YE

[L2] [N] 1,5 mm² RD + BL + GN/YE

32Q1 2A

32Q2 C 6A

32Q3 2A

32E1 Stigo ZR 011

1,5 mm² BK

[32-1] [32-1] [32-2] [32-3] [32-4]

32KA1 32HL1 32HL2 32HL3

66

400Vac VOLTAGE PRESENCE

[32-5] [32-6]

32X1

ELECTRIC SOCKET

[32-7] [32-8]

32R1 32E2 M 1AC

HEATER FAN

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01	03/09/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)
00	26/07/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)

TITLE : BASE LOAD POWER HUB (BLPH)
DAVIT CRANE WIRING DIAGRAM
ENCLOSURE SERVICE

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

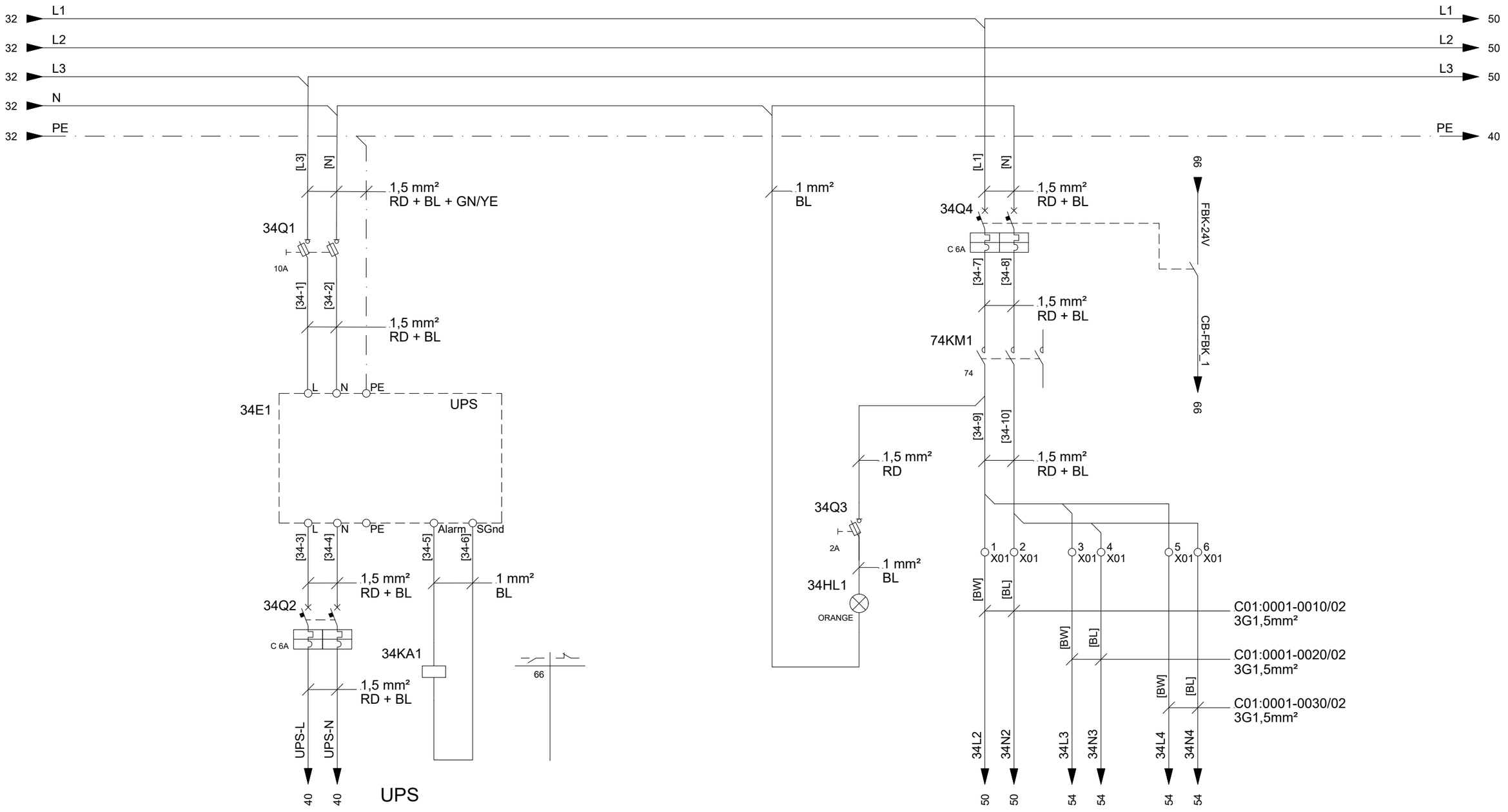
DRAWING NO. 1724001010-MAC-DG-00012

SHEET 32

REV. 01

File Name : 24-27012-WD-001 Rev. 00

F.to UNI A3: 420mmx297mm



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01	03/09/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)
00	26/07/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)

TITLE : BASE LOAD POWER HUB (BLPH)
DAVIT CRANE WIRING DIAGRAM
UPS AND STANDSTILL HEATERS

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

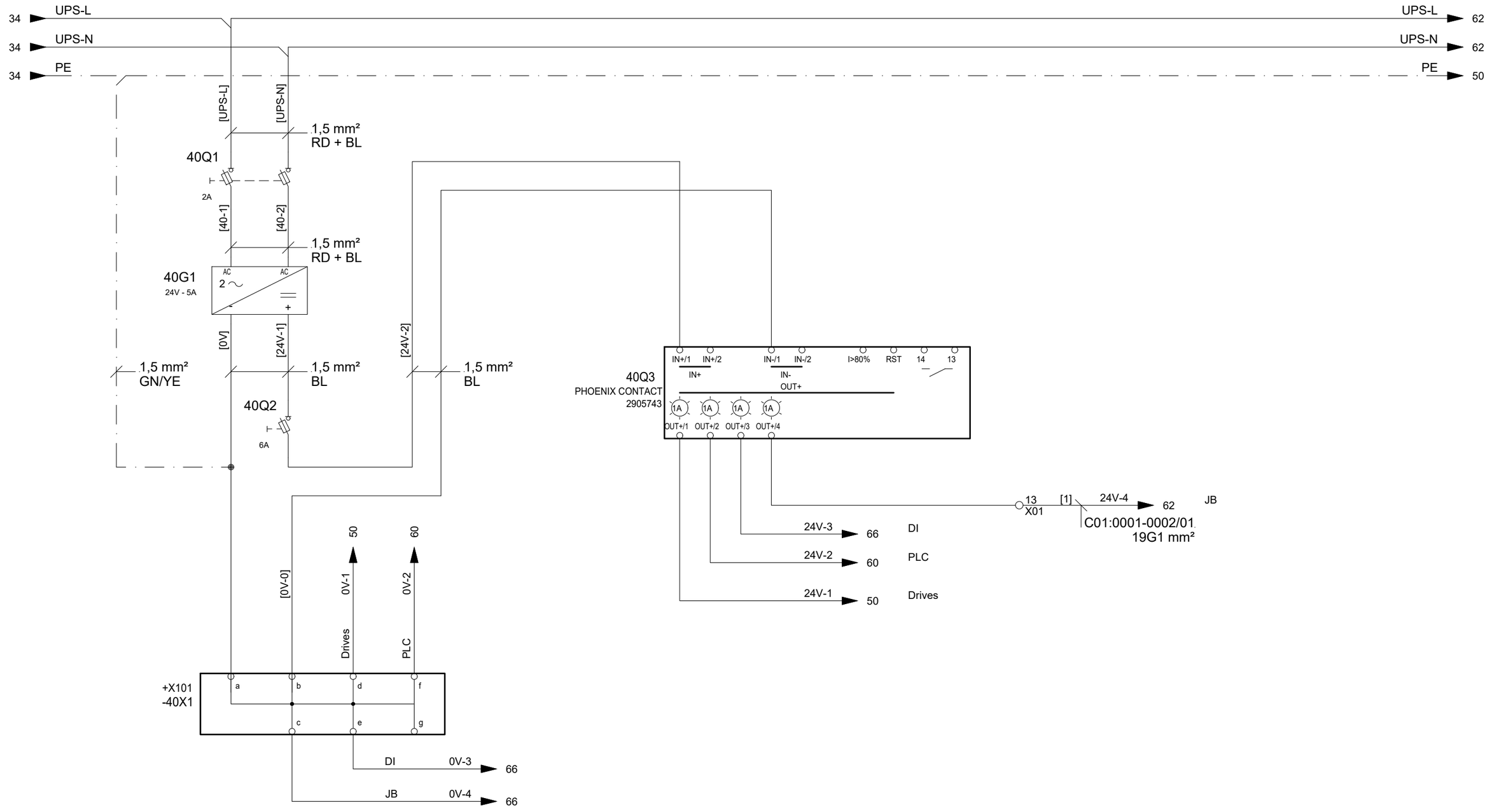
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SHEET 34

REV. 01

File Name : 24-27012-WD-001 Rev. 00

F.to UNI A3: 420mmx297mm



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REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	03/09/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)
00	26/07/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)

TITLE : BASE LOAD POWER HUB (BLPH)
DAVIT CRANE WIRING DIAGRAM
24Vdc SUPPLY

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

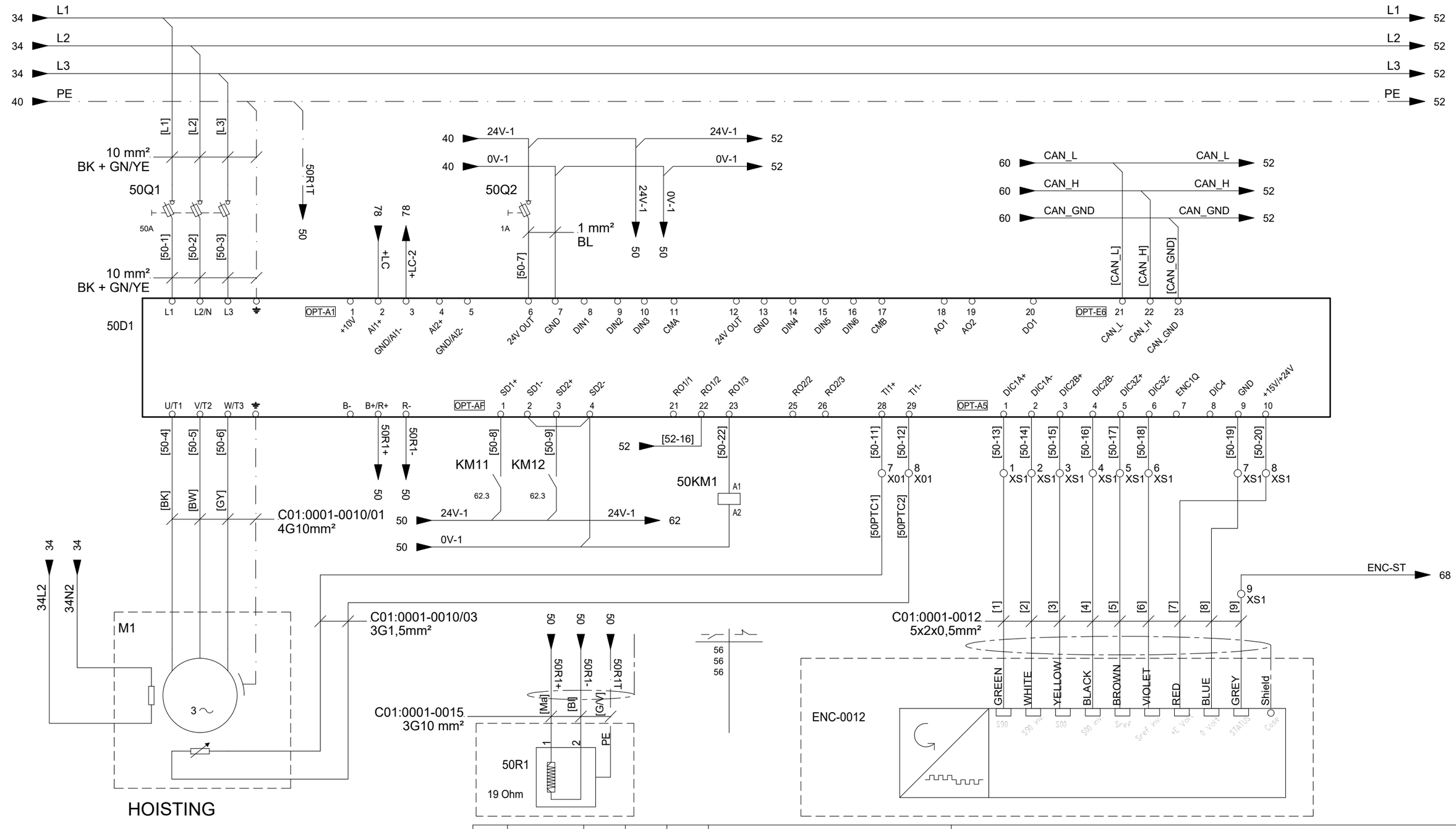
DRAWING NO. 1724001010-MAC-DG-00012

SHEET 40

REV. 01

File Name : 24-27012-WD-001 Rev. 00

F.to UNI A3: 420mmx297mm



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REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	03/09/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)
00	26/07/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)

TITLE : BASE LOAD POWER HUB (BLPH)
DAVIT CRANE WIRING DIAGRAM
HOISTING VFD CONNECTIONS

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

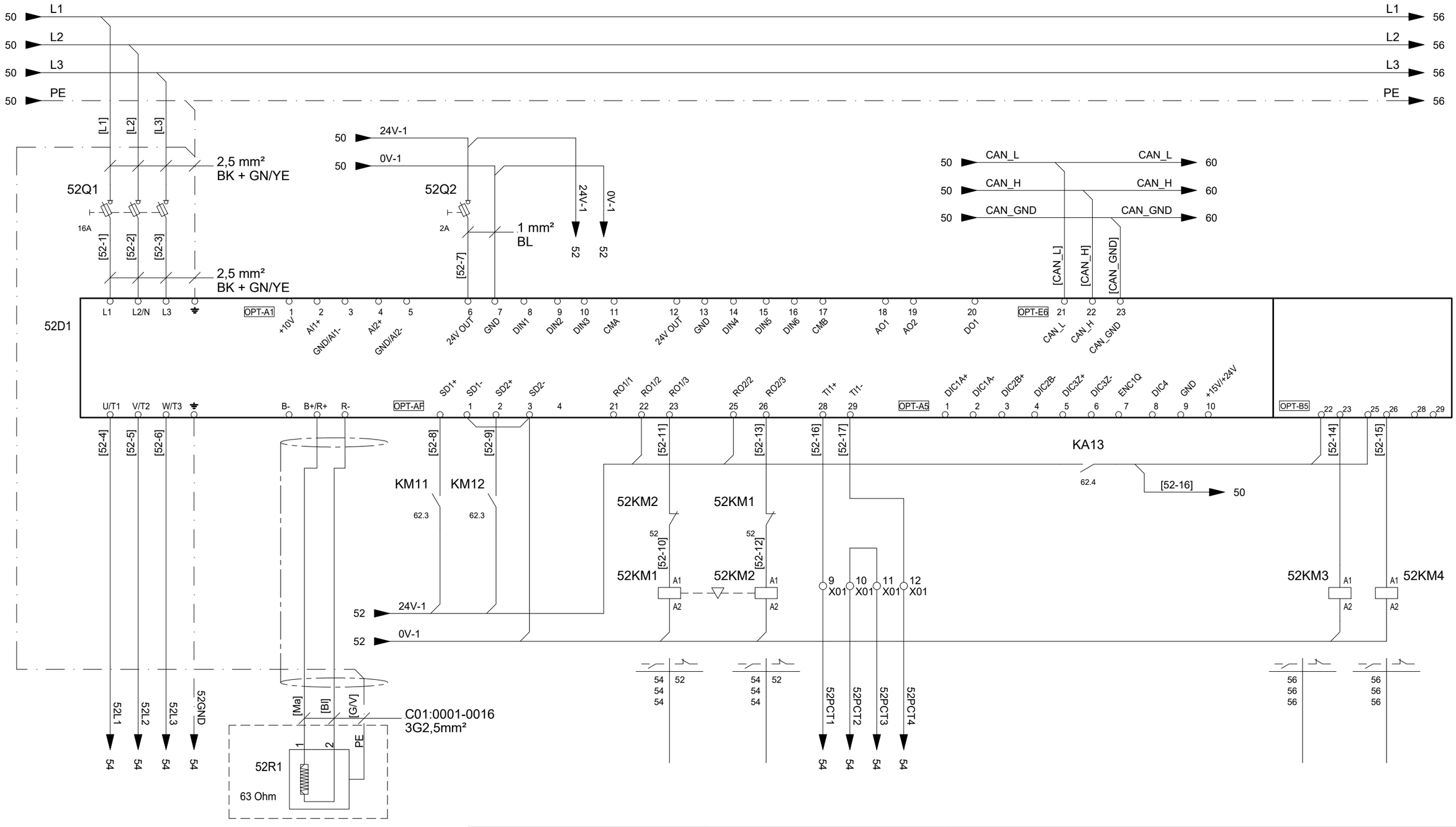
DRAWING NO. 1724001010-MAC-DG-00012

SHEET 50

REV. 01

F.to UNI A3: 420mmx297mm

File Name : 24-27012-WD-001 Rev. 00



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REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	03/09/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)
00	26/07/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)

TITLE : BASE LOAD POWER HUB (BLPH)
DAVIT CRANE WIRING DIAGRAM
ROTATION AND TROLLEY VFD CONNECTIONS

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

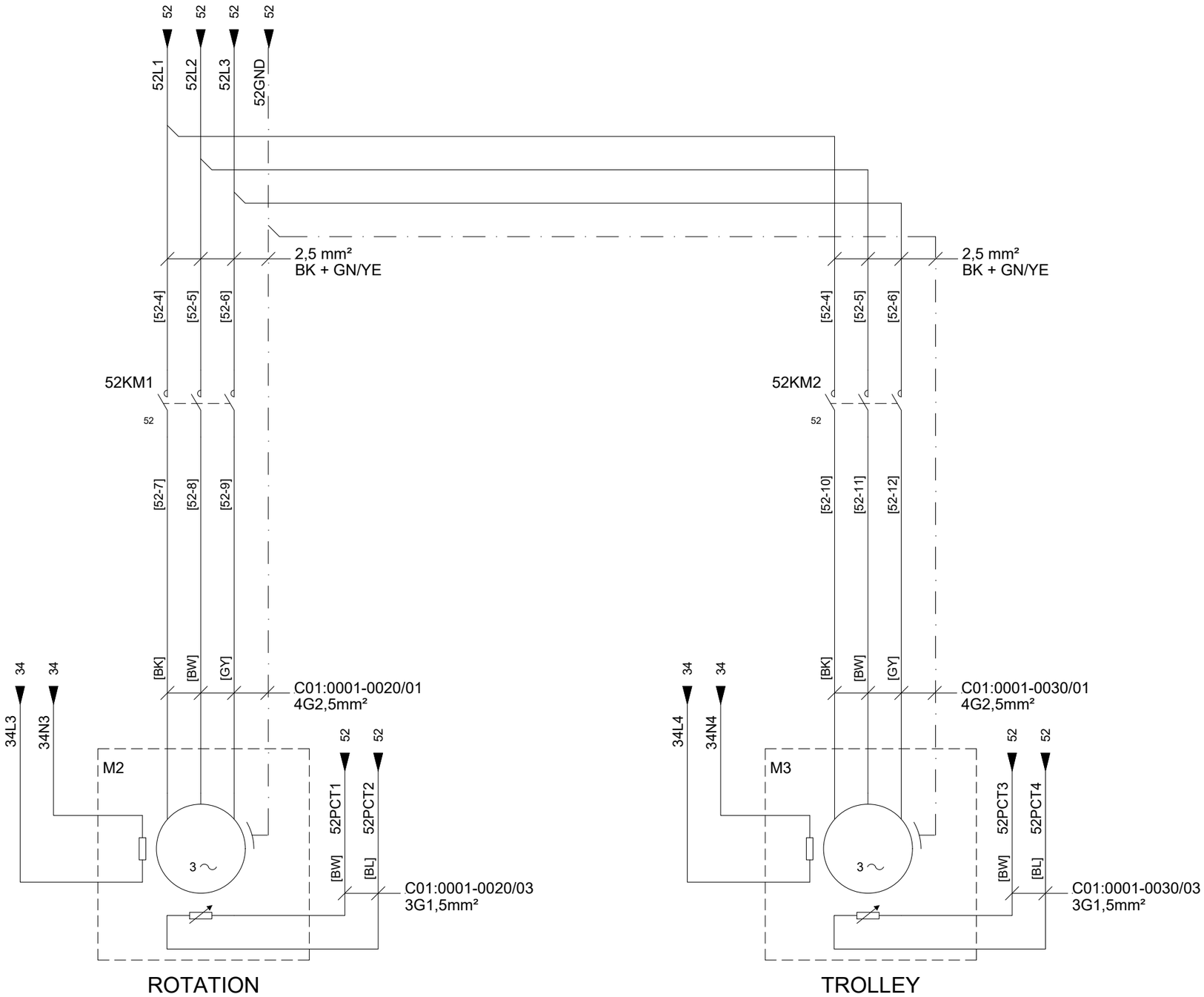
DRAWING NO. 1724001010-MAC-DG-00012

SHEET 52

REV. 01

File Name : 24-27012-WD-001 Rev. 00

F.to UNI A3: 420mmx297mm



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01	03/09/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)
00	26/07/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)

TITLE : BASE LOAD POWER HUB (BLPH)
DAVIT CRANE WIRING DIAGRAM
ROTATION AND TROLLEY MOTORS

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

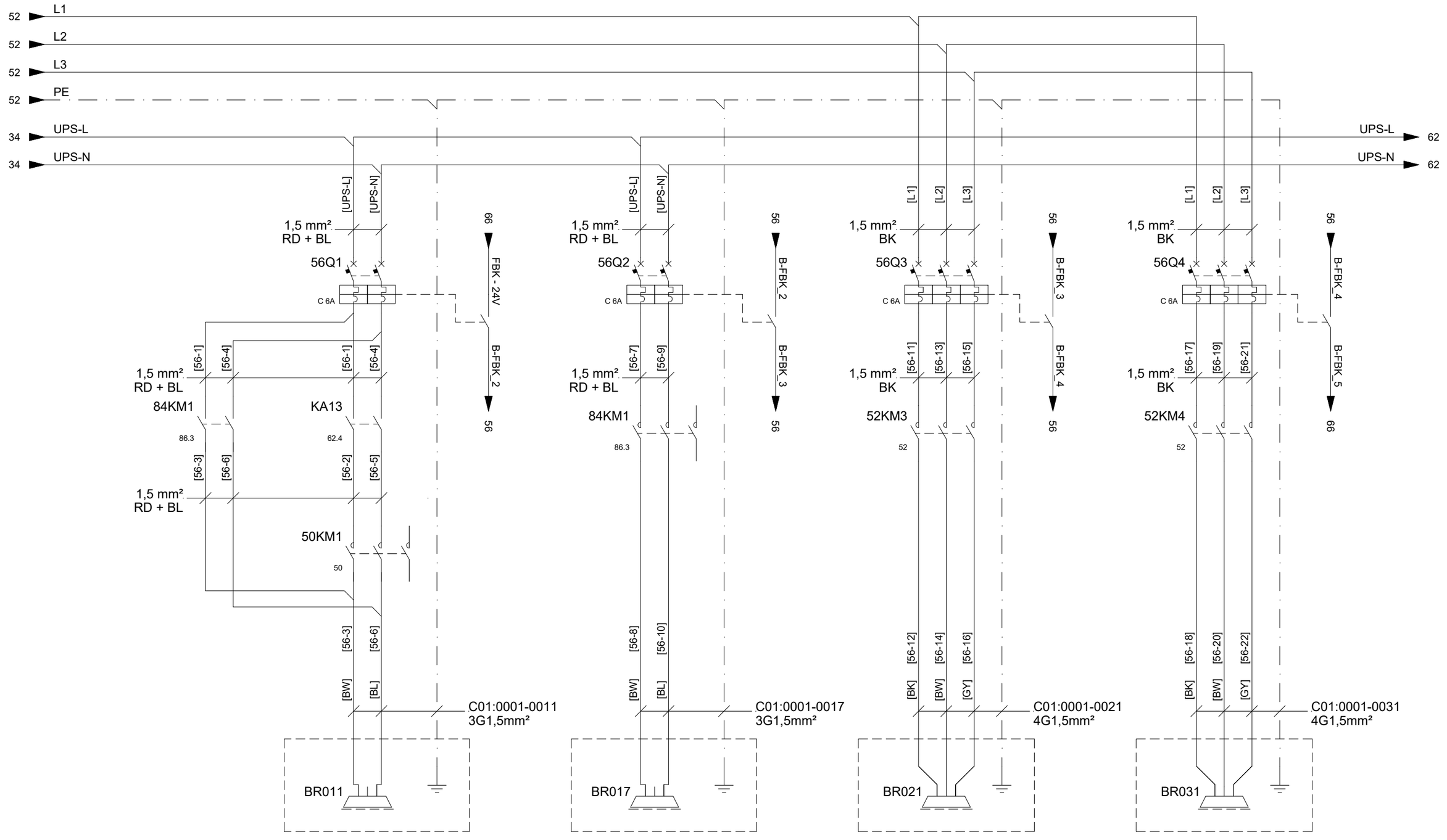
DRAWING NO. 1724001010-MAC-DG-00012

SHEET 54

REV. 01

File Name : 24-27012-WD-001 Rev. 00

F.to UNI A3: 420mmx297mm



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CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	03/09/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)
00	26/07/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)

TITLE : BASE LOAD POWER HUB (BLPH)
DAVIT CRANE WIRING DIAGRAM
MOTOR BRAKES

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

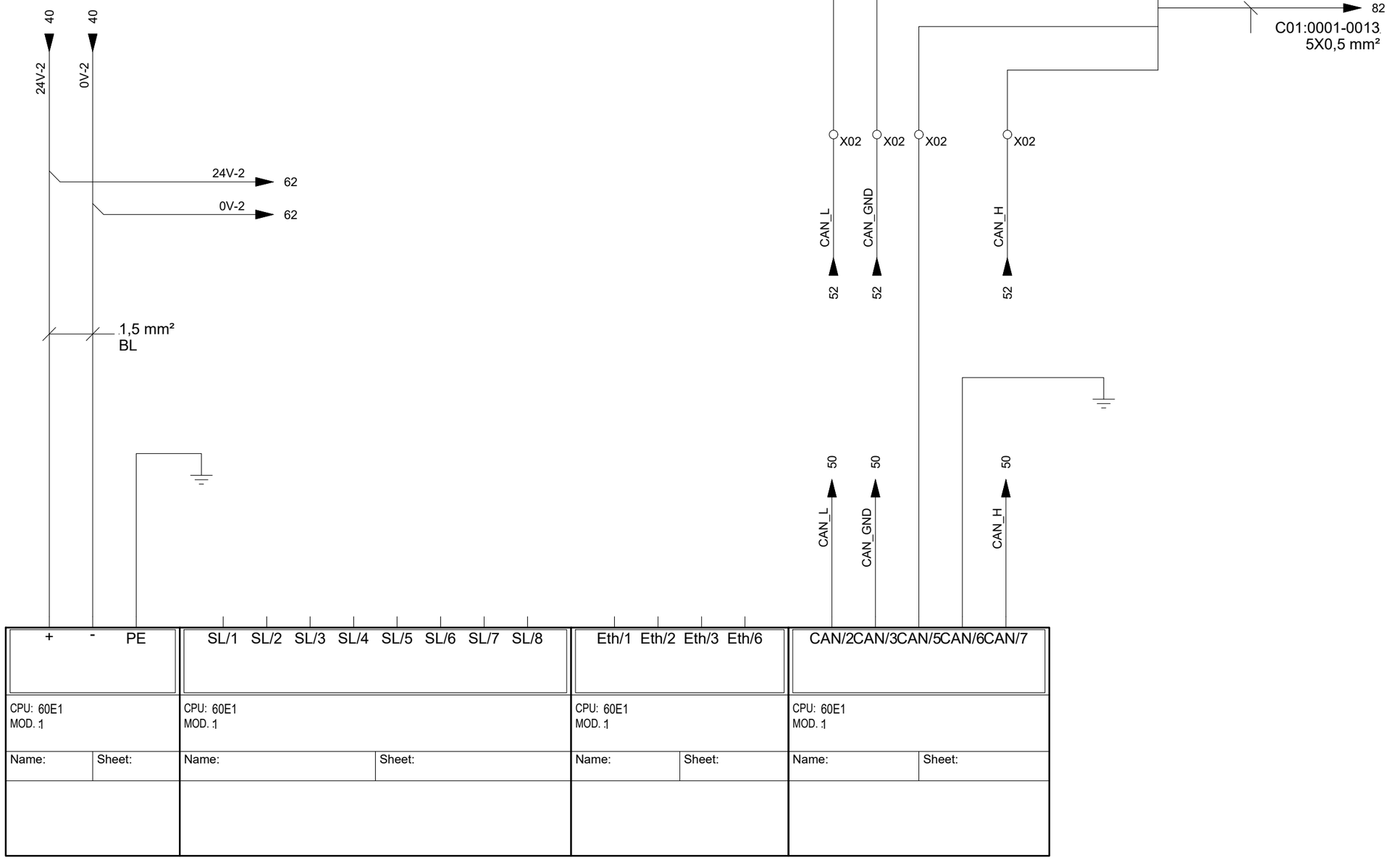
DRAWING NO. 1724001010-MAC-DG-00012

SHEET 56

REV. 01

File Name : 24-27012-WD-001 Rev. 00

F.to UNI A3: 420mmx297mm



CPU

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ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	03/09/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)
00	26/07/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)

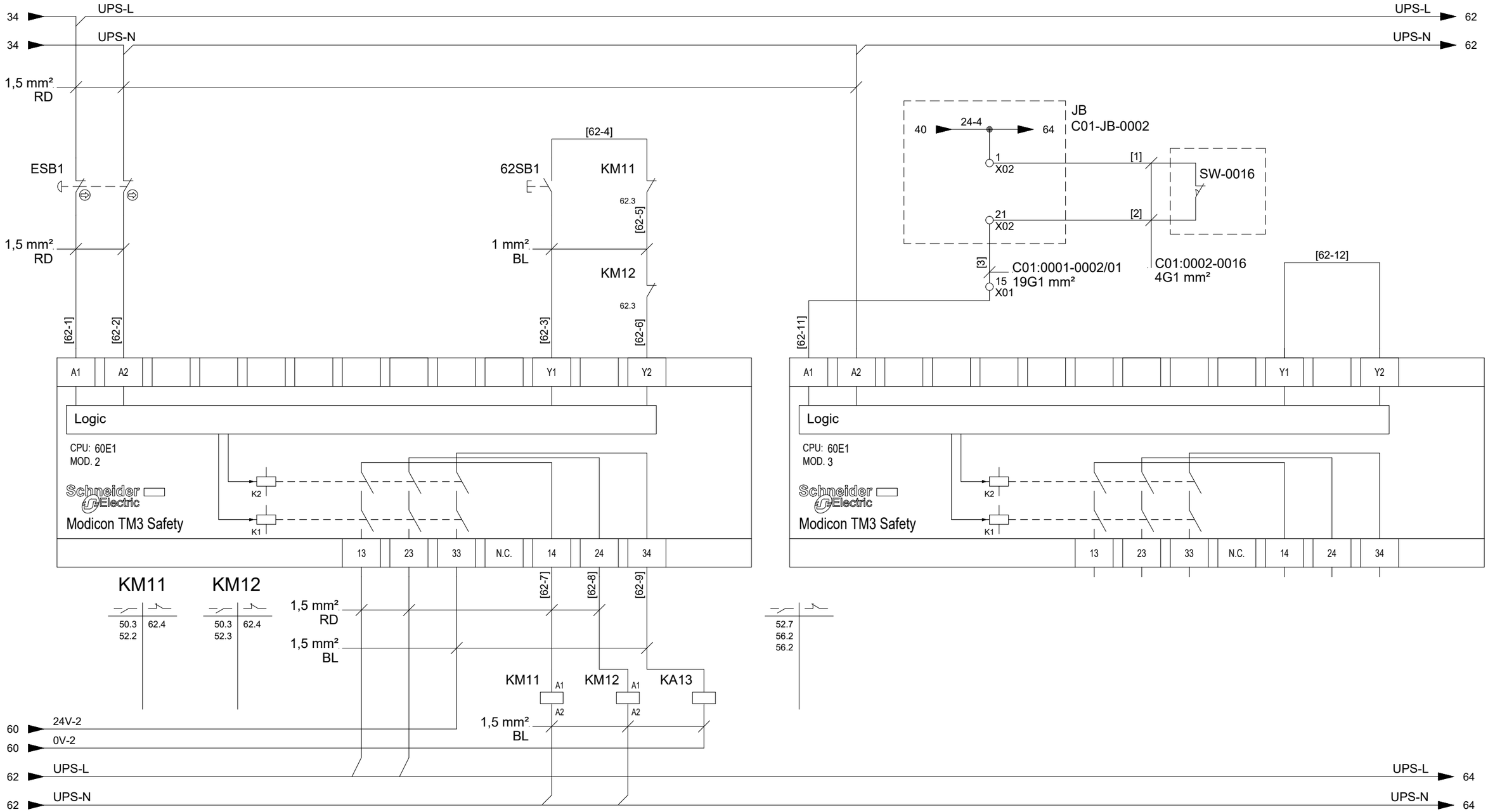
TITLE : BASE LOAD POWER HUB (BLPH)
DAVIT CRANE WIRING DIAGRAM
CPU

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

A3 | DRAWING NO. 1724001010-MAC-DG-00012 | SHEET 60 | REV. 01

F.to UNI A3: 420mmx297mm

File Name : 24-27012-WD-001 Rev. 00



EESD

PAYOUT LIMIT

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	03/09/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)
00	26/07/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)

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ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
DAVIT CRANE WIRING DIAGRAM
SAFETY MODULES

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

DRAWING NO. 1724001010-MAC-DG-00012

SHEET 62

REV. 01

File Name : 24-27012-WD-001 Rev. 00

F.to UNI A3: 420mmx297mm

62 UPS-L → UPS-L 64

62 UPS-N → UPS-N 64

JB
C01-JB-0002

62 → 66

2
X02

22
X02

[1]

[2]

SW-0036

[4]

C01:0001-0002/01
16 19G1 mm²
X01

C01:0002-0036
4G1 mm²

[64-1]

[64-3]

A1 | A2 | Y1 | Y2

Logic

CPU: 60E1
MOD. 4

Schneider Electric
Modicon TM3 Safety

K2

K1

13 | 23 | 33 | N.C. | 14 | 24 | 34

64 UPS-L → UPS-L 86

64 UPS-N → UPS-N 86

A2B

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	03/09/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)
00	26/07/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)

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CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
DAVIT CRANE WIRING DIAGRAM
SAFETY MODULES

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

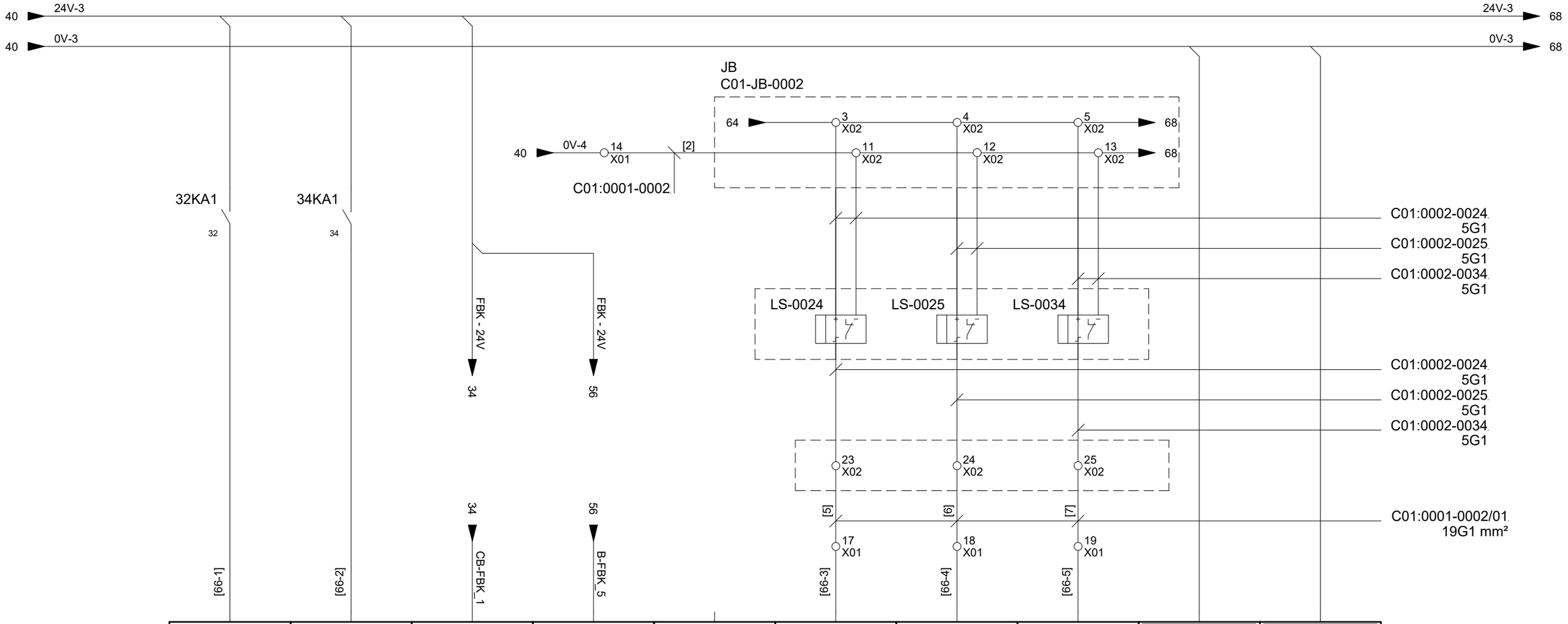
DRAWING NO. 1724001010-MAC-DG-00012

SHEET 64

REV. 01

File Name : 24-27012-WD-001 Rev. 00

F.to UNI A3: 420mmx297mm



0	1	2	3	4	5	6	7	COM	COM
CPU: 60E1 MOD. 5	CPU: 60E1 MOD. 5	CPU: 60E1 MOD. 5	CPU: 60E1 MOD. 5	CPU: 60E1 MOD. 5	CPU: 60E1 MOD. 5	CPU: 60E1 MOD. 5	CPU: 60E1 MOD. 5	CPU: 60E1 MOD. 5	CPU: 60E1 MOD. 5
Name: Sheet:	Name: Sheet:	Name: Sheet:	Name: Sheet:	Name: Sheet:	Name: Sheet:	Name: Sheet:	Name: Sheet:	Name: Sheet:	Name: Sheet:
400Vac OK	UPS STATUS OK	CB FEEDBACK	BRAKE CB FEEDBACK	SPARE	LIMIT SWITCH ROTATION CW	LIMIT SWITCH ROTATION CCW	LIMIT SWITCH TROLLEY TRAVELING FORWARD		

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CROSSWIND
ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	03/09/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)
00	26/07/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)

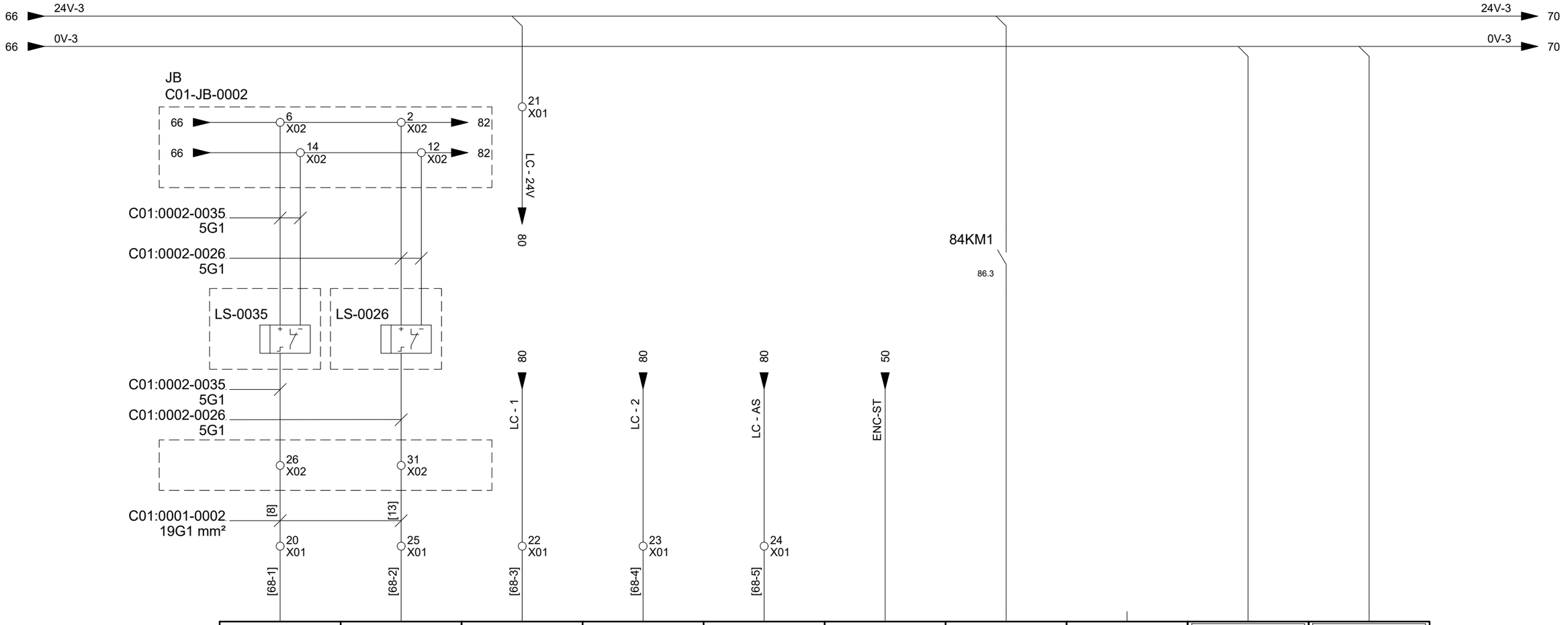
TITLE : BASE LOAD POWER HUB (BLPH)
DAVIT CRANE WIRING DIAGRAM
DIGITAL INPUT

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

A3 | DRAWING NO. 1724001010-MAC-DG-00012 | SHEET 66 | REV. 01

F.to UNI A3: 420mmx297mm

File Name : 24-27012-WD-001 Rev. 00



8	9	10	11	12	13	14	15	COM	COM
CPU: 60E1 MOD. 5	CPU: 60E1 MOD. 5	CPU: 60E1 MOD. 5	CPU: 60E1 MOD. 5	CPU: 60E1 MOD. 5	CPU: 60E1 MOD. 5	CPU: 60E1 MOD. 5	CPU: 60E1 MOD. 5	CPU: 60E1 MOD. 5	CPU: 60E1 MOD. 5
Name: Sheet:	Name: Sheet:	Name: Sheet:	Name: Sheet:	Name: Sheet:	Name: Sheet:	Name: Sheet:	Name: Sheet:	Name: Sheet:	Name: Sheet:
LIMIT SWITCH TROLLEY TRAVELING BACKWARD	LIMIT SWITCH BLOCK PIN	OVERLOAD 1st LIMIT	OVERLOAD 2nd LIMIT	ANTISLACK	HOISTING ENCODER STATUS	MOPS ACTIVE	SPARE		

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REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	03/09/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)
00	26/07/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)

TITLE : BASE LOAD POWER HUB (BLPH)
DAVIT CRANE WIRING DIAGRAM
DIGITAL INPUT

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

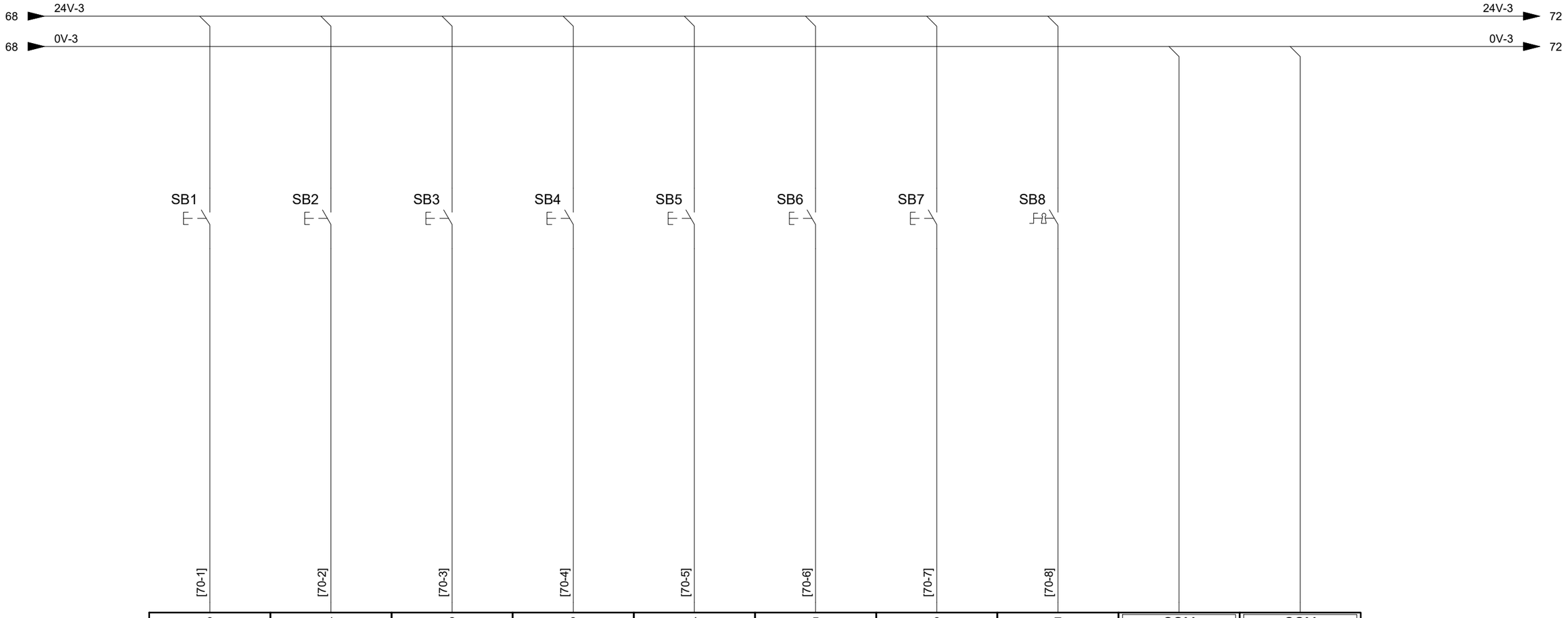
DRAWING NO. 1724001010-MAC-DG-00012

SHEET 68

REV. 01

File Name : 24-27012-WD-001 Rev. 00

F.to UNI A3: 420mmx297mm



0	1	2	3	4	5	6	7	COM	COM
CPU: 60E1 MOD. 6	CPU: 60E1 MOD. 6	CPU: 60E1 MOD. 6	CPU: 60E1 MOD. 6	CPU: 60E1 MOD. 6	CPU: 60E1 MOD. 6	CPU: 60E1 MOD. 6	CPU: 60E1 MOD. 6	CPU: 60E1 MOD. 6	CPU: 60E1 MOD. 6
Name: Sheet:	Name: Sheet:	Name: Sheet:	Name: Sheet:	Name: Sheet:	Name: Sheet:	Name: Sheet:	Name: Sheet:	Name: Sheet:	Name: Sheet:
ROTATION CW PUSH BUTTON	ROTATION CCW PUSH BUTTON	TROLLEY TRAVELING FORWARD PUSH BUTTON	TROLLEY TRAVELING BACKWARD PUSH BUTTON	HOISTING UP PUSH BUTTON	HOISTING DOWN PUSH BUTTON	SECOND SPEED PUSH BUTTON	OVERLOAD BYPASS		

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ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	03/09/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)
00	26/07/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)

TITLE : BASE LOAD POWER HUB (BLPH)
DAVIT CRANE WIRING DIAGRAM
DIGITAL INPUT

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

DRAWING NO. 1724001010-MAC-DG-00012

SHEET 70

REV. 01

File Name : 24-27012-WD-001 Rev. 00

F.to UNI A3: 420mmx297mm

70 24V-3 → 24V-3 74

70 0V-3 → 0V-3 74

8	9	10	11	12	13	14	15	COM	COM
CPU: 60E1 MOD. 6	CPU: 60E1 MOD. 6	CPU: 60E1 MOD. 6	CPU: 60E1 MOD. 6	CPU: 60E1 MOD. 6	CPU: 60E1 MOD. 6	CPU: 60E1 MOD. 6	CPU: 60E1 MOD. 6	CPU: 60E1 MOD. 6	CPU: 60E1 MOD. 6
Name: Sheet:	Name: Sheet:	Name: Sheet:	Name: Sheet:	Name: Sheet:	Name: Sheet:	Name: Sheet:	Name: Sheet:	Name: Sheet:	Name: Sheet:
SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE		

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ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	03/09/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)
00	26/07/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)

TITLE : BASE LOAD POWER HUB (BLPH)
DAVIT CRANE WIRING DIAGRAM
DIGITAL INPUT

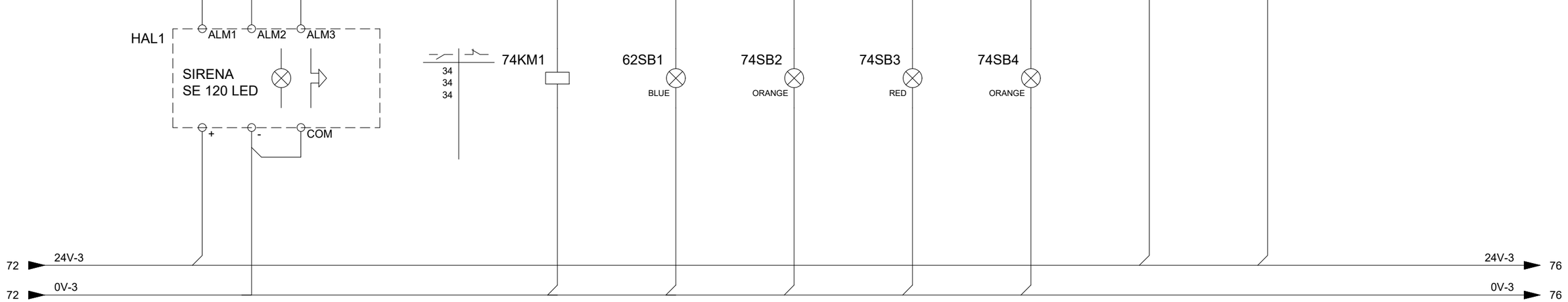
CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

A3 | DRAWING NO. 1724001010-MAC-DG-00012 | SHEET 72 | REV. 01

File Name : 24-27012-WD-001 Rev. 00

F.to UNI A3: 420mmx297mm

HORN COMAND		HORN STAGE 2		HORN STAGE 3		STANDSTILL HEATERS		RESET REQUEST		PIN ENGAGED		ALARM		OVERLOAD WARNING					
Name:	Sheet:	Name:	Sheet:	Name:	Sheet:	Name:	Sheet:	Name:	Sheet:	Name:	Sheet:	Name:	Sheet:	Name:	Sheet:	Name:	Sheet:	Name:	Sheet:
CPU: 60E1 MOD. 7		CPU: 60E1 MOD. 7		CPU: 60E1 MOD. 7		CPU: 60E1 MOD. 7		CPU: 60E1 MOD. 7		CPU: 60E1 MOD. 7		CPU: 60E1 MOD. 7		CPU: 60E1 MOD. 7		CPU: 60E1 MOD. 7		CPU: 60E1 MOD. 7	
0		1		2		3		4		5		6		7		COM0		COM0	



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REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	03/09/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)
00	26/07/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)

TITLE : BASE LOAD POWER HUB (BLPH)
DAVIT CRANE WIRING DIAGRAM
DIGITAL OUTPUT

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

DRAWING NO. 1724001010-MAC-DG-00012

SHEET 74

REV. 01

File Name : 24-27012-WD-001 Rev. 00

F.to UNI A3: 420mmx297mm

AOPS ACTIVATED		MOPS ACTIVATED		3.5 tonn LOAD LIMIT		1 tonn LOAD LIMIT		SPARE		SPARE		SPARE		SPARE					
Name:	Sheet:	Name:	Sheet:	Name:	Sheet:	Name:	Sheet:	Name:	Sheet:	Name:	Sheet:	Name:	Sheet:	Name:	Sheet:	Name:	Sheet:	Name:	Sheet:
CPU: 60E1 MOD. 7		CPU: 60E1 MOD. 7		CPU: 60E1 MOD. 7		CPU: 60E1 MOD. 7		CPU: 60E1 MOD. 7		CPU: 60E1 MOD. 7		CPU: 60E1 MOD. 7		CPU: 60E1 MOD. 7		CPU: 60E1 MOD. 7			
8		9		10		11		12		13		14		15		COM1		COM1	

76SB1 YELLOW

76SB2 YELLOW

76SB3 YELLOW

76SB4 YELLOW

74 24V-3

74 0V-3

24V-3 78

0V-3 78

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REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	03/09/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)
00	26/07/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)

TITLE : BASE LOAD POWER HUB (BLPH)
DAVIT CRANE WIRING DIAGRAM
DIGITAL OUTPUT

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

DRAWING NO. 1724001010-MAC-DG-00012

SHEET 76

REV. 01

File Name : 24-27012-WD-001 Rev. 00

F.to UNI A3: 420mmx297mm

76 24V-3

76 0V-3

80 +LC

80 -LC

10 XS1

11 XS1

+LC 50

50 +LC-2

Name:	Sheet:
CPU: 60E1 MOD. 8	
Q0+ Q0-	

Name:	Sheet:
CPU: 60E1 MOD. 8	
Q1+ Q1-	

78E1 A1 A2 E5 E6

24V 0V PE
CPU: 60E1 MOD. 8
Name: Sheet:

I0+ I0-	I1+ I1-	I2+ I2-	I3+ I3-
CPU: 60E1 MOD. 8	CPU: 60E1 MOD. 8	CPU: 60E1 MOD. 8	CPU: 60E1 MOD. 8
Name: Sheet:	Name: Sheet:	Name: Sheet:	Name: Sheet:
LOAD CELL 4-20mA			

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REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	03/09/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)
00	26/07/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)

TITLE : BASE LOAD POWER HUB (BLPH)
DAVIT CRANE WIRING DIAGRAM
ANALOG INPUT AND OUTPUT

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

DRAWING NO. 1724001010-MAC-DG-00012

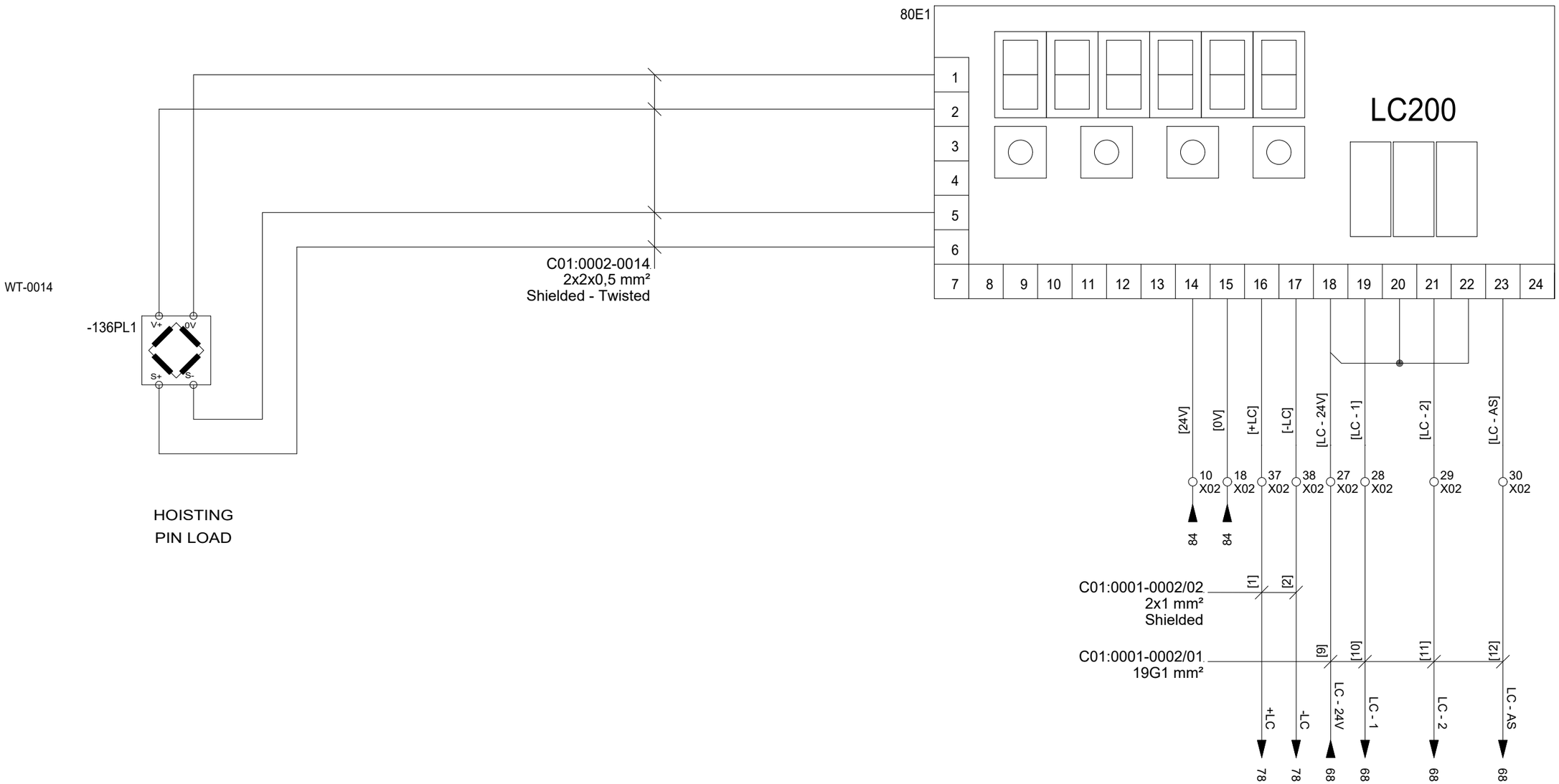
SHEET 78

REV. 01

File Name : 24-27012-WD-001 Rev. 00

F.to UNI A3: 420mmx297mm

LOAD CELL AMPLIFIER



HOISTING
PIN LOAD

LOAD CELL

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REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	03/09/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)
00	26/07/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)

TITLE : BASE LOAD POWER HUB (BLPH)
DAVIT CRANE WIRING DIAGRAM
LOAD CELL

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

DRAWING NO. 1724001010-MAC-DG-00012

SHEET 80

REV. 01

File Name : 24-27012-WD-001 Rev. 00

F.to UNI A3: 420mmx297mm

JB
C01-JB-0002

68
68
84
84

7 X02
15 X02
8 X02
16 X02

[24V]
[0V]
[24V]
[0V]

C01:0002-0013
2x0,75 mm²

C01:0002-0023
2x0,75 mm²

09

C01:0001-0013
5x0,5mm²

C01:0013-0023
5x0,5mm²

C01:0023-0033
5x0,5mm²

84

ENC-0013

ENC-0023

+E Volt
0 Volt
Port 1
Port 2

+E Volt
0 Volt
Port 1
Port 2

+E Volt
0 Volt

CAN_SHIELD
CAN_L
CAN_H
CAN_GND

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REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	03/09/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)
00	26/07/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)

TITLE : BASE LOAD POWER HUB (BLPH)
DAVIT CRANE WIRING DIAGRAM
HOISTING AND ROTATION ENCODERS

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

DRAWING NO. 1724001010-MAC-DG-00012

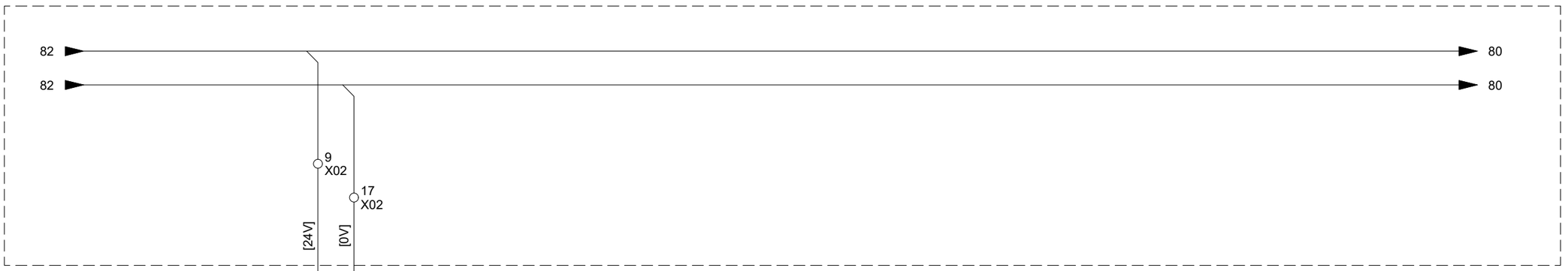
SHEET 82

REV. 01

File Name : 24-27012-WD-001 Rev. 00

F.to UNI A3: 420mmx297mm

JB
C01-JB-0002

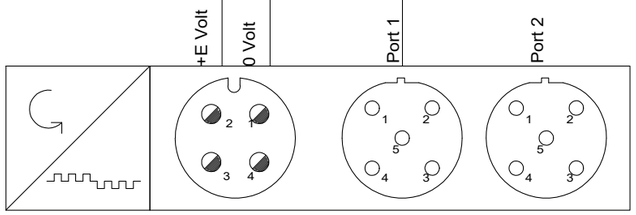


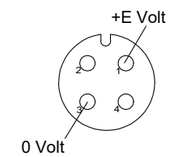
C01:0002-0033
2x0,75 mm²

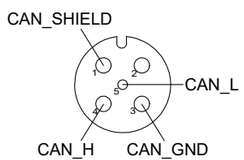
C01:0023-0033
5x0,5mm²

82

ENC-0033







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REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	03/09/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)
00	26/07/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)

TITLE : BASE LOAD POWER HUB (BLPH)
DAVIT CRANE WIRING DIAGRAM
TROLLEY ENCODER

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

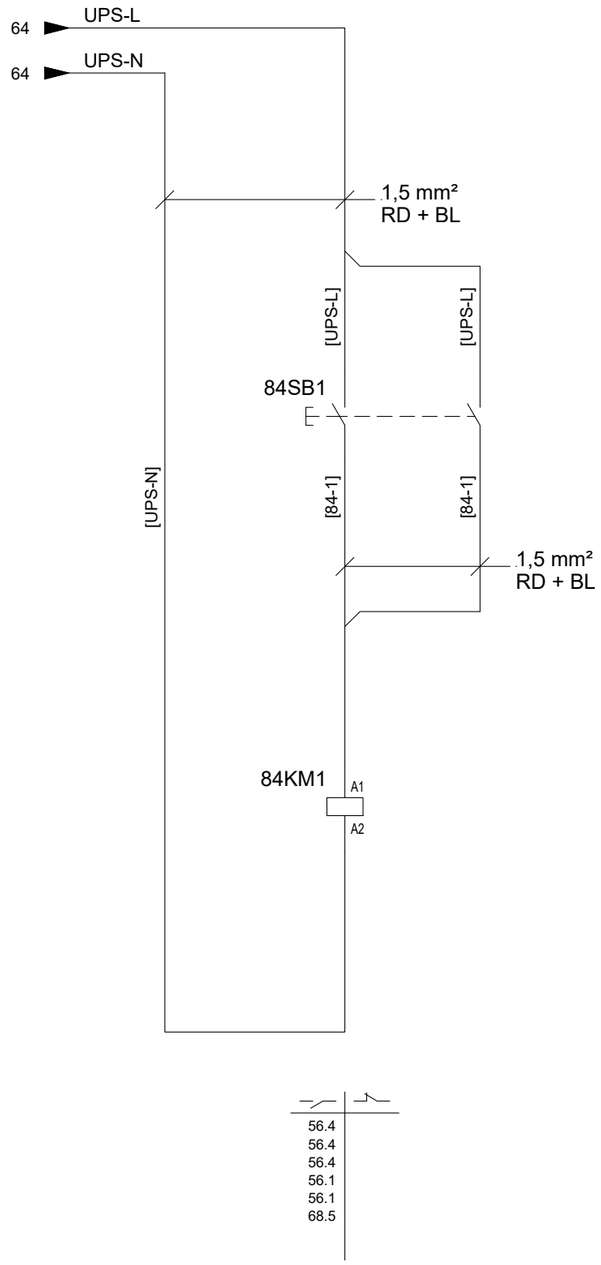
DRAWING NO. 1724001010-MAC-DG-00012

SHEET 84

REV. 01

File Name : 24-27012-WD-001 Rev. 00

F.to UNI A3: 420mmx297mm



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CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	03/09/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)
00	26/07/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)

TITLE : BASE LOAD POWER HUB (BLPH)
DAVIT CRANE WIRING DIAGRAM
MOPS COMMAND

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

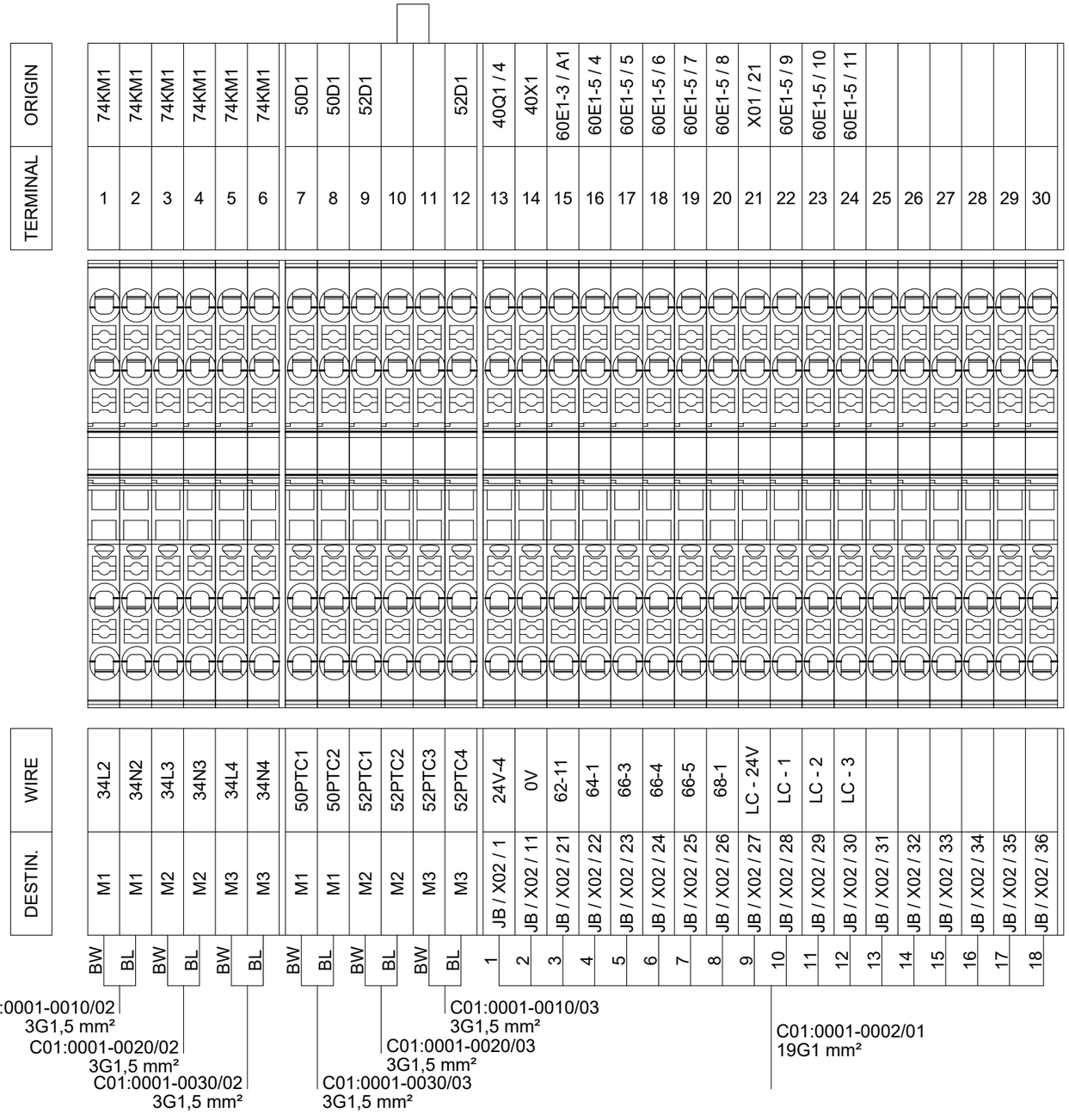
DRAWING NO. 1724001010-MAC-DG-00012

SHEET 86

REV. 01

File Name : 24-27012-WD-001 Rev. 00

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ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	03/09/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)
00	26/07/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)

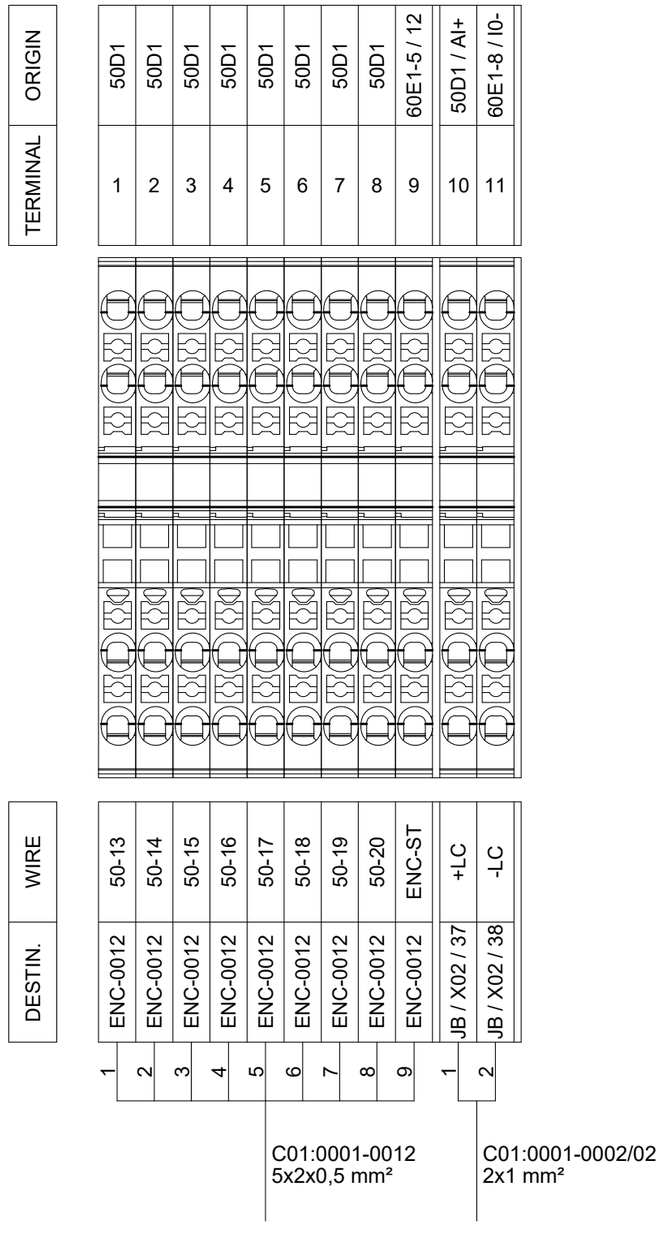
TITLE : BASE LOAD POWER HUB (BLPH)
DAVIT CRANE WIRING DIAGRAM
TERMINAL STRIP X01

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

A3 | DRAWING NO. 1724001010-MAC-DG-00012 | SHEET 90 | REV. 01

File Name : 24-27012-WD-001 Rev. 00

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CROSSWIND
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REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	03/09/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)
00	26/07/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)

TITLE : BASE LOAD POWER HUB (BLPH)
DAVIT CRANE WIRING DIAGRAM
TERMINAL STRIP XS1

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

DRAWING NO. 1724001010-MAC-DG-00012

SHEET 92

REV. 01

File Name : 24-27012-WD-001 Rev. 00

F.to UNI A3: 420mmx297mm

	DESTIN.	WIRE
1	X01 / 13	24V-4
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		24V-4
		24V-4
		24V-4
2	X01 / 14	0V
	LS-0026	0V
		0V
		0V
		0V
		0V
		0V
		0V
3	X01 / 15	62-11
4	X01 / 16	64-1
5	X01 / 17	66-3
6	X01 / 18	66-4
7	X01 / 19	66-5
8	X01 / 20	68-1
9	X01 / 21	LC - 24V
10	X01 / 22	LC - 1
11	X01 / 23	LC - 2
12	X01 / 24	LC - 3
13	X01 / 25	68-2
14	X01 / 26	
15	X01 / 27	
16	X01 / 28	
17	X01 / 29	
18	X01 / 30	
1	50D1 / AI+	+LC
2	60E1-8 / I0-	-LC

C01:0001-0002/01
19G1 mm²

C01:0001-0002/02
2X1 mm² shielded

	TERMINAL	ORIGIN
	1	SW-0016
	2	SW-0036
	3	LS-0024
	4	LS-0025
	5	LS-0034
	6	LS-0035
	7	ENC-0013
	8	ENC-0023
	9	ENC-0033
	10	80E1 / 14
	11	LS-0024
	12	LS-0025
	13	LS-0034
	14	LS-0035
	15	ENC-0013
	16	ENC-0023
	17	ENC-0033
	18	80E1 / 15
	19	
	20	
	21	SW-0016
	22	SW-0036
	23	LS-0024
	24	LS-0025
	25	LS-0034
	26	LS-0035
	27	
	28	80E1 / 19
	29	80E1 / 21
	30	80E1 / 23
	31	LS-0026
	32	
	33	
	34	
	35	
	36	
	37	80E1 / 16
	38	80E1 / 17

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CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	03/09/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)
00	26/07/2024	MPR	GBA	ATR	ISSUE FOR COMMENT (IFC)

TITLE :

BASE LOAD POWER HUB (BLPH)
DAVIT CRANE WIRING DIAGRAM
TERMINAL STRIP JB / X02

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

A3	DRAWING NO.	SCALE : NTS
	1724001010-MAC-DG-00012	SHEET 94 / REV. 01

F.to UNI A3: 420mmx297mm

File Name : 24-27012-WD-001 Rev. 00

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ENGINEERING

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in Remazel Engineering

Base Load Power Hub (BLPH)

DAVIT CRANE

SPARE PART INDEX REGISTER (COMMISSIONING AND 2 YEAR OPERATION)

Document Number: 1724001010-COM-LIS-00015

Document Class: 2

ROSETTI MARINO

1	NO COMMENTS - APPROVED - WORK MAY PROCEED
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3	MAJOR COMMENTS – REJECTED – DO NOT PROCEED
4	APPROVAL NOT REQUIRED

NOTE: Approval doesn't relieve the supplier from mandatory compliance with contractual documents and specifications. Comments made do not imply acceptance of any cost or delivery impact.

Sign	Date
M. Di Scipio	09/12/2024

Rev.	Date	Description	Prepared	Reviewed	Approved
02	05/12/2024	Accepted for construction (AFC)	MP	MB	MT
01	12/11/2024	Issue for Review (IFR)	MP	MB	MT
00	03/10/2024	Issue for Review (IFR)	MP	MB	MT

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Revision / Change Log

Rev.	Description
00	Issue for Review (IFR)
01	Issue for Review (IFR)
02	Accepted for construction (AFC)

HOLDS LIST

No.	Description
1	
2	
3	
4	

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1 INTRODUCTION

1.1 PROJECT OVERVIEW

Crosswind, a Shell and Eneco joint venture, was awarded the tender to develop the offshore Hollandse Kust Noord (HKN) wind farm, located 18.5km off the coast of Netherlands near the town of Egmond aan Zee. The consortium plans to have HKN operational in 2023 with an installed capacity of 759MW generating at least 3.3TWh per year. This is sufficient renewable power to supply more than 1 million Dutch households with green electricity.

Offshore wind farms produce intermittent electricity and balancing these dips and peaks and integrating this electricity into the national energy system requires new technologies. For this reason, the offshore wind farm will include several new technologies that could be implemented at full-scale in the future. The new technologies being explored include a floating solar park, a short-duration battery storage as well as long-term storage via green hydrogen produced by water electrolysis and subsequently consumed in a fuel cell. The combination of these individual measures, herein referred to as the Base Load Power Hub (BLPH) will ensure a continuous power supply regardless of the wind situation.

1.1.1 Project Location

The Hollandse Kust Noord (HKN) wind farm is located 18.5km off the coast of the Netherlands near the town of Egmond aan Zee.

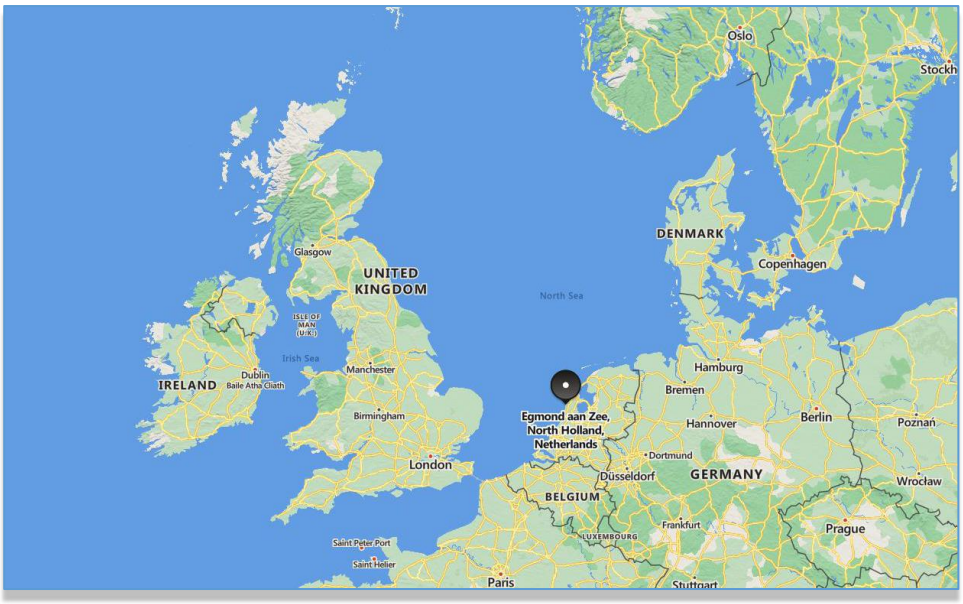


Figure 1 HOLLANDSE KUST NOORD WIND PARK Location Map



Figure 2 - Wind Park Details

The wind farm will consist of No. 69 x 11.5MW wind turbine generators each to be installed on a dedicated monopile structure. A 70th monopile located on coordinates E 590719.1, N 5841602.3 is reserved for installing the platform accommodating the BLPH. The monopile structure was designed and installed by Van Oord Offshore Wind (VooW) and therefore not part of the BLPH scope.

1.1.2 Project Concept

All components included in the BLPH will be integrated onshore on a topsides and installed in an offshore location within the boundaries of the HKN wind farm. At its simplest, the BLPH will store energy during periods of high electricity generation from renewable sources (a wind turbine generator and the floating solar PV farm) and release it during periods of low generation. In practice. It is expected that the energy stored will supplement generation from renewable sources to ensure that at least 1.0MW of power is exported to the electrical grid regardless of wind/solar availability.

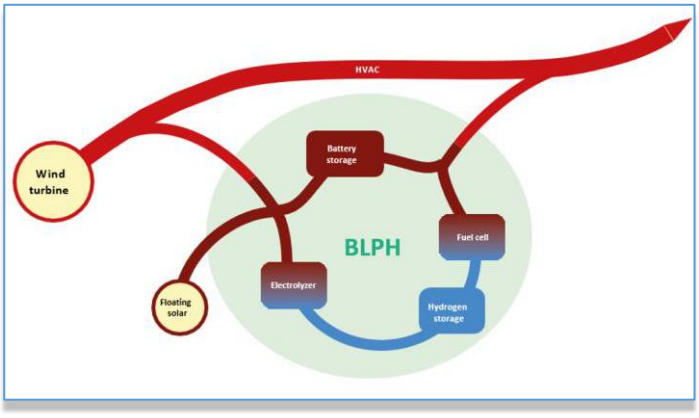


Figure 3 – BLPH Concept

Electricity in the BLPH will be stored in the form of electrons in a battery energy storage system (BESS) as well as converted into green hydrogen via water electrolysis. When the power output from the connecting wind turbine drops to below 1 MWe, the BLPH will return its stored energy to supplement the remaining power output. This will be by discharging the BESS, while stored hydrogen will be converted back into electricity using a fuel cell to extend the discharge duration.

The purpose of the BLPH s to function as a testbed for the integration of energy storage technologies with renewable generation. It is expected that equipment installed on the BLPH will operate as Normally Unmanned Installation for at least two (2) years with no or minimal maintenance and it will have its own independent control room with the ability to communicate with Crosswind's control room.

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2 DOCUMENT SCOPE

The purpose of the document is to provide a list of replacement parts for the davit crane. The parts list will be divided between components needed for commissioning and those for the two-year

2.1 REFERENCES

Doc. No.	Description
1724001010 123A90A	Purchase order

Table 1 - Reference Documents

2.2 DEFINITIONS AND ABBREVIATIONS

COMPANY or Client (CPY):	Crosswind
CONTRACTOR (CTR):	ROSETTI MARINO S.p.A.
PROJECT:	HOLLANDSE KUST NOORD WIND PARK Project

Table 2 - Definitions and Abbreviations

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3 SPARE PARTS INDEX REGISTER

3.1 SPARE PARTS FOR COMMISSIONING/START UP

3.2 SPARE PARTS 2Y OPERATION

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SPARE PARTS FOR COMMISSIONING/START UP						
Item	Number	Q.ty	Units	Item Description	Description Additional	Wiring Diagram
1	011-0014-C1311	2	Each	Fuse	10,3x38 CH10 1A gG	50Q2
2	011-0014-C1315	6	Each	Fuse	10,3x38 CH10 2A gG	32Q1
3	011-0014-C0643	1	Each	Fuse	10,3x38 CH10 6A gG	40Q2
4	011-0014-C0641	1	Each	Fuse	10,3x38 CH10 10A gG	34Q1
5	011-0014-C2598	2	Each	Fuse	22x58, CH22, 50A, aM	50Q1
6	011-0014-C1527	1	Each	Contactor	Contactor TeSys LC1D - 3 poles - AC3 440V 9 A - 24 V CC	50KM1
7	011-0014-C2604	1	Each	Contactor	Contactor TeSys LC1D - 4 poles - AC1 440V 32 A- 24 V CC	KM11
8	011-0014-C2605	1	Each	Contactor	Contactor aux TeSys CA3SK - 10 A - 24 V CC	74KM1
9	011-0014-C1828	1	Each	Contactor	Contactor TeSys LC1D - 3 poles - AC3 440V 9 A - 230 V AC	84KM1
10	006-0003-C0210	1	Each	Cylindrical roller bearing	Wheel roller bearing NNF 5008 ADA-2LSV (40x68x38)	N.A.
11	006-0003-C0849	1	Each	Cylindrical roller bearing	Pulley roller bearingNNF 5012 ADB-2LSV (60x95x46)	N.A.

SPARE PARTS 2Y OPERATION						
Item	Number	Q.ty	Units	Item Description	Description Additional	Wiring Diagram
1	011-0014-C2599	2	Each	Relay	PLC-INTERFACE, with PLC-BPT.../21 with connection Push-in and relay, mounting on NS 35/7,5, 1 contact, input voltage 24 V DC	32KA1
2	011-0015-C0034	1	Each	Load cell amplifier	Load cell amplifier, output 4-20mA	80E1
3	011-0008-C2442	1	Each	Load cell	PSPRX pin load cell - model PRX, rated capacity 500 kg to 4000 kg, double shear, Stainless steel, IP65	WT-0014
4	007-0003-C0579	1	m	Cable chain	Dim. 100mm, pitch: 75, curvature radius: 75mm, pitch n°: 72	N.A.
5	011-0008-C2429	1	Each	Limit switch	Proximity switch, M12, 4 mm, DC, 3 wires, PNP NA, IO-Link COM3, cable 5 m	LS0024-0025
6	011-0008-C2430	1	Each	Limit switch	Proximity switch, M12, 4 mm, DC, 3 wires, PNP NA, IO-Link COM3, cable 15 m	LS0034-0035
7	011-0008-C2436	1	Each	Hoisting limit switch	hoisting down limit switch for payout prevention	SW-0016
8	006-0003-C0210	2	Each	Cylindrical roller bearing	Wheel roller bearing NNF 5008 ADA-2LSV (40x68x38)	N.A.
9	006-0003-C0849	2	Each	Cylindrical roller bearing	Pulley roller bearingNNF 5012 ADB-2LSV (60x95x46)	N.A.
10	007-0006-C1220	1	Each	Electric motor	Slewing motor MGM BAHK2 100 LB4 Enhanced Power (E.P.)	M2
11	007-0006-C1221	1	Each	Electric motor	Hoisting motor MGM BAHK2 132 MC4 Enhanced Power (E.P.)	M1
12	007-0006-C1222	1	Each	Electric motor	Traversing motor MGM BAHK2 90 SA4 Enhanced Power (E.P.)	M3

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4 PART 2 – CERTIFICATION DOSSIER

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Base Load Power Hub (BLPH)

DAVIT CRANE

Tag.No.X-99001

Inspection Test Plan

Document Number: 1724001010-QC-ITP-00002

Document Class: 2

ROSETTI MARINO

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Sign	Date
ROSETTI MARINO SpA	11-09-2024

03	03/09/2024	Accepted for Construction (AFC)	CZI	GDC	MPU
02	26/07/2024	Accepted For Construction (AFC)	CZI	GDC	MPU
01	10/07/2024	Issued for comments	CZI	GDC	MPU
00	21/06/2024	Issued for Review (IFR)	CZI	GDC	MPU
Rev.	Date	Description	Prepared	Reviewed	Approved

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Revision / Change Log

Rev.	Description
00	Issued for Review (IFR)
01	Issued for layout comments
02	Accepted For Construction (AFC)
03	Issued Accepted for Construction (AFC)

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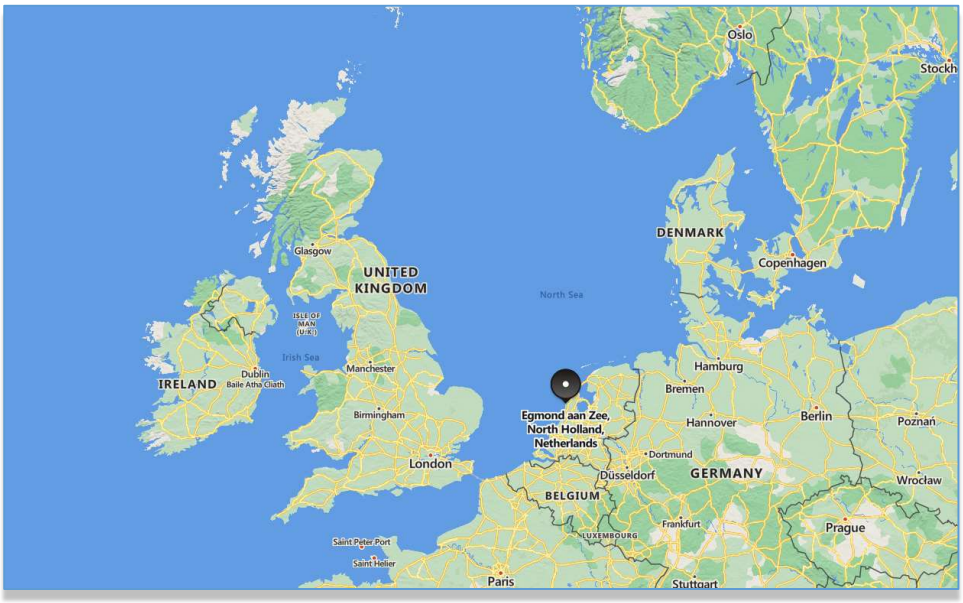


Figure 1 HOLLANDSE KUST NOORD WIND PARK Location Map



Figure 2 - Wind Park Details

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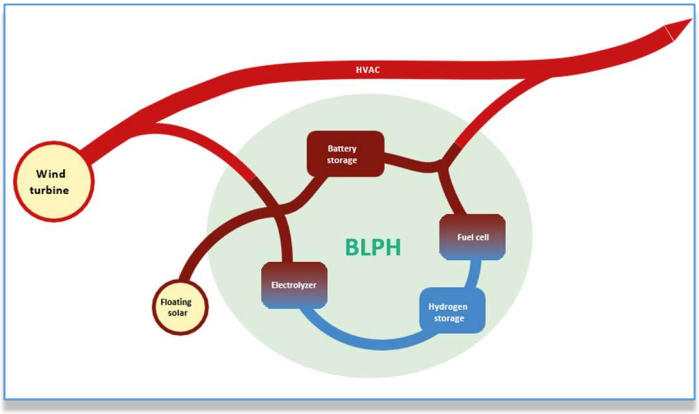


Figure 3 – BLPH Concept

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2 DOCUMENT SCOPE

Inspection Test Plan

2.1 DEFINITIONS AND ABBREVIATIONS

COMPANY or Client (CPY):	Crosswind
CONTRACTOR (CTR):	ROSETTI MARINO S.p.A.
PROJECT:	HOLLANDSE KUST NOORD WIND PARK Project

Table 1 - Definitions and Abbreviations

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3 INSPECTION TEST PLAN

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Davit Crane

Tag.No.X-99001

Inspection Test Plan

24-27012_ITP-001

Rev	Date	Revision Description	Prepared	Checked	Approved
03	03/09/2024	Issued for CW comments	CZI	GDC	MPU
02	26/07/2024	Issued for comments	CZI	GDC	MPU
01	10/07/2024	Issued for comments	CZI	GDC	MPU
00	10/06/2024	First Issued	CZI	GDC	MPU

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SUMMARY OF REVISION

Rev.	Revised chapters	Revision description	Reason for revision
00	/	/	First Issued
01	/	/	Layout comments
02	/	/	Issued for comments
03	4.0; 7.0; 9.02; 15.03	Added crane tag n°; Added year revision for standard; added step for painting; modify surveillance for step 7.0; 9.02 ;15.03	Issued for comments

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1 Scope

The scope of this document is to define the construction steps and intervention points of all the parts followed during the construction of the following project:

Customer	Hull/Project	Company
ROSETTI MARINO	HOLLANDSE KUST NOORD WIND PARK Project	CROSSWIND

The supply included the following items:

Order position	Description	Q.ty	ROSETTI MARINO tag
10-20	Davit crane	1	Tag.No. X-99001

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2 Abbreviations and acronyms

AF	Antifouling	**NACE**	NACE International
ASTM	American Society for Testing and Materials	**NDE**	Non-Destructive Examination
AW	As Welded	**NDFT**	Nominal Dry Film Thickness
AWS	American Welding Society	**NDT**	Non-Destructive Testing
CDR	Contractor Data Requirements	**NORSOK**	Norsk Sokkels Konkuranseposisjon
COSHH	Control of Substances Hazardous to Health Regulation	**PCN**	Personnel Certification in Non-Destructive Testing
CRA	Corrosion Resistant Alloys	**PDS**	Product Data Sheet
CSWIP	Certification Scheme for Weldment Inspection Personnel	**PO**	Purchase Order
DFT	Dry Film Thickness	**PQR**	Procedure Qualification Record
FAT	Factory Acceptance Test	**PT**	Dye-Penetrant Testing
FCAW	Flux Cored Arc Weld	**PWHT**	Post Weld Heat Treated
FL	Fusion Line	**QCP**	Quality Control Plan
GMAW	Gas Metal Arc Welding	**RT**	Radiographic Testing
GTC	General Terms and Conditions	**SAW**	Submerged Arc Welding
GTS	Group Technical Standards	**SMAW**	Shielded Metal Arc Welding
HAZ	Heat Affected Zone	**SOW**	Scope Of Work
HDG	Hot Dip Galvanising	**SSPC**	The Society for Protective Coating
HP	High Pressure	**STC**	Specific Terms and Conditions
HPU	Hydraulic Power Unit	**SWL**	Safe Working Load
HV	High Voltage	**TBC**	To Be Confirmed
ITP	Inspection & Test Plan	**TBD**	To Be Defined
LP	Low Pressure	**TD**	Design temperature
LV	Low Voltage	**UHP**	Ultra-High Pressure
MBL	Minimum Breaking Load	**UT**	Ultrasonic Testing
MCAW	Metal Core Arc Welding	**UTS**	Ultimate Tensile Strength
MPI	Magnetic Particle Inspection	**VDB**	Vendor Data Book
MSDS	Material Safety Data Sheet	**WFT**	Wet Film Thickness
MT	Magnetic Testing	**WPQ**	Welder Performance Qualification
N.A.	Not Applicable	**WPS**	Welding Procedure Specification.

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3 Document reference

Ref.	Description	ROSETTI MARINO doc. number	Rev.
[1]	Technical Specification for DAVIT CRANE	123A90-DDL-MAC-SP-50034	01
[2]	TDS - Davit Crane	123A90-DDL-MAC-DS-50036	00
[3]	Coating and Painting spec	123A90-DDL-MAT-SP-60006	01

4 Rules and standard reference

No.	Description
UNI EN 10025-1 Ed.2005	Hot rolled products of structural steels – General technical delivery conditions
UNI EN 10025-2 Ed.2019	Hot rolled products of structural steels – Technical delivery conditions for non-alloy structural steels
UNI EN 10025-3 Ed.2019	Hot rolled products of structural steels – Technical delivery conditions normalized/normalized rolled weldable fine grain structural steels
UNI EN 10025-4 Ed.2023	Hot rolled products of structural steels – Technical delivery conditions for thermomechanical rolled weldable fine grain structural steels
UNI EN 10028-3 Ed.2017	Flat products made of steels for pressure purposes Weldable fine grain steels, normalized
UNI EN 10210-1 Ed.2006	Hot finished structural hollow sections of non-alloy and fine grain steel - Technical delivery conditions
UNI EN 10216-5 Ed.2021	Stainless Steel Seamless Tubes
UNI EN ISO 15614-1 Ed.2019	Specification and qualification of welding procedures for metallic materials
UNI EN ISO 9606-1 Ed.2017	Qualification testing of welders
UNI EN 10160 Ed.2001	Ultrasonic testing of steel flat product of thickness equal or greater than 6 mm (reflection method)
UNI EN 10250-2 Ed.2022	Open die steel forgings for general engineering purposed
UNI EN ISO 683-2 Ed.2018	Alloy Steel for quenching and tempering
UNI EN 10228-1 Ed.2016	Non-destructive testing of steel forgings – Magnetic particle inspection
UNI EN 10228-3 Ed.2016	Non-destructive testing of steel forgings – Part. 3 – Ultrasonic testing of ferritic or martensitic steel forgings
UNI EN 10204 Ed.2005	Metallic products – Types of inspection documents
UNI EN ISO 9712 Ed.2022	Non-destructive testing – Qualification and certification of NDT personnel
UNI EN ISO 17637 Ed.2017	Non-destructive testing of welds – Visual testing of fusion-welded joints
UNI EN ISO 17638 Ed.2016	Non-destructive testing of welds – Magnetic particle testing
UNI EN ISO 23278 Ed.2015	Non-destructive testing of welds – Magnetic particle testing – Acceptance levels
UNI EN ISO 17640 Ed.2019	Non-destructive testing of welds. Ultrasonic testing. Techniques, testing levels, and assessment
UNI EN ISO 11666 Ed.2018	Non-destructive testing of welds. Ultrasonic testing. Acceptance levels
UNI EN ISO 5817 Ed.2023	Welding – Fusion-welded joints in steel, nickel, titanium and their alloys (beam welding excluded) – Quality levels for imperfections
EN ISO 3452 Ed.2021	Non-destructive testing of welds – Penetrant testing
UNI EN ISO 23277 Ed.2015	Non-destructive testing of welds – Penetrant testing – Acceptance levels
UNI EN 10308 Ed.2004	Non-destructive testing. Ultrasonic testing of steel bars

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No.	Description
UNI EN ISO 898 Ed.2013	Mechanical properties of fasteners made of carbon steel and alloy steel
UNI EN 10088-3 Ed.2024	Technical delivery conditions for semi-finished products, bars, rods, wire, sections and bright products of corrosion resisting steels for general purposes
UNI EN 10083-3 Ed.2006	Steels For Quenching And Tempering. Technical Delivery Conditions For Alloy Steels
ISO 19840 Ed.2012	Paints and varnishes—Corrosion protection of steel structures by protective paint systems

5 Inspection keys

ID	Activity	Description
H	Hold	Mandatory inspection point beyond which a work cannot proceed. The party involved shall be invited to witness the activity, **5 working days notification.** Works may proceed only after approval of inspection points by designated responsible person.
W	Witness	Mandatory inspection point. The party involved shall be invited to witness the activity, **5 working days notification.** The activity may proceed if the party involved confirms in advance in writing that they will not attend.
R	Review	Review of documentation and/or raised report relating to this activity. Requirements shall be met in order to close this activity.
A	Approval	The supplier shall issue and send the documentation related to this phase for approval to all the involved party, without written approval of the documentation the supplier can't proceed with the next steps.
M	Monitor	Vendor/Subcontractor shall communicate to the involved party by writing the starting date and time of the relevant activity, to allow it to carry out proper surveillance of the ongoing activities. The party involved shall be invited to witness the activity, **5 working days notification.**

5.1 Remarks

The inspection notice time to all the involved parties is **5 working days notification**. Remazel and Rosetti Marino deserve the possibility to change this document during all the construction phases.

The other miscellaneous items not clearly in this ITP will be inspected and tested by Remazel only.

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6 Main and commercial items

6.1 Main items

Drawing	Description	ROSETTI MARINO tag	Structural definition	Material certificate	1.00 Carbon & Stainless steels material (Plate, pipes, and profiles)	2.00 Forging (Shape)	3.00 Forging (Commercial bars)	4.00 Assembly & Welding	5.00 Hardening	6.00 Machining	7.00 Painting
Offshore Davit Cranes											
TBD	Boom	Tag.No. X-99001	Primary	EN 10204 3.1	X			X		X	X
TBD	Column		Primary	EN 10204 3.1	X			X		X	X
TBD	Pedestal		Primary	EN 10204 3.1	X			X		X	X
TBD	Slewing bearing		Primary	EN 10204 3.1		X			X	X	X
TBD	Pinion		Primary	EN 10204 3.1			X		X	X	
TBD	Pin		Primary	EN 10204 3.1	X					X	
TBD	Pulley		Primary	EN 10204 3.1	X					X	X
TBD	Trolley		Primary	EN 10204 3.1	X			X		X	X
TBD	Drum		Primary	EN 10204 3.1	X			X		X	X
TBD	Shoulder		Primary	EN 10204 3.1	X					X	X

Table 6-1 - Main items list .

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6.2 Commercial items

OTHER COMPONENTS	
Hook	Section 8.00
Wire rope and socket	Section 9.00
Slew bolts	Section 10.00
Gearbox and brakes	Section 11.00
Electrical motor	Section 12.00
Frequency converters	Section 13.00
Load Cell	Section 14.00

Table 6-2 - Commercial items list

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7 Inspection and test plan

7.1 Main items

Section	Description	Applicable Specification / Standard / Procedure	Acceptance Criteria	Verifying Document	Remarks	Sub-Supplier	Remazel	ROSETTI MARINO	CROSSWIND
1.00	**CARBON & STAINLESS STEEL MATERIAL (Plate, pipes, and profiles)**								
1.01	Material traceability	Material Traceability procedure 24-27012_MTP-00	Material Traceability procedure 24-27012_MTP-00	Certification list		H	R	R	R
1.02	UT Control (Plates ≥20mm)	EN 10160 1724001010-NDT-PRO-00006	As per EN 10160 Class S2/E3	NDE Report	Lamination Check Personnel qualified EN 9712 Level II	H	M	R	R
1.03	Chemical analysis and mechanical properties	EN 10025 EN 10250 EN ISO 683 EN 10210 ASTM A564 EN 10088 EN10028	As per EN 10025 EN 10250 EN ISO 683 EN 10210 ASTM A564 EN 10088 EN10028	EN 10204 3.1 certificate		H	R	R	R
2.00	**FORGING (Shape)**								
2.01	Chemical analysis and mechanical properties	Forging Manufacturer Procedure EN 10250-2 EN 10250-3 EN ISO 683-2 ASTM A564	As per Forging Manufacturer Procedure EN 10250-2 EN 10250-3 EN ISO 683-2 ASTM A564	EN 10204 3.1 Certificate		H	R	R	R
2.02	MT Control	EN 10228-1 1724001010-NDT-PRO-00006	As per EN 10228-1 Liv. 3	NDT Report	Slewing Bearings will be inspected with MT after final machining (Step 6.02)	H	W	R	R
2.03	UT control	EN 10228-3 1724001010-NDT-PRO-00006	As per EN 10228-3 Liv. 2	NDT Report		H	W	R	R
2.04	Dimensional check after roughing	Drawing	As per Drawings	Dimensional report		H	R	R	R

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Section	Description	Applicable Specification / Standard / Procedure	Acceptance Criteria	Verifying Document	Remarks	Sub-Supplier	Remazel	ROSETTI MARINO	CROSSWIND
2.05	Material traceability	Material Traceability procedure 24-27012_MTP-00	Material Traceability procedure 24-27012_MTP-00	Certification list		H	R	R	R
2.06	Marking	Forging Manufacturer Procedure	As per EN 10250-2 EN 10250-3 EN ISO 683-2 ASTM A564	N.A.		H	R	R	R
3.00	**FORGING (Commercial bars)**								
3.01	Material traceability	According to Standard specification	According to Standard specification	Certification list		H	R	R	R
3.02	Chemical analysis and mechanical properties	EN 10250-2 EN 10250-3 EN ISO 683-2 ASTM A564	As per EN 10250-2 EN 10250-3 EN ISO 683-2 ASTM A564	EN 10204 3.1 certificate	See table 6.1	H	R	R	R
3.03	Dimensional check after roughing	Drawing	As per Drawings	Dimensional report		H	R	R	R
3.04	Marking	Forging Manufacturer Procedure	As per EN 10250-2 EN 10250-3 EN ISO 683-2 ASTM A564	N.A.		H	R	R	R
4.00	**ASSEMBLY & WELDING**								
4.01	Welding book submission	EN ISO 15614-1 EN ISO 9606-1 1724001010-WEL-PRO-00005	As per EN ISO 15614-1 EN ISO 9606-1	Welding book	Welding book must be included: • PQR • Weld map • WPS • Welder qualification The PQR shall be approved by Notified Body.	H	A	R	R
4.02	Welding Consumables	EN Standard	As per EN Standard	EN 10204 3.1 Certificate for chemical analysis and 2.2 for mechanical properties		H	R	R	R
4.03	Fit-up inspection	WPS	As per WPS	Internal Inspection report		H	M	R	R

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Section	Description	Applicable Specification / Standard / Procedure	Acceptance Criteria	Verifying Document	Remarks	Sub-Supplier	Remazel	ROSETTI MARINO	CROSSWIND
4.04	Welding activities	WPS	As per WPS	Internal Inspection report		H	M	R	R
4.05	NDT Operator Qualification	EN ISO 9712	As per EN ISO 9712 level II	NDT operator qualification		H	A	R	R
4.06	VT inspection of welds	EN ISO 17637 1724001010-NDT-PRO-00006	As per EN ISO 5817 Lev. C	NDT report	Testing of welds shall be performed not sooner than 48 hours after completion. In process NDT inspection is not limited. Only the final acceptance inspection shall meet the 48-hour hold. The percentage of checks is shown on the drawings.	H	W	R	R
4.07	MT inspection of welds	EN ISO 17638 1724001010-NDT-PRO-00006	As per EN ISO 23278 Lev. 2	NDT report		H	W	R	R
4.08	UT inspection of welds	EN ISO 17640 1724001010-NDT-PRO-00006	As per EN ISO 11666 Lev. 2	NDT report		H	W	R	R
4.09	Dimensional check after welding	Drawing	As per drawing	Dimensional report		H	W	R	R
4.10	Material traceability	Material Traceability procedure TBD	As per Material Traceability procedure TBD	Certification list		H	R	R	R
5.00	**HARDENING**								
5.01	Hardness Check	As per Drawing	As per Drawing	Hardness Report		H	W	R	R
5.02	MT control on hardened surfaces	EN 10228-1 1724001010-NDT-PRO-00006	As per EN 10228-1 Lev. 3	NDE Report	Personnel qualified EN 9712 Level 2	H	W	R	R
6.00	**MACHINING**								
6.01	Dimensional check after machining	As per Drawing	As per drawing	/	Visual Inspection before painting will be performe during dimensional check Dimensional report	H	W	W	R
6.02	Magnetic Test on machined parts Forging & machined welds	EN 10228-1 NDT Procedure 1724001010-NDT-PRO-00006	EN 10228-1 Lev. 3 NDT Procedure 1724001010-NDT-PRO-00006	NDE Report		H	W	R	R
6.03	Rust protection on machined parts	N.A.	N.A.	N.A.		H	R	R	R
7.00	**PAINTING**								

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Section	Description	Applicable Specification / Standard / Procedure	Acceptance Criteria	Verifying Document	Remarks	Sub-Supplier	Remazel	ROSETTI MARINO	CROSSWIND
7.01	Steel preparation visual Inspection - Surface profile checks - Dust checks - Salt checks	Painting Specification 1724001010-MAT-PRO-00007	Painting Specification 1724001010-MAT-PRO-00007	Painting report		H	W	W	W
7.02	Visual inspection of Final Coat	Painting Specification 1724001010-MAT-PRO-00007	Painting Specification 1724001010-MAT-PRO-00007	Painting report		H	W	W	W
7.03	DFT Test	Painting Specification 1724001010-MAT-PRO-00007	Painting Specification 1724001010-MAT-PRO-00007	Painting report		H	W	W	W
7.04	Adhesion test	Painting Specification 1724001010-MAT-PRO-00007	Painting Specification 1724001010-MAT-PRO-00007	Painting report		H	W	W	W

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7.2 Commercial items

7.2.1 Other components

Section	Description	Applicable Specification / Standard / Procedure	Acceptance Criteria	Verifying Document	Remarks	Sub-Supplier	Remazel	ROSETTI MARINO	CROSSWIND
8.00	**HOOK**								
8.01	Base Material chemical analysis and mechanical properties	EN 10025-2 EN 10250-2 EN ISO 683-2	As per EN 10025-2 EN 10250-2 EN ISO 683-2	EN 10204 3.1 Certificate		H	R	R	R
8.02	UT Control (Plates ≥20mm)	EN 10160	As per EN 10160 Class S2/E3	NDE Report	Personnel qualified EN 9712 Level II	H	R	R	R
8.03	UT Control (Round bars)	EN 10308	As per EN 10308 Class 3	NDE Report	Personnel qualified EN 9712 Level II	H	R	R	R
8.04	UT control (Forging)	EN 10228-3	As per EN 10228-3 Lev. 3	NDE Report	Personnel qualified EN 9712 Level II	H	R	R	R
8.05	Load Test	Manufacturer Specification	As per Manufacturer Specification	CE declaration Declaration of Conformity	CE Marking is required	H	W	R	R
8.06	Dimensional Check	Drawing	As per Drawing	Dimensional Report		H	W	W	R
8.07	Material traceability	According to Standard specification	According to Standard specification	Certification list		H	R	R	R
9.00	**WIRE ROPE AND SOCKET**								
9.01	Chemical analysis and mechanical properties	API 9A	As per API 9A	EN 10204 3.1 Certificate		H	R	R	R
9.02	Breaking Test	Manufacturer Specification	As per Manufacturer Specification	CE declaration Certificate of test and through examination of wire rope	CE Marking is required	H	R	R	W
10.00	**SLEW BOLTS**								
10.01	Chemical analysis and mechanical properties	EN ISO 898	As per EN ISO 898	EN 10204 3.1 Certificate		H	R	R	R
10.02	Material traceability	According to Standard specification	According to Standard specification	Certification list		H	R	R	R
11.00	**GEARBOX AND BRAKES**								
11.01	Manufacturer Certificate	Standard Manufacturer	As per Standard Manufacturer	Declaration of Conformity		H	R	R	R

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Section	Description	Applicable Specification / Standard / Procedure	Acceptance Criteria	Verifying Document	Remarks	Sub-Supplier	Remazel	ROSETTI MARINO	CROSSWIND
11.02	Chemical analysis and mechanical properties	EN Standards	As per EN standards	EN 10204 3.1 Certificate	Applicable for torque items	H	R	R	R
11.03	Dynamic and static test	Manufacturer procedure	As per Manufacturer procedure	CE declaration Declaration of Conformity		H	R	R	R
12.00	**ELECTRICAL MOTOR**								
12.01	Manufacturer Certificate	Manufacturer Specification	As per Manufacturer Specification	CE declaration Declaration of Conformity	CE Marking is required	H	R	R	R
13.00	**FREQUENCY CONVERTERS**								
13.01	Manufacturer Certificate	Manufacturer Specification	As per Manufacturer Specification	CE declaration Declaration of Conformity	CE Marking is required	H	R	R	R
14.00	**LOAD CELL**								
14.01	Base Material chemical analysis and mechanical properties	ASTM A564	As per ASTM A564	EN ISO 10204 3.1 Certificate		H	R	R	R
14.02	MT on Forging machined parts	EN ISO 10228-1	As per EN ISO 10228-3 Lev. 3	NDE Report	Personnel qualified ISO 9712 Level 2	H	R	R	R
14.03	UT Control (Round bars)	EN ISO 10308	As per EN 10308 Class 3	NDE Report		H	R	R	R
14.04	UT Control (Forging)	EN ISO 10228-3	As per EN ISO 10228-3 Lev. 3	NDE Report		H	R	R	R
14.05	Load Test / Calibration Check	Load Cell Calibration Procedure	As per Construction Drawing	Load Cell Calibration Report		H	R	R	R
14.06	Dimensional Check	Drawing	As per Drawing	Dimensional Report		H	R	R	R
14.07	Marking	As per Construction Drawing	As per Construction Drawings	N.A.		H	R	R	R

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7.3 Completion Activities

Section	Description	Applicable Specification / Standard / Procedure	Acceptance Criteria	Verifying Document	Remarks	Sub-Supplier	Remazel	ROSETTI MARINO	CROSSWIND
15.00	**ASSEMBLY & TESTING**								
15.01	Cleanliness check	123A90-DDL-MAC-SP-50034_00	All dirt, grime, grease, and shop residue shall be removed from the surface of furnished equipment prior to packaging and shipping from the manufacturing facility.	\		-	H	R	R
15.02	Final Check Assembly	General Assembly Drawing	As per General Assembly Drawing	Test Report		-	H	-	-
15.03	Factory Acceptance Test	FAT Procedure TBD 1724001010-QC-PRO-00008	As per FAT Procedure TBD	FAT Report	Including as min. static load test, functional test without & with load, overload functional test	-	H	W	W
15.04	Safety requirements check	\	\	\	safety instruction in English languages/ Check safety labels	-	H	R	R
15.05	Weight Control	Weight Procedure TBD	As per Weight Procedure TBD	Test Report		-	H	R	R
15.06	Nameplate Check	Nameplate Check Drawing	As per Nameplate Check Drawing	Nameplate picture	CE Marking is required	-	H	W	R
15.07	Final and packing inspection	Packing Procedure TBD	As per Packing procedure TBD	Inspection Report		-	H	R	R
15.08	Manufacturer Data Book Review	Data Book Index	Data Book Index	Data Book Dossier		-	H	R	R
16.00	**SPARE PARTS**								
16.00	Check commissioning spare parts	1724001010-COM-LIS-00015	Spare parts list	Spare parts list Inspection release note		-	H	W	R
16.01	Check 2y spare parts	1724001010-COM-LIS-00015	Spare parts list	Spare parts list Inspection release note		-	H	W	R

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Base Load Power Hub (BLPH)

DAVIT CRANE

WELDING PROCEDURE SPECIFICATION (WPS) AND QUALIFICATIONS RECORDS (PQR), WELDING OPERATORS LIST and WELDER QUALIFICATIONS RECORDS (WPQ), WELDING MAP

Document Number: 1724001010-WEL-PRO-00005

ROSETTI MARINO

1	NO COMMENTS - APPROVED - WORK MAY PROCEED
2	MINOR COMMENTS - REVISE AND RESUBMIT - WORK MAY PROCEED
3	MAJOR COMMENTS – REJECTED – DO NOT PROCEED
4	APPROVAL NOT REQUIRED

NOTE: Approval doesn't relieve the supplier from mandatory compliance with contractual documents and specifications. Comments made do not imply acceptance of any cost or delivery impact.

Sign	Date
DAVIDE CENACCHI	23/12/2024

Document Class: 2

Rev.	Date	Description	Prepared	Reviewed	Approved
05	19/12/2024	Accepted for construction (AFC)	CZB	MPU	ATR
04	12/11/2024	Accepted for construction (AFC)	CZB	MPU	ATR
03	30/10/2024	Accepted for construction (AFC)	CZB	MPU	ATR
02	09/10/2024	Issue for Review (IFR)	CZB	MPU	ATR
01	06/09/2024	Issue for Review (IFR)	CZB	MPU	ATR
00	26/07/2024	Issue for Review (IFR)	CZB	MPU	ATR

REMAZEL ENGINEERING

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Revision / Change Log

Rev.	Description
00	Issue for Review (IFR)
01	Issue for Review (IFR)
02	Issue for Review (IFR)
03	Accepted for construction (AFC)
04	Accepted for construction (AFC) / Added section for Winch and Winch Carpentry
05	

HOLDS LIST

No.	Description
1	
2	
3	
4	

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1 INTRODUCTION

1.1 PROJECT OVERVIEW

Crosswind, a Shell and Eneco joint venture, was awarded the tender to develop the offshore Hollandse Kust Noord (HKN) wind farm, located 18.5km off the coast of Netherlands near the town of Egmond aan Zee. The consortium plans to have HKN operational in 2023 with an installed capacity of 759MW generating at least 3.3TWh per year. This is sufficient renewable power to supply more than 1 million Dutch households with green electricity.

Offshore wind farms produce intermittent electricity and balancing these dips and peaks and integrating this electricity into the national energy system requires new technologies. For this reason, the offshore wind farm will include several new technologies that could be implemented at full-scale in the future. The new technologies being explored include a floating solar park, a short-duration battery storage as well as long-term storage via green hydrogen produced by water electrolysis and subsequently consumed in a fuel cell. The combination of these individual measures, herein referred to as the Base Load Power Hub (BLPH) will ensure a continuous power supply regardless of the wind situation.

1.1.1 Project Location

The Hollandse Kust Noord (HKN) wind farm is located 18.5km off the coast of the Netherlands near the town of Egmond aan Zee.

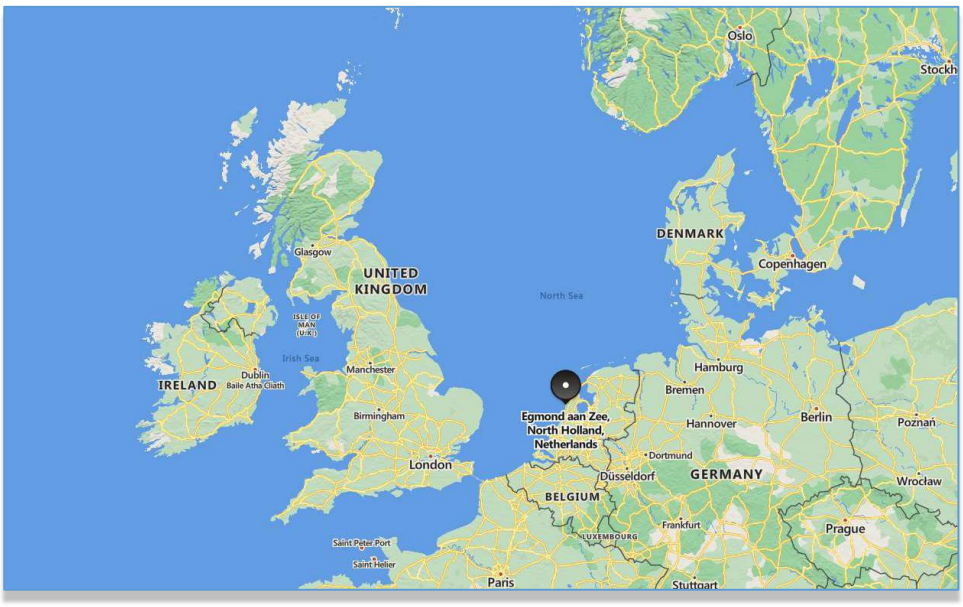


Figure 1 HOLLANDSE KUST NOORD WIND PARK Location Map



Figure 2 - Wind Park Details

The wind farm will consist of No. 69 x 11.5MW wind turbine generators each to be installed on a dedicated monopile structure. A 70th monopile located on coordinates E 590719.1, N 5841602.3 is reserved for installing the platform accommodating the BLPH. The monopile structure was designed and installed by Van Oord Offshore Wind (VooW) and therefore not part of the BLPH scope.

1.1.2 Project Concept

All components included in the BLPH will be integrated onshore on a topsides and installed in an offshore location within the boundaries of the HKN wind farm. At its simplest, the BLPH will store energy during periods of high electricity generation from renewable sources (a wind turbine generator and the floating solar PV farm) and release it during periods of low generation. In practice. It is expected that the energy stored will supplement generation from renewable sources to ensure that at least 1.0MW of power is exported to the electrical grid regardless of wind/solar availability.

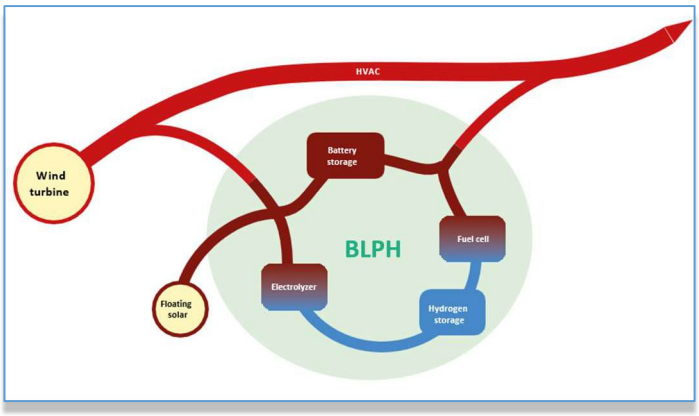


Figure 3 – BLPH Concept

Electricity in the BLPH will be stored in the form of electrons in a battery energy storage system (BESS) as well as converted into green hydrogen via water electrolysis. When the power output from the connecting wind turbine drops to below 1 MWe, the BLPH will return its stored energy to supplement the remaining power output. This will be by discharging the BESS, while stored hydrogen will be converted back into electricity using a fuel cell to extend the discharge duration.

The purpose of the BLPH s to function as a testbed for the integration of energy storage technologies with renewable generation. It is expected that equipment installed on the BLPH will operate as Normally Unmanned Installation for at least two (2) years with no or minimal maintenance and it will have its own independent control room with the ability to communicate with Crosswind's control room.

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2 DOCUMENT SCOPE

WELDING PROCEDURE SPECIFICATION (WPS) AND QUALIFICATIONS RECORDS (PQR), WELDING OPERATORS LIST and WELDER QUALIFICATIONS RECORDS (WPQ), WELDING MAP

Table 1 - Reference Documents

2.1 DEFINITIONS AND ABBREVIATIONS

COMPANY or Client (CPY):	Crosswind
CONTRACTOR (CTR):	ROSETTI MARINO S.p.A.
PROJECT:	HOLLANDSE KUST NOORD WIND PARK Project

Table 2 - Definitions and Abbreviations

3 WELDING BOOK

This document undergoes an issuance cycle within EDMS Fusionlive". Its distribution is electronically controlled. Once printed shall be considered as "NOT CONTROLLED" copy

DAVIT CRANE

WELDING PROCEDURE SPECIFICATION (WPS) & QUALIFICATION RECORDS (PQR), WELDING OPERATORS LIST & WELDER QUALIFICATION RECORDS (WPQ), WELDING MAP – REMAZEL

Rev	Date	Revision Description	Prepared	Checked	Approved
05	19/12/2024	Accepted for constrution	CZB	MPU	ATR
04	12/11/2024	Accepted for constrution	CZB	MPU	ATR
03	24/10/2024	Accepted for constrution	CZB	MPU	ATR
02	09/10/2024	Issued For Review	CZB	MPU	ATR
01	06/09/2024	Issued For Review	CZB	MPU	ATR
00	26/07/2024	Issued For Review	CZB	MPU	ATR

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SUMMARY OF REVISION

Rev.	Revised chapters	Revision description	Reason for revision
00	///	///	IFR
01	///	///	IFR
02	All	Add WPQR CCP09; Reviewed comment on WPQR CCP12	IFR
03	/	Add welders history certificates Also Accepted for construction	AFC
04	/	Add section for Winch and Winch Carpentry	AFC
05	/	//	AFC

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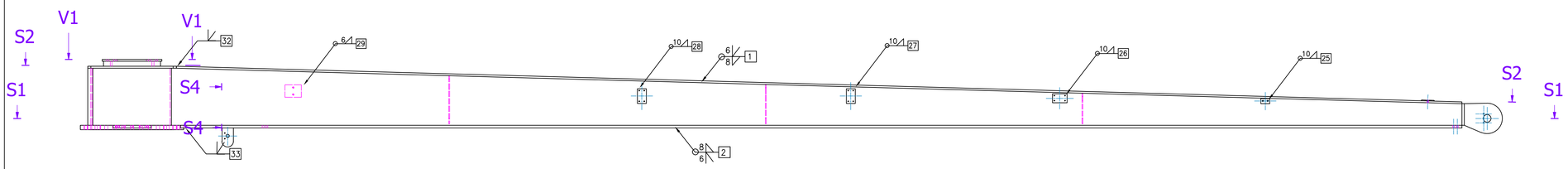
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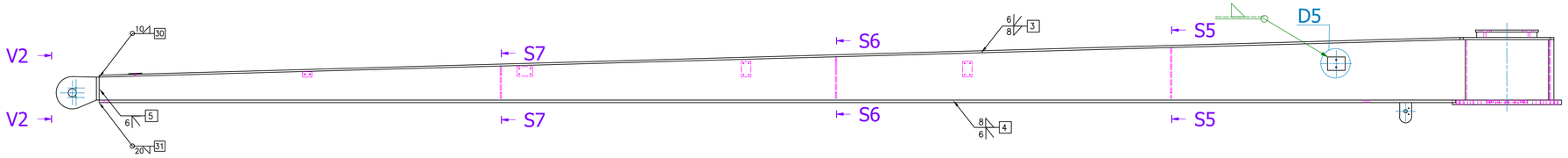
1. Weld Map 13
2. WPS 14
3. WPQR 15
4. Welder Certificates 16
5. Attachments 8

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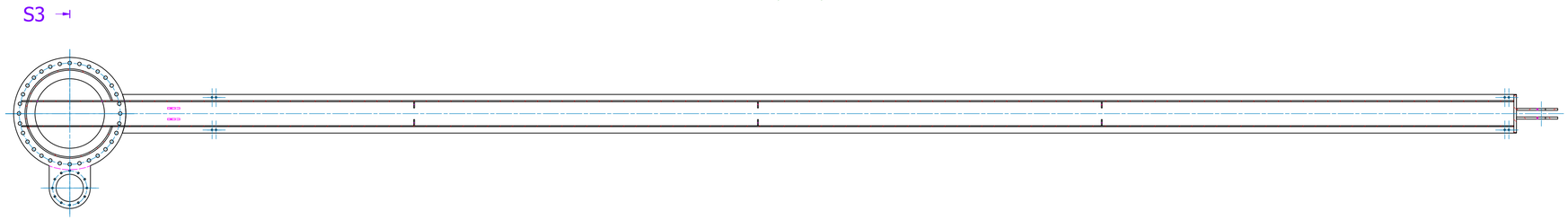
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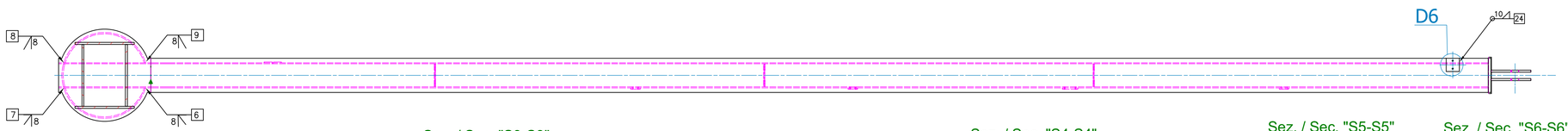




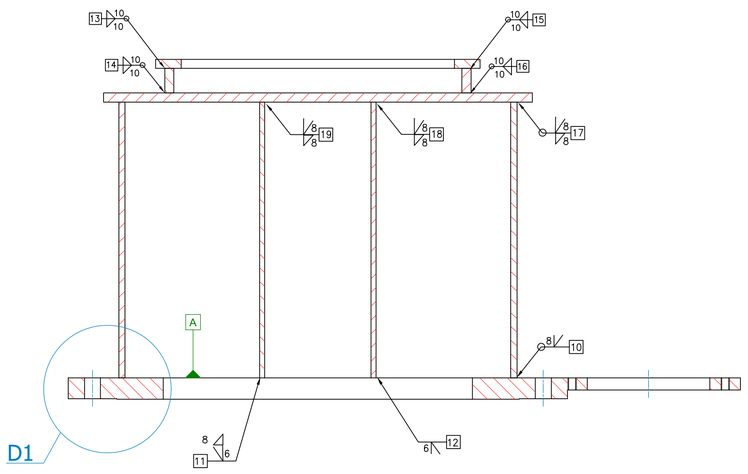
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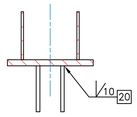
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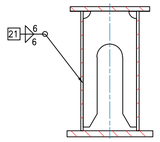
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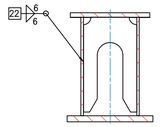
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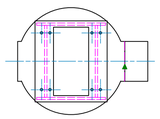
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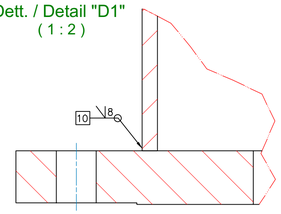
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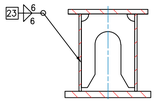
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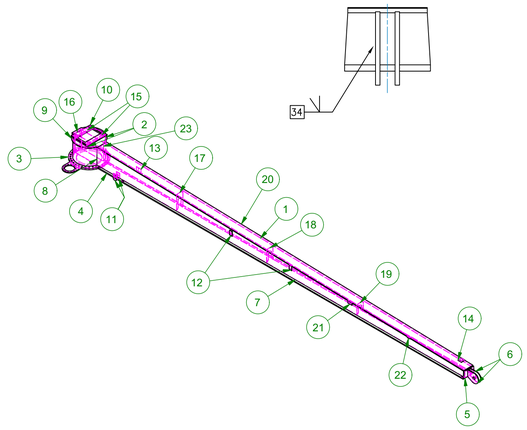
Dett. / Detail "D1"
(1 : 2)



Sez. / Sez. "S7-S7"
(1 : 10)



Vista da / View from "V2"
(1 : 10)



23	Sheet metal	Thk = 10 mm - S 355 J2+N UNI EN 10025_Cert. 3.1	1	C3	28,73 kg
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17	Sheet metal	Thk = 8 mm - S 355 J2+N UNI EN 10025_Cert. 3.1	1	C3	2,63 kg
16	Sheet metal	Thk = 10 mm - S 355 J2+N UNI EN 10025_Cert. 3.1	1	C3	6,23 kg
15	Sheet metal	Thk = 15 mm - S 355 J2+N UNI EN 10025_Cert. 3.1	2	C3	2,22 kg
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EL.	DESCRIPTION	DESCRIPTION ADDITIONAL	Q.TY	Q.C.L.	WEIGHT

Riferimenti documenti per Costruzione / Verniciatura / Controllo
Reference documents for Construction / Painting / Inspections

Numero Documento / Documents number	Descrizione / Description
	Piano di collaudo / Inspection Test Plan
	Specifica di Verniciatura / Painting Specification
	Specifica di Distensione / Stress Relieving Specification
	Specifica Trattamento Termico / Heat Treatment Specification

3.1 CERTIFICATE - EN10204

SALDATURA CONTINUA
CONTINUOUS WELDING

Tutte le saldature testa a testa non indicate a disegno devono essere a piena penetrazione
All head to head weldings not indicated on drawing must be complete penetration joint
NDT
100% VI
100% MT/PT
100% UT

SALDATURE NON QUOTATE
WELD WITHOUT DIMENSION
Su un lato / One side
t = min (T1;T2)
NDT:
100 % VI

SALDATURE NON QUOTATE
WELD WITHOUT DIMENSION
Sui due lati / Both side
t = min (T1;T2)
NDT:
100 % VI

Eliminare spigoli vivi
Remove all edges

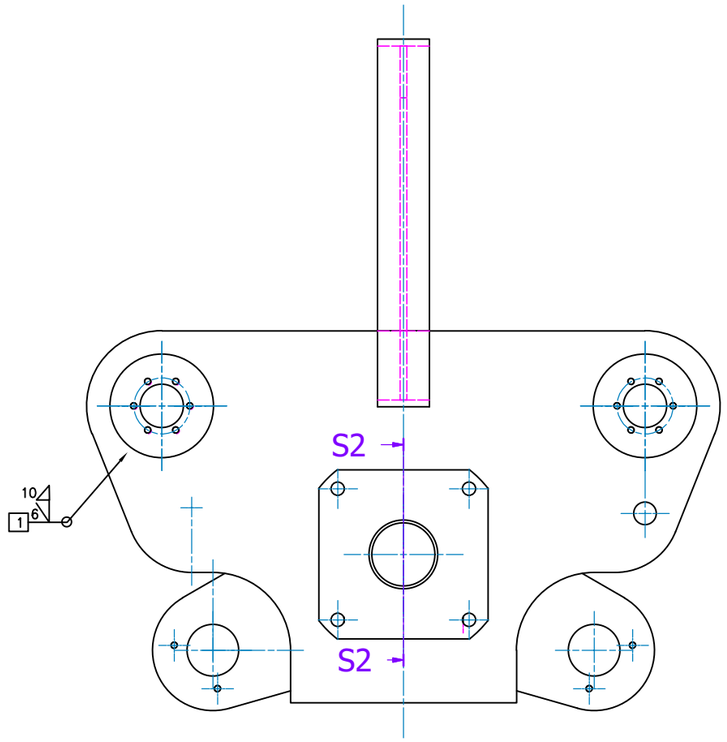
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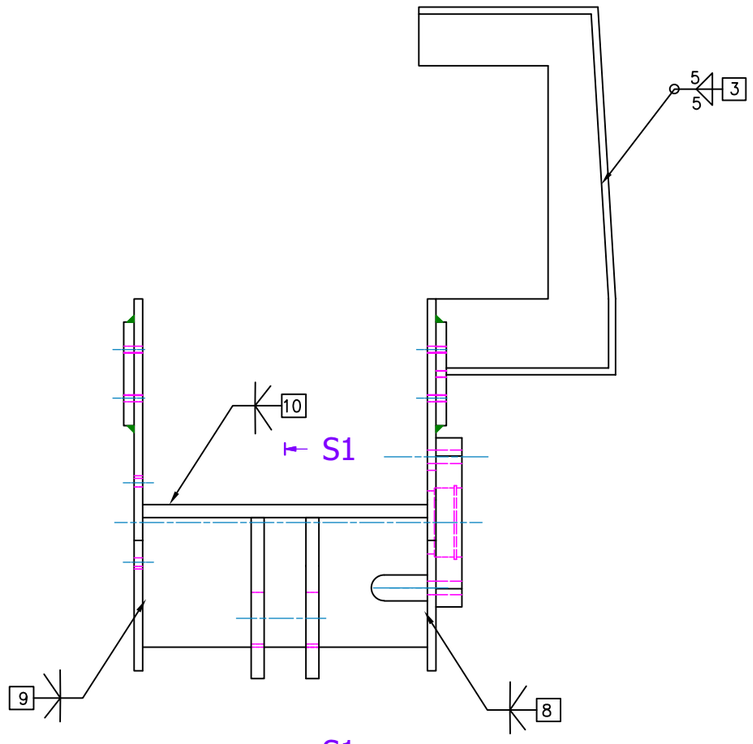
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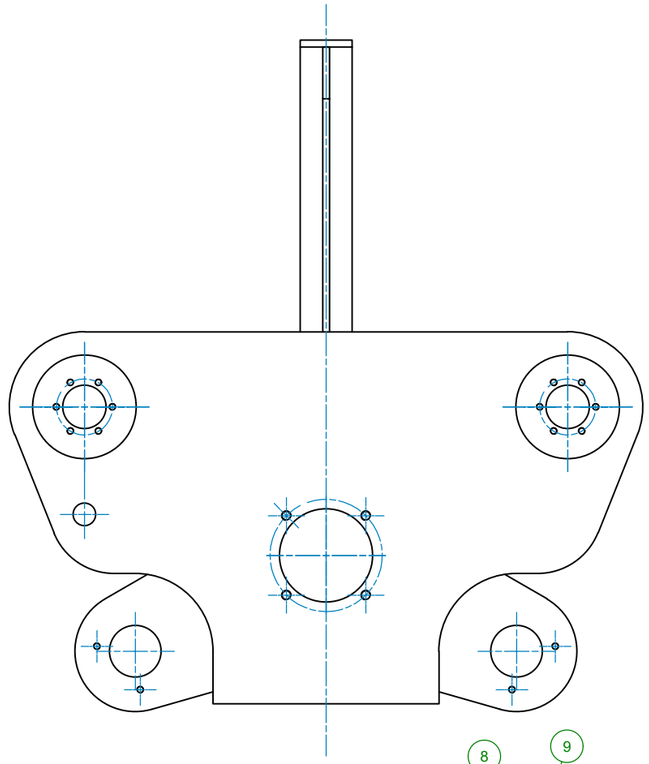
REMAZEL ENGINEERING
Chiuduno (BG) - 24060 - ITALY
Phone : +39-035-68.44.14 - Fax : +39-035-68.78.23
e-mail : info@remazel.com / website : www.remazel.com

Project / Equipment : **C09-0001**
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Scale : 1 : 20
Sheet : 1 of 3
A1
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Revision : A

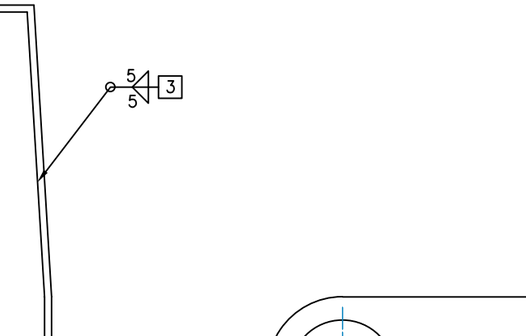
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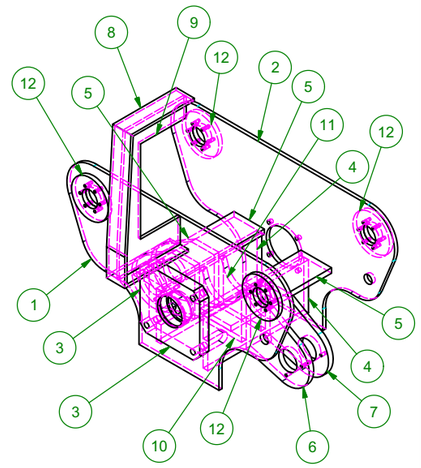




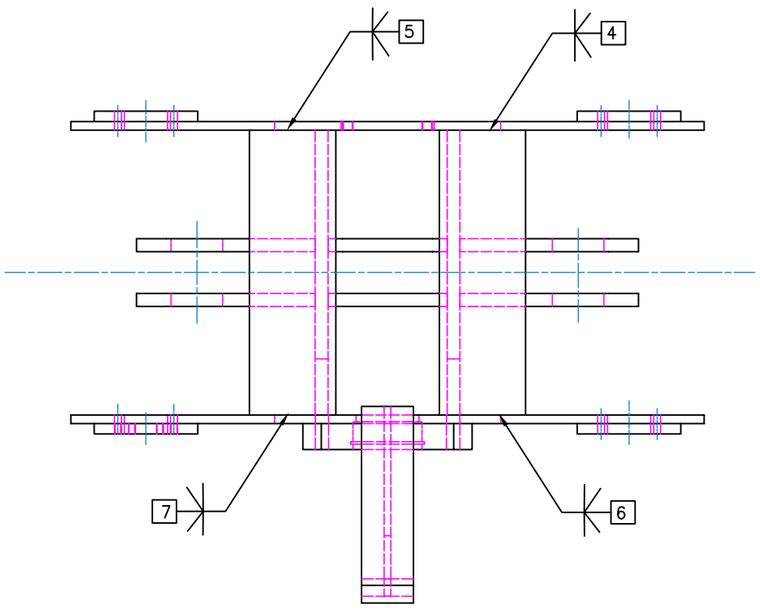


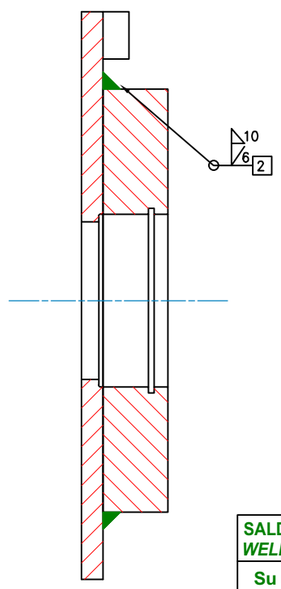
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(1 : 2)



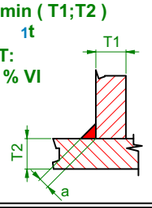


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4	Sheet metal	Thk = 15 mm - S 355 J2+N UNI EN 10025_Cert 3.1	C3	2	5,62 kg
3	Sheet metal	Thk = 30 mm - S 355 J2+N UNI EN 10025_Cert 3.1	C3	1	7,49 kg
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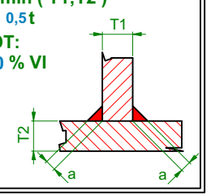
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WELD WITHOUT DIMENSION

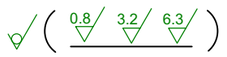
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a = 1t
NDT:
100 % VI



SALDATURE NON QUOTATE
WELD WITHOUT DIMENSION

Sui due lati / *Both side*
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a = 0,5t
NDT:
100 % VI





Eliminare spigoli vivi
Remove all edges

SALDATURA CONTINUA
CONTINUOUS WELDING

REMAZEL ENGINEERING
Chiuduno (BG) - 24060 - ITALY
Phone : +39-035-68.44.14 - Fax : +39-035-68.78.23
e-mail : info@remazel.com / website : www.remazel.com

Project / Equipment :
C09-0001

Weight :
86,5 kg

Title :
Carrello Gancio
Traveling Trolley

Scale :
1 : 5

Sheet :
1 of 1

A2

Drawing State:
Work in Progress
PRELIMINARY

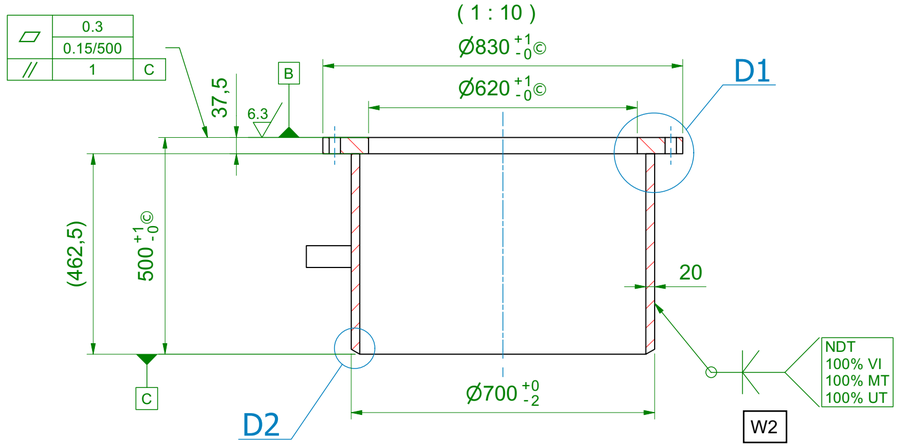
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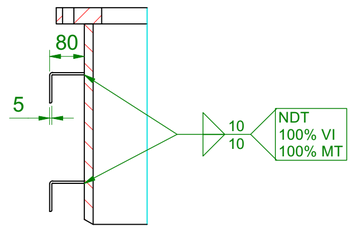
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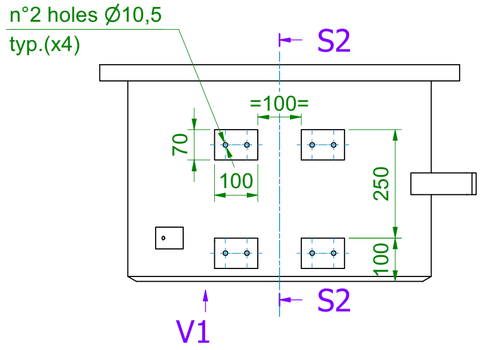
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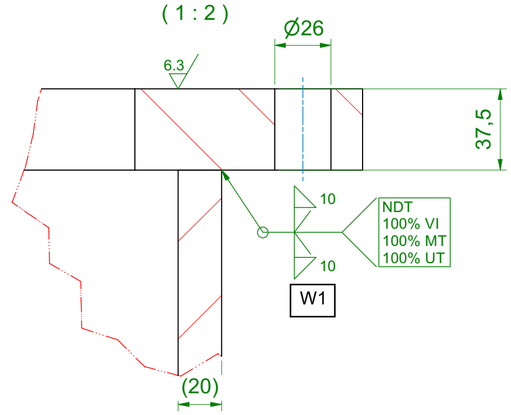


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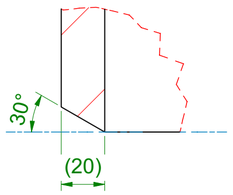




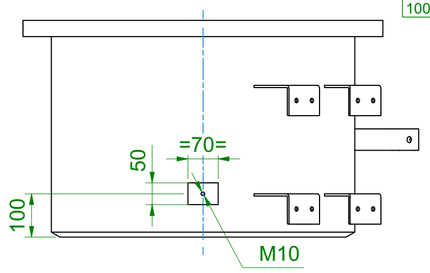
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(1 : 2)



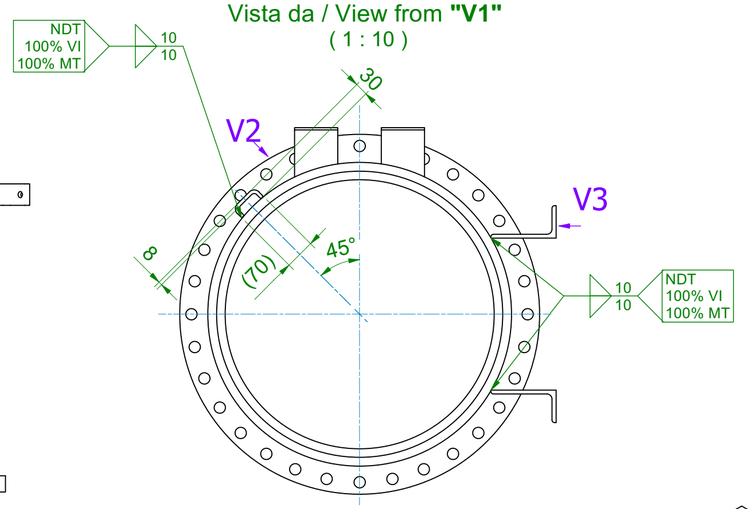
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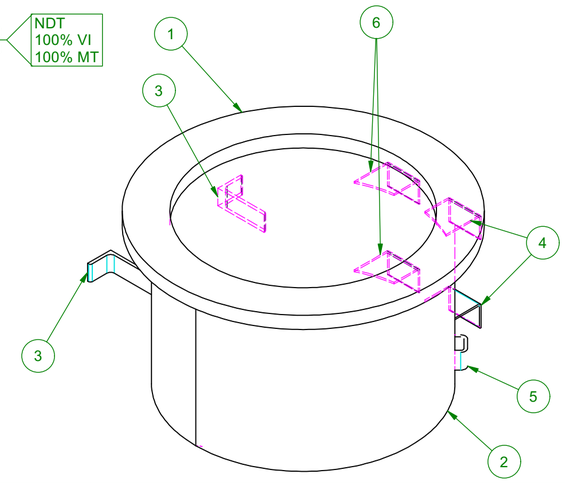


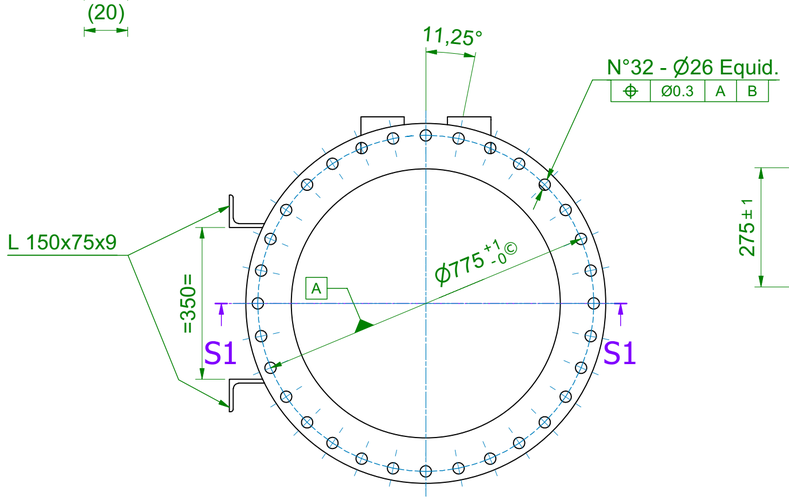
Vista da / View from **"V2"**
(1 : 10)



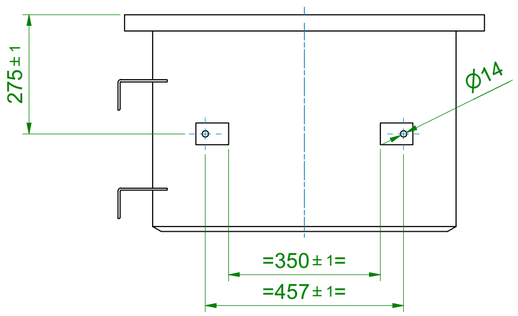
Vista da / View from **"V1"**
(1 : 10)







Vista da / View from **"V3"**
(1 : 10)



Riferimenti documenti per Costruzione / Verniciatura / Controllo
Reference documents for Construction / Painting / Inspections

Numero Documento / *Documents number*	Descrizione / *Description*
1724001010-QC-ITP-00002	Piano di collaudo / *Inspection Test Plan*
1724001010-MAT-PRO-00007	Specifica di Verniciatura / *Painting Specification*
	Specifica di Distensione / *Stress Relieving Specification*
	Specifica Trattamento Termico / *Heat Treatment Specification*

Simboli saldatura secondo
Welding symbols according to
UNI EN ISO 2553

Eliminare spigoli vivi
Remove all edges

6	Sheet metal	Thk = 5 mm - S 355 J2+N UNI EN 10025_Cert.3.1	2	0,62 kg
5	Sheet metal	Thk = 8 mm - S 355 J2+N UNI EN 10025_Cert.3.1	1	0,33 kg
4	Sheet metal	Thk = 5 mm - S 355 J2+N UNI EN 10025_Cert.3.1	2	0,62 kg
3	Sheet metal	L 150x75x9 - S 355 J2+N UNI EN 10025_Cert.3.1	2	0,77 kg
2	Sheet metal	Thk = 20 mm - S 355 J2+N UNI EN 10025_Cert.3.1	1	153,36 kg
1	Sheet metal	Thk = 40 mm - S 355 J2+N UNI EN 10025_Cert.3.1	1	78,77 kg
EL.	DESCRIPTION	ADDITIONAL DESCRIPTION	Q.TY	WEIGHT

REV	DATE	DESCRIPTION	DRAFTMAN	DESIGNER	CALCULATION ENG.	P.E.
D	12/09/2024	Modificato Item 4 / Update item 4	riccardo.sobani	Sobani R.	De Fazio F.	–
C	04/09/2024	Aggiornamento Generale / General Update	riccardo.sobani	Sobani R.	De Fazio F.	–
B	05/09/2024	Rimozione verniciatura Aggiunte nuove carpenterie/ Delete painting color and Added new Carpentry	riccardo.sobani	Sobani R.	De Fazio F.	–
A	31/07/2024	Prima emissione / First issued	riccardo.sobani			

6.3

PRIMER ONLY

SALDATURA CONTINUA
CONTINUOUS WELDING

Tutte le saldature testa a testa
non indicate a disegno devono essere
a piena penetrazione

All head to head weldings
not indicated on drawing
must be complete penetration joint

NDT
100% VI
100% MT/PT
100% UT

SALDATURE NON QUOTATE
WELD WITHOUT DIMENSION

Su un lato / *One side*
t = min (T1;T2)
a = 1 t
NDT:
100 % VI
100 % MT

T1
T2
a

SALDATURE NON QUOTATE
WELD WITHOUT DIMENSION

Sui due lati / *Both side*
t = min (T1;T2)
a = 0,5 t
NDT:
100 % VI
100 % MT

T1
T2
a
a

UNI EN ISO 8501-3

Grado di preparazione saldature, bordi e altre aree con imperfezioni superficiali
Preparation grade of welds, edges and other areas with surface imperfections

Zona / *Areas*	Grado / *Grade*	R min / *Min radius*
Saldature / *Welds*	P3	N.A.
Bordi / *Edges*	P3	2 mm
Aree con imperf. superf. / *Areas with surface imperf.*	P3	N.A.

REMAZEL ENGINEERING
Chiuduno (BG) - 24060 - ITALY
Phone : +39-035-68.44.14 - Fax : +39-035-68.78.23
e-mail : info@remazel.com / website : www.remazel.com

Project / Equipment :
C09-0001

Weight : 223,2 kg

Title :
Carpenteria Pedestal
Pedestal Carpentry

Scale : 1 : 10

Sheet : 1 of 3 **A2**

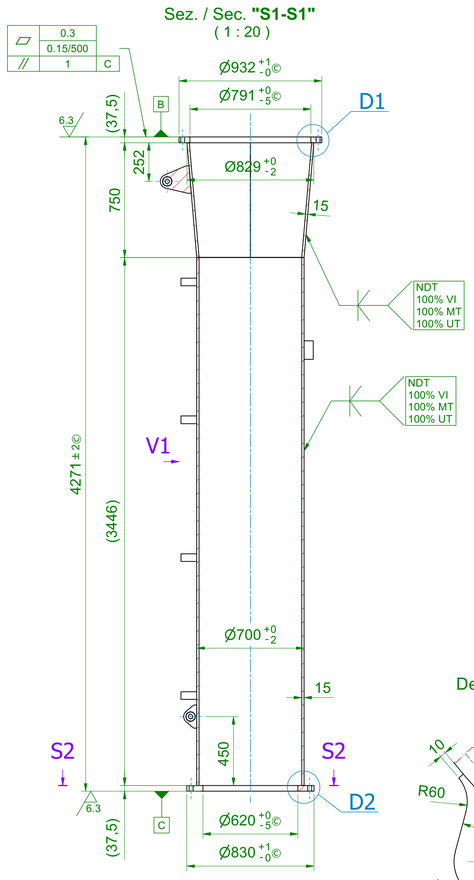
Drawing State: **Work in Progress** / ***FOR CONSTRUCTION***

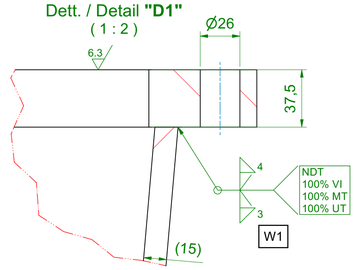
Q.C.L. : C1

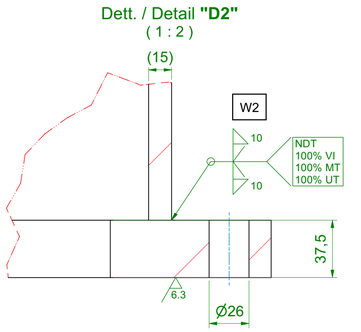
Drawing N° : C09-0001-P0001

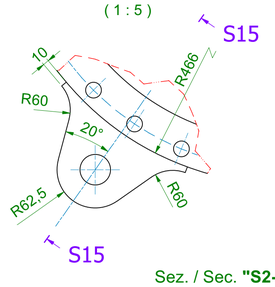
Revision : D

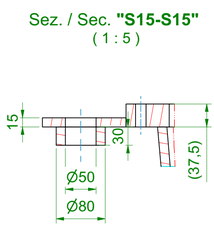
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LAVORAZIONI MECCANICHE RICHIAMATE A DISEGNO
Generic tolerances for machining ISO 2768-1 m
Geometrical Tolerancing ISO 1101:2017
Surface Texture Symbols ISO 21920-2:2021
Welded Joints - Symbolic Representation on Drawings UNI EN ISO 2553:2019
Welding - Arc Welding of Steels UNI EN ISO 15609-1:2019
Welding - Arc Welding of Aluminium UNI EN ISO 15609-3:2004
Welding - Resistance Welding UNI EN ISO 15609-5:2011
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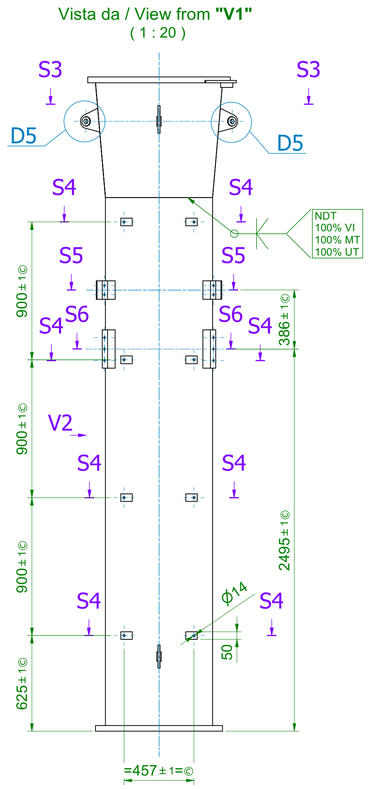


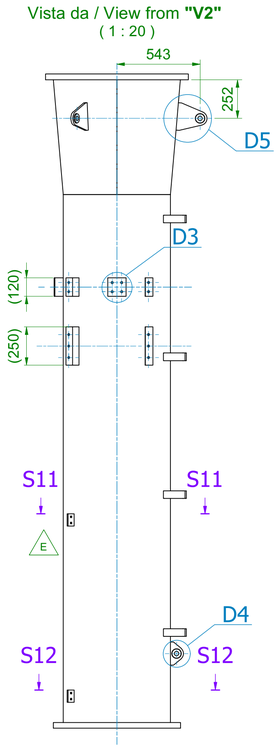


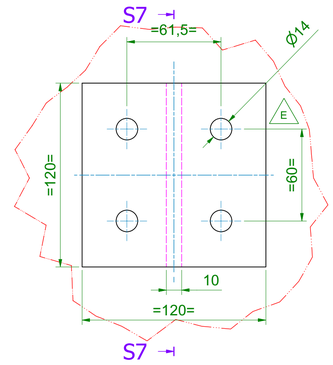


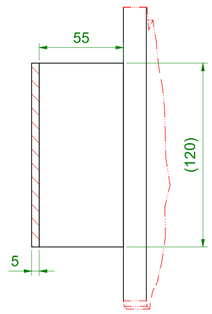


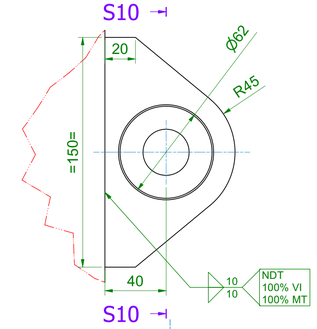


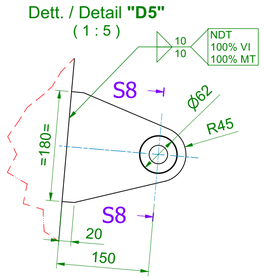


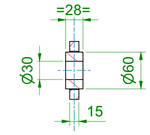


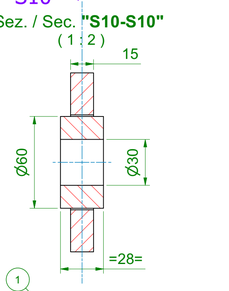


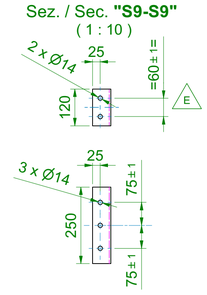


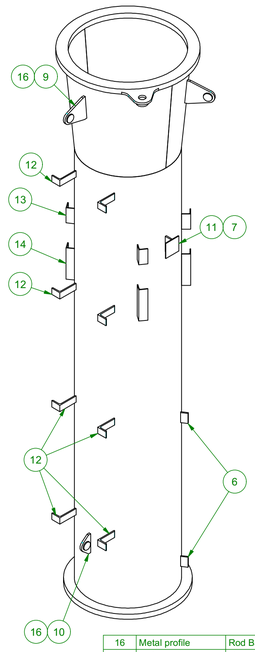


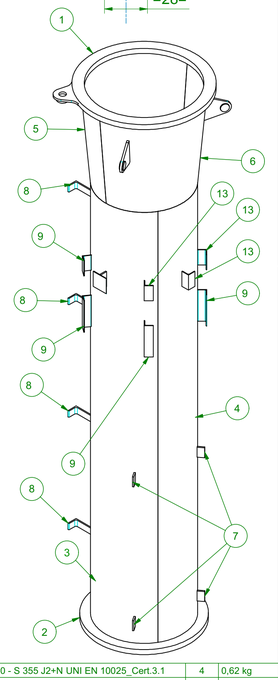


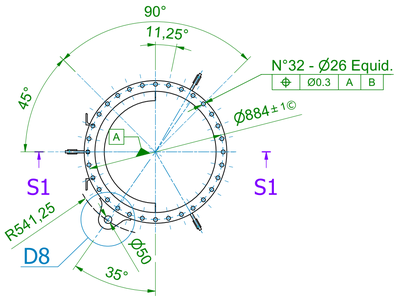


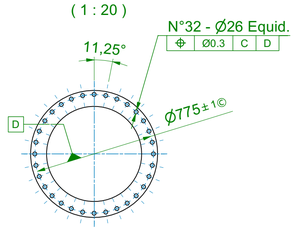


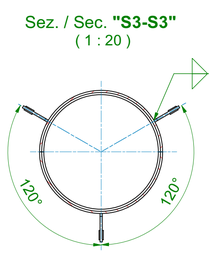


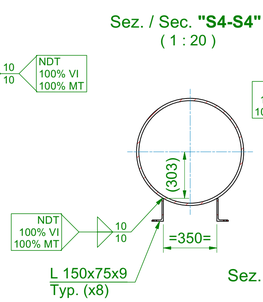


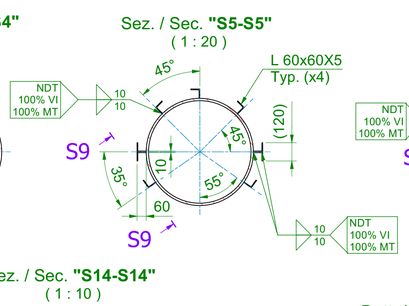


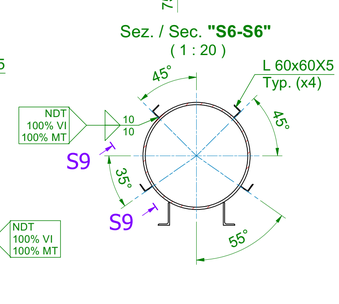


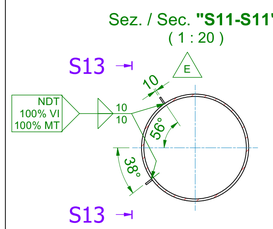


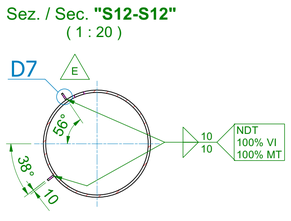


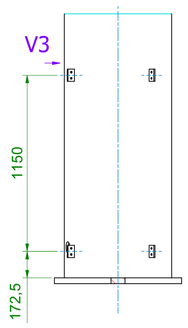


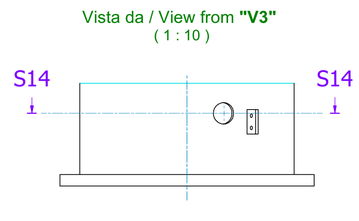


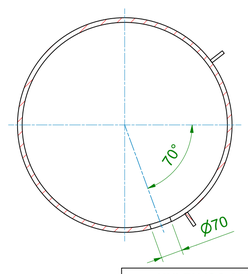


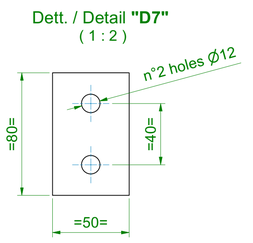












16	Metal profile	Rod Bar Ø60 - S 355 J2+N UNI EN 10025_Cert.3.1	4	0,62 kg
15	Metal profile	Rod Bar Ø60 - S 355 J2+N UNI EN 10025_Cert.3.1	1	1,19 kg
14	Metal profile	L 60x60x5 - S 355 J2+N UNI EN 10025_Cert.3.1	4	1,14 kg
13	Metal profile	L 60x60x5 - S 355 J2+N UNI EN 10025_Cert.3.1	5	0,55 kg
12	Metal profile	L 150x75x9 - S 355 J2+N UNI EN 10025_Cert.3.1	8	0,77 kg
11	Sheet metal	Thk = 5 mm - S 355 J2+N UNI EN 10025_Cert.3.1	2	0,56 kg
10	Sheet metal	Thk = 15 mm - S 355 J2+N UNI EN 10025_Cert.3.1	1	0,72 kg
9	Sheet metal	Thk = 15 mm - S 355 J2+N UNI EN 10025_Cert.3.1	3	2,55 kg
8	Sheet metal	Thk = 15 mm - S 355 J2+N UNI EN 10025_Cert.3.1	1	2,07 kg
7	Sheet metal	Thk = 10 mm - S 355 J2+N UNI EN 10025_Cert.3.1	2	0,52 kg
6	Sheet metal	Thk = 10 mm - S 355 J2+N UNI EN 10025_Cert.3.1	4	0,31 kg
5	Sheet metal	Thk = 15 mm - S 355 J2+N UNI EN 10025_Cert.3.1	1	104,4 kg
4	Sheet metal	Thk = 15 mm - S 355 J2+N UNI EN 10025_Cert.3.1	1	104,4 kg
3	Sheet metal	Thk = 15 mm - S 355 J2+N UNI EN 10025_Cert.3.1	1	874,32 kg
2	Sheet metal	Thk = 40 mm - S 355 J2+N UNI EN 10025_Cert.3.1	1	82,35 kg
1	Sheet metal	Thk = 40 mm - S 355 J2+N UNI EN 10025_Cert.3.1	1	68,5 kg
EL.	DESCRIPTION	ADDITIONAL DESCRIPTION	Q.TY	WEIGHT

6.3

REV	DATE	DESCRIPTION	DRAFTMAN	DESIGNER	CALCULATION ENG.	P.E.
E	07/10/2024	Aggiornamento distanza fori Item 11 Item 13 / Update holes space Item 11 Item 13	riccardo.sobani	Sobani R.	De Fazio F.	-
D	11/09/2024	Aggiornamento Item 6 Item 3 / Update Item 6 Item 3	riccardo.sobani	Sobani R.	De Fazio F.	-
C	04/09/2024	Aggiornamento Generale / General Update	riccardo.sobani	Sobani R.	De Fazio F.	-
B	03/09/2024	Aggiornamento Generale / General Update	riccardo.sobani	Sobani R.	De Fazio F.	-
A	31/07/2024	Prima emissione / First issued	riccardo.sobani	Sobani R.	-	-

SALDATURA CONTINUA
CONTINUOUS WELDING

Tutte le saldature testa a testa non indicate a disegno devono essere a piena penetrazione

All head to head weldings not indicated on drawing must be complete penetration joint

NDT
100% VI
100% MT/PT
100% UT

Riferimenti documenti per Costruzione / Verniciatura / Controllo
Reference documents for Construction / Painting / Inspections

Numero Documento / *Documents number*	Descrizione / *Description*
1724001010-QC-ITP-00002	Piano di collaudo / *Inspection Test Plan*
1724001010-MAT-PRO-00007	Specifica di Verniciatura / *Painting Specification*
	Specifica di Distensione / *Stress Relieving Specification*
	Specifica Trattamento Termico / *Heat Treatment Specification*

Eliminare spigoli vivi
Remove all edges

Simboli saldatura secondo
Welding symbols according to
UNI EN ISO 2553

UNI EN ISO 8501-3
Grado di preparazione saldature, bordi e altre aree con imperfezioni superficiali
Preparation grade of welds, edges and other areas with surface imperfections

Zona / *Areas*	Grado / *Grade*	R min / *Min radius*
Saldature / *Welds*	P3	N.A.
Bordi / *Edges*	P3	2 mm
Aree con imperf. superf. / *Areas with surface imperf.*	P3	N.A.

SALDATURE NON QUOTATE
WELD WITHOUT DIMENSION
Sui due lati / *Both side*
t = min (T1;T2)
a = 0.5 t
NDT:
100 % VI
100 % MT

SALDATURE NON QUOTATE
WELD WITHOUT DIMENSION
Su un lato / *One side*
t = min (T1;T2)
a = 1 t
NDT:
100 % VI
100 % MT

REMAZEL ENGINEERING
Chiuduno (BG) - 24060 - ITALY
Phone : +39-035-68.44.14 - Fax : +39-035-68.78.23
e-mail : info@remazel.com / website : www.remazel.com

Project / Equipment :
C09-0001

Weight : 1228,9 kg

Title :
Carpenteria Colonna Fissa
Fixed Column Carpentry

Scale : 1 : 20

Sheet : 1 of 3 **A1**

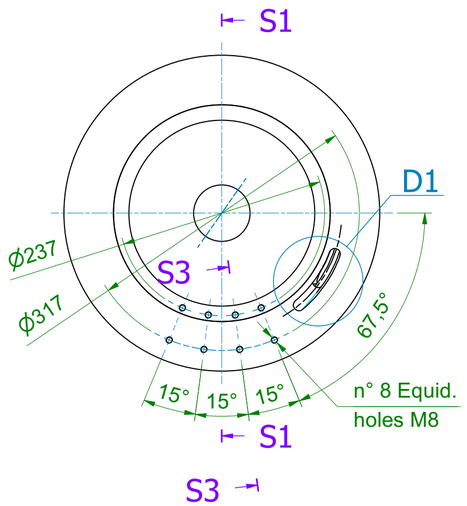
Drawing State: **Work in Progress** / **FOR CONSTRUCTION**

Q.C.L. : C1

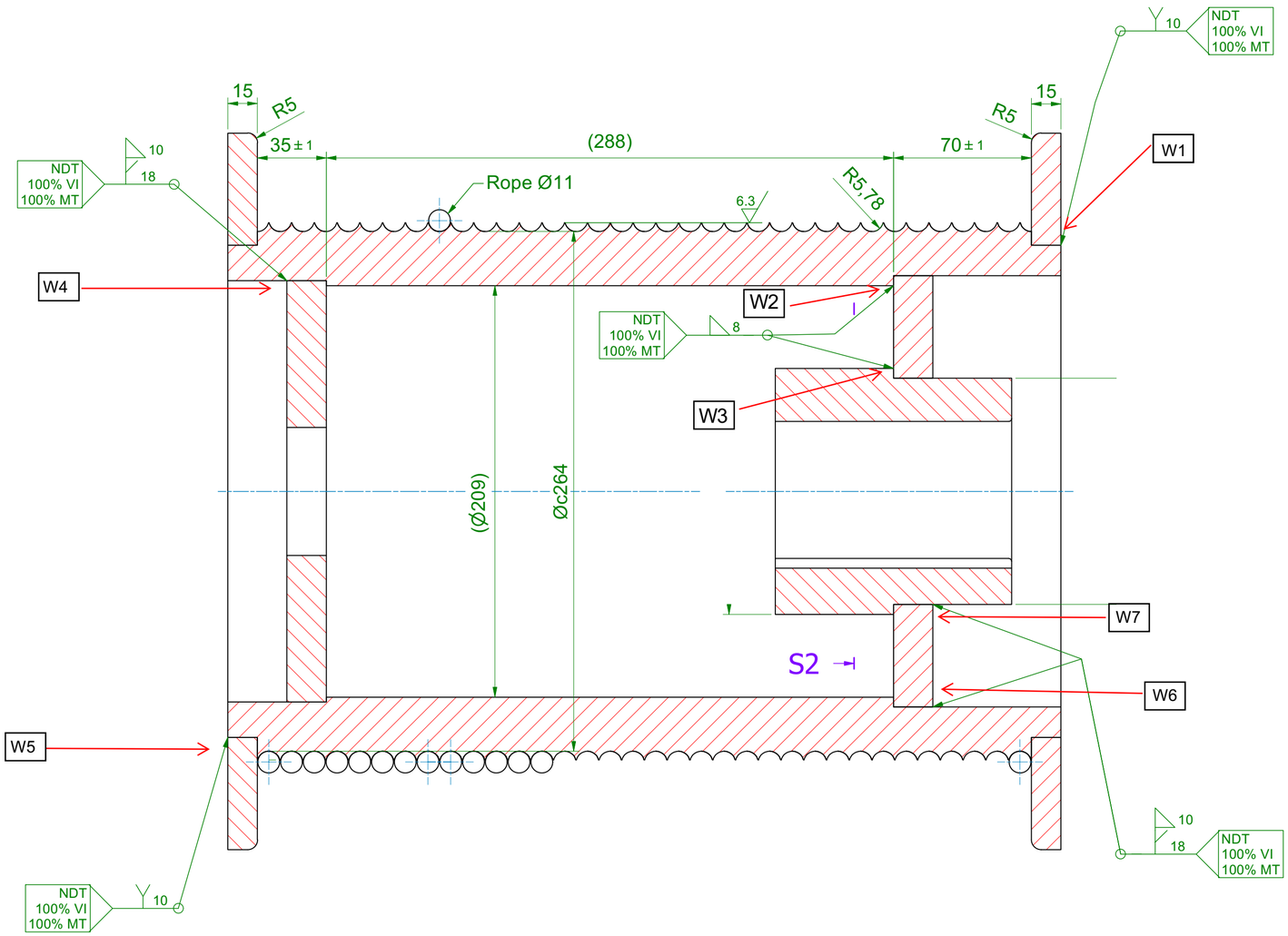
Drawing N° : C09-0001-P0002

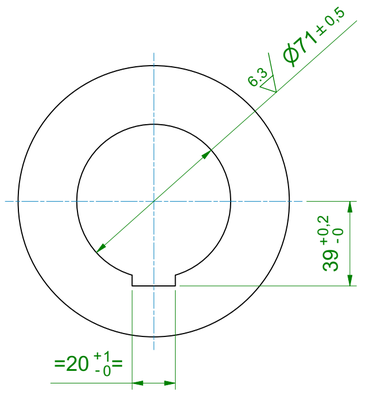
Revision : E

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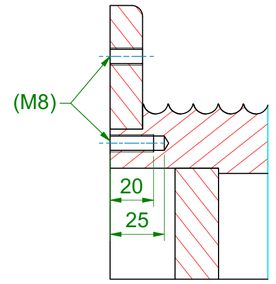


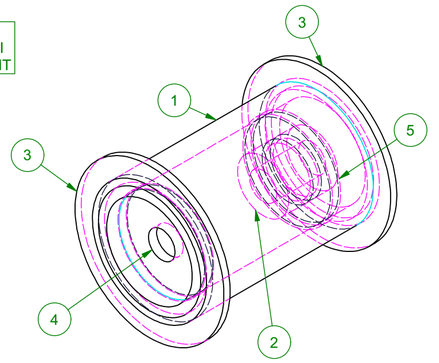
NOTA:
Fori filettati da eseguire dopo assemblaggio
Threaded holes to be drilled after assembly





Sez. / Sec. **"S3-S3"**
(1 : 2)





EL.	DESCRIPTION	ADDITIONAL DESCRIPTION	Q.TY	WEIGHT
5	Sheet metal	Thk = 20 mm - S 355 J2 UNI EN 10025_Cert. 3.1	1	4,43 kg
4	Sheet metal	Thk = 20 mm - S 355 J2 UNI EN 10025_Cert. 3.1	1	5,13 kg
3	Sheet metal	Thk = 15 mm - S 355 J2 UNI EN 10025_Cert. 3.1	2	6,48 kg
2	Metal profile	Rod Bar Ø 125 - S 355 J2 UNI EN 10025_Cert. 3.1	1	8,35 kg
1	Metal profile	Thk = 21 mm - S 355 J2 UNI EN 10025_Cert. 3.1	1	89,2 kg

Eliminare spigoli vivi
Remove all edges

Simboli saldatura secondo
Welding symbols according to
UNI EN ISO 2553

SALDATURA CONTINUA
CONTINUOUS WELDING

Riferimenti documenti per Costruzione / Verniciatura / Controllo
Reference documents for Construction / Painting / Inspections

Numero Documento / *Documents number*	Descrizione / *Description*
1724001010-QC-ITP-00002	Piano di collaudo / *Inspection Test Plan*
1724001010-MAT-PRO-00007	Specifica di Verniciatura / *Painting Specification*
	Specifica di Distensione / *Stress Relieving Specification*
	Specifica Trattamento Termico / *Heat Treatment Specification*

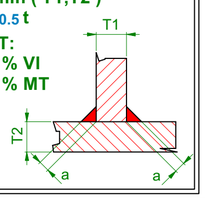
UNI EN ISO 8501-3

Grado di preparazione saldature, bordi e altre aree con imperfezioni superficiali
Preparation grade of welds, edges and other areas with surface imperfections

Zona / *Areas*	Grado / *Grade*	R min / *Min radius*
Saldature / *Welds*	P2	N.A.
Bordi / *Edges*	P3	2 mm
Aree con imperf. superf. / *Areas with surface imperf.*	P3	N.A.

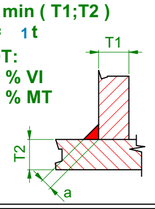
SALDATURE NON QUOTATE
WELD WITHOUT DIMENSION

Sui due lati / *Both side*
t = min (T1;T2)
a = 0.5 t
NDT:
100 % VI
100 % MT



SALDATURE NON QUOTATE
WELD WITHOUT DIMENSION

Su un lato / *One side*
t = min (T1;T2)
a = 1 t
NDT:
100 % VI
100 % MT



3.2 6.3

REV	DATE	DESCRIPTION	DRAFTMAN	DESIGNER	CALCULATION ENG.	P.E.
A	22/10/2024	Prima emissione / First issued	riccardo.sobani	Sobani R.	De Fazio F.	–

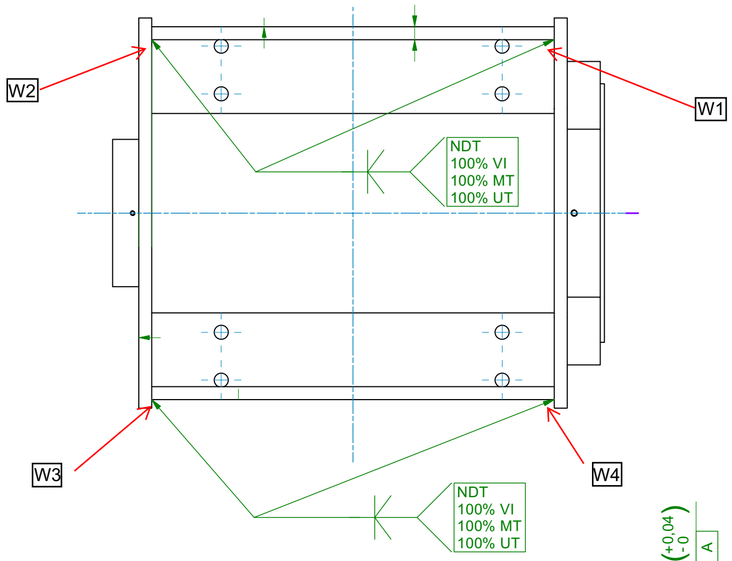
DATI RISERVATI DI PROPRIETA' REMAZEL ENGINEERING S.p.A. - Vietata la riproduzione anche parziale senza autorizzazione scritta
LAVORAZIONI MECCANICHE / MECHANICAL MACHINING
Generale / General: UNI EN ISO 2768-1 mK
Saldature / Welding: UNI EN ISO 5817 Livello / Level C
Bullonature / Bolting: VDI 2230 Class A
Smerigliatura / Grinding: UNI EN ISO 13920 Class B
Sabbiatura / Shot Blasting: UNI EN ISO 8501-1 Sa 2½
Verniciatura / Painting: UNI EN ISO 12944-5 C4

REMAZEL ENGINEERING
Chiuduno (BG) - 24060 - ITALY
Phone : +39-035-68.44.14 - Fax : +39-035-68.78.23
e-mail : info@remazel.com / website : www.remazel.com

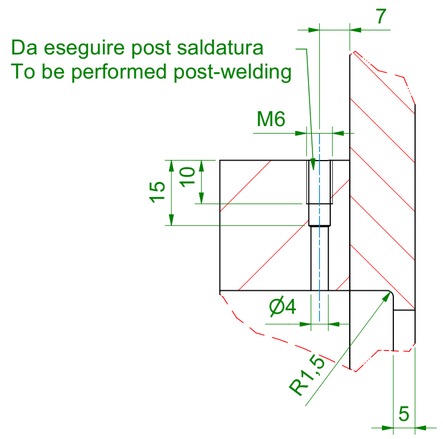
Project / Equipment : **C09-0001**
Weight : 120,1 kg
Title : Cassa Winch / Winch Box
Scale : 1 : 7.5
Sheet : 1 of 3 **A2**
Drawing State: **Released** / ***FOR CONSTRUCTION***
Q.C.L. : C1
Drawing N° : C09-0001-P0085
Revision : A

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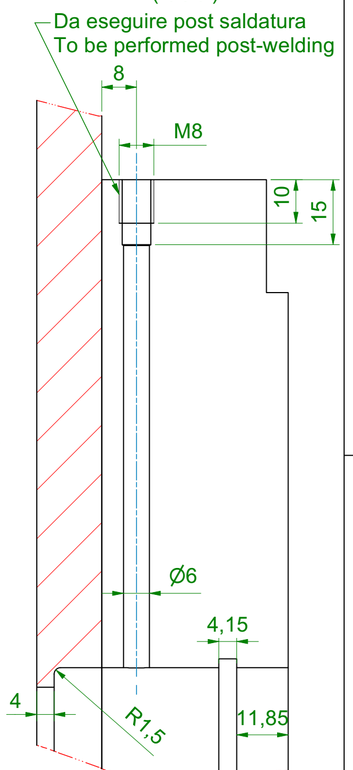
Sez. / Sec. **"S5-S5"**
(1 : 5)



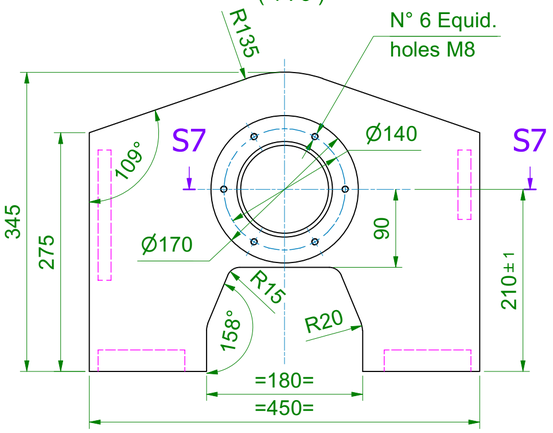
Dett. / Detail **"D1"**
(1 : 1)



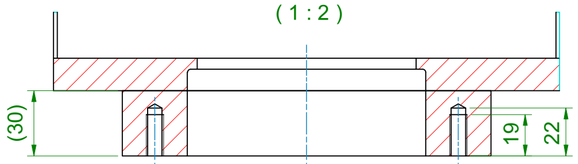
Dett. / Detail **"D2"**
(1 : 1)

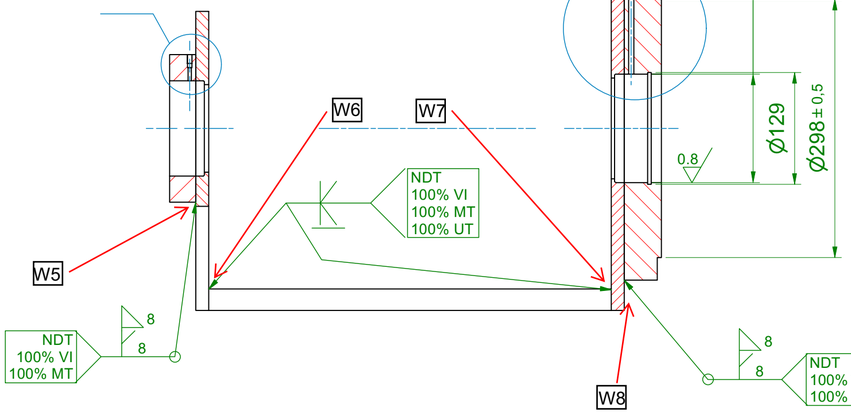


Sez. / Sec. **"S3-S3"**
(1 : 5)

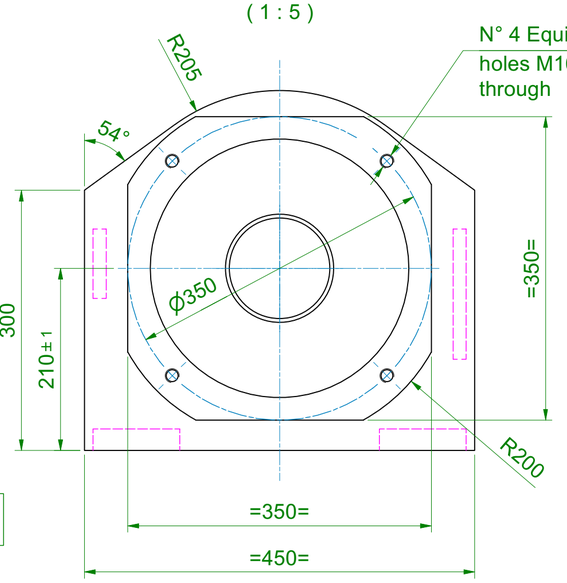


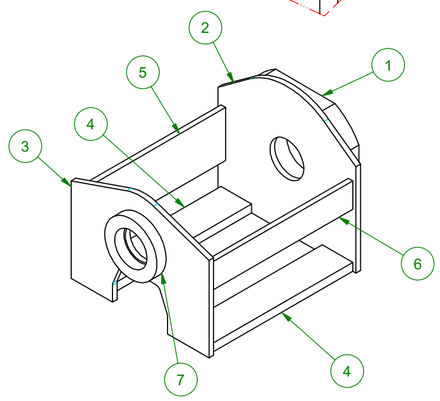
Sez. / Sec. **"S7-S7"**
(1 : 2)

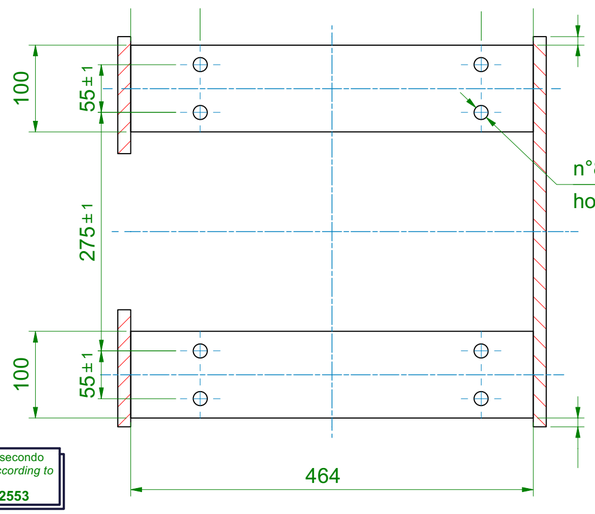




Sez. / Sec. **"S2-S2"**
(1 : 5)



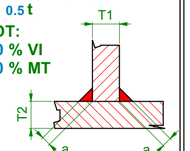




7	Sheet metal	Thk = 30 mm - S 355 J2 UNI EN 10025_Cert. 3.1	1	3,31 kg
6	Sheet metal	Thk = 15 mm - S 355 J2 UNI EN 10025_Cert. 3.1	1	4,38 kg
5	Sheet metal	Thk = 15 mm - S 355 J2 UNI EN 10025_Cert. 3.1	1	8,21 kg
4	Sheet metal	Thk = 25 mm - S 355 J2 UNI EN 10025_Cert. 3.1	2	9,12 kg
3	Sheet metal	Thk = 15 mm - S 355 J2 UNI EN 10025_Cert. 3.1	1	13,47 kg
2	Sheet metal	Thk = 15 mm - S 355 J2 UNI EN 10025_Cert. 3.1	1	18,64 kg
1	Sheet metal	Thk = 45 mm - S 355 J2 UNI EN 10025_Cert. 3.1	1	35,82 kg
EL.	DESCRIPTION	ADDITIONAL DESCRIPTION	Q.TY	WEIGHT

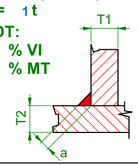
SALDATURE NON QUOTATE
WELD WITHOUT DIMENSION

Sui due lati / *Both side*
t = min (T1;T2)
a = 0.5 t
NDT:
100 % VI
100 % MT



SALDATURE NON QUOTATE
WELD WITHOUT DIMENSION

Su un lato / *One side*
t = min (T1;T2)
a = 1 t
NDT:
100 % VI
100 % MT



Riferimenti documenti per Costruzione / Verniciatura / Controllo
Reference documents for Construction / Painting / Inspections

Numero Documento / *Documents number*	Descrizione / *Description*
1724001010-QC-ITP-00002	Piano di collaudo / *Inspection Test Plan*
1724001010-MAT-PRO-00007	Specifica di Verniciatura / *Painting Specification*
	Specifica di Distensione / *Stress Relieving Specification*
	Specifica Trattamento Termico / *Heat Treatment Specification*

Simboli saldatura secondo
Welding symbols according to
UNI EN ISO 2553

Eliminare spigoli vivi
Remove all edges

SALDATURA CONTINUA
CONTINUOUS WELDING

0.8 / 6.3

UNI EN ISO 8501-3

Grado di preparazione saldature, bordi e altre aree con imperfezioni superficiali
Preparation grade of welds, edges and other areas with surface imperfections

Zona *Areas*	Grado *Grade*	R min *Min radius*
Saldature *Welds*	**P2**	**N.A.**
Bordi *Edges*	**P3**	**2 mm**
Aree con imperf. superf. *Areas with surface imperf.*	**P3**	**N.A.**

REV	DATE	DESCRIPTION	DRAFTMAN	DESIGNER	CALCULATION ENG.	P.E.
A	22/10/2024	Prima emissione / First issued	riccardo.sobani	Sobani R.	De Fazio F.	–

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e-mail : info@remazel.com / website : www.remazel.com

Project / Equipment : **C09-0001**
Weight : N/A
Title : Carpenteria Telaio Winch / Chassis Winch Carpentry
Scale : 1 : 5
Sheet : 1 of 2 **A2**
Drawing State: **Released** **FOR CONSTRUCTION**
Q.C.L. : C1
Drawing N° : C09-0001-P0005
Revision : A

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WELDING MATRIX - BOOM CARPENTRY

REV. 0

Drawing No. C09-0001-P0004

Typical Weld N°	Item number		Type of Material		Plate Thickness Mat "A"	Plate Thickness Mat "B"	Deposited thickness			Back gouging	WPQR number	WPS number	Welding Position	Filler brand name	Process	VT examination	MT examination	UT examination	NOTES
	"A"	"B"	"A"	"B"	(mm)	(mm)	(mm)												
W1	1	7	S355J2+N	S355J2+N	8	8	6+8	PJP+FW	1/2V	NO	CCP12	CCP12-2	PA +PB	ESAB OK ARISTOROD 12.50	135	100%	100%	0%	
W2	4	7	S355J2+N	S355J2+N	20	8	6+8	PJP+FW	1/2V	NO	CCP12	CCP12-2	PA +PB	ESAB OK ARISTOROD 12.50	135	100%	100%	0%	
W3	7	7	S355J2+N	S355J2+N	8	8	6+8	PJP+FW	1/2V	NO	CCP12	CCP12-2	PA +PB	ESAB OK ARISTOROD 12.50	135	100%	100%	0%	
W4	4	7	S355J2+N	S355J2+N	20	8	6+8	PJP+FW	1/2V	NO	CCP12	CCP12-2	PA +PB	ESAB OK ARISTOROD 12.50	135	100%	100%	0%	
W5	5	7	S355J2+N	S355J2+N	20	8	6	PJP	1/2V	NO	CCP12	CCP12-2	PA	ESAB OK ARISTOROD 12.50	135	100%	100%	0%	TYPICAL WELD VALID ON BOTH SIDES OF THE BOOM
W6	8	7	S355J2+N	S355J2+N	10	8	8	PJP	1/2V	NO	CCP12	CCP12-2	PA	ESAB OK ARISTOROD 12.50	135	100%	100%	0%	
W7	8	7	S355J2+N	S355J2+N	10	8	8	PJP	1/2V	NO	CCP12	CCP12-2	PA	ESAB OK ARISTOROD 12.50	135	100%	100%	0%	
W8	8	7	S355J2+N	S355J2+N	10	8	8	PJP	1/2V	NO	CCP12	CCP12-2	PA	ESAB OK ARISTOROD 12.50	135	100%	100%	0%	
W9	8	7	S355J2+N	S355J2+N	10	8	8	PJP	1/2V	NO	CCP12	CCP12-2	PA	ESAB OK ARISTOROD 12.50	135	100%	100%	0%	
W10	8	3	S355J2+N	S355J2+N	10	35	8	PJP	1/2V	NO	CCP12	CCP12-2	PA	ESAB OK ARISTOROD 12.50	135	100%	100%	0%	
W11	3	7	S355J2+N	S355J2+N	35	8	6+8	PJP	1/2V	NO	CCP12	CCP12-2	PA	ESAB OK ARISTOROD 12.50	135	100%	100%	0%	
W12	3	7	S355J2+N	S355J2+N	35	8	6	PJP	1/2V	NO	CCP12	CCP12-2	PA	ESAB OK ARISTOROD 12.50	135	100%	100%	0%	
W13	10	2	S355J2+N	S355J2+N	15	15	10	FW	NA	NA	CCP13	CCP13-01	PB	ESAB OK ARISTOROD 12.50	135	100%	100%	0%	
W14	15	2	S355J2+N	S355J2+N	15	15	10	FW	NA	NA	CCP13	CCP13-01	PB	ESAB OK ARISTOROD 12.50	135	100%	100%	0%	
W15	10	2	S355J2+N	S355J2+N	15	15	10	FW	NA	NA	CCP13	CCP13-01	PB	ESAB OK ARISTOROD 12.50	135	100%	100%	0%	
W16	9	2	S355J2+N	S355J2+N	15	15	10	FW	NA	NA	CCP13	CCP13-01	PB	ESAB OK ARISTOROD 12.50	135	100%	100%	0%	
W17	8	9	S355J2+N	S355J2+N	10	15	8+8	PJP+FW	1/2V	NO	CCP12	CCP12-2	PA +PB	ESAB OK ARISTOROD 12.50	135	100%	100%	0%	
W18	7	9	S355J2+N	S355J2+N	8	15	8+8	PJP+FW	1/2V	NO	CCP12	CCP12-2	PA +PB	ESAB OK ARISTOROD 12.50	135	100%	100%	0%	
W19	7	9	S355J2+N	S355J2+N	8	15	6+8	PJP+FW	1/2V	NO	CCP12	CCP12-2	PA +PB	ESAB OK ARISTOROD 12.50	135	100%	100%	0%	
W20	11	4	S355J2+N	S355J2+N	12	20	10	PJP	1/2V	NO	CCP12	CCP12-2	PA	ESAB OK ARISTOROD 12.50	135	100%	100%	0%	
W21	17	7 & 1	S355J2+N	S355J2+N	8	8	6	FW	NA	NA	CCP14	CCP14-01	PB	ESAB OK ARISTOROD 12.50	135	100%	100%	0%	
W22	18	7 & 1	S355J2+N	S355J2+N	8	8	6	FW	NA	NA	CCP14	CCP14-01	PB	ESAB OK ARISTOROD 12.50	135	100%	100%	0%	
W23	19	7 & 1	S355J2+N	S355J2+N	8	8	6	FW	NA	NA	CCP14	CCP14-01	PB	ESAB OK ARISTOROD 12.50	135	100%	100%	0%	
W24	14	7	S355J2+N	S355J2+N	9	8	10	FW	NA	NA	CCP13	CCP13-01	PB	ESAB OK ARISTOROD 12.50	135	100%	100%	0%	
W25	22	7	S355J2+N	S355J2+N	10	8	10	FW	NA	NA	CCP13	CCP13-01	PB	ESAB OK ARISTOROD 12.50	135	100%	100%	0%	
W26	21	7	S355J2+N	S355J2+N	10	8	10	FW	NA	NA	CCP13	CCP13-01	PB	ESAB OK ARISTOROD 12.50	135	100%	100%	0%	
W27	12	7	S355J2+N	S355J2+N	10	8	10	FW	NA	NA	CCP13	CCP13-01	PB	ESAB OK ARISTOROD 12.50	135	100%	100%	0%	
W28	12	7	S355J2+N	S355J2+N	10	8	10	FW	NA	NA	CCP13	CCP13-01	PB	ESAB OK ARISTOROD 12.50	135	100%	100%	0%	
W29	13	7	S355J2+N	S355J2+N	10	8	10	FW	NA	NA	CCP13	CCP13-01	PB	ESAB OK ARISTOROD 12.50	135	100%	100%	0%	
W30	5	1	S355J2+N	S355J2+N	20	8	10	FW	NA	NA	CCP13	CCP13-01	PB	ESAB OK ARISTOROD 12.50	135	100%	100%	0%	
W31	5	4	S355J2+N	S355J2+N	20	20	20	FW	NA	NA	CCP13	CCP13-01	PB	ESAB OK ARISTOROD 12.50	135	100%	100%	0%	
W32	1	9	S355J2+N	S355J2+N	8	15	8	CJP	1/2V	NO	CCP12	CCP12-01	PA	ESAB OK ARISTOROD 12.50	135	100%	100%	0%	
W33	4	3	S355J2+N	S355J2+N	20	35	20	CJP	1/2V	NO	CCP12	CCP12-01	PA	ESAB OK ARISTOROD 12.50	135	100%	100%	0%	
W34	6	5	S355J2+N	S355J2+N	15	20	15	CJP	1/2V	NO	CCP12	CCP12-01	PA	ESAB OK ARISTOROD 12.50	135	100%	100%	0%	TYPICAL WELD VALID FOR BOTH ITEMS 6

WELDING MATRIX - TRAVELING TROLLEY

REV. 0

Drawing No. C09-0001-P0006

Typical Weld N°	Item number		Type of Material		Plate Thickness Mat "A"	Plate Thickness Mat "B"	Deposited thickness			Back gouging	WPQR number	WPS number	Welding Position	Filler brand name	Process	VT examination	MT examination	UT examination	NOTES
	"A"	"B"	"A"	"B"	(mm)	(mm)	(mm)												
W1	1	12	S355J2+N	S355J2+N	10	12	6+10	PJP+FW	1/2V	NO	CCP12	CCP12-2	PC +PB	ESAB OK ARISTOROD 12.50	135	100%	100%	0%	TYPICA L WELD FOR ALL ITEMS 12
W2	1	3	S355J2+N	S355J2+N	10	30	6+10	PJP+FW	1/2V	NO	CCP12	CCP12-2	PC +PB	ESAB OK ARISTOROD 12.50	135	100%	100%	0%	
W3	8	9	S355J2+N	S355J2+N	8	8	5	FW	NA	NA	CCP14	CCP14-01	PB	ESAB OK ARISTOROD 12.50	135	100%	100%	0%	
W4	5	2	S355J2+N	S355J2+N	15	10	15	CJP	K	YES	CCP12	CCP12-3	PA	ESAB OK ARISTOROD 12.50	135	100%	100%	0%	
W5	5	2	S355J2+N	S355J2+N	15	10	15	CJP	K	YES	CCP12	CCP12-3	PA	ESAB OK ARISTOROD 12.50	135	100%	100%	0%	TYPICAL WELD VALID ON BOTH SIDES OF THE BOOM
W6	5	1	S355J2+N	S355J2+N	15	10	15	CJP	K	YES	CCP12	CCP12-3	PA	ESAB OK ARISTOROD 12.50	135	100%	100%	0%	
W7	5	1	S355J2+N	S355J2+N	15	10	15	CJP	K	YES	CCP12	CCP12-3	PA	ESAB OK ARISTOROD 12.50	135	100%	100%	0%	
W8	4	1	S355J2+N	S355J2+N	15	10	15	CJP	K	YES	CCP12	CCP12-3	PA	ESAB OK ARISTOROD 12.50	135	100%	100%	0%	TYPICAL WELD VALID FOR BOTH ITEMS 4
W9	4	2	S355J2+N	S355J2+N	15	10	15	CJP	K	YES	CCP12	CCP12-3	PA	ESAB OK ARISTOROD 12.50	135	100%	100%	0%	TYPICAL WELD VALID FOR BOTH ITEMS 4
W10	4	5	S355J2+N	S355J2+N	15	15	15	CJP	K	YES	CCP12	CCP12-3	PA	ESAB OK ARISTOROD 12.50	135	100%	100%	0%	TYPICAL WELD VALID FOR BOTH ITEMS 4
W11	6	4	S355J2+N	S355J2+N	15	15	15	CJP	1/2V	YES	CCP12	CCP12-3	PA	ESAB OK ARISTOROD 12.50	135	100%	100%	0%	
W12	7	4	S355J2+N	S355J2+N	15	15	15	CJP	1/2V	YES	CCP12	CCP12-3	PA	ESAB OK ARISTOROD 12.50	135	100%	100%	0%	
W13	11	5	S355J2+N	S355J2+N	15	15	15	CJP	1/2V	YES	CCP12	CCP12-3	PA	ESAB OK ARISTOROD 12.50	135	100%	100%	0%	

WELDING MATRIX - PEDESTAL CARPENTRY

REV. 0

Drawing No. C09-0001-P0001

Typical Weld N°	Item number		Type of Material		Plate Thickness Mat "A"	Plate Thickness Mat "B"	Deposited thickness			Back gouging	WPQR number	WPS number	Welding Position	Filler brand name	Process	VT examination	MT examination	UT examination	NOTES
	"A"	"B"	"A"	"B"	(mm)	(mm)	(mm)												
W1	1	2	S355J2+N	S355J2+N	20	42	20	CJP	K	YES	CCP09	CCP09-01	PC	ESAB OK ARISTOROD 12.50	135	100%	100%	100%	ADDITIONAL FILLET WELD LEG 10 mm
W2	2	2	S355J2+N	S355J2+N	20	20	20	CJP	K	YES	CCP10	CCP10-2	PA	ESAB OK ARISTOROD 12.50	135	100%	100%	100%	

WELDING MATRIX - SLEWING COLUMN

REV. 0

Drawing No. C09-0001-P0002

Typical Weld N°	Item number		Type of Material		Plate Thickness Mat "A"	Plate Thickness Mat "B"	Deposited thickness			Back gouging	WPQR number	WPS number	Welding Position	Filler brand name	Process	VT examination	MT examination	UT examination	NOTES
	"A"	"B"	"A"	"B"	(mm)	(mm)	(mm)												
W1	5&6	1	S355J2+N	S355J2+N	15	42	15	CJP	K	YES	CCP09	CCP09-01	PC	ESAB OK ARISTOROD 12.50	135	100%	100%	100%	ADDITIONAL FILLET WELD LEG 10 mm
W2	3&4	2	S355J2+N	S355J2+N	15	42	15	CJP	K	YES	CCP09	CCP09-01	PC	ESAB OK ARISTOROD 12.50	135	100%	100%	100%	ADDITIONAL FILLET WELD LEG 10 mm

REMAZEL

WELDING MATRIX

Revisione/ *Revision:* 0

job	Reference Drawing
24-27012	C09-0001-P0085

Joint ID	Combination			Thk Item "A"	Thk Item "B"	Material item "A"	Material item "B"	Deposit thickness	WPQR	WPS	Process	VT	MT	UT	note
W	A	\	B	mm	mm			mm				%			
W1	1	\	3	15,5	15	S355J2+N	S355J2+N	10	CCP-12	CCP12-2	135	100	100	\	
W2	1	\	5	27,5	20	S355J2+N	S355J2+N	8	CCP-13	CCP13-01	135	100	100	\	
W3	2	\	5	27	20	S355J2+N	S355J2+N	8	CCP-13	CCP13-01	135	100	100	\	
W4	1	\	4	25	20	S355J2+N	S355J2+N	10+18	CCP-13	CCP13-01	135	100	100	\	
W5	1	\	3	25	15	S355J2+N	S355J2+N	10	CCP-12	CCP12-2	135	100	100	\	
W6	1	\	5	15,5	20	S355J2+N	S355J2+N	10+18	CCP-13	CCP13-01	135	100	100	\	
W7	2	\	5	22	20	S355J2+N	S355J2+N	10+18	CCP-13	CCP13-01	135	100	100	\	

REMAZEL

WELDING MATRIX

Revisione/ *Revision:* 0

job	Reference Drawing
24-27012	C09-0001-P0005

Joint ID	Combination			Thk Item "A"	Thk Item "B"	Material item "A"	Material item "B"	Deposit thickness	WPQR	WPS	Process	VT	MT	UT	note
W	A	\	B	mm	mm			mm				%			
W1	2		5	15	15	S355J2+N	S355J2+N	15	CCP10	CCP10-2	135	100	100	100	
W2	3		5	15	15	S355J2+N	S355J2+N	15	CCP10	CCP10-2	135	100	100	100	
W3	3		6	15	15	S355J2+N	S355J2+N	15	CCP10	CCP10-2	135	100	100	100	
W4	2		6	15	15	S355J2+N	S355J2+N	15	CCP10	CCP10-2	135	100	100	100	
W5	3		7	15	30	S355J2+N	S355J2+N	8+8	CCP13	CCP13-01	135	100	100	\	
W6	3		4	15	25	S355J2+N	S355J2+N	15	CCP10	CCP10-2	135	100	100	100	
W7	2		4	15	25	S355J2+N	S355J2+N	15	CCP10	CCP10-2	135	100	100	100	
W8	1		2	45	15	S355J2+N	S355J2+N	15	CCP13	CCP13-01	135	100	100	\	

2. WPS

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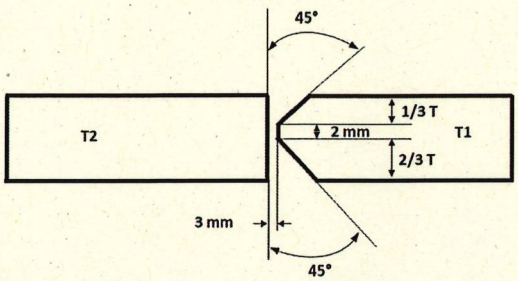
CONCRANE A REMAZEL Group Company	**WELDING PROCEDURE SPECIFICATION (WPS)**	**WPS n°:** CCP09-1 **WPQR:** CCP09 Rev. 01 – 18/07/2024 | Pag. 1 / 1

Reference code	**EN ISO 15614-1;**	*Welding position*	**H (PC) – HORIZONTAL POSITION**
Welding process	**GMAW (135)**	*Type*	**SEMI AUTOMATIC**
Mode of metal transfer	**SHORT AND SPRAY ARC**	*Preparation method*	**FLAME CUTTING AND MACHINING**

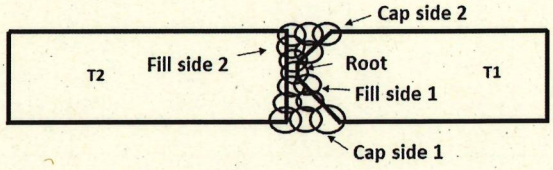
JOINT DESIGN

Joint type	**BW – BUTT WELD (CJP)**	*Structural class*	**N.A.**
Groove type	**Double bevel groove weld**	*Root opening*	**3 mm**
Groove angle	**45° ± 5°**	*Root face*	**1-2 mm**
Backing	**none**	*Leg Size*	**n.a.**
Back gouging procedure	**Grind to sound metal**	*Deposition Range*	**12 mm – 48 mm**

Bevel design



Welding sequence



BASE MATERIAL

	Part t_1	*Part t_2*
Part identification		
Pipe or plate	**PLATE**	**PLATE**
Material group ISO 15608	**1.2**	**1.2**
Material type	**S355J2+N**	**S355J2+N**
Thickness range	**12 – 48 mm**	**12 – 48 mm**
Diameter	**>150 mm**	**>150 mm**

FILLER MATERIALS

Welding process	**GMAW (135)**
Specification	**EN ISO 14341-A**
Classification	**G42 4 M21 3Si**
Trade marker	**ESAB OK AristoRod 12.50**
Size	**Ø 1.2 mm**

SHIELD GAS

Welding process	**GMAW (135)**
Specification	**EN ISO 14175**
Class	**M21**
Trade marker	**82% Ar + 18% CO2**
Flow rate	**18-24 l/min**
Nozzle diameter	**Ø16 mm**

PREHEAT

Preheat temperature	**T= 20°C**
Preheat maintenance temperature	**N.A.**
Interpass temperature	**MAX 250°**

Other remarks for preheat and interpass temeprature
Monitor interpass temperature with tempilstik or laser thermometer.

PWHT

Time and temperature	**N.A.**
PWHT method	**N.A.**
Heating and cooling rates	**N.A.**

Other remarks for PWHT:
N.A.

TECNIQUE

String or wave	**STRING**	*Stick out*	**15÷20 mm**
Multiple or single pass	**MULTIPLE**	*C - CEV (IIW) & Pcm*	**Cev max= 0.44 ; Pcm max= 0.27**
Initial/Interpass cleaning	**BRUSHING AND/OR GRINDING**	*Torch travel angle*	**15÷20° (Push)**

WELDING DETAILS

No.	*Process*	*Position*	*Filler Ø (mm)*	*Current*	*Amperage range [A]*		*Voltage range (V)*		*Travel speed range (mm/min)*		*Transfer Mode*	*Heat input [kJ/mm]*	
					Min	*Max*	*Min*	*Max*	*Min*	*Max*		*Min*	*Max*
Root	135	F (PC)	1.2	DCEP	160	180	20.5	22.5	120	160	Short Arc	0.98	1.62
Fill Side 1	135	F (PC)	1.2	DCEP	240	280	25	27	250	330	Spray Arc	0.91	1.45
Cap Side1	135	F (PC)	1.2	DCEP	240	280	25	27	250	320	Spray Arc	0.91	1.45
Fill Side 2	135	F (PC)	1.2	DCEP	240	280	25	27	250	330	Spray Arc	0.91	1.45
Cap Side2	135	F (PC)	1.2	DCEP	240	280	25	27	250	320	Spray Arc	0.91	1.45

Other remarks:
Tack welding will be done according to first pass parameters.

REVISION AND SIGANTURE

REV	*Date*	*Description*	*Prepared*	*Approved*
00	18/07/2024	First issue		

Prepared by:	*Approved by*	*Society approved by*	*Customer approved by:*
REMAZEL ENGINEERING S.p.A.			

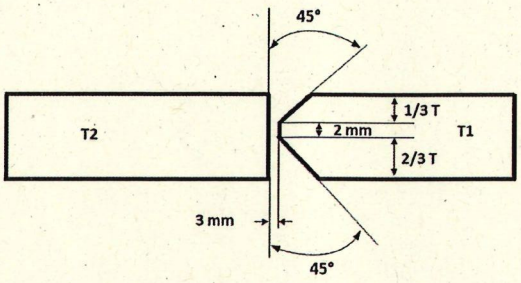
REMAZEL ENGINEERING	WELDING PROCEDURE SPECIFICATION (WPS)	WPS n°: CCP10-2 WPQR: CCP10 Rev. 01 – 18/07/2024 | Pag. 1 / 1

Reference code	EN ISO 15614-1;	*Welding position*	F (PA) – FLAT POSITION
Welding process	GMAW (135)	*Type*	SEMI AUTOMATIC
Mode of metal transfer	SHORT AND SPRAY ARC	*Preparation method*	FLAME CUTTING AND MACHINING

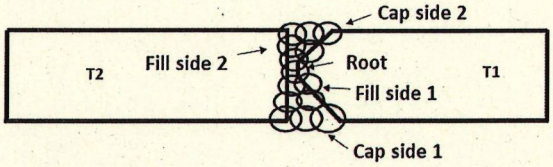
JOINT DESIGN

Joint type	BW – BUTT WELD (CJP)	*Structural class*	n.a.
Groove type	Double bevel groove weld	*Root opening*	3 mm
Groove angle	45° ± 5°	*Root face*	1-2 mm
Backing	none	*Leg Size*	n.a.
Back gouging procedure	Grind to sound metal	*Deposition Range*	7.5 mm – 30 mm

Bevel design



Welding sequence



BASE MATERIAL

	Part t_1	*Part t_2*
Part identification		
Pipe or plate	PLATE	PLATE
Material group ISO 15608	1.2	1.2
Material type	S355J2+N	S355J2+N
Thickness range	7.5 - 30 mm	7.5 - 30 mm
Diameter	>150 mm	>150 mm

FILLER MATERIALS

Welding process	GMAW (135)
Specification	EN ISO 14341-A
Classification	G42 4 M21 3Si
Trade marker	ESAB OK AristoRod 12.50
Size	Ø 1.2 mm

SHIELD GAS

Welding process	GMAW (135)
Specification	EN ISO 14175
Class	M21
Trade marker	82% Ar + 18% CO2
Flow rate	18-24 l/min
Nozzle diameter	Ø16 mm

PREHEAT

Preheat temperature	T= 20°C
Preheat maintenance temperature	N.A.
Interpass temperature	MAX 250°

Other remarks for preheat and interpass temeprature
Monitor interpass temperature with tempilstik or laser thermometer.

PWHT

Time and temperature	N.A.
PWHT method	N.A.
Heating and cooling rates	N.A.

Other remarks for PWHT:
N.A.

TECNIQUE

String or wave	STRING	*Stick out*	15÷20 mm
Multiple or single pass	MULTIPLE	*C - CEV (IIW) & Pcm*	Cev max= 0.44 ; Pcm max= 0.27
Initial/Interpass cleaning	BRUSHING AND/OR GRINDING	*Torch travel angle*	15÷20° (Push)

WELDING DETAILS

No.	*Process*	*Position*	*Filler Ø (mm)*	*Current*	*Amperage range [A]*		*Voltage range (V)*		*Travel speed range (mm/min)*		*Transfer Mode*	*Heat input [kJ/mm]*	
					Min	*Max*	*Min*	*Max*	*Min*	*Max*		*Min*	*Max*
Root	135	F (PA)	1.2	DCEP	160	180	20.5	22.5	120	160	Short Arc	0.98	1.62
Fill Side 1	135	F (PA)	1.2	DCEP	240	280	25	27	250	330	Spray Arc	0.91	1.45
Cap Side1	135	F (PA)	1.2	DCEP	240	280	25	27	250	320	Spray Arc	0.91	1.45
Fill Side 2	135	F (PA)	1.2	DCEP	240	280	25	27	250	330	Spray Arc	0.91	1.45
Cap Side2	135	F (PA)	1.2	DCEP	240	280	25	27	250	320	Spray Arc	0.91	1.45

Other remarks:
Tack welding will be done according to first pass parameters.

REVISION AND SIGANTURE

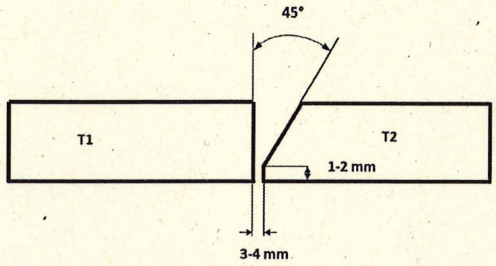
REV	*Date*	*Description*	*Prepared*	*Approved*
00	18/07/2024	First issue		

Prepared by	*Approved by*	*Society approved by*	*Customer approved by:*
REMAZEL ENGINEERING S.p.A.			

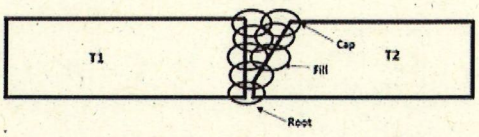
CONCRANE A REMAZEL Group Company	WELDING PROCEDURE SPECIFICATION (WPS)	WPS n°: CCP12-1 WPQR: CCP12 Rev. 01 – 08/10/2024	Pag. 1 / 1

Reference code	EN ISO 15614-1;	*Welding position*	F (PA)– FLAT POSITION
Welding process	GMAW (135)	*Type*	SEMI AUTOMATIC
Mode of metal transfer	SHORT AND SPRAY ARC	*Preparation method*	FLAME CUTTING AND MACHINING
JOINT DESIGN			
Joint type	BW – BUTT WELD (CJP)	*Structural class*	N.A.
Groove type	Single bevel groove weld	*Root opening*	3-4 mm
Groove angle	45° ± 5°	*Root face*	1-2 mm
Backing	none	*Leg Size*	n.a.
Back gouging procedure	n.a.	*Deposition Range*	7.5 mm – 30 mm

Bevel design



Welding sequence



BASE MATERIAL		
Part identification	*Part t_1*	*Part t_2*
Pipe or plate	PLATE	PLATE
Material group ISO 15608	1.2	1.2
Material type	S355J2+N	S355J2+N
Thickness range	7.5 - 30 mm	7.5 - 30 mm
Diameter	>150 mm	>150 mm

FILLER MATERIALS	
Welding process	GMAW (135)
Specification	EN ISO 14341-A
Classification	G42 4 M21 3Si1
Trade marker	ESAB OK AristoRod 12.50
Size	Ø 1.2 mm

SHIELD GAS	
Welding process	GMAW (135)
Specification	EN ISO 14175
Class	M21
Trade marker	82% Ar + 18% CO2
Flow rate	18-24 l/min
Nozzle diameter	Ø16 mm

PREHEAT	
Preheat temperature	T= 20°C
Preheat maintenance temperature	N.A.
Interpass temperature	MAX 250°

Other remarks for preheat and interpass temeprature
Monitor interpass temperature with tempilstik or laser thermometer.

PWHT	
Time and temperature	N.A.
PWHT method	N.A.
Heating and cooling rates	N.A.

Other remarks for PWHT:
N.A.

TECHNIQUE			
String or wave	STRING	*Stick out*	15÷20 mm
Multiple or single pass	MULTIPLE	*C - CEV (IIW) & Pcm*	Cev max= 0.44 ; Pcm max= 0.27
Initial/Interpass cleaning	BRUSHING AND/OR GRINDING	*Torch travel angle*	15÷20° (Push)

WELDING DETAILS

No.	*Process*	*Position*	*Filler Ø (mm)*	*Current*	*Amperage range [A]*		*Voltage range (V)*		*Travel speed range (mm/min)*		*Transfer Mode*	*Heat input [kJ/mm]*	
					Min	*Max*	*Min*	*Max*	*Min*	*Max*		*Min*	*Max*
Root	135	F(PA)	1.2	DCEP	110	130	17	19	120	170	Short Arc	0.57	0.95
Fill	135	F(PA)	1.2	DCEP	260	280	29	31	290	330	Spray Arc	1.01	1.44
Cap	135	F(PA)	1.2	DCEP	260	280	29	31	290	330	Spray Arc	1.01	1.44

Other remarks:
Tack welding will be done according to first pass parameters.

REVISION AND SIGANTURE

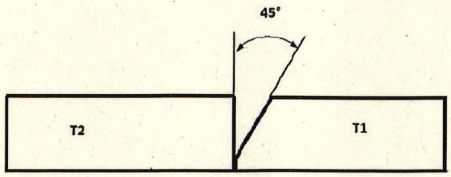
REV	*Date*	*Description*	*Prepared*	*Approved*
01	08/10/2024	Revised heat input		
00	22/07/2024			

Prepared by	*Approved by*	*Society approved by*	*Customer approved by:*
REMAZEL ENGINEERING S.p.A.			

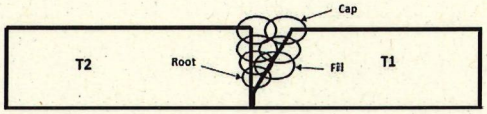
CONCRANE A REMAZEL Group Company	WELDING PROCEDURE SPECIFICATION (WPS)	WPS n°: CCP12-2 WPQR: CCP12 Rev. 01 – 08/10/2024	Pag. 1 / 1

Reference code	EN ISO 15614-1;	*Welding position*	F (PA)– FLAT POSITION
Welding process	GMAW (135)	*Type*	SEMI AUTOMATIC
Mode of metal transfer	SHORT AND SPRAY ARC	*Preparation method*	FLAME CUTTING AND MACHINING
JOINT DESIGN			
Joint type	BW – BUTT WELD (CJP)	*Structural class*	N.A.
Groove type	Single bevel groove weld	*Root opening*	0 mm
Groove angle	45° ± 5°	*Root face*	According to dwg
Backing	none	*Leg Size*	n.a.
Back gouging procedure	n.a.	*Deposition Range*	

Bevel design



Welding sequence



BASE MATERIAL			**PREHEAT**	
Part identification	*Part t_1*	*Part t_2*	*Preheat temperature*	T= 20°C
Pipe or plate	PLATE	PLATE		
Material group ISO 15608	1.2	1.2	*Preheat maintenance temperature*	N.A.
Material type	S355J2+N	S355J2+N		
Thickness range	7.5 - 30 mm	7.5 - 30 mm	*Interpass temperature*	MAX 250°
Diameter	>150 mm	>150 mm		
FILLER MATERIALS			*Other remarks for preheat and interpass temeprature*	
Welding process	GMAW (135)		**Monitor interpass temperature with tempilstik or laser thermometer.**	
Specification	EN ISO 14341-A			
Classification	G42 4 M21 3Si1		**PWHT**	
Trade marker	ESAB OK AristoRod 12.50		*Time and temperature*	N.A.
Size	Ø 1.2 mm			
SHIELD GAS			*PWHT method*	N.A.
Welding process	GMAW (135)			
Specification	EN ISO 14175		*Heating and cooling rates*	N.A.
Class	M21			
Trade marker	82% Ar + 18% CO2		*Other remarks for PWHT:*	
Flow rate	18-24 l/min		N.A.	
Nozzle diameter	Ø16 mm			

TECHNIQUE			
String or wave	STRING	*Stick out*	15÷20 mm
Multiple or single pass	MULTIPLE	*C - CEV (IIW) & Pcm*	Cev max= 0.44 ; Pcm max= 0.27
Initial/Interpass cleaning	BRUSHING AND/OR GRINDING	*Torch travel angle*	15÷20° (Push)

WELDING DETAILS

No.	*Process*	*Position*	*Filler Ø (mm)*	*Current*	*Amperage range [A]*		*Voltage range (V)*		*Travel speed range (mm/min)*		*Transfer Mode*	*Heat input [kJ/mm]*	
					Min	*Max*	*Min*	*Max*	*Min*	*Max*		*Min*	*Max*
Root	135	F(PA)	1.2	DCEP	160	180	20.5	22.5	120	160	Short Arc	0.98	1.62
Fill	135	F(PA)	1.2	DCEP	240	280	25	27	250	320	Spray Arc	0.91	1.45
Cap	135	F(PA)	1.2	DCEP	240	280	25	27	250	320	Spray Arc	0.91	1.45

Other remarks:
Tack welding will be done according to first pass parameters.

REVISION AND SIGANTURE

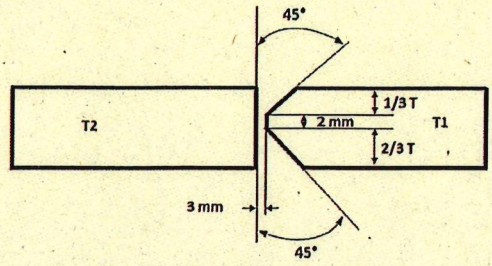
REV	*Date*	*Description*	*Prepared*	*Approved*
01	08/10/2024	Revised heat input		
00	22/07/2024			

Prepared by	*Approved by*	*Society approved by*	*Customer approved by:*
REMAZEL ENGINEERING S.p.A.			

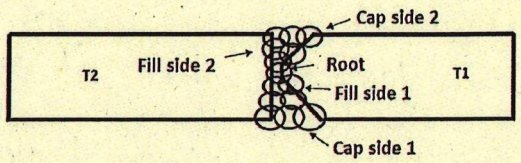
REMAZEL ENGINEERING	WELDING PROCEDURE SPECIFICATION (WPS)	WPS n°: CCP12-3 WPQR: CCP12 Rev. 00 – 22/07/2024	Pag. 1 / 1

Reference code	EN ISO 15614-1;	Welding position	F (PA)– FLAT POSITION
Welding process	GMAW (135)	Type	SEMI AUTOMATIC
Mode of metal transfer	SHORT AND SPRAY ARC	Preparation method	FLAME CUTTING AND MACHINING
JOINT DESIGN			
Joint type	BW – BUTT WELD (CJP)	Structural class	N.A.
Groove type	K bevel groove weld	Root opening	2-3 mm
Groove angle	45° ± 5°	Root face	1-2 mm
Backing	none	Leg Size	n.a.
Back gouging procedure	n.a.	Deposition Range	

Bevel design



Welding sequence



BASE MATERIAL		
Part identification	Part t_1	Part t_2
Pipe or plate	PLATE	PLATE
Material group ISO 15608	1.2	1.2
Material type	S355J2+N	S355J2+N
Thickness range	7.5 - 30 mm	7.5 - 30 mm
Diameter	>150 mm	>150 mm

FILLER MATERIALS	
Welding process	GMAW (135)
Specification	EN ISO 14341-A
Classification	G42 4 M21 3Si1
Trade marker	ESAB OK ArlstoRod 12.50
Size	Ø 1.2 mm

SHIELD GAS	
Welding process	GMAW (135)
Specification	EN ISO 14175
Class	M21
Trade marker	82% Ar + 18% CO2
Flow rate	18-24 l/min
Nozzle diameter	Ø16 mm

PREHEAT	
Preheat temperature	T= 20°C
Preheat maintenance temperature	N.A.
Interpass temperature	MAX 250°

Other remarks for preheat and interpass temeprature
Monitor interpass temperature with tempilstik or laser thermometer.

PWHT	
Time and temperature	N.A.
PWHT method	N.A.
Heating and cooling rates	N.A.

Other remarks for PWHT:
N.A.

TECHNIQUE			
String or wave	STRING	Stick out	15÷20 mm
Multiple or single pass	MULTIPLE	C - CEV (IIW) & Pcm	Cev max= 0.44 ; Pcm max= 0.27
Initial/Interpass cleaning	BRUSHING AND/OR GRINDING	Torch travel angle	15÷20° (Push)

WELDING DETAILS

No.	Process	Position	Filler Ø (mm)	Current	Amperage range [A]		Voltage range (V)		Travel speed range (mm/min)		Transfer Mode	Heat Input (kJ/mm)	
					Min	Max	Min	Max	Min	Max		Min	Max
Root	135	F (PA)	1.2	DCEP	160	180	20.5	22.5	120	160	Short Arc	0.98	1.62
Fill Side 1	135	F (PA)	1.2	DCEP	240	280	25	27	250	330	Spray Arc	0.91	1.45
Cap Side1	135	F (PA)	1.2	DCEP	240	280	25	27	250	320	Spray Arc	0.91	1.45
Fill Side 2	135	F (PA)	1.2	DCEP	240	280	25	27	250	330	Spray Arc	0.91	1.45
Cap Side2	135	F (PA)	1.2	DCEP	240	280	25	27	250	320	Spray Arc	0.91	1.45

Other remarks:
Tack welding will be done according to first pass parameters.

REVISION AND SIGANTURE

REV	Date	Description	Prepared	Approved
00	22/07/2024			

Prepared by	Approved by	Society approved by	Customer approved by:
	REMAZEL ENGINEERING S.p.A.		

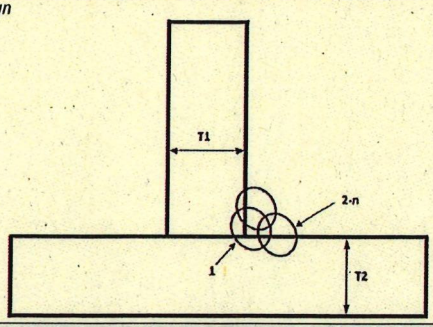
REMAZEL ENGINEERING	WELDING PROCEDURE SPECIFICATION (WPS)	WPS n°: CCP13-01 WPQR: CCP13 Rev. 00 – 18/07/2024	Pag. 1 / 1

Reference code	EN ISO 15614-1;	*Welding position*	F (PB) – FLAT POSITION
Welding process	GMAW (135)	*Type*	SEMI AUTOMATIC
Mode of metal transfer	SHORT AND SPRAY ARC	*Preparation method*	FLAME CUTTING AND MACHINING

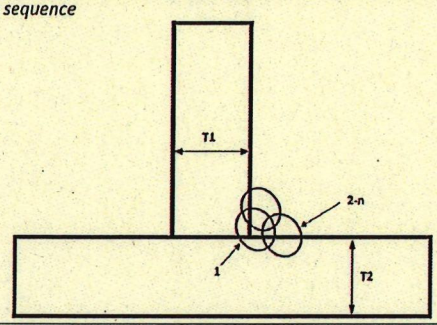
JOINT DESIGN

Joint type	FW – FILLET WELD (T-JOINT)	*Structural class*	N.A.
Groove type	n.a	*Root opening*	0-2 mm
Groove angle	n.a	*Root face*	n.a.
Backing	n.a.	*Leg Size range*	7 mm – 26 mm
Back gouging procedure	n.a.	*Deposition Range*	3 mm - 48 mm

Bevel design



Welding sequence



BASE MATERIAL

Part identification	*Part t_1*	*Part t_2*
Pipe or plate	PLATE	PLATE
Material group ISO 15608	1.2	1.2
Material type	S355J2+N	S355J2+N
Thickness range	3-48 mm	3-48 mm
Diameter	>150 mm	>150 mm

FILLER MATERIALS

Welding process	GMAW (135)
Specification	EN ISO 14341-A
Classification	G42 4 M21 3Si1
Trade marker	ESAB OK ArlstoRod 12.50
Size	Ø 1.2 mm

SHIELD GAS

Welding process	GMAW (135)
Specification	EN ISO 14175
Class	M21
Trade marker	82% Ar + 18% CO2
Flow rate	18-24 l/min
Nozzle diameter	Ø16 mm

PREHEAT

Preheat temperature	T= 20°C
Preheat maintenance temperature	N.A.
Interpass temperature	MAX 250°

FILLER MATERIALS

Monitor interpass temperature with tempilstik or laser thermometer.

PWHT

Time and temperature	N.A.
SHIELD GAS	
Heating and cooling rates	N.A.

Other remarks for PWHT:
N.A.

TECNIQUE

String or wave	STRING	*Stick out*	15÷20 mm
Multiple or single pass	MULTIPLE	*C - CEV (IIW) & Pcm*	Cev max= 0.45;
Initial/Interpass cleaning	BRUSHING AND/OR GRINDING	*Torch travel angle*	15÷20° (Push)

WELDING DETAILS

No.	*Process*	*Position*	*Filler Ø (mm)*	*Current*	*Amperage range [A]*		*Voltage range (V)*		*Travel speed range (mm/min)*		*Transfer Mode*	*Heat input [kJ/mm]*	
					Min	*Max*	*Min*	*Max*	*Min*	*Max*		*Min*	*Max*
1	135	F (PB)	1.2	DCEP	240	280	28	31	250	330	Spray Arc	1.0	1.7
2-n	135	F (PB)	1.2	DCEP	240	280	28	31	250	330	Spray Arc	1.0	1.7

Other remarks:
Tack welding will be done according to first pass parameters.

REVISION AND SIGANTURE

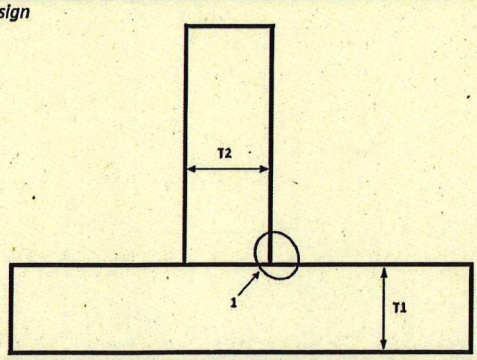
REV	*Date*	*Description*	*Prepared*	*Approved*
00	18/07/2024	First issue		

Prepared by	*Approved by*	*Society approved by*	*Customer approved by:*
	REMAZEL ENGINEERING S.p.A.		

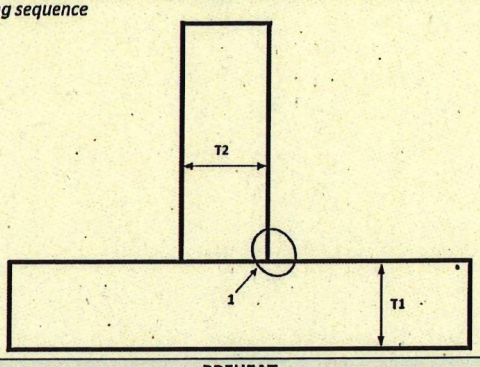
REMAZEL ENGINEERING	WELDING PROCEDURE SPECIFICATION (WPS)	WPS n°: CCP14-1 WPQR: CCP14 Rev. 00 – 18/07/2024	Pag. 1 / 1

Reference code	EN ISO 15614-1;	Welding position	F/H (PB)– FLAT POSITION
Welding process	GMAW (135)	Type	SEMI AUTOMATIC
Mode of metal transfer	SHORT AND SPRAY ARC	Preparation method	FLAME CUTTING AND MACHINING
JOINT DESIGN			
Joint type	FW – FILLET WELD (T-JOINT)	Structural class	N.A.
Groove type	n.a	Root opening	0-2 mm
Groove angle	n.a	Root face	n.a.
Backing	n.a.	Leg Size range	3.5 mm – 7 mm
Back gouging procedure	n.a.	Thickness Range	3 mm – 30 mm

Bevel design



Welding sequence



BASE MATERIAL		
Part identification	Part t_1	Part t_2
Pipe or plate	PLATE	PLATE
Material group ISO 15608	1.2	1.2
Material type	S355J2+N	S355J2+N
Thickness	7.5 mm – 30 mm	7.5 mm – 30 mm
Diameter	N.A.	N.A.

FILLER MATERIALS	
Welding process	GMAW (135)
Specification	EN ISO 14341-A
Classification	G42 4 M21 3Si1
Trade marker	ESAB OK AristoRod 12.50
Size	Ø 1.2 mm

SHIELD GAS	
Welding process	GMAW (135)
Specification	EN ISO 14175
Class	M21
Trade marker	82% Ar + 18% CO2
Flow rate	18-24 l/min
Nozzle diameter	Ø16 mm

PREHEAT	
Preheat temperature	- T= 20°C
Preheat maintenance temperature	N.A.
Interpass temperature	MAX 250°

Other remarks for preheat and interpass temeprature
Monitor interpass temperature with tempilstik or laser thermometer.

PWHT	
Time and temperature	N.A.
PWHT method	N.A.
Heating and cooling rates	N.A.

Other remarks for PWHT:
N.A.

TECNIQUE			
String or wave	STRING	Stick out	15÷20 mm
Multiple or single pass	SINGLE	C - CEV (IIW) & Pcm	Cev max= 0.44 ; Pcm max= 0.27
Initial/Interpass cleaning	BRUSHING AND/OR GRINDING	Torch travel angle	15÷20° (Push)

WELDING DETAILS

No.	Process	Position	Filler Ø (mm)	Current	Amperage range [A]		Voltage range (V)		Travel speed range (mm/min)		Transfer Mode	Heat input [kJ/mm]	
					Min	Max	Min	Max	Min	Max		Min	Max
1	135	PB	1.2	DCEP	240	280	25	27	250	330	Spray Arc	0.91	1.45

Other remarks:
Tack welding will be done according to first pass parameters.

REVISION AND SIGANTURE

REV	Date	Description	Prepared	Approved
00	18/07/2024	First issue		

Prepared by	Approved by	Society approved by	Customer approved by:
	REMAZEL ENGINEERING S.p.A		

3. WPQR

This document is the property of **REMAZEL Engineering S.p.A.** who will safeguard its rights according to the civil and penal provisions of the Law.

WELDING PROCEDURE QUALIFICATION RECORD (WPQR)

LEVEL 2

N. 21TO00308PW\5A

Manufacturer **CONCRANE S.r.l. - TRIESTE (TS)**

WPQR No. **CCP12 Rev.01 dated 15/07/2021** Dated **21/06/2021**

Manufacturer's welding procedure (WPS) No. **p-CCP12** Dated **17/05/2021**

RANGE OF QUALIFICATION

Welding process **135** Type **Partly mechanized**

Joint type **Plates and Pipes and build-up BW ssnb-ssmb-bs/FW**

Single/Multiple pass **Multiple** (**Impact and Hardness properties apply**)

Parent material group(s) **1-1** ISO/TR 15608; ISO/TR20172; ISO/TR 20173; ISO/TR20174 with a specified minimum yield strength 275 < ReH ≤ 360 Mpa **DH36; AH36; DH32; AH32; D; B; A** according to Pt D, Ch 2, Sec 1 of RINA Rules

Parent material thickness (mm) Butt Joint = **7,5 to 30** Fillet Joint t_1 = **3 to 30** t_2 = **3 to 30**

Throat thickness (mm) **No restriction ***

Weld deposit thickness (mm) **Max 30 mm**

Outside pipe diameter (mm) **Over 150 (PA, PB, PC rotated positions); Over 500 (Other qualified positions) ****

Filler metal make **N.A.** Nr. of wires for process 12: **None**

Flux make **N.A.** Flux Designation: **N.A.**

Filler metal designation **Solid wire EN ISO 14341-A G42 4M21 3Si1**

Shielding gas (ISO 14175) **M21 with CO_2% min.14,4 max.21,6** Backing gas (ISO 14175) **None**

Type of welding current **DCEP** Kj/cm **min 5,7 ; max 16,4**

Welding position **PA** Transfer Mode **First pass: Short Arc; Other Passes: Spray, Pulse and Globular transfer**

Preheat min. (°C) +20 (if ISO/TR 17671-2 requirements are fulfilled) Interpass temp. Max. (°C) -

Interpass temp. Max. (°C) +250 Postheat min. (°C) - Time (minutes) -

Post weld heat treatment / Ageing **None** Time (minutes) -

Other information **(*) Multi-run; as for butt welds with multi-run (i.e. a=t); (**) Over 500 mm, when RINA Rules apply**

Welder's/Operator's name **Radasanu Georgetin Ionut** Stamp No. **RG**

Welding test conducted by **CONCRANE S.r.l. - Trieste (TS)**

Mechanical test conducted by **Metal Services Srl - R. d. Legionari (GO)** Laboratory test No. **21.0368 Rev.1**

At presence of RINA Surveyor **F. Sedran**

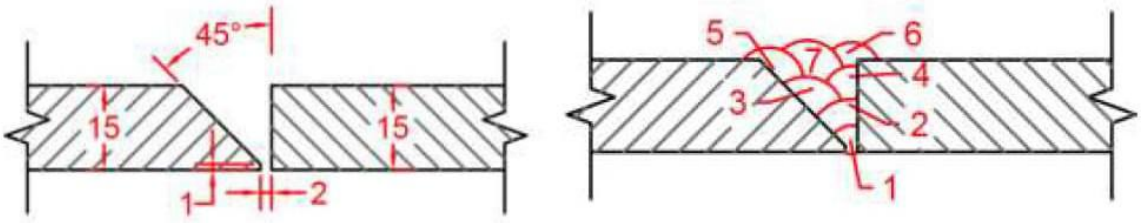
We confirm that statements in this record are correct and that the test welds were prepared, welded and tested and have fulfilled the requirements in accordance with **UNI EN ISO 15614-1: 2019** Standard and **RINA Rules for the Classification of Ships** requirements**.**

Issued at: Genova on 15 July 2021

RINA Services S.p.A.
PED No. Bo. 0474

RECORD OF WELD TEST

JOINT DETAILS AND WELDING SEQUENCES PLATE TO PLATE BUTT JOINT FULL PENETRATION- SINGLE BEVEL with root face and root gap – ss nb ml									
Pass No.	Process	Filler metal diam. (mm)	Amps	Volt	Type of Current/ Polarity	Travel speed (cm/min)	Heat input (kJ/cm)	Metal Transfer mode	Other
1	**135**	1,2	125	18,2	**DCEP**	14,3	7,6	**Short Arc**	-
2	**135**	1,2	239	28,8	**DCEP**	31,0	10,7	**Spray Arc**	-
3	**135**	1,2	242	28,2	**DCEP**	29,8	11,0	**Spray Arc**	-
4	**135**	1,2	268	28,5	**DCEP**	30,5	12,0	**Spray Arc**	-
5	**135**	1,2	269	28,2	**DCEP**	27,7	13,1	**Spray Arc**	-
6	**135**	1,2	252	28,2	**DCEP**	31,6	10.8	**Spray Arc**	-
7	**135**	1,2	256	28,3	**DCEP**	30,5	11,4	**Spray Arc**	-



PARENT MATERIAL

Material specification	**EN 10028-3 (Pt D, Ch 2, Sec 1 of RINA Rules)**		
Type or grade	**P355NH (DH36)**		
Group(s)/Subgroup(s) No. (ISO/TR 15608; ISO/TR20172; ISO/TR 20173; ISO/TR20174)			**1.2**
Thickness (mm)	**15 to 15**	Throat thickness (mm)	**N.A.**
Diameter (mm)	**N.A.**		
Branch connection angle	**N.A.**		
Other	**-**		

WELDING CONSUMABLES

Process	**135D**	**135S**
Trade name(s)	**ESAB OK AristoRod 12.50**	**ESAB OK AristoRod 12.50**
Specification	**EN ISO 14341-A**	**EN ISO 14341-A**
Classification / designation	**G42 4 M21 3Si1**	**G42 4 M21 3Si1**
Size (mm)	**1,2**	**1,2**
Deposited metal thickness		
Groove	**3 mm**	**12 mm**
Throat	**N.A.**	**N.A.**
Flux trade name	**N.A.**	**N.A.**
Consumable insert	**N.A.**	**N.A.**
Other	**-**	**-**

GAS

	Gas	Mixture	Flow rate (l/min.)
Shielding		**Ar 82% + CO_2 18%**	**18**
Trailing			
Backing			

POSITION

Welding position **PA**

Other **-**

PREHEAT				**POSTWELD HEAT TREATMENT**			
Preheat temperature	**+20°C**			Temperature	**None**	Time	-
Interpass temperature	**+250°C**			Method	**-**		
Postheat temperature	**None**	Time	**-**	Other	**-**		

ELECTRICAL CHARACTERISTICS

Current **DCEP**

Ampere (range) **See table** Volts (Range) **See table**

Mode of metal transfer **D (Short Transfer) First pass; S (Spray Transfer) Other passes**

Tungsten electrode size and type **N.A.**

Pulse welding details **N.A.**

Plasmawelding details **N.A.**

Waveform controlled welding machine - Waveform control mode **-**

Power source - Welding mode Pulse □ Non pulse ☑

Other **-**

TECHNIQUE

Travel speed (range) **See table**

String or weave bead **String** Maximum width of run **None**

Oscillation (*) **None** (Amplitude/Frequency/Dwell time)

Method of groove/edge preparation **Flame cutting and Machining**

Interpass cleaning **Grinding/Brushing**

Method of back gouging **N.A.**

Orifice or gas cup size **16**

Distance contact tube/worpiece (*) **15-20 mm**

Multiple or single pass **Multiple**

Multiple or single electrodes **Single**

Torch angle (*) **N.A.**

Other (*) for fully mechanized/robotic only

TRANSVERSE TENSILE TEST						
Spec. (No.)	Width (mm)	Thickness (mm)	Area (mm^2)	Total load (N)	R_m. (N/mm^2)	Fracture location
1238	**25,02**	**13,44**	**336,27**	**179058**	**532**	**Base material - ductile**
1238	**25,01**	**13,24**	**331,13**	**175425**	**530**	**Base material - ductile**

ALL-WELD METAL TENSILE TEST							
Spec. (No.)	Diameter (mm)	Area (mm)	L_0 (mm)	Yield strength (N/mm^2)	Tensile strength (N/mm^2)	A (%)	Z (%)
1238	**6,06**	**-**	**30**	**408**	**520**	**33.0**	**74**

BEND TEST			
Type	No.	Bend Angle	Result
SIDE TRANSVERSE	**4 OFF**	**180°**	**Acceptable**

IMPACT TEST

Full-Size 10x10x55

Spec No.	Notch location	Notch type	Test Temp. (°C)	Impact values (J)	Average (J)
VWT $_{0/1}$	**WELD**	**ISO-V**	**-20**	**149 - 156 - 149**	**151**
VHT $_{0/1}$	**FUSION LINE**	**ISO-V**	**-20**	**144 - 202 - 184**	**177**
VHT $_{2/1}$	**FUSION LINE + 2**	**ISO-V**	**-20**	**260 - 257 - 258**	**258**
VHT $_{5/1}$	**FUSION LINE + 5**	**ISO-V**	**-20**	**241 - 242 - 244**	**242**

HARDNESS TEST		
Location	Type/load	Maximum value
Parent metal(s)	**HV10**	**158**
H.A.Z.(s)	**HV10**	**220**
Weld metal	**HV10**	**186**

OTHER TEST

MACROGRAPHIC EXAMINATION **Acceptable**

MICROGRAPHIC EXAMINATION **Not required**

NON DESTRUCTIVE EXAMINATION

VISUAL EXAMINATION **Acceptable**

RADIOGRAPHIC EXAMINATION **Not required**

PENETRANT TEST **Not required**

MAGNETIC PARTICLE **Acceptable**

ULTRASONIC TEST **Acceptable**

Issued at: Genova on 15 July 2021

RINA Services S.p.A.
PED No. Bo. 0474

TEST REPORT No. 21.0368 Rev.1

ISSUED ON 21/06/2021

This document replace the test report no. 21.0368 Rev.0

Customer

CONCRANE S.r.l.

Via Caboto, 26

34147 Trieste (TS)

INFORMATION

The present test report cannot be modified and cannot be reproduced in a partial way without the formal written approval of Metal Services Materials Testing Srl.
Test results are only related to the supplied tested samples; the remains of them will be stored and available for not more than 30 days after the test report issuing date, unless differently agreed on the purchase order.
Equipment used are to be intended under metrological validity.
The uncertainty of measurement is expressed as expanded uncertainty obtained by multiplying the combined uncertainty for the coverage factor of k = 2, corresponding to a confidence interval of about 95%.
(+) Supervised test by 3rd part inspector.

MATERIAL RECEPTION

Date	Delivery note no.	Offer no.	Order no.
28/05/2021	21050	-	-

Sampling data

Sampling and identification executed by the Customer

MATERIAL DESCRIPTION

Sample no.	Identification mark
1238	Sample identified as “pWPS CCP12 – BW plate thk. 15 mm – material DNV-GL EH36/RINA DH36 – welding process GMAW – position 1G – welding consumable ESAB OK AristoRod 12.50 Ø 1.2 mm – AWS A5.18 ER 70S-6 – shielding gas EN ISO 14175 M21 82%Ar + 18% CO2 18/24 l/min“

TEST INDEX

Section no.	Test	Page
1	Visual examination (UNI EN ISO 17637:2017)	2
2	Magnetoscopic examination (UNI EN ISO 17638:2016 – ASTM E709 – API 2X)	2
3	Ultrasonic examination (UNI EN ISO 17640:2018 – API RP 2X)	3
4	Transverse tensile test on welds (UNI EN ISO 4136:2012)	4
5	Longitudinal tensile test on welds (UNI EN ISO 5178:2011)	4
6	Bend test on welds (UNI EN ISO 5173:2012)	4
7	Impact test on welds (UNI EN ISO 9016:2012)	4
8	Macrographic examination (UNI EN ISO 17639:2013)	5
9	Hardness test on welded joints (UNI EN ISO 9015-1:2011)	6
-	Other reference documents (08833.ENG.MME.SDS Rev.07)	-

NOTE

This document replaces the test report no. 21.0368 Rev.0 and it has been issued in order to integrate data of the fields “Material description” and of the section 5 “Longitudinal tensile test on welds”

//

RESERVED FOR DIGITAL SIGNATURE

Firmato digitalmente da:
PELLEGRIN LORENZO
Firmato il 21/06/2021 11:14
Seriale Certificato: 21401746878628221003275909547213633194
Valido dal 01/10/2020 al 01/10/2023
ArubaPEC S.p.A. NG CA 3

Laboratory Manager	Inspector (+)
p.i. L. Pellegrin	RINA S.p.A. F. Sedran

TEST REPORT No. 21.0368 Rev.1

ISSUED ON 21/06/2021

This document replace the test report no. 21.0368 Rev.0

1. VISUAL EXAMINATION

TEST CONDITIONS

Equipment	Visual conditions	Surface conditions	Working step
Weld Gauge, Lamp	Min. 1000 lux on tested surface	As welded	Welds completed
Test method	**Acceptance criteria**	**Procedure of examination**	**Reference drawing**
UNI EN ISO 17638:2016 – ASTM E709 – API 2X	UNI EN ISO 5817:2014 - 08833.ENG.MME.SDS Rev.07	-	pWPS CCP12
Heat Treatment	**Extention of the examination**	**-**	**-**
-	100%	-	-

RESULTS

Sample no.	Data	Position	Result of inspection
1238	31/05/2021	-	*Imperfections exceeding the acceptance criteria and their location*: No recordable indications.

Record of indications detected

Weld Id.	*Indication no.*	*Start from*	*Probe[1]*	*Length*	*Depth[1]*	*Probable type of defect*
-	-	-	-	-	-	-

Glossary: //

Note 1: Only for UT examination

2 MAGNETIC PARTICLES TESTING

TEST CONDITIONS

Equipment	Visual conditions	Surface conditions	Working step
Deltaflux DF Y/A S/N 140514	Min. 500 lux on tested surface	Welded	As finished
Contrast paint	**Type of magnetic particles**	**Magnetic particles**	**Type of current**
ProNdt 183	Wet - visible	ProNdt 181	AC
Test method	**Acceptance criteria**	**Procedure of examination**	**Reference drawing**
UNI EN ISO 17640:2018 – API RP 2X	UNI EN ISO 23278:2015 Lev.1 - 08833.ENG.MME.SDS Rev.07	-	pWPS CCP12
Heat Treatment	**Extension of the examination**	**Demagnetization**	**Lifting power**
Not declared	100%	Not required	5 Kg

RESULTS

Sample no.	Data	Position	Result of inspection
1238	31/05/2021	-	*Imperfections exceeding the acceptance criteria and their location*: No recordable indications.

Record of indications detected

Weld Id.	*Indication no.*	*Start from*	*Probe[1]*	*Length*	*Depth[1]*	*Probable type of defect*
-	-	-	-	-	-	-

Glossary: //

Note 1: Only for UT examination

NOTE

//

Laboratory Manager	Inspector (+)
p.i. L. Pellegrin	RINA S.p.A. F. Sedran

TEST REPORT No. 21.0368 Rev.1
ISSUED ON 21/06/2021
This document replace the test report no. 21.0368 Rev.0

3. ULTRASONIC EXAMINATION

TEST CONDITIONS

Material	Thickness	Heat Treatment	Testing plan
EH36	15 mm	-	100 %
Instrument	**Probe**	**Couplant**	**Note**
Sonatest D20+ s/n.:I009835	Olympus AMR 8x9 70	Gel	-
Test method		**Acceptance criteria**	
UNI EN ISO 17640:2018 – API RP 2X		UNI EN ISO 11666:2018 - 08833.ENG.MME.SDS Rev.07	

RESULTS

Sample no.	Data	Position	Result of inspection
1238	31/05/2021	-	*Imperfections exceeding the acceptance criteria and their location*: No recordable indications.

Record of indications detected

Weld Id.	*Indication no.*	*Start from*	*Probe*[1]	*Length*	*Depth*[1]	*Probable type of defect*
-	-	-	-	-	-	-

Glossary: //
Note 1: Only for UT examination

NOTE

//

Laboratory Manager	Inspector (+)
p.i. L. Pellegrin	RINA S.p.A. F. Sedran

TEST REPORT No. 21.0368 Rev.1

ISSUED ON 21/06/2021

This document replace the test report no. 21.0368 Rev.0

4. TRANSVERSE TENSILE TEST ON WELDS

Sample no.	Date	Position	T °C	a mm	b mm	So mm^2	Fm N	Rm MPa	Fracture Position
1238	07/06/2021	T to Weld	22	13.44	25.02	336.27	179058	532	Base material - ductile
1238	07/06/2021	T to Weld	22	13.24	25.01	331.13	175425	530	Base material - ductile

Instruments: Galdabini Quasar 1200 (Serial no. V9GV)
Glossary: T = transversal; L = longitudinal
Note: //

5. LONGITUDINAL TENSILE TEST ON WELDS

Sample no.	Date	Position	T °C	Ø mm	$Rp_{0.02}$ MPa	$Rp_{0.2}$ MPa	$Rp_{1.0}$ MPa	Rm MPa	L_0 mm	A %	Z %	Rs/Rm
1238	07/06/2021	All weld	22	6.06	-	408	-	520	30	33.0	74	-

Instruments: Galdabini Quasar 250 (Serial no.V901)
Glossary: //
Note: //

6. BEND TEST ON WELDS

Sample no.	Date	Type of test	T °C	t_s mm	l mm	d mm	Bend angle °	Test Result
1238	07/06/2021	SBB	22	10	65	40	180	No recordable indication
1238	07/06/2021	SBB	22	10	65	40	180	No recordable indication
1238	07/06/2021	SBB	22	10	65	40	180	No recordable indication
1238	07/06/2021	SBB	22	10	65	40	180	No recordable indication

Instruments: Caliper Sama 18148032 (766)
Glossary: t_s= specimen thickness; l= minimum clearance between the shoulders; d= ram diameter; SBB = Side bend on butt weld.
Note: //

7. IMPACT TEST ON WELDS

Sample no.	Date	Position	w mm	T °C	KV_2 J			KV_2 AVG J
1238	07/06/2021	VHT 5/1	10	-20	241	242	244	242
1238	07/06/2021	VHT 2/1	10	-20	260	257	258	258
1238	07/06/2021	VHT 0/1	10	-20	144	202	184	177
1238	07/06/2021	VWT 0/1	10	-20	149	156	149	151

Instruments: Galdabini Impact 300 (Serial no.V88G)
Glossary: T = transversal; L = longitudinal
Note: When absorbed energy is < 8 J or >= 240 J the values are approximate.

NOTE

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Laboratory Manager	Inspector (+)
p.i. L. Pellegrin	RINA S.p.A. F. Sedran

TEST REPORT No. 21.0368 Rev.1

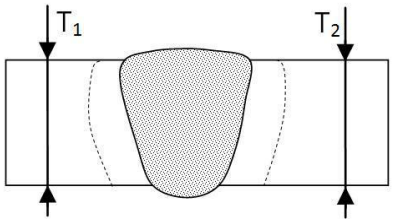
ISSUED ON 21/06/2021

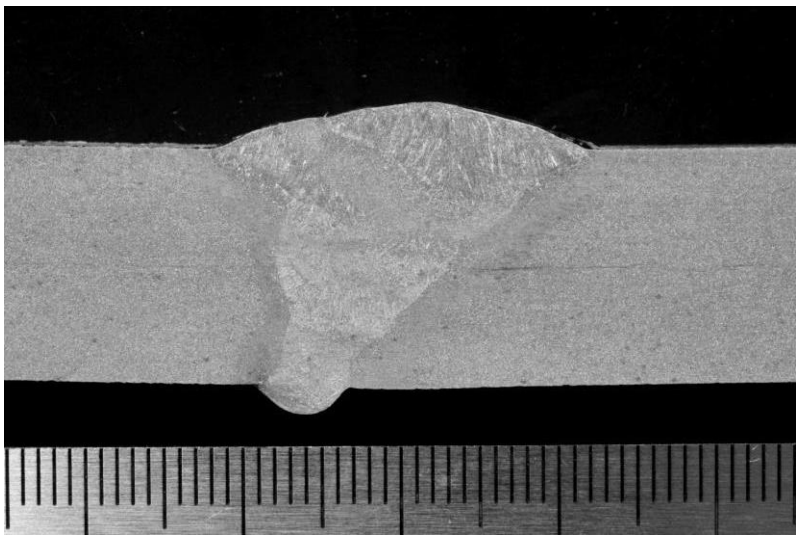
This document replace the test report no. 21.0368 Rev.0

8. MACROGRAPHIC EXAMINATION

Sample no	1238 Macro #1
Date	03/06/2021
Position	T to weld
Etching	HNO3 10%
T_1	15 mm
T_2	15 mm
Z_1	n.a.
Z_2	n.a.
Throat Thickness	n.a.

Sketch





Imperfection
No recordable indications

Instruments: Wild stereomicroscope (serial no.386471309)

Glossary: //

Note: //

NOTE

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Laboratory Manager	Inspector (+)
p.i. L. Pellegrin	RINA S.p.A. F. Sedran

TEST REPORT No. 21.0368 Rev.1

ISSUED ON 21/06/2021

This document replace the test report no. 21.0368 Rev.0

9. HARDNESS TEST ON ARC WELDED JOINTS

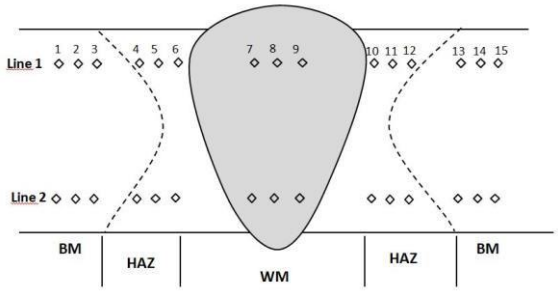
Sample no.	Date	Type of test	Indentation	Position	Line 1 (HV)	Line 2 (HV)	Line 3 (HV)
1238 Macro #1	03/06/2021	HV10	1	BM	150	154	-
			2	BM	151	152	-
			3	BM	158	156	-
			4	HAZ	177	169	-
			5	HAZ	198	177	-
			6	HAZ	206	178	-
			7	WM	179	181	-
			8	WM	167	156	-
			9	WM	171	186	-
			10	HAZ	211	204	-
			11	HAZ	214	220	-
			12	HAZ	193	186	-
			13	BM	156	154	-
			14	BM	150	151	-
			15	BM	148	155	-

Instruments: QNESS Q150+ (serial no. Q1294/02/18)

Glossary: //

Note: //

INDENTATION POSITION



NOTE

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INSPECTOR NOTES(+)

Laboratory Manager	Inspector (+)
p.i. L. Pellegrin	RINA S.p.A. F. Sedran

CERTIFICATO DI CONTROLLO 3.2 / INSPECTION CERTIFICATE 3.2 - EN 10204:2004

METINVEST
METINVEST TRAMETAL SPA

Società per azioni con socio unico soggetta a direzione e coordinamento di Metinvest B.V
Registered office: Via XII Ottobre, 3 - 16121 Genova, Italy
Phone +39 010 5762911 - Fax +39 010 5762990
Works: Via E. Fermi, 44 - 33058 San Giorgio di Nogaro UD, Italy
Phone +39 0431 629989 - Fax +39 0431 629985
Cap. Soc. Euro 300.120.000,00 i.v.
C.F., P.IVA e Iscr. Reg. Imp. GE 05956630965 - REA 437720/GE
http://trametal.metinvestholding.com

(A) PROCESSO DI ELABORAZIONE / STEELMAKING PROCESS: E = ELECTRIC ; BO = BASIC OXYGEN
(B) STATO DI FORNITURA / DELIVERY CONDITION: AR = GREZZO DI LAMINAZIONE / AS ROLLED ;
N* = LAMINAZIONE A TEMPERATURA CONTROLLATA / NORMALIZING ROLLING ;
N = NORMALIZZATO / NORMALIZED at 910°C, 1,5 min/mm ; ARIA CALMA / STILL AIR;
R = RICOTTO / ANNEALED;
N+R = NORMALIZZATO + RINVENUTO / NORMALIZED + TEMPERED
(C) TRATTAMENTO TERMICO DEL CAMPIONE / HEAT TREATMENT OF SAMPLE:
N = 910°C, 1,5 min/mm ; ARIA CALMA / STILL AIR
R = 650°C, 1,5 min/mm ; ARIA CALMA / STILL AIR
(D) Ceq_1 = C + Mn/6 ; Ceq_2 = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15 ;
Pcm = C + Si/30 + (Mn + Cu + Cr)/20 + Nl/60 + Mo/15 + V/10 + B*5
(1) POSIZIONE / LOCATION: 1 = TESTA / TOP ; 2 = PIEDE / BOTTOM
(2) POSIZIONE / LOCATION: C = CUORE / 1/2 THICKNESS ; P = PELLE / SURFACE ; D = 1/4 SPESSORE / THICKNESS
(3) DIREZIONE / DIRECTION: L = LONGITUDINALE / LONGITUDINAL ; T = TRASVERSALE / TRANSVERSE
(4) FORMA DEL PROVINO / SHAPE OF TEST PIECE: P = PRISMATICO / PRISMATIC ; C = CILINDRICO / CYLINDRICAL
(5) ESITO PROVA DI PIEGA / RESULT: OK = COMPLYING ; NO = NOT COMPLYING

A06 Cliente / Customer

TONELLO S.P.A.
VIA D'ORMENT N. 6
33042 BUTTRIO 33042 IT
UD ITALIA

A03 N° Certificato / Certificate no.	Z02 Data / Date
47645	12/12/2019
A08 N° Ordine Trametal / Works order	A07 N° Ordine cliente / Customer's order
31904901	B9001117
DDT	del / date
Pratica / File no.	N141X66X
del / date	09/12/2019

B06 Marcatura di prodotto / Marking of the product
LAMIERA/ORDINE/N° INFORNAMENTO/DIMENSIONI/QUALITÀ/MARCHIO DEL PRODUTTORE
PLATE/ORDER/INTERNAL N°/DIMENSIONS/STEEL GRADE/MANUFACTURER'S MARK

B01/B02/B03

Prodotto / Product	Lamiere / Hot rolled plates
Qualità / Steel grade	VL E36
Normativa / Specification	IACS-DNVGL

B07 ITEM	B07 LAMIERA PLATE	B07 N° INFORN. INTERNAL NUMBER	B09/B11 DIMENSIONI [mm] DIMENSIONS	B12 MASSA TEORICA [t] THEORICAL WEIGHT	B07 LOTTO BATCH NO.	C70 PROCESSO ELAB. (A) STEELMAKING PROCESS	B04 STATO FORNITURA LAMIERA (B) DELIVERY CONDITION	C00 CAMPIONE SAMPLE	B05 TRATT. CAMPIONE (C) HEAT TREATMENT	C00 CAMPIONE PWHT SAMPLE	B05 PWHT BEGINNING TEMPERATURE °C TEMPERATURA INIZIO	HEATING RATE °C/h VELOCITA' RISCALDO	TEMPERATURE TREATMENT °C TEMPERATURA TRATTAMENTO	HOLDING TIME PERMANENZA Min	COOLING RATE °C/h VELOCITA' RAFFREDDAMENTO	END TEMPERATURE °C TEMPERATURA FINE	N° CICLI / CYCLES	C00 CAMPIONE Q+T SAMPLE	B05 Q+T TEMPERATURE (Q) °C TEMPERATURA	HOLDING TIME (Q) Min PERMANENZA	COOLING RAFFREDDAMENTO	TEMPERATURE (T) °C TEMPERATURA	HOLDING TIME (T) Min PERMANENZA	COOLING RAFFREDDAMENTO
1	1TAN850407A	1590166	15.00X2450X12000	3,46	632914	BO	N	W7849		19T829															
~~2~~	~~1NAM330204A~~	~~1590652~~	~~30.00X2450X6300~~	~~3,63~~	~~632911~~	~~BO~~	~~N~~	~~W7846~~																	
~~3~~	~~1NAM960403A~~	~~1590606~~	~~35.00X2450X7200~~	~~4,05~~	~~632912~~	~~BO~~	~~N~~	~~W7847~~																	
~~4~~	~~1NAM960503A~~	~~1590550~~	~~50.00X2450X6300~~	~~6,06~~	~~632913~~	~~BO~~	~~N~~	~~W7848~~																	
	Total	4		18,00																					

TONELLO S.p.A.
CONTROLLO QUALITA'
PER
COPIA CONFORME
CENTRO LAVORAZIONE LAMIERE

C71/C92 COMPOSIZIONE CHIMICA DI COLATA / HEAT CHEMICAL ANALYSIS

B07 COLATA HEAT	C71 C %	C72 Mn %	C73 Si %	C74 P %	C75 S %	C76 Cu %	C77 Ni %	C78 Cr %	C79 Mo %	C80 Al %	C81 V %	C82 Nb %	C83 Ti %	C84 Sn %	C85 Ca %	C86 N %	C87 B %	C88 H %	C89 Ceq1 % (D)	C90 Ceq2 % (D)	C91 Pcm % (D)
VL E36 Min 0.00 - 100.00		0,90								0,020	0,050	0,020	0,007								
VL E36 Max 0.00 - 100.00	0,18	1,60	0,50	0,035	0,035	0,350	0,400	0,200	0,080		0,100	0,050	0,020								
1NAM33	0,16	1,50	0,20	0,012	0,003	0,060	0,040	0,030	<0.005	0,035	<0.005	0,021	<0.005	<0.005	0,0000	0,0080	0,0005	0,0002	0,41	0,42	0,25
1NAM96	0,16	1,49	0,20	0,012	0,002	0,040	0,030	0,020	<0.005	0,035	<0.005	0,020	<0.005	<0.005	0,0000	0,0070	<0.0005	0,0002	0,41	0,42	0,24
1TAN85	0,16	1,51	0,22	0,008	0,002	0,030	0,020	0,030	<0.005	0,037	<0.005	<0.010	<0.005	<0.005	0,0000	0,0070	<0.0005	0,0004	0,41	0,42	0,25

			PROVA DI TRAZIONE TENSILE TEST								PROVA DI RESILIENZA IMPACT TEST - CHARPY V-NOTCH TEST						PROVA DI PIEGA BEND TEST				PROVA DI DUREZZA HARDNESS TEST				PROVA DI STRIZIONE Z% TEST	
C00		C01	C01	C02	C03	C11	C12		C13	C14	C10	C41	C02	C03	C01	C42		C02	C51	C52	C50	C01	C30	C31		C53	C54
CAMPIONE SAMPLE	SPESSORE LAMIERA PLATE THICKNESS	POSIZIONE (1) LOCATION	POSIZIONE (2) LOCATION	DIREZIONE (3) ORIENTATION	TEMPERATURA [°C] TEST TEMPERATURE	ReH [Mpa] YIELD STRENGTH	Rm [Mpa] TENSILE STRENGTH	ReH/Rm	A% ELONGATION	Rp 0,2 [Mpa] PROOF/YIELD STRENGTH	FORMA PROVINO (4) SHAPE OF TEST PIECE	LARGHEZZA [mm] WIDTH	DIREZIONE (3) ORIENTATION	TEMPERATURA [°C] TEST TEMPERATURE	POSIZIONE (2) LOCATION	SINGOLI VALORI [J] INDIVIDUAL VALUES	MEDIA [J] MEAN VALUE	DIREZIONE (3) ORIENTATION	MANDRINO [mm] MANDREL	ANGOLO [°] ANGLE	ESITO (5) RESULT	POSIZIONE (2) LOCATION	METODO TEST METHOD	SINGOLI VALORI INDIVIDUAL VALUES	MEDIA MEAN VALUE	Z% SINGOLI VALORI Z% INDIVIDUAL VALUES	Z% VALORE MEDIO Z% MEAN VALUE
VL E36 Min 0.00 - 100.00					20	355	490		21,0																	

			PROVA DI TRAZIONE TENSILE TEST									PROVA DI RESILIENZA IMPACT TEST - CHARPY V-NOTCH TEST						PROVA DI PIEGA BEND TEST				PROVA DI DUREZZA HARDNESS TEST				PROVA DI STRIZIONE Z% TEST	
C00		C01	C01	C02	C03	C11	C12		C13	C14	C10	C41	C02	C03	C01	C42	C43	C02	C51	C52	C50	C01	C30	C31	C32	C53	C54
CAMPIONE SAMPLE	SPESSORE LAMIERA PLATE THICKNESS	POSIZIONE (1) LOCATION	POSIZIONE (2) LOCATION	DIREZIONE (3) ORIENTATION	TEMPERATURA [°C] TEST TEMPERATURE	ReH [Mpa] YIELD STRENGTH	Rm [Mpa] TENSILE STRENGTH	ReH/Rm	A% ELONGATION	Rp 0.2 [Mpa] PROOF/YIELD STRENGTH	FORMA PROVINO (4) SHAPE OF TEST PIECE	LARGHEZZA [mm] WIDTH	DIREZIONE (3) ORIENTATION	TEMPERATURA [°C] TEST TEMPERATURE	POSIZIONE (2) LOCATION	SINGOLI VALORI [J] INDIVIDUAL VALUES	MEDIA [J] MEAN VALUE	DIREZIONE (3) ORIENTATION	MANDRINO [mm] MANDREL	ANGOLO [°] ANGLE	ESITO (5) RESULT	POSIZIONE (2) LOCATION	METODO TEST METHOD	SINGOLI VALORI INDIVIDUAL VALUES	MEDIA MEAN VALUE	Z% SINGOLI VALORI Z% INDIVIDUAL VALUES	Z% VALORE MEDIO Z% MEAN VALUE
VL E36 Max 0.00 - 100.00					20		630																				
VL E36 Min 6.00 - 50.00													L	-40			34										
~~W7846~~	~~30,00~~	~~2~~	~~P~~	~~T~~	~~20~~	~~401~~	~~522~~	~~0,77~~	~~32,7~~		~~P~~	~~10,00~~	~~L~~	~~-40~~	~~P~~	~~233 250 254~~	~~246~~											
~~W7847~~	~~35,00~~	~~2~~	~~P~~	~~T~~	~~20~~	~~380~~	~~511~~	~~0,74~~	~~32,3~~		~~P~~	~~10,00~~	~~L~~	~~-40~~	~~P~~	~~284 291 276~~	~~284~~											
~~W7848~~	~~50,00~~	~~2~~	~~P~~	~~T~~	~~20~~	~~378~~	~~528~~	~~0,72~~	~~30,0~~		~~P~~	~~10,00~~	~~L~~	~~-40~~	~~P~~	~~206 185 187~~	~~193~~											
W7849	15,00	2	P	T	20	413	513	0,81	31,8		P	10,00	L	-40	P	271 243 263	259										

C10
UNI EN ISO 6892-1:2016 / UNI EN ISO 148-1:2016

Z01

ITEM		TOLLERANZA DI SPESSORE TOLERANCE ON THICKNESS	TOLLERANZE DI LARGHEZZA TOLERANCE ON WIDTH	TOLLERANZE DI LUNGHEZZA TOLERANCE ON LENGTH	CONDIZIONI SUPERFICIALI SURFACE FINISH	PLANARITÀ FLATNESS
1		EN 10029 CL.B	-0+100 MM	-0+200 MM	EN 10163/2 CL B2	EN 10029 CL. N
2		EN 10029 CL.B	-0+100 MM	-0+200 MM	EN 10163/2 CL B2	EN 10029 CL. N
3		EN 10029 CL.B	-0+100 MM	-0+200 MM	EN 10163/2 CL B2	EN 10029 CL. N
4		EN 10029 CL.B	-0+100 MM	-0+200 MM	EN 10163/2 CL B2	EN 10029 CL. N

CERTIFICHIAMO che le lamiere elencate sono conformi alla prescrizione dell'ordine, che i controlli della marcatura, dell'aspetto superficiale e dimensionale hanno dato esito positivo.
WE CERTIFY that the above mentioned plates are consistent with the order prescriptions: marking, inspection and measurement without objection.
DICHIARIAMO CHE LE LAMIERE SONO STATE CONTROLLATE IN ACCORDO ALLA NORMATIVA VIGENTE E CHE LE RADIAZIONI IONIZZANTI NON ECCEDONO IL VALORE DEL FONDO NATURALE.
WE DECLARE THAT THE PLATES WERE CONTROLLED ACCORDING TO STANDARD AND RADIATION DO NOT EXCEED THE NATURAL RADIATION.

Z06

Z07

Z03 ENTE COLLAUDO / INSPECTION BODY

TIMBRO DELL'ISPETTORE
STAMP OF THE INSPECTION REPRESENTATIVE

X Witnessed
And found to comply with:
DNV GL Rules
Date: 2019-12-12
Sign: Marco Bernl
DNV GL Venice

This document has been digitally signed and will therefore not have handwritten signatures.

Z02

METINVEST TRAMETAL S.p.A.
F. Andrian
CQ Manager

Certificazione valida per materiale fornitoVi con ns. DDT nr. C1000590 del 20/04/2021 relativo a:

PZ. 2 PART. SAGOMATO A DISEGNO: P01 SP. 15mm
PZ. 2 PART. SAGOMATO A DISEGNO: P02 SP. 15mm
PZ. 6 PART. SAGOMATO A DISEGNO: P05 SP. 15mm
RIF. VS. ORD. EMAIL DEL 13/04/2021
RIF. VS. COMM. URGENTE

TONELLO S.p.A.
CONTROLLO QUALITA'
PER
COPIA CONFORME
CENTRO LAVORAZIONE LAMIERE

CERTIFICATO DI COLLAUDO (3.1) - Analisi Chimica
ATTESTATO DI CONTROLLO (2.2) - Caratteristiche Meccaniche/
INSPECTION CERTIFICATE (3.1) - Chemical analysis
TEST REPORT (2.2) - Mechanical properties

Data/Date: 2021-02-19

Numero certificato/Cert no: EC26329874 rev. 0

Nostro ordine/Our order:	0100206249	Vostro ordine/Your order:	263/2021
Nostro riferimento/Our ref:	HYBRIS PRD account	Vostro riferimento/Your ref:	
Codice Cliente/Cust no:	ITB01537	Vostro numero fax/Your fax	
Data ordine Cliente/Your date:	20210217	Vostra e-mail/Your e-mail:	

Indirizzo di fatturazione/Invoice address
ALLOYS ITALIA SRL
.
VIA DEGLI SCHIAVETTI 9 - ZONA IND.
34074 MONFALCONE
Italy

Destinatario del certificato/Cert receiver

Indirizzo di spedizione/Delivery address
ALLOYS ITALIA SRL
VIA DEGLI SCHIAVETTI 9 - ZONA IND.
34074 MONFALCONE GO
Italy

CONSEGNA/DELIVERY Numero di lotto/Lot no: PVV01022033B Quantità/Quantity: 1098 KGM

PRODOTTO/PRODUCT

Marchio/Brand: ESAB
Descrizione/Desc: OK AristoRod 12.50 1.2mm 18kg
Codice/Item no: **1A50126910**

CLASSIFICAZIONE/CLASSIFICATIONS

EN ISO 14341-A: G 3Si1
EN ISO 14341-A: G 38 3 C1 3Si1
EN ISO 14341-A: G 42 4 M20 3Si1
EN ISO 14341-A: G 42 4 M21 3Si1
SFA/AWS A5.18: ER70S-6
CSA W48: B-G 49A 3 C1 S6
JIS Z 3312: YGW 12 (C1)

CARATTERISTICHE MECCANICHE/MECH PROPS

Valori tipici/Typical data: in accordo a/acc to EN 10204 - 2.2

Norma/Standard: EN
Altro/Auxiliary: M21
Condizione/Condition:

TRAZIONE/TENSILE

ReL	Rm	A4-A5
470 MPa	560 MPa	26 %

RESILIENZA/IMPACT

Temp	-30 °C	-40 °C	-50 °C
KV	100 J	90 J	70 J

COMPOSIZIONE CHIMICA/ CHEMICAL COMPOSITION

Valori reali/Actual results: in accordo a/acc to I 3.1

Wire/strip

Altro/Auxiliary:

C		0.08%
Si		0.83%
Mn		1.47%
P		0.007%
S		0.012%
Cr		0.02%
Ni		0.01%
Mo	<	0.01%
Cu		0.05%
V	<	0.01%
Al		0.007%
Ti+Zr		0.01%

COMMENTI/COMMENTS

Materiale fornito in accordo al Sistema Qualità conforme alla norma EN ISO 9001.
Questo certificato è stampato elettronicamente ed è valido senza firma.
Per ogni chiarimento, rivolgersi a:

ESAB Saldatura S.p.A. | Str. Provinciale 34, n.37 - 20010 Ossona MI, Italy

Product supplied under a QA Programme fulfilling the EN ISO 9001 standard.
This certificate is produced electronically and is valid without signature.
Please refer any queries to: (see above)

Validazione - analisi chimica/Validation - Chemical Analysis
Josef Moravek Quality Manager

Validazione - altro/Validation - Others
Jose Abal Lopez,H. Rasmuson Product Manager,

WELDING PROCEDURE QUALIFICATION RECORD (WPQR)

LEVEL 2

N. 21TO00308PW\6A

Manufacturer **CONCRANE S.r.l. - TRIESTE (TS)**

WPQR No. **CCP13 Rev.01 dated 15/07/2021** Dated **21/06/2021**

Manufacturer's welding procedure (WPS) No. **p-CCP13** Dated **17/05/2021**

RANGE OF QUALIFICATION

Welding process	**135**	Type	**Partly mechanized**
Joint type	**Plates and Pipes and build-up FW**		
Single/Multiple pass	**Multiple**	(**Hardness properties apply**)	
Parent material group(s)	**1-1**	ISO/TR 15608; ISO/TR20172; ISO/TR 20173; ISO/TR20174 with a specified minimum yield strength 275 < ReH ≤ 360 Mpa	
Parent material thickness (mm)	Butt Joint = **N.A.**	Fillet Joint t_1 = **3 to 48**	t_2 = **3 to 48**
Throat thickness (mm)	**No restriction**		
Weld deposit thickness (mm)	**N.A.**		
Outside pipe diameter (mm)	**Over 150 (PA, PB, PC rotated positions); Over 500 (Other qualified positions)**		
Filler metal make	**N.A.**	Nr. of wires for process 12: **None**	
Flux make	**N.A.**	Flux Designation: **N.A.**	
Filler metal designation	**Solid wire EN ISO 14341-A G42 4M21 3Si1**		
Shielding gas (ISO 14175)	**M21 with CO_2% min.14,4 max.21,6**	Backing gas (ISO 14175)	**None**
Type of welding current	**DCEP**	Kj/cm **Min 8,7**	
Welding position	**PB**	Transfer Mode **Spray, Pulse and Globular transfer**	
Preheat min. (°C)	+20 (if ISO/TR 17671-2 requirements are fulfilled)	Interpass temp. Max. (°C)	-
Interpass temp. Max. (°C)	+250	Postheat min. (°C) -	Time (minutes) -
Post weld heat treatment / Ageing	**None**	Time (minutes) -	
Other information	**None**		

Welder's/Operator's name	**Radasanu Georgetin Ionut**	Stamp No.	**RG**
Welding test conducted by	**CONCRANE S.r.l. - Trieste (TS)**		
Mechanical test conducted by	**Metal Services Srl - R. d. Legionari (GO)**	Laboratory test No.	**21.0384 Rev.1**
At presence of RINA Surveyor	**F. Sedran**		

We confirm that statements in this record are correct and that the test welds were prepared, welded and tested and have fulfilled the requirements in accordance with **UNI EN ISO 15614-1: 2019** Standard.

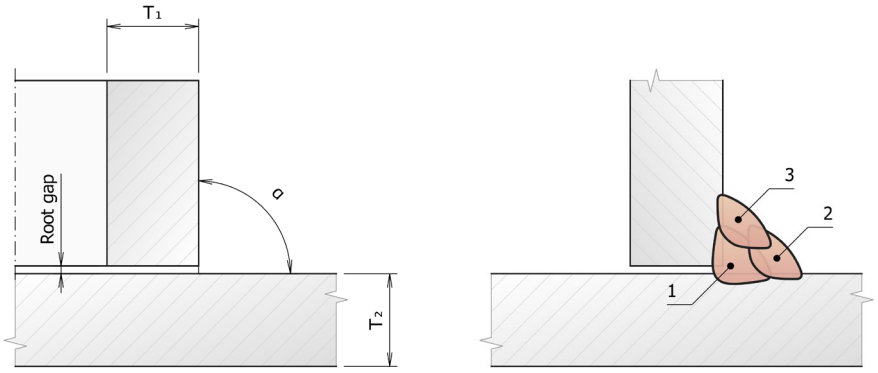
Issued at: Genova on 15 July 2021

RINA Services S.p.A.
PED No. Bo. 0474

Certificate No. 21TO00308PW\6A

RECORD OF WELD TEST

JOINT DETAILS AND WELDING SEQUENCES PLATE TO PLATE T FILLET WELD FROM ONE SIDE CLOSE SQUARE - ml									
Pass No.	Process	Filler metal diam. (mm)	Amps	Volt	Type of Current/ Polarity	Travel speed (cm/min)	Heat input (kJ/cm)	Metal Transfer mode	Other
1	**135**	1,2	275	28,1	**DCEP**	26,3	14,1	**Spray Arc**	-
2	**135**	1,2	276	28,1	**DCEP**	32,1	11,6	**Spray Arc**	-
3	**135**	1,2	271	28,3	**DCEP**	28,8	12,8	**Spray Arc**	-



PARENT MATERIAL

Material specification	**EN 10028-3**		
Type or grade	**P355NH**		
Group(s)/Subgroup(s) No. (ISO/TR 15608; ISO/TR20172; ISO/TR 20173; ISO/TR20174)			**1.2**
Thickness (mm)	**24 to 24**	Throat thickness (mm)	**9,5**
Diameter (mm)	**N.A.**		
Branch connection angle	**N.A.**		
Other	**-**		

WELDING CONSUMABLES

Process	**135S**
Trade name(s)	**ESAB OK AristoRod 12.50**
Specification	**EN ISO 14341-A**
Classification / designation	**G42 4 M21 3Si1**
Size (mm)	**1,2**
Deposited metal thickness	**N.A.**
Groove	**N.A.**
Throat	**9,5 mm**
Flux trade name	**N.A.**
Consumable insert	**N.A.**
Other	**-**

GAS			
	Gas	Mixture	Flow rate (l/min.)
Shielding		**Ar 82% + CO_2 18%**	**18**
Trailing			
Backing			

POSITION

Welding position **PB**

Other **-**

PREHEAT				**POSTWELD HEAT TREATMENT**		
Preheat temperature	**+20°C**			Temperature	**None**	Time -
Interpass temperature	**+250°C**			Method	**-**	
Postheat temperature	**None**	Time	**-**	Other	**-**	

ELECTRICAL CHARACTERISTICS

Current **DCEP**

Ampere (range) **See table** Volts (Range) **See table**

Mode of metal transfer **S (Spray Transfer)**

Tungsten electrode size and type **N.A.**

Pulse welding details **N.A.**

Plasmawelding details **N.A.**

Waveform controlled welding machine - Waveform control mode **-**

Power source - Welding mode Pulse ☐ Non pulse ☑

Other **-**

TECHNIQUE

Travel speed (range) **See table**

String or weave bead **String** Maximum width of run **None**

Oscillation (*) **None** (Amplitude/Frequency/Dwell time)

Method of groove/edge preparation **Flame cutting and Machining**

Interpass cleaning **Grinding/Brushing**

Method of back gouging **N.A.**

Orifice or gas cup size **16**

Distance contact tube/worpiece (*) **15-20 mm**

Multiple or single pass **Multiple**

Multiple or single electrodes **Single**

Torch angle (*) **N.A.**

Other (*) for fully mechanized/robotic only

HARDNESS TEST		
Location	Type/load	Maximum value
Parent metal(s)	**HV10**	**167**
H.A.Z.(s)	**HV10**	**376**
Weld metal	**HV10**	**228**

OTHER TEST

MACROGRAPHIC EXAMINATION	**Acceptable**
MICROGRAPHIC EXAMINATION	**Not required**

NON DESTRUCTIVE EXAMINATION

VISUAL EXAMINATION	**Acceptable**
RADIOGRAPHIC EXAMINATION	**Not required**
PENETRANT TEST	**Not required**
MAGNETIC PARTICLE	**Acceptable**
ULTRASONIC TEST	**Not required**

Issued at: Genova on 15 July 2021

RINA Services S.p.A.
PED No. Bo. 0474

METAL SERVICES
MATERIALS TESTING

TEST REPORT No. 21.0384 Rev.1

ISSUED ON 21/06/2021

This document replace the test report no. 21.0384 Rev.0

Customer

CONCRANE S.r.l.

Via Caboto, 26

34147 Trieste (TS)

INFORMATION

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Test results are only related to the supplied tested samples; the remains of them will be stored and available for not more than 30 days after the test report issuing date, unless differently agreed on the purchase order.
Equipment used are to be intended under metrological validity.
The uncertainty of measurement is expressed as expanded uncertainty obtained by multiplying the combined uncertainty for the coverage factor of k = 2, corresponding to a confidence interval of about 95%.
(+) Supervised test by 3rd part inspector.

MATERIAL RECEPTION

Date	Delivery note no.	Offer no.	Order no.
28/05/2021	21050		-

Sampling data

Sampling and identification executed by the Customer

MATERIAL DESCRIPTION

Sample no.	Identification mark
1239	Sample identified as “pWPS CCP13 – FW plate thk. 24 mm – material DNV-GL EH36/RINA DH36 – welding process GMAW – position 2F – welding consumable ESAB OK AristoRod 12.50 Ø 1.2 mm – AWS A5.18 ER 70S-6 – shielding gas EN ISO 14175 M21 82%Ar + 18% CO2 18/24 l/min“

TEST INDEX

Section no.	Test	Page
1	Visual examination (UNI EN ISO 17637:2017)	2
2	Magnetoscopic examination (UNI EN ISO 17638:2016 – ASTM E709 – API 2X)	2
3	Fracture test (UNI EN ISO 9017:2018)	3
4	Macrographic examination (UNI EN ISO 17639:2013)	3
5	Hardness test on welded joints (UNI EN ISO 9015-1:2011)	4
-	Other reference documents (08833.ENG.MME.SDS Rev.07)	-

NOTE

This document replaces the test report no. 21.0384 Rev.0 and it has been issued in order to integrate data of the field “Material description”.
//

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Firmato digitalmente da:
PELLEGRIN LORENZO
Firmato il 21/06/2021 11:14
Seriale Certificato: 21401746878628221003275909547213633194
Valido dal 01/10/2020 al 01/10/2023
ArubaPEC S.p.A. NG CA 3

Laboratory Manager	Inspector (+)
p.i. L. Pellegrin	RINA S.p.A. F. Sedran

TEST REPORT No. 21.0384 Rev.1

ISSUED ON 21/06/2021

This document replace the test report no. 21.0384 Rev.0

1. VISUAL EXAMINATION

TEST CONDITIONS

Equipment	Visual conditions	Surface conditions	Working step
Weld Gauge, Lamp	Min. 1000 lux on tested surface	As welded	Welds completed
Test method	**Acceptance criteria**	**Procedure of examination**	**Reference drawing**
UNI EN ISO 17638:2016 – ASTM E709 – API 2X	UNI EN ISO 5817:2014 - 08833.ENG.MME.SDS Rev.07	-	CCP13
Heat Treatment	**Extention of the examination**	**-**	**-**
-	100%	-	-

RESULTS

Sample no.	Data	Position	Result of inspection
1239	31/05/2021	-	*Imperfections exceeding the acceptance criteria and their location*: No recordable indications.

Record of indications detected

Weld Id.	*Indication no.*	*Start from*	*Probe*[1]	*Length*	*Depth*[1]	*Probable type of defect*
-	-	-	-	-	-	-

Glossary: //

Note 1: Only for UT examination

2. MAGNETIC PARTICLES TESTING

TEST CONDITIONS

Equipment	Visual conditions	Surface conditions	Working step
Deltaflux DF Y/A S/N 140514	Min. 500 lux on tested surface	Welded	As finished
Contrast paint	**Type of magnetic particles**	**Magnetic particles**	**Type of current**
ProNdt 183	Wet - visible	ProNdt 181	AC
Test method	**Acceptance criteria**	**Procedure of examination**	**Reference drawing**
UNI EN ISO 17640:2018 – API RP 2X	UNI EN ISO 23278:2015 Lev.1 - 08833.ENG.MME.SDS Rev.07	-	CCP13
Heat Treatment	**Extension of the examination**	**Demagnetization**	**Lifting power**
Not declared	100%	Not required	5 Kg

RESULTS

Sample no.	Data	Position	Result of inspection
1239	31/05/2021	-	*Imperfections exceeding the acceptance criteria and their location*: No recordable indications.

Record of indications detected

Weld Id.	*Indication no.*	*Start from*	*Probe*[1]	*Length*	*Depth*[1]	*Probable type of defect*
-	-	-	-	-	-	-

Glossary: //

Note 1: Only for UT examination

3. FRACTURE TEST

Sample no.	Date	Results
1239	29/01/2021	No recordable indications

Instruments: Caliper Sama 18148032.

Glossary: N.R.I.; no recordable indications.

Note: //

NOTE

//

Laboratory Manager	Inspector (+)
p.i. L. Pellegrin	RINA S.p.A. F. Sedran

TEST REPORT No. 21.0384 Rev.1

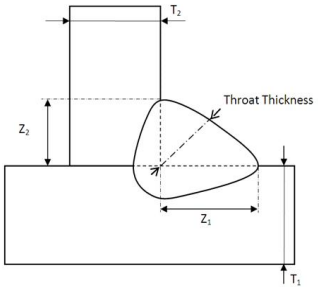
ISSUED ON 21/06/2021

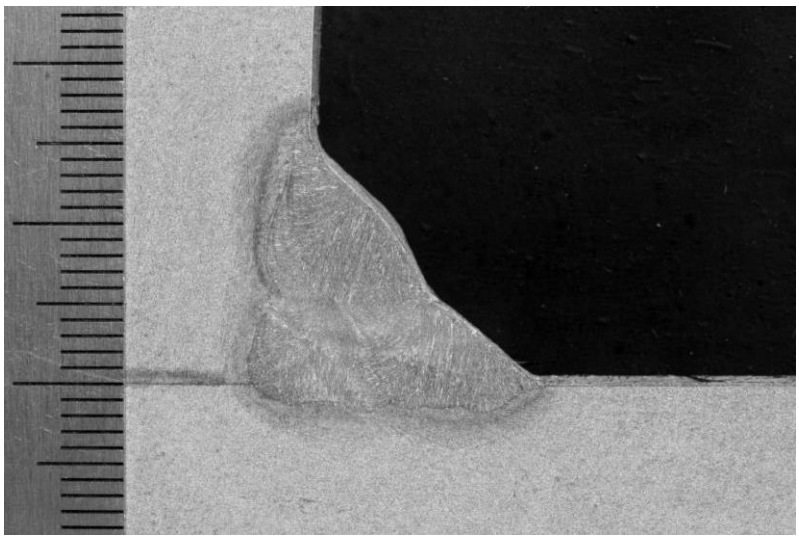
This document replace the test report no. 21.0384 Rev.0

4. MACROGRAPHIC EXAMINATION

Sample no	1239 Macro #1
Date	03/06/2021
Position	T to weld
Etching	HNO3 10%
T_1	24 mm
T_2	24 mm
Z_1	14.9 mm
Z_2	16.6 mm
Throat Thickness	9.5 mm

Sketch





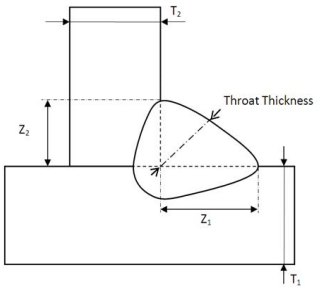
Imperfection

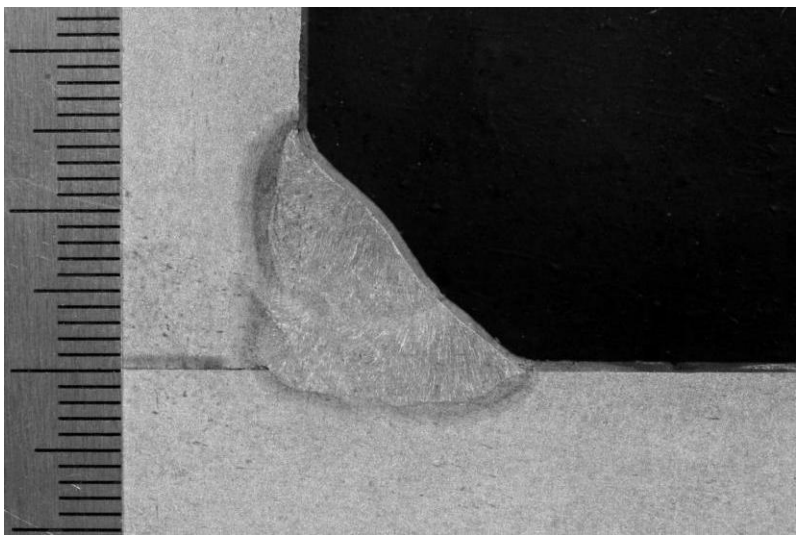
No recordable indications

Instruments: Wild stereomicroscope (serial no.386471309)
Glossary: //
Note: //

Sample no	1239 Macro #2
Date	03/06/2021
Position	T to weld
Etching	HNO3 10%
T_1	24 mm
T_2	24 mm
Z_1	14.9 mm
Z_2	15.4 mm
Throat Thickness	9.8 mm

Sketch





Imperfection

No recordable indications

Instruments: Wild stereomicroscope (serial no.386471309)
Glossary: //
Note: //

Laboratory Manager	Inspector (+)
p.i. L. Pellegrin	RINA S.p.A. F. Sedran

TEST REPORT No. 21.0384 Rev.1

ISSUED ON 21/06/2021

This document replace the test report no. 21.0384 Rev.0

5. HARDNESS TEST ON ARC WELDED JOINTS

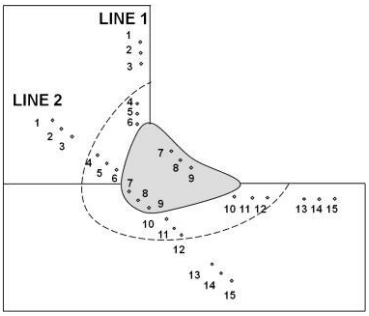
Sample no.	Date	Type of test	Indentation	Position	Line 1 (HV)	Line 2 (HV)	Line 3 (HV)
1239 Macro #1	03/06/2021	HV10	1	BM	160	153	-
			2	BM	156	155	-
			3	BM	168	152	-
			4	HAZ	235	211	-
			5	HAZ	376	266	-
			6	HAZ	375	282	-
			7	WM	221	228	-
			8	WM	224	221	-
			9	WM	223	226	-
			10	HAZ	372	278	-
			11	HAZ	270	209	-
			12	HAZ	206	183	-
			13	BM	161	157	-
			14	BM	167	156	-
			15	BM	156	160	-

Instruments: QNESS Q150+ (serial no. Q1294/02/18)

Glossary: //

Note: //

INDENTATION POSITION



NOTE

//

INSPECTOR NOTES(+)

Laboratory Manager	Inspector (+)
p.i. L. Pellegrin	RINA S.p.A. F. Sedran

TEST REPORT No. 21.0385 Rev.1

ISSUED ON 21/06/2021

This document replace the test report no. 21.0385 Rev.0

Customer

CONCRANE S.r.l.

Via Caboto, 26

34147 Trieste (TS)

INFORMATION

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The uncertainty of measurement is expressed as expanded uncertainty obtained by multiplying the combined uncertainty for the coverage factor of k = 2, corresponding to a confidence interval of about 95%.
(+) Supervised test by 3rd part inspector.

MATERIAL RECEPTION

Date	Delivery note no.	Offer no.	Order no.
28/05/2021	21050		-

Sampling data

Sampling and identification executed by the Customer

MATERIAL DESCRIPTION

Sample no.	Identification mark
1240	Sample identified as "pWPS CCP14 – FW plate thk. 15 mm – material EH36 – welding process GMAW – position 2F – welding consumable ESAB OK AristoRod 12.50 Ø 1.2 mm – AWS A5.18 ER 70S-6 – shielding gas EN ISO 14175 M21 82%Ar + 18% CO2 18/24 l/min"

TEST INDEX

Section no.	Test	Page
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4	Macrographic examination (UNI EN ISO 17639:2013)	3
5	Hardness test on welded joints (UNI EN ISO 9015-1:2011)	4
-	Other reference documents (08833.ENG.MME.SDS Rev.07)	-

NOTE

This document replaces the test report no. 21.0385 Rev.0 and it has been issued in order to integrate data of the field "Material description".
//

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Firmato digitalmente da:
PELLEGRIN LORENZO
Firmato il 21/06/2021 11:14
Seriale Certificato: 21401746878628221003275909547213633194
Valido dal 01/10/2020 al 01/10/2023
ArubaPEC S.p.A. NG CA 3

Laboratory Manager	Inspector (+)
p.i. L. Pellegrin	RINA S.p.A. F. Sedran

A02

CERTIFICATO DI CONTROLLO 3.1 / INSPECTION CERTIFICATE 3.1 - EN 10204:2004

A04/A05

METINVEST
METINVEST TRAMETAL SPA

A01

Società per azioni con socio unico soggetta a direzione e coordinamento di Metinvest B.V
Registered office: Via XII Ottobre, 3 - 16121 Genova, Italy
Phone +39 010 5762911 - Fax +39 010 5762990
Works: Via E. Fermi, 44 - 33058 San Giorgio di Nogaro UD, Italy
Phone +39 0431 629989 - Fax +39 0431 629985
Cap. Soc. Euro 300.120.000,00 i.v.
C.F., P.IVA e Iscr. Reg. Imp. GE 05956630965 - REA 437720/GE
http://trametal.metinvestholding.com

(A) PROCESSO DI ELABORAZIONE / STEELMAKING PROCESS: E = ELECTRIC ; BO = BASIC OXYGEN
(B) STATO DI FORNITURA / DELIVERY CONDITION: AR = GREZZO DI LAMINAZIONE / AS ROLLED ;
N* = LAMINAZIONE A TEMPERATURA CONTROLLATA / NORMALIZING ROLLING ;
N = NORMALIZZATO / NORMALIZED at 910°C, 1,5 min/mm ; ARIA CALMA / STILL AIR;
R = RICOTTO / ANNEALED;
N+R = NORMALIZZATO + RINVENUTO / NORMALIZED + ANNEALED
(C) TRATTAMENTO TERMICO DEL CAMPIONE / HEAT TREATMENT OF SAMPLE:
N = 910°C, 1,5 min/mm ; ARIA CALMA / STILL AIR
R = 650°C, 1,5 min/mm ; ARIA CALMA / STILL AIR
(D) Ceq_1 = C + Mn/6 ; Ceq_2 = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15 ;
Pcm = C + Si/30 + (Mn + Cu + Cr)/20 + NI/60 + Mo/15 + V/10 + B*5
(1) POSIZIONE / LOCATION: 1 = TESTA / TOP ; 2 = PIEDE / BOTTOM
(2) POSIZIONE / LOCATION: C = CUORE / 1/2 THICKNESS ; P = PELLE / SURFACE ; D = 1/4 SPESSORE / THICKNESS
(3) DIREZIONE / DIRECTION: L = LONGITUDINALE / LONGITUDINAL ; T = TRASVERSALE / TRANSVERSE
(4) FORMA DEL PROVINO / SHAPE OF TEST PIECE: P = PRISMATICO / PRISMATIC ; C = CILINDRICO / CYLINDRICAL
(5) ESITO PROVA DI PIEGA / RESULT: OK = COMPLYING ; NO = NOT COMPLYING

A06 Cliente / Customer

TONELLO S.P.A.

VIA D'ORMENT N. 6
33042 BUTTRIO
UD ITALY

TONELLO S.p.A.
CONTROLLO QUALITA'
PER
COPIA CONFORME
CENTRO LAVORAZIONE LAMIERE

A03 N° Certificato / Certificate no.: 377095

Z02 Data / Date: 05/05/2016

A08 N° Ordine Trametal / Works order: 31601531

A07 N° Ordine cliente / Customer's order: B6000428

DDT: BOL 31607710

del / date: 04/05/2016

Pratica / File no.:

del / date:

B06 Marcatura di prodotto / Marking of the product

LAMIERA/ORDINE/N° INFORNAMENTO/DIMENSIONI/QUALITÀ/MARCHIO DEL PRODUTTORE
PLATE/ORDER/INTERNAL N°/DIMENSIONS/STEEL GRADE/MANUFACTURER'S MARK

B01/B02/B03

Prodotto / Product: Lamiere / Hot rolled plates

Qualità / Steel grade: SA516GR70MT/LTV

Normativa / Specification: ASME

B07 ITEM	B07 LAMIERA PLATE	B07 N° INFORN. INTERNAL NUMBER	B09/B11 DIMENSIONI [mm] DIMENSIONS	B12 MASSA TEORICA [t] THEORICAL WEIGHT	B07 LOTTO BATCH NO.	C70 PROCESSO ELAB. (A) STEELMAKING PROCESS	B04 STATO FORNITURA LAMIERA (B) DELIVERY CONDITION	C00 CAMPIONE SAMPLE	B05 TRATT. CAMPIONE (C) HEAT TREATMENT	C00 CAMPIONE PWHT SAMPLE	B05 PWHT BEGINNING TEMPERATURA INIZIO °C	VELOCITA' RISCALDO C/h HEATING RATE	TEMPERATURA TRATTAMENTO °C TEMPERATURE TREATMENT	PERMANENZA Min HOLDING TIME	VELOCITA' RAFFREDDAMENTO °C/h COOLING RATE	TEMPERATURA FINE °C END TEMPERATURE	N° CICLI / CYCLES	C00 CAMPIONE Q+T SAMPLE	B05 Q+T TEMPERATURA (Q) °C TEMPERATURE	PERMANENZA (Q) Min HOLDING TIME	RAFFREDDAMENTO COOLING	TEMPERATURA (T) °C TEMPERATURE	PERMANENZA (T) Min HOLDING TIME	RAFFREDDAMENTO COOLING
~~2~~	~~1NV0820301A~~	~~1260851~~	~~60.00X2500X8500~~	~~10,01~~	~~477019~~	~~BO~~	~~N~~	~~GD930~~																	
3	1NU9741803A	1260333	25.00X2500X6000	2,94	477041	BO	N	GD935		16T319															

C71/C92 COMPOSIZIONE CHIMICA DI COLATA / HEAT CHEMICAL ANALYSIS

B07	C71	C72	C73	C74	C75	C76	C77	C78	C79	C80	C81	C82	C83	C84	C85	C86	C87	C88	C89	C90	C91
COLATA HEAT	C %	Mn %	Si %	P %	S %	Cu %	Ni %	Cr %	Mo %	Al %	V %	Nb %	Ti %	Sn %	Ca %	N %	B %	H %	Ceq1 % (D)	Ceq2 % (D)	Pcm % (D)
Ordine Min 2																					
Ordine Max 2												0,050									
Ordine Min 3																					
Ordine Max 3												0,050									
SA51670LTV Min 12.60 - 50.00		0,85	0,15																		
SA51670LTV Max 12.60 - 50.00	0,28	1,20	0,40	0,035	0,035																
SA51670LTV Min 50.10 - 100.00		0,85	0,15																		
SA51670LTV Max 50.10 - 100.00	0,30	1,20	0,40	0,035	0,035																
1NU974	0,16	1,49	0,26	0,013	0,003	0,030	0,020	0,020	<0.005	0,030	0,004	0,023	0,004	<0.005	0,0000	0,0080	0,0005	0,0002	0,41	0,42	0,25
1NV082	0,17	1,47	0,25	0,012	0,002	0,050	0,020	0,030	<0.005	0,024	<0.005	0,024	<0.005	<0.005	0,0000	0,0070	<0.0005	0,0003	0,42	0,43	0,26

			PROVA DI TRAZIONE TENSILE TEST									PROVA DI RESILIENZA IMPACT TEST - CHARPY V-NOTCH TEST						PROVA DI PIEGA BEND TEST				PROVA DI DUREZZA HARDNESS TEST				PROVA DI STRIZIONE Z% TEST	
C00		C01	C01	C02	C03	C11	C12		C13	C14	C10	C41	C02	C03	C01	C42	C43	C02	C51	C52	C50	C01	C30	C31	C32	C53	C54
CAMPIONE SAMPLE	SPESSORE LAMIERA PLATE THICKNESS	POSIZIONE (1) LOCATION	POSIZIONE (2) LOCATION	DIREZIONE (3) ORIENTATION	TEMPERATURA [°C] TEST TEMPERATURE	ReH [Mpa] YIELD STRENGTH	Rm [Mpa] TENSILE STRENGTH	ReH/Rm	A2" ELONGATION	Rp 0.2 [Mpa] PROOF STRENGTH	FORMA PROVINO (4) SHAPE OF TEST PIECE	LARGHEZZA [mm] WIDTH	DIREZIONE (3) ORIENTATION	TEMPERATURA [°C] TEST TEMPERATURE	POSIZIONE (2) LOCATION	INDIVIDUAL [J] SINGOLI VALORI	MEDIA [J] MEAN VALUE	DIREZIONE (3) ORIENTATION	MANDRINO [mm] MANDREL	ANGOLO [°] ANGLE	ESITO (5) RESULT	POSIZIONE (2) LOCATION	METODO TEST METHOD	SINGOLI VALORI INDIVIDUAL VALUES	MEDIA MEAN VALUE	Z% INDIVIDUAL VALUES Z% SINGOLI VALORI	Z% MEAN VALUE Z% VALORE MEDIO
ORDINE Min 2														-42		20	27										
ORDINE Min 3														-42		20	27										
SA51670LTV Min 0.00 - 25.00													L	-46			20										
SA51670LTV Min 20.10 - 120.00					20		485		17,0	260																	
SA51670LTV Max 20.10 - 120.00					20		620																				
SA51670LTV Min 50.10 - 75.00													L	-35			20										
~~GD930~~	~~60,00~~	~~2~~	~~D~~	~~T~~	~~20~~		~~520~~		~~37,7~~	~~379~~	~~C~~	~~10,00~~	~~L~~	~~-42~~	~~D~~	~~194 199 181~~	~~191~~										
GD935	25,00	2	P	T	20		525		34,0	385	P	10,00	L	-42	P	187 183 189	186										

TONELLO S.p.A. CONTROLLO QUALITA' PER COPIA CONFORME CENTRO LAVORAZIONE LAMIERE

C10

ASME SA-370 FIG. 3 AND FIG. 10 (FIG. 11 a 10x10mm) - SAMPLE TAKEN AFTER PLATE HEAT TREATMENT

D02-D50 CONTROLLO ULTRASONORO / ULTRASONIC EXAMINATION

D02	D03	D04	D05	D06	D07
APPARECCHIATURA EQUIPMENT	N° SERIE SERIAL NO	CONDIZIONI SUPERFICIALI SURFACE CONDITIONS	ACCOPPIANTE COUPLANT	MODALITÀ OPERATIVE PROCEDURE	TARATURA CALIBRATION
GILARDONI RDG450	RDG450-450-140156TC	GREZZO DI LAMINAZIONE AS ROLLED	ACQUA WATER	IN ACCORDO ALLA SPECIFICA ACCORDING TO SPECIFICATION	IN ACCORDO ALLA SPECIFICA ACCORDING TO SPECIFICATION

B07 LAMIERA PLATE	D08 SONDE PROBE	D09 DIAMETRO DIAMETER MM	D10 FREQUENZA FREQUENCE MHZ	D11 ANGOLO Angle °	D12 NORMA DI RIFERIMENTO STANDARD SPECIFICATION	D13 CLASSE DI ACCETTABILITÀ ACCEPTANCE SPECIFICATIONS	D14 ESITO RESULT	D15 INDICAZIONI INDICATIONS	D16 RETICOLO RETICLE	D17 BORDI EDGES
1NV0820301A	DP25/2	mm 25	2 MHz	0	EN 10160 CL. S2 E3		OK	NO INDICATIONS FOUND	mm 100x100	75
1NU9741803A	BDD20/2	mm 20	2 MHz	0	EN 10160 CL. S2 E3		OK	NO INDICATIONS FOUND	mm 100x100	50

D18 NOTE REMARKS	D19 ENTE ISPETTIVO INSPECTOR	D20 FIRMA SIGNATURE
		METINVEST TRAMETAL S.p.a. F. Andrian III Liv. EN ISO 9712

Z01

ITEM		TOLLERANZA DI SPESSORE TOLERANCE ON THICKNESS	TOLLERANZE DI LARGHEZZA TOLERANCE ON WIDTH	TOLLERANZE DI LUNGHEZZA TOLERANCE ON LENGTH	CONDIZIONI SUPERFICIALI SURFACE FINISH	PLANARITÀ FLATNESS
2		EN 10029 CL.B	-0+100 MM	-0+200 MM	EN 10163/2 CL B2	EN 10029 CL. N
3		EN 10029 CL.B	-0+100 MM	-0+200 MM	EN 10163/2 CL B2	EN 10029 CL. N

CERTIFICHIAMO che le lamiere elencate sono conformi alla prescrizione dell'ordine, che i controlli della marcatura, dell'aspetto superficiale e dimensionale hanno dato esito positivo.
WE CERTIFY that the above mentioned plates are consistent with the order prescriptions: marking, inspection and measurement without objection.
DICHIARIAMO CHE LE LAMIERE SONO STATE CONTROLLATE IN ACCORDO ALLA NORMATIVA VIGENTE E CHE LE RADIAZIONI IONIZZANTI NON ECCEDONO IL VALORE DEL FONDO NATURALE.
WE DECLARE THAT THE PLATES WERE CONTROLLED ACCORDING TO STANDARD AND RADIATION DO NOT EXCEED THE NATURAL RADIATION.

Z06

Z07	Z03 ENTE COLLAUDO / INSPECTION BODY	Z02
PRODUCED FROM CONTINOUS CAST SLAB AND HAVE A MINIMUN REDUCTION RATIO OF 3 TO 1. ACCORDING TO ASME II PART A ED. 2013. FULLY KILLED, FINE GRAIN STEEL. Value of Mn maximun in derogation permitted up to 1.50% Plates acc. to PED 97/23/EC	TIMBRO DELL'ISPETTORE STAMP OF THE INSPECTION REPRESENTATIVE	METINVEST TRAMETAL S.p.a. F. Andrian CQ Manager

Certificazione valida per materiale fornitoVi con ns. DDT nr. C1000590 del 20/04/2021 relativo a:

PZ. 6 PART. SAGOMATO A DISEGNO: P06 SP. 25mm
PZ. 2 PART. SAGOMATO A DISEGNO: P03 SP. 25mm
PZ. 2 PART. SAGOMATO A DISEGNO: P04 SP. 25mm
RIF. VS. ORD. EMAIL DEL 13/04/2021
RIF. VS. COMM. URGENTE

CERTIFICATO DI COLLAUDO (3.1) - Analisi Chimica
ATTESTATO DI CONTROLLO (2.2) - Caratteristiche Meccaniche/
INSPECTION CERTIFICATE (3.1) - Chemical analysis
TEST REPORT (2.2) - Mechanical properties

Data/Date: 2021-02-19

Numero certificato/Cert no: EC26329874 rev. 0

Nostro ordine/Our order:	0100206249	Vostro ordine/Your order:	263/2021
Nostro riferimento/Our ref:	HYBRIS PRD account	Vostro riferimento/Your ref:	
Codice Cliente/Cust no:	ITB01537	Vostro numero fax/Your fax	
Data ordine Cliente/Your date:	20210217	Vostra e-mail/Your e-mail:	

Indirizzo di fatturazione/Invoice address
ALLOYS ITALIA SRL
.
VIA DEGLI SCHIAVETTI 9 - ZONA IND.
34074 MONFALCONE
Italy

Destinatario del certificato/Cert receiver

Indirizzo di spedizione/Delivery address
ALLOYS ITALIA SRL
VIA DEGLI SCHIAVETTI 9 - ZONA IND.
34074 MONFALCONE GO
Italy

CONSEGNA/DELIVERY Numero di lotto/Lot no: PVV01022033B Quantità/Quantity: 1098 KGM

PRODOTTO/PRODUCT

Marchio/Brand: ESAB
Descrizione/Desc: OK AristoRod 12.50 1.2mm 18kg
Codice/Item no: **1A50126910**

CLASSIFICAZIONE/CLASSIFICATIONS

EN ISO 14341-A: G 3Si1
EN ISO 14341-A: G 38 3 C1 3Si1
EN ISO 14341-A: G 42 4 M20 3Si1
EN ISO 14341-A: G 42 4 M21 3Si1
SFA/AWS A5.18: ER70S-6
CSA W48: B-G 49A 3 C1 S6
JIS Z 3312: YGW 12 (C1)

COMPOSIZIONE CHIMICA/ CHEMICAL COMPOSITION

Valori reali/Actual results: in accordo a/acc to I 3.1

Wire/strip

Altro/Auxiliary:

C		0.08%
Si		0.83%
Mn		1.47%
P		0.007%
S		0.012%
Cr		0.02%
Ni		0.01%
Mo	<	0.01%
Cu		0.05%
V	<	0.01%
Al		0.007%
Ti+Zr		0.01%

CARATTERISTICHE MECCANICHE/MECH PROPS

Valori tipici/Typical data: in accordo a/acc to EN 10204 - 2.2

Norma/Standard: EN
Altro/Auxiliary: M21
Condizione/Condition:

TRAZIONE/TENSILE

ReL	Rm	A4-A5
470 MPa	560 MPa	26 %

RESILIENZA/IMPACT

Temp	-30 °C	-40 °C	-50 °C
KV	100 J	90 J	70 J

COMMENTI/COMMENTS

Materiale fornito in accordo al Sistema Qualità conforme alla norma EN ISO 9001.
Questo certificato è stampato elettronicamente ed è valido senza firma.
Per ogni chiarimento, rivolgersi a:

ESAB Saldatura S.p.A. | Str. Provinciale 34, n.37 - 20010 Ossona MI, Italy

Product supplied under a QA Programme fulfilling the EN ISO 9001 standard.
This certificate is produced electronically and is valid without signature.
Please refer any queries to: (see above)

Validazione - analisi chimica/Validation - Chemical Analysis
Josef Moravek Quality Manager

Validazione - altro/Validation - Others
Jose Abal Lopez,H. Rasmuson Product Manager,

WELDING PROCEDURE QUALIFICATION RECORD (WPQR)

LEVEL 2

N. 21TO00308PW\7A

Manufacturer **CONCRANE S.r.l. - TRIESTE (TS)**

WPQR No. **CCP14 Rev.01 dared 15/07/2021** Dated **21/06/2021**

Manufacturer's welding procedure (WPS) No. **p-CCP14** Dated **17/05/2021**

RANGE OF QUALIFICATION

Welding process **135** Type **Partly mechanized**

Joint type **Plates and Pipes and build-up FW**

Single/Multiple pass **Single** (**Hardness properties apply**)

Parent material group(s) **1-1** ISO/TR 15608; ISO/TR20172; ISO/TR 20173; ISO/TR20174

with a specified minimum yield strength 275 < ReH ≤ 360 Mpa

DH36; AH36; DH32; AH32; D; B; A according to Pt D, Ch 2, Sec 1 of RINA Rules

Parent material thickness (mm) Butt Joint = **N.A.** Fillet Joint t_1 **= 3 to 30** t_2 **= 3 to 30**

Throat thickness (mm) **4,1 to 8,3**

Weld deposit thickness (mm) **N.A.**

Outside pipe diameter (mm) **Over 150 (PA, PB, PC rotated positions); Over 500 (Other qualified positions) ***

Filler metal make **N.A.** Nr. of wires for process 12: **None**

Flux make **N.A.** Flux Designation: **N.A.**

Filler metal designation **Solid wire EN ISO 14341-A G42 4M21 3Si1**

Shielding gas (ISO 14175) **M21 with CO_2% min.14,4 max.21,6** Backing gas (ISO 14175) **None**

Type of welding current **DCEP** Kj/cm **Min 10,9**

Welding position **PB** Transfer Mode **Spray, Pulse and Globular transfer**

Preheat min. (°C) +20 (if ISO/TR 17671-2 requirements are fulfilled) Interpass temp. Max. (°C) -

Interpass temp. Max. (°C) N.A. Postheat min. (°C) - Time (minutes) **-**

Post weld heat treatment / Ageing **None** Time (minutes) **-**

Other information **(*) Over 500 mm, when RINA Rules apply**

Welder's/Operator's name **Radasanu Georgetin Ionut** Stamp No. **RG**

Welding test conducted by **CONCRANE S.r.l. - Trieste (TS)**

Mechanical test conducted by **Metal Services Srl - R. d. Legionari (GO)** Laboratory test No. **21.0385 Rev.1**

At presence of RINA Surveyor **F. Sedran**

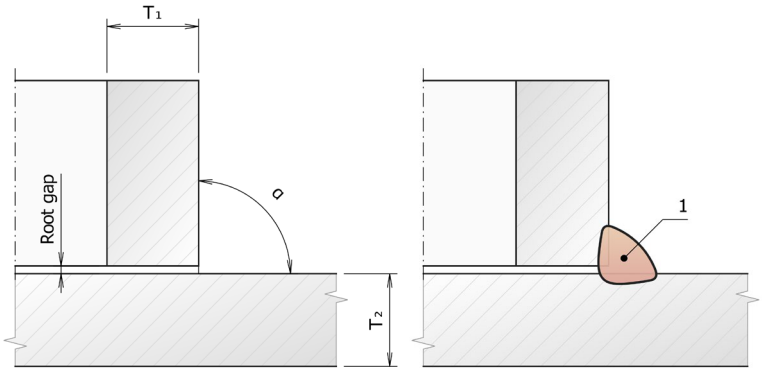
We confirm that statements in this record are correct and that the test welds were prepared, welded and tested and have fulfilled the requirements in accordance with **UNI EN ISO 15614-1: 2019** Standard and **RINA Rules for the Classification of Ships** requirements**.**

Issued at: Genova on 15 July 2021

RINA Services S.p.A.
PED No. Bo. 0474

RECORD OF WELD TEST

JOINT DETAILS AND WELDING SEQUENCES PLATE TO PLATE T FILLET WELD FROM ONE SIDE CLOSE SQUARE - sl									
Pass No.	Process	Filler metal diam. (mm)	Amps	Volt	Type of Current/ Polarity	Travel speed (cm/min)	Heat input (kJ/cm)	Metal Transfer mode	Other
1	**135**	1,2	276	28,3	**DCEP**	25,5	14,5	**Spray Arc**	-



PARENT MATERIAL

Material specification	**EN 10028-3 (Pt D, Ch 2, Sec 1 of RINA Rules)**		
Type or grade	**P355NH (DH36)**		
Group(s)/Subgroup(s) No. (ISO/TR 15608; ISO/TR20172; ISO/TR 20173; ISO/TR20174)			**1.2**
Thickness (mm)	**15 to 15**	Throat thickness (mm)	**5,5**
Diameter (mm)	**N.A.**		
Branch connection angle	**N.A.**		
Other	**-**		

WELDING CONSUMABLES

Process	**135S**
Trade name(s)	**ESAB OK AristoRod 12.50**
Specification	**EN ISO 14341-A**
Classification / designation	**G42 4 M21 3Si1**
Size (mm)	**1,2**
Deposited metal thickness	**N.A.**
Groove	**N.A.**
Throat	**5,5 mm**
Flux trade name	**N.A.**
Consumable insert	**N.A.**
Other	**-**

GAS			
	Gas	Mixture	Flow rate (l/min.)
Shielding		**Ar 82% + CO_2 18%**	**18**
Trailing			
Backing			

POSITION

Welding position **PB**

Other **-**

PREHEAT				**POSTWELD HEAT TREATMENT**			
Preheat temperature	**+20°C**			Temperature	**None**	Time	-
Interpass temperature	**N.A.**			Method	**-**		
Postheat temperature	**None**	Time	**-**	Other	**-**		

ELECTRICAL CHARACTERISTICS

Current **DCEP**

Ampere (range) **See table** Volts (Range) **See table**

Mode of metal transfer **S (Spray Transfer)**

Tungsten electrode size and type **N.A.**

Pulse welding details **N.A.**

Plasmawelding details **N.A.**

Waveform controlled welding machine - Waveform control mode **-**

Power source - Welding mode Pulse ☐ Non pulse ☑

Other **-**

TECHNIQUE

Travel speed (range) **See table**

String or weave bead **String** Maximum width of run **None**

Oscillation (*) **None** (Amplitude/Frequency/Dwell time)

Method of groove/edge preparation **Flame cutting and Machining**

Interpass cleaning **N.A.**

Method of back gouging **N.A.**

Orifice or gas cup size **16**

Distance contact tube/worpiece (*) **15-20 mm**

Multiple or single pass **Single**

Multiple or single electrodes **Single**

Torch angle (*) **N.A.**

Other (*) for fully mechanized/robotic only

HARDNESS TEST		
Location	Type/load	Maximum value
Parent metal(s)	**HV10**	**169**
H.A.Z.(s)	**HV10**	**259**
Weld metal	**HV10**	**222**

OTHER TEST

MACROGRAPHIC EXAMINATION	**Acceptable**
MICROGRAPHIC EXAMINATION	**Not required**

NON DESTRUCTIVE EXAMINATION

VISUAL EXAMINATION	**Acceptable**
RADIOGRAPHIC EXAMINATION	**Not required**
PENETRANT TEST	**Not required**
MAGNETIC PARTICLE	**Acceptable**
ULTRASONIC TEST	**Not required**

Issued at: Genova on 15 July 2021

RINA Services S.p.A.
PED No. Bo. 0474

METAL SERVICES
MATERIALS TESTING

TEST REPORT No. 21.0385 Rev.1

ISSUED ON 21/06/2021

This document replace the test report no. 21.0385 Rev.0

Customer

CONCRANE S.r.l.

Via Caboto, 26

34147 Trieste (TS)

INFORMATION

The present test report cannot be modified and cannot be reproduced in a partial way without the formal written approval of Metal Services Materials Testing Srl.
Test results are only related to the supplied tested samples; the remains of them will be stored and available for not more than 30 days after the test report issuing date, unless differently agreed on the purchase order.
Equipment used are to be intended under metrological validity.
The uncertainty of measurement is expressed as expanded uncertainty obtained by multiplying the combined uncertainty for the coverage factor of k = 2, corresponding to a confidence interval of about 95%.
(+) Supervised test by 3rd part inspector.

MATERIAL RECEPTION

Date	Delivery note no.	Offer no.	Order no.
28/05/2021	21050		-

Sampling data

Sampling and identification executed by the Customer

MATERIAL DESCRIPTION

Sample no.	Identification mark
1240	Sample identified as "pWPS CCP14 – FW plate thk. 15 mm – material EH36 – welding process GMAW – position 2F – welding consumable ESAB OK AristoRod 12.50 Ø 1.2 mm – AWS A5.18 ER 70S-6 – shielding gas EN ISO 14175 M21 82%Ar + 18% CO2 18/24 l/min"

TEST INDEX

Section no.	Test	Page
1	Visual examination (UNI EN ISO 17637:2017)	2
2	Magnetoscopic examination (UNI EN ISO 17638:2016 – ASTM E709 – API 2X)	2
3	Fracture test (UNI EN ISO 9017:2018)	3
4	Macrographic examination (UNI EN ISO 17639:2013)	3
5	Hardness test on welded joints (UNI EN ISO 9015-1:2011)	4
-	Other reference documents (08833.ENG.MME.SDS Rev.07)	-

NOTE

This document replaces the test report no. 21.0385 Rev.0 and it has been issued in order to integrate data of the field "Material description".
//

RESERVED FOR DIGITAL SIGNATURE

Firmato digitalmente da:
PELLEGRIN LORENZO
Firmato il 21/06/2021 11:14
Seriale Certificato: 21401746878628221003275909547213633194
Valido dal 01/10/2020 al 01/10/2023
ArubaPEC S.p.A. NG CA 3

Laboratory Manager	Inspector (+)
p.i. L. Pellegrin	RINA S.p.A. F. Sedran

TEST REPORT No. 21.0385 Rev.1

ISSUED ON 21/06/2021

This document replace the test report no. 21.0385 Rev.0

1. VISUAL EXAMINATION

TEST CONDITIONS

Equipment	Visual conditions	Surface conditions	Working step
Weld Gauge, Lamp	Min. 1000 lux on tested surface	As welded	Welds completed
Test method	**Acceptance criteria**	**Procedure of examination**	**Reference drawing**
UNI EN ISO 17638:2016 – ASTM E709 – API 2X	UNI EN ISO 5817:2014 - 08833.ENG.MME.SDS Rev.07	-	CCP14
Heat Treatment	**Extention of the examination**	**-**	**-**
-	100%	-	-

RESULTS

Sample no.	Data	Position	Result of inspection
1240	31/05/2021	-	*Imperfections exceeding the acceptance criteria and their location*: No recordable indications.

Record of indications detected

Weld Id.	*Indication no.*	*Start from*	*Probe*[1]	*Length*	*Depth*[1]	*Probable type of defect*
-	-	-	-	-	-	-

Glossary: //

Note 1: Only for UT examination

2. MAGNETIC PARTICLES TESTING

TEST CONDITIONS

Equipment	Visual conditions	Surface conditions	Working step
Deltaflux DF Y/A S/N 140514	Min. 500 lux on tested surface	Welded	As finished
Contrast paint	**Type of magnetic particles**	**Magnetic particles**	**Type of current**
ProNdt 183	Wet - visible	ProNdt 181	AC
Test method	**Acceptance criteria**	**Procedure of examination**	**Reference drawing**
UNI EN ISO 17640:2018 – API RP 2X	UNI EN ISO 23278:2015 Lev.1 - 08833.ENG.MME.SDS Rev.07	-	CCP14
Heat Treatment	**Extension of the examination**	**Demagnetization**	**Lifting power**
Not declared	100%	Not required	5 Kg

RESULTS

Sample no.	Data	Position	Result of inspection
1240	31/05/2021	-	*Imperfections exceeding the acceptance criteria and their location*: No recordable indications.

Record of indications detected

Weld Id.	*Indication no.*	*Start from*	*Probe*[1]	*Length*	*Depth*[1]	*Probable type of defect*
-	-	-	-	-	-	-

Glossary: //

Note 1: Only for UT examination

3. FRACTURE TEST

Sample no.	Date	Results
1240	29/01/2021	No recordable indications

Instruments: Caliper Sama 18148032.

Glossary: N.R.I.; no recordable indications.

Note: //

NOTE

//

Laboratory Manager	Inspector (+)
p.i. L. Pellegrin	RINA S.p.A. F. Sedran

TEST REPORT No. 21.0385 Rev.1

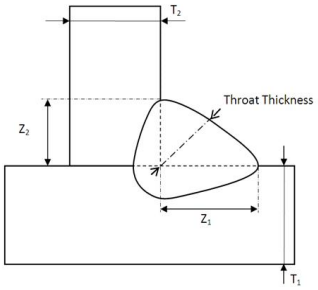
ISSUED ON 21/06/2021

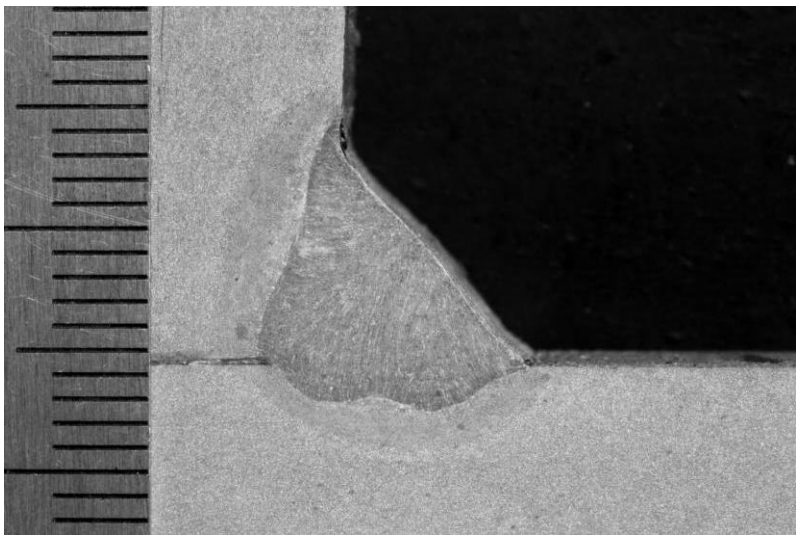
This document replace the test report no. 21.0385 Rev.0

4. MACROGRAPHIC EXAMINATION

Sample no	1240 Macro #1
Date	03/06/2021
Position	T to weld
Etching	HNO3 10%
T_1	15 mm
T_2	15 mm
Z_1	7.9 mm
Z_2	10.5 mm
Throat Thickness	5.5 mm

Sketch



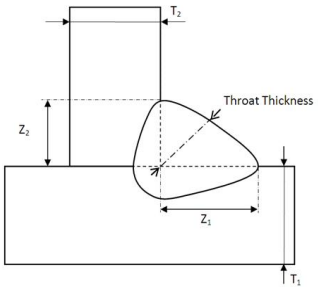


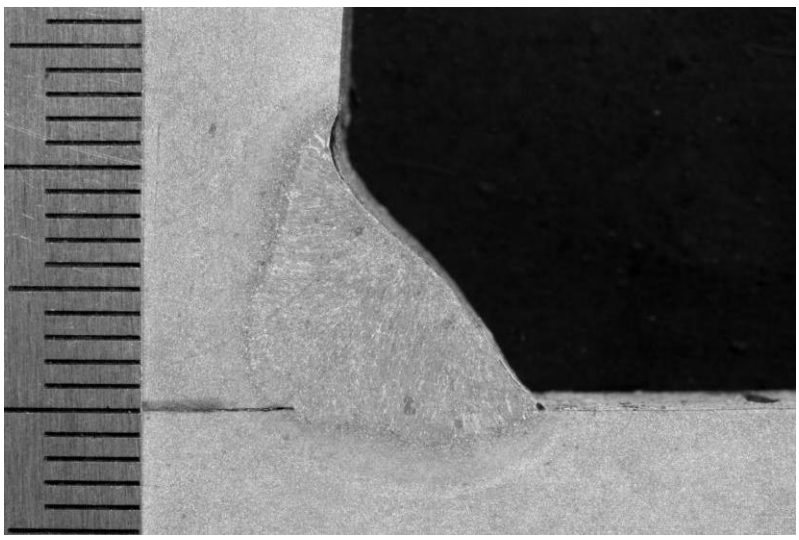
Imperfection
No recordable indications

Instruments: Wild stereomicroscope (serial no.386471309)
Glossary: //
Note: //

Sample no	1240 Macro #2
Date	03/06/2021
Position	T to weld
Etching	HNO3 10%
T_1	15 mm
T_2	15 mm
Z_1	8.9 mm
Z_2	12.5 mm
Throat Thickness	6.2 mm

Sketch





Imperfection
No recordable indications

Instruments: Wild stereomicroscope (serial no.386471309)
Glossary: //
Note: //

Laboratory Manager	Inspector (+)
p.i. L. Pellegrin	RINA S.p.A. F. Sedran

TEST REPORT No. 21.0385 Rev.1

ISSUED ON 21/06/2021

This document replace the test report no. 21.0385 Rev.0

5. HARDNESS TEST ON ARC WELDED JOINTS

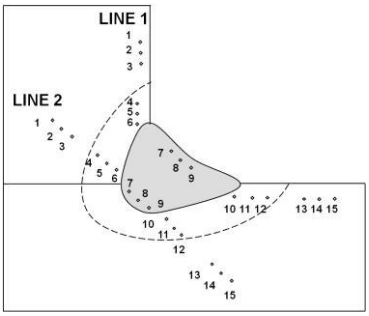
Sample no.	Date	Type of test	Indentation	Position	Line 1 (HV)	Line 2 (HV)	Line 3 (HV)
1240 Macro #1	03/06/2021	HV10	1	BM	153	151	-
			2	BM	153	152	-
			3	BM	151	153	-
			4	HAZ	191	183	-
			5	HAZ	236	198	-
			6	HAZ	259	256	-
			7	WM	212	203	-
			8	WM	218	206	-
			9	WM	222	207	-
			10	HAZ	257	258	-
			11	HAZ	201	222	-
			12	HAZ	170	188	-
			13	BM	152	159	-
			14	BM	152	157	-
			15	BM	153	169	-

Instruments: QNESS Q150+ (serial no. Q1294/02/18)

Glossary: //

Note: //

INDENTATION POSITION



NOTE

//

INSPECTOR NOTES(+)

Laboratory Manager	Inspector (+)
p.i. L. Pellegrin	RINA S.p.A. F. Sedran

CERTIFICATO DI CONTROLLO 3.2 / INSPECTION CERTIFICATE 3.2 - EN 10204:2004

METINVEST
METINVEST TRAMETAL SPA

Società per azioni con socio unico soggetta a direzione e coordinamento di Metinvest B.V
Registered office: Via XII Ottobre, 3 - 16121 Genova, Italy
Phone +39 010 5762911 - Fax +39 010 5762990
Works: Via E. Fermi, 44 - 33058 San Giorgio di Nogaro UD, Italy
Phone +39 0431 629989 - Fax +39 0431 629985
Cap. Soc. Euro 300.120.000,00 i.v.
C.F., P.IVA e Iscr. Reg. Imp. GE 05956630965 - REA 437720/GE
http://trametal.metinvestholding.com

(A) PROCESSO DI ELABORAZIONE / STEELMAKING PROCESS: E = ELECTRIC ; BO = BASIC OXYGEN
(B) STATO DI FORNITURA / DELIVERY CONDITION: AR = GREZZO DI LAMINAZIONE / AS ROLLED ;
N* = LAMINAZIONE A TEMPERATURA CONTROLLATA / NORMALIZING ROLLING ;
N = NORMALIZZATO / NORMALIZED at 910°C, 1,5 min/mm ; ARIA CALMA / STILL AIR;
R = RICOTTO / ANNEALED;
N+R = NORMALIZZATO + RINVENUTO / NORMALIZED + TEMPERED
(C) TRATTAMENTO TERMICO DEL CAMPIONE / HEAT TREATMENT OF SAMPLE:
N = 910°C, 1,5 min/mm ; ARIA CALMA / STILL AIR
R = 650°C, 1,5 min/mm ; ARIA CALMA / STILL AIR
(D) Ceq_1 = C + Mn/6 ; Ceq_2 = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15 ;
Pcm = C + Si/30 + (Mn + Cu + Cr)/20 + Nl/60 + Mo/15 + V/10 + B*5
(1) POSIZIONE / LOCATION: 1 = TESTA / TOP ; 2 = PIEDE / BOTTOM
(2) POSIZIONE / LOCATION: C = CUORE / 1/2 THICKNESS ; P = PELLE / SURFACE ; D = 1/4 SPESSORE / THICKNESS
(3) DIREZIONE / DIRECTION: L = LONGITUDINALE / LONGITUDINAL ; T = TRASVERSALE / TRANSVERSE
(4) FORMA DEL PROVINO / SHAPE OF TEST PIECE: P = PRISMATICO / PRISMATIC ; C = CILINDRICO / CYLINDRICAL
(5) ESITO PROVA DI PIEGA / RESULT: OK = COMPLYING ; NO = NOT COMPLYING

A06 Cliente / Customer

TONELLO S.P.A.
VIA D'ORMENT N. 6
33042 BUTTRIO 33042 IT
UD ITALIA

A03 N° Certificato / Certificate no.	Z02 Data / Date
47645	12/12/2019
A08 N° Ordine Trametal / Works order	A07 N° Ordine cliente / Customer's order
31904901	B9001117
DDT	del / date
Pratica / File no.	N141X66X
del / date	09/12/2019

B06 Marcatura di prodotto / Marking of the product
LAMIERA/ORDINE/N° INFORNAMENTO/DIMENSIONI/QUALITÀ/MARCHIO DEL PRODUTTORE
PLATE/ORDER/INTERNAL N°/DIMENSIONS/STEEL GRADE/MANUFACTURER'S MARK

B01/B02/B03

Prodotto / Product	Lamiere / Hot rolled plates
Qualità / Steel grade	VL E36
Normativa / Specification	IACS-DNVGL

B07 ITEM	B07 LAMIERA PLATE	B07 N° INFORN. INTERNAL NUMBER	B09/B11 DIMENSIONI [mm] DIMENSIONS	B12 MASSA TEORICA [t] THEORICAL WEIGHT	B07 LOTTO BATCH NO.	C70 PROCESSO ELAB. (A) STEELMAKING PROCESS	B04 STATO FORNITURA LAMIERA (B) DELIVERY CONDITION	C00 CAMPIONE SAMPLE	B05 TRATT. CAMPIONE (C) HEAT TREATMENT	C00 CAMPIONE PWHT SAMPLE	B05 PWHT TEMPERATURA INIZIO °C BEGINNING TEMPERATURE	VELOCITA' RISCALDO C/h HEATING RATE	TEMPERATURA TRATTAMENTO °C TEMPERATURE TREATMENT	PERMANENZA Min HOLDING TIME	VELOCITA' RAFFREDDAMENTO °C/h COOLING RATE	TEMPERATURA FINE °C END TEMPERATURE	N° CICLI / CYCLES	C00 CAMPIONE Q+T SAMPLE	B05 Q+T TEMPERATURA (Q) °C TEMPERATURE	PERMANENZA (Q) Min HOLDING TIME	RAFFREDDAMENTO COOLING	TEMPERATURA (T) °C TEMPERATURE	PERMANENZA (T) Min HOLDING TIME	RAFFREDDAMENTO COOLING
1	1TAN850407A	1590166	15.00X2450X12000	3,46	632914	BO	N	W7849		19T829															
~~2~~	~~1NAM330204A~~	~~1590652~~	~~30.00X2450X6300~~	~~3,63~~	~~632911~~	~~BO~~	~~N~~	~~W7846~~																	
~~3~~	~~1NAM960403A~~	~~1590606~~	~~35.00X2450X7200~~	~~4,85~~	~~632912~~	~~BO~~	~~N~~	~~W7847~~																	
~~4~~	~~1NAM960503A~~	~~1590550~~	~~50.00X2450X6300~~	~~6,06~~	~~632913~~	~~BO~~	~~N~~	~~W7848~~																	
	Total	4		18,00																					

TONELLO S.p.A.
CONTROLLO QUALITA'
PER
COPIA CONFORME
CENTRO LAVORAZIONE LAMIERE

C71/C92 COMPOSIZIONE CHIMICA DI COLATA / HEAT CHEMICAL ANALYSIS

B07 COLATA HEAT	C71 C %	C72 Mn %	C73 Si %	C74 P %	C75 S %	C76 Cu %	C77 Ni %	C78 Cr %	C79 Mo %	C80 Al %	C81 V %	C82 Nb %	C83 Ti %	C84 Sn %	C85 Ca %	C86 N %	C87 B %	C88 H %	C89 Ceq1 % (D)	C90 Ceq2 % (D)	C91 Pcm % (D)
VL E36 Min 0.00 - 100.00		0,90								0,020	0,050	0,020	0,007								
VL E36 Max 0.00 - 100.00	0,18	1,60	0,50	0,035	0,035	0,350	0,400	0,200	0,080		0,100	0,050	0,020								
1NAM33	0,16	1,50	0,20	0,012	0,003	0,060	0,040	0,030	<0.005	0,035	<0.005	0,021	<0.005	<0.005	0,0000	0,0080	0,0005	0,0002	0,41	0,42	0,25
1NAM96	0,16	1,49	0,20	0,012	0,002	0,040	0,030	0,020	<0.005	0,035	<0.005	0,020	<0.005	<0.005	0,0000	0,0070	<0.0005	0,0002	0,41	0,42	0,24
1TAN85	0,16	1,51	0,22	0,008	0,002	0,030	0,020	0,030	<0.005	0,037	<0.005	<0.010	<0.005	<0.005	0,0000	0,0070	<0.0005	0,0004	0,41	0,42	0,25

	PROVA DI TRAZIONE TENSILE TEST								PROVA DI RESILIENZA IMPACT TEST - CHARPY V-NOTCH TEST						PROVA DI PIEGA BEND TEST				PROVA DI DUREZZA HARDNESS TEST				PROVA DI STRIZIONE Z% TEST	
C00		C01	C01	C02	C03	C11	C12	C13	C14	C10	C41	C02	C03	C01	C42	C43	C02	C51	C52	C50	C01	C30	C31	C32	C53	C54
CAMPIONE SAMPLE	PLATE THICKNESS SPESSORE LAMIERA	POSIZIONE (1) LOCATION	POSIZIONE (2) LOCATION	DIREZIONE (3) ORIENTATION	TEMPERATURA [°C] TEST TEMPERATURE	ReH [Mpa] YIELD STRENGTH	Rm [Mpa] TENSILE STRENGTH	ReH/Rm	A% ELONGATION	FORMA PROVINO (4) SHAPE OF TEST PIECE	LARGHEZZA [mm] WIDTH	DIREZIONE (3) ORIENTATION	TEMPERATURA [°C] TEST TEMPERATURE	POSIZIONE (2) LOCATION	SINGOLI VALORI [J] INDIVIDUAL VALUES	MEDIA [J] MEAN VALUE	DIREZIONE (3) ORIENTATION	MANDRINO [mm] MANDREL	ANGOLO [°] ANGLE	ESITO (5) RESULT	POSIZIONE (2) LOCATION	METODO TEST METHOD	SINGOLI VALORI INDIVIDUAL VALUES	MEDIA MEAN VALUE	Z% SINGOLI VALORI Z% INDIVIDUAL VALUES	Z% VALORE MEDIO Z% MEAN VALUE
VL E36 Min 0.00 - 100.00					20	355	490		21,0																	

			PROVA DI TRAZIONE TENSILE TEST									PROVA DI RESILIENZA IMPACT TEST - CHARPY V-NOTCH TEST						PROVA DI PIEGA BEND TEST				PROVA DI DUREZZA HARDNESS TEST				PROVA DI STRIZIONE Z% TEST	
C00		C01	C01	C02	C03	C11	C12		C13	C14	C10	C41	C02	C03	C01	C42	C43	C02	C51	C52	C50	C01	C30	C31	C32	C53	C54
CAMPIONE SAMPLE	SPESSORE LAMIERA PLATE THICKNESS	POSIZIONE (1) LOCATION	POSIZIONE (2) LOCATION	DIREZIONE (3) ORIENTATION	TEMPERATURA [°C] TEST TEMPERATURE	ReH [Mpa] YIELD STRENGTH	Rm [Mpa] TENSILE STRENGTH	ReH/Rm	A% ELONGATION	Rp 0.2 [Mpa] PROOF/YIELD STRENGTH	FORMA PROVINO (4) SHAPE OF TEST PIECE	LARGHEZZA [mm] WIDTH	DIREZIONE (3) ORIENTATION	TEMPERATURA [°C] TEST TEMPERATURE	POSIZIONE (2) LOCATION	SINGOLI VALORI [J] INDIVIDUAL VALUES	MEDIA [J] MEAN VALUE	DIREZIONE (3) ORIENTATION	MANDRINO [mm] MANDREL	ANGOLO [°] ANGLE	ESITO (5) RESULT	POSIZIONE (2) LOCATION	METODO TEST METHOD	SINGOLI VALORI INDIVIDUAL VALUES	MEDIA MEAN VALUE	Z% SINGOLI VALORI Z% INDIVIDUAL VALUES	Z% VALORE MEDIO Z% MEAN VALUE
VL E36 Max 0.00 - 100.00					20		630																				
VL E36 Min 6.00 - 50.00													L	-40			34										
~~W7846~~	~~30,00~~	~~2~~	~~P~~	~~T~~	~~20~~	~~401~~	~~522~~	~~0,77~~	~~32,7~~		~~P~~	~~10,00~~	~~L~~	~~-40~~	~~P~~	~~233 250 254~~	~~246~~											
~~W7847~~	~~35,00~~	~~2~~	~~P~~	~~T~~	~~20~~	~~380~~	~~511~~	~~0,74~~	~~32,3~~		~~P~~	~~10,00~~	~~L~~	~~-40~~	~~P~~	~~284 291 276~~	~~284~~											
~~W7848~~	~~50,00~~	~~2~~	~~P~~	~~T~~	~~20~~	~~378~~	~~528~~	~~0,72~~	~~30,0~~		~~P~~	~~10,00~~	~~L~~	~~-40~~	~~P~~	~~206 185 187~~	~~193~~											
W7849	15,00	2	P	T	20	413	513	0,81	31,8		P	10,00	L	-40	P	271 243 263	259										

C10
UNI EN ISO 6892-1:2016 / UNI EN ISO 148-1:2016

Z01

ITEM		TOLLERANZA DI SPESSORE TOLERANCE ON THICKNESS	TOLLERANZE DI LARGHEZZA TOLERANCE ON WIDTH	TOLLERANZE DI LUNGHEZZA TOLERANCE ON LENGTH	CONDIZIONI SUPERFICIALI SURFACE FINISH	PLANARITÀ FLATNESS
1		EN 10029 CL.B	-0+100 MM	-0+200 MM	EN 10163/2 CL B2	EN 10029 CL. N
2		EN 10029 CL.B	-0+100 MM	-0+200 MM	EN 10163/2 CL B2	EN 10029 CL. N
3		EN 10029 CL.B	-0+100 MM	-0+200 MM	EN 10163/2 CL B2	EN 10029 CL. N
4		EN 10029 CL.B	-0+100 MM	-0+200 MM	EN 10163/2 CL B2	EN 10029 CL. N

CERTIFICHIAMO che le lamiere elencate sono conformi alla prescrizione dell'ordine, che i controlli della marcatura, dell'aspetto superficiale e dimensionale hanno dato esito positivo.
WE CERTIFY that the above mentioned plates are consistent with the order prescriptions: marking, inspection and measurement without objection.
DICHIARIAMO CHE LE LAMIERE SONO STATE CONTROLLATE IN ACCORDO ALLA NORMATIVA VIGENTE E CHE LE RADIAZIONI IONIZZANTI NON ECCEDONO IL VALORE DEL FONDO NATURALE.
WE DECLARE THAT THE PLATES WERE CONTROLLED ACCORDING TO STANDARD AND RADIATION DO NOT EXCEED THE NATURAL RADIATION.

Z06

Z07

Z03 ENTE COLLAUDO / INSPECTION BODY

TIMBRO DELL'ISPETTORE
STAMP OF THE INSPECTION REPRESENTATIVE

X Witnessed
And found to comply with:
DNV GL Rules
Date: 2019-12-12
Sign: Marco Bernl
DNV GL Venice

This document has been digitally signed and will therefore not have handwritten signatures.

Z02

METINVEST TRAMETAL S.p.A.
F. Andrian
CQ Manager

Certificazione valida per materiale fornitoVi con ns. DDT nr. C1000590 del 20/04/2021 relativo a:

PZ. 2 PART. SAGOMATO A DISEGNO: P01 SP. 15mm
PZ. 2 PART. SAGOMATO A DISEGNO: P02 SP. 15mm
PZ. 6 PART. SAGOMATO A DISEGNO: P05 SP. 15mm
RIF. VS. ORD. EMAIL DEL 13/04/2021
RIF. VS. COMM. URGENTE

TONELLO S.p.A.
CONTROLLO QUALITA'
PER
COPIA CONFORME
CENTRO LAVORAZIONE LAMIERE

CERTIFICATO DI COLLAUDO (3.1) - Analisi Chimica
ATTESTATO DI CONTROLLO (2.2) - Caratteristiche Meccaniche/
INSPECTION CERTIFICATE (3.1) - Chemical analysis
TEST REPORT (2.2) - Mechanical properties

Data/Date: 2021-02-19

Numero certificato/Cert no: EC26329874 rev. 0

Nostro ordine/Our order:	0100206249	Vostro ordine/Your order:	263/2021
Nostro riferimento/Our ref:	HYBRIS PRD account	Vostro riferimento/Your ref:	
Codice Cliente/Cust no:	ITB01537	Vostro numero fax/Your fax	
Data ordine Cliente/Your date:	20210217	Vostra e-mail/Your e-mail:	

Indirizzo di fatturazione/Invoice address
ALLOYS ITALIA SRL
.
VIA DEGLI SCHIAVETTI 9 - ZONA IND.
34074 MONFALCONE
Italy

Destinatario del certificato/Cert receiver

Indirizzo di spedizione/Delivery address
ALLOYS ITALIA SRL
VIA DEGLI SCHIAVETTI 9 - ZONA IND.
34074 MONFALCONE GO
Italy

CONSEGNA/DELIVERY Numero di lotto/Lot no: PVV01022033B Quantità/Quantity: 1098 KGM

PRODOTTO/PRODUCT

Marchio/Brand: ESAB
Descrizione/Desc: OK AristoRod 12.50 1.2mm 18kg
Codice/Item no: **1A50126910**

CLASSIFICAZIONE/CLASSIFICATIONS

EN ISO 14341-A: G 3Si1
EN ISO 14341-A: G 38 3 C1 3Si1
EN ISO 14341-A: G 42 4 M20 3Si1
EN ISO 14341-A: G 42 4 M21 3Si1
SFA/AWS A5.18: ER70S-6
CSA W48: B-G 49A 3 C1 S6
JIS Z 3312: YGW 12 (C1)

CARATTERISTICHE MECCANICHE/MECH PROPS

Valori tipici/Typical data: in accordo a/acc to EN 10204 - 2.2

Norma/Standard: EN
Altro/Auxiliary: M21
Condizione/Condition:

TRAZIONE/TENSILE

ReL	Rm	A4-A5
470 MPa	560 MPa	26 %

RESILIENZA/IMPACT

Temp	-30 °C	-40 °C	-50 °C
KV	100 J	90 J	70 J

COMPOSIZIONE CHIMICA/ CHEMICAL COMPOSITION

Valori reali/Actual results: in accordo a/acc to I 3.1

Wire/strip

Altro/Auxiliary:

C		0.08%
Si		0.83%
Mn		1.47%
P		0.007%
S		0.012%
Cr		0.02%
Ni		0.01%
Mo	<	0.01%
Cu		0.05%
V	<	0.01%
Al		0.007%
Ti+Zr		0.01%

COMMENTI/COMMENTS

Materiale fornito in accordo al Sistema Qualità conforme alla norma EN ISO 9001.
Questo certificato è stampato elettronicamente ed è valido senza firma.
Per ogni chiarimento, rivolgersi a:

ESAB Saldatura S.p.A. | Str. Provinciale 34, n.37 - 20010 Ossona MI, Italy

Product supplied under a QA Programme fulfilling the EN ISO 9001 standard.
This certificate is produced electronically and is valid without signature.
Please refer any queries to: (see above)

Validazione - analisi chimica/Validation - Chemical Analysis
Josef Moravek Quality Manager

Validazione - altro/Validation - Others
Jose Abal Lopez,H. Rasmuson Product Manager,

WELDING PROCEDURE QUALIFICATION RECORD (WPQR)

LEVEL 2

N. 21TO00308PW\2A

Manufacturer **CONCRANE S.r.l. - TRIESTE (TS)**

WPQR No. **CCP09 Rev.01 dated 15/07/2021** Dated **21/06/2021**

Manufacturer's welding procedure (WPS) No. **p-CCP09** Dated **17/05/2021**

RANGE OF QUALIFICATION

Welding process	**135**	Type	**Partly mechanized**
Joint type	**Plates and Pipes and build-up BW ssnb-ssmb-bs/FW**		
Single/Multiple pass	**Multiple**	(**Impact and Hardness properties apply**)	
Parent material group(s)	**1-1**	ISO/TR 15608; ISO/TR20172; ISO/TR 20173; ISO/TR20174 with a specified minimum yield strength 275 < ReH ≤ 360 Mpa	
Parent material thickness (mm)	Butt Joint = **12 to 48**	Fillet Joint t_1 = **3 to 48**	t_2 = **3 to 48**
Throat thickness (mm)	**No restriction**		
Weld deposit thickness (mm)	**Max 48 mm**		
Outside pipe diameter (mm)	**Over 150 (PA, PB, PC rotated positions); Over 500 (Other qualified positions)**		
Filler metal make	**N.A.**	Nr. of wires for process 12: **None**	
Flux make	**N.A.**	Flux Designation: **N.A.**	
Filler metal designation	**Solid wire EN ISO 14341-A G42 4M21 3Si1**		
Shielding gas (ISO 14175)	**M21 with CO_2% min.14,4 max.21,6**	Backing gas (ISO 14175)	**None**
Type of welding current	**DCEP**	Kj/cm **min 7,2 ; max 15,5**	
Welding position	**PC**	Transfer Mode **First pass: Short Arc; Other Passes: Spray, Pulse and Globular transfer**	
Preheat min. (°C)	+20 (if ISO/TR 17671-2 requirements are fulfilled)	Interpass temp. Max. (°C) -	
Interpass temp. Max. (°C)	+250	Postheat min. (°C) -	Time (minutes) -
Post weld heat treatment / Ageing	**None**	Time (minutes) -	
Other information	**None**		

Welder's/Operator's name	**Radasanu Georgetin Ionut**	Stamp No.	**RG**
Welding test conducted by	**CONCRANE S.r.l. - Trieste (TS)**		
Mechanical test conducted by	**Metal Services Srl - R. d. Legionari (GO)**	Laboratory test No.	**21.0365 Rev.1**
At presence of RINA Surveyor	**F. Sedran**		

We confirm that statements in this record are correct and that the test welds were prepared, welded and tested and have fulfilled the requirements in accordance with **UNI EN ISO 15614-1: 2019** Standard.

Issued at: Genova on 15 July 2021

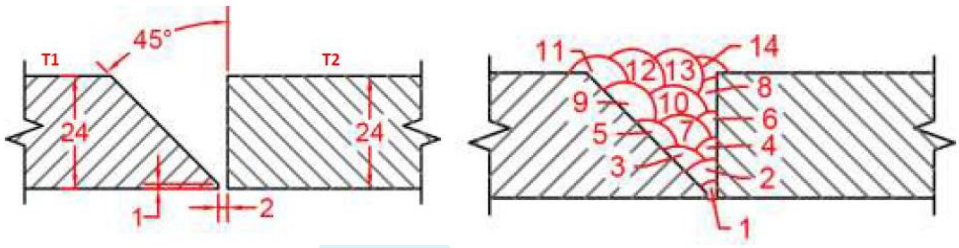
RINA Services S.p.A.
PED No. Bo. 0474

RECORD OF WELD TEST

JOINT DETAILS AND WELDING SEQUENCES

PLATE TO PLATE BUTT JOINT FULL PENETRATION- SINGLE BEVEL with root face and root gap – ss nb ml

Pass No.	Process	Filler metal diam. (mm)	Amps	Volt	Type of Current/ Polarity	Travel speed (cm/min)	Heat input (kJ/cm)	Metal Transfer mode	Other
1	**135**	1,2	132	19.2	**DCEP**	12,7	9,6	**Short Arc**	-
2	**135**	1,2	262	26.2	**DCEP**	29,5	11,2	**Spray Arc**	-
3	**135**	1,2	268	25.2	**DCEP**	27,7	11,7	**Spray Arc**	-
4	**135**	1,2	243	25.7	**DCEP**	30,0	10,0	**Spray Arc**	-
5	**135**	1,2	258	25.8	**DCEP**	25,7	12,4	**Spray Arc**	-
6	**135**	1,2	257	25.2	**DCEP**	26,5	11,7	**Spray Arc**	-
7	**135**	1,2	272	25.7	**DCEP**	29,0	11,6	**Spray Arc**	-
8	**135**	1,2	261	25.9	**DCEP**	28,1	11,5	**Spray Arc**	-
9	**135**	1,2	255	25.8	**DCEP**	30,0	10,5	**Spray Arc**	-
10	**135**	1,2	241	25.7	**DCEP**	29,5	10,1	**Spray Arc**	-
11	**135**	1,2	239	25.9	**DCEP**	28,1	10,6	**Spray Arc**	-
12	**135**	1,2	238	25.8	**DCEP**	26,5	11,1	**Spray Arc**	-
13	**135**	1,2	243	25.7	**DCEP**	29,5	10,2	**Spray Arc**	-
14	**135**	1,2	249	25.6	**DCEP**	28,1	10,9	**Spray Arc**	-



PARENT MATERIAL

Material specification	**EN 10028-3**		
Type or grade	**P355NH**		
Group(s)/Subgroup(s) No. (ISO/TR 15608; ISO/TR20172; ISO/TR 20173; ISO/TR20174)			**1.2**
Thickness (mm)	**24 to 24**	Throat thickness (mm)	**N.A.**
Diameter (mm)	**N.A.**		
Branch connection angle	**N.A.**		
Other	**-**		

WELDING CONSUMABLES

Process	**135D**	**135S**
Trade name(s)	**ESAB OK AristoRod 12.50**	**ESAB OK AristoRod 12.50**
Specification	**EN ISO 14341-A**	**EN ISO 14341-A**
Classification / designation	**G42 4 M21 3Si1**	**G42 4 M21 3Si1**
Size (mm)	**1,2**	**1,2**
Deposited metal thickness		
Groove	**3 mm**	**21 mm**
Throat	**N.A.**	**N.A.**
Flux trade name	**N.A.**	**N.A.**
Consumable insert	**N.A.**	**N.A.**
Other	**-**	**-**

GAS

	Gas	Mixture	Flow rate (l/min.)
Shielding		**Ar 82% + CO_2 18%**	**18**
Trailing			
Backing			

POSITION

Welding position **PC**

Other **-**

PREHEAT				**POSTWELD HEAT TREATMENT**			
Preheat temperature	**+20°C**			Temperature	**None**	Time	-
Interpass temperature	**+250°C**			Method	**-**		
Postheat temperature	**None**	Time	**-**	Other	**-**		

ELECTRICAL CHARACTERISTICS

Current **DCEP**

Ampere (range) **See table** Volts (Range) **See table**

Mode of metal transfer **D (Short Transfer) First pass; S (Spray Transfer) Other passes**

Tungsten electrode size and type **N.A.**

Pulse welding details **N.A.**

Plasmawelding details **N.A.**

Waveform controlled welding machine - Waveform control mode **-**

Power source - Welding mode Pulse □ Non pulse ☑

Other **-**

TECHNIQUE

Travel speed (range) **See table**

String or weave bead **String** Maximum width of run **None**

Oscillation (*) **None** (Amplitude/Frequency/Dwell time)

Method of groove/edge preparation **Flame cutting and Machining**

Interpass cleaning **Grinding/Brushing**

Method of back gouging **N.A.**

Orifice or gas cup size **16**

Distance contact tube/worpiece (*) **15-20 mm**

Multiple or single pass **Multiple**

Multiple or single electrodes **Single**

Torch angle (*) **N.A.**

Other (*) for fully mechanized/robotic only

TRANSVERSE TENSILE TEST						
Spec. (No.)	Width (mm)	Thickness (mm)	Area (mm^2)	Total load (N)	R_m. (N/mm^2)	Fracture location
1235	**25,07**	**18,56**	**465,30**	**254439**	**547**	**Base material - ductile**
1235	**25,09**	**18,50**	**464,17**	**253471**	**546**	**Base material - ductile**

ALL-WELD METAL TENSILE TEST							
Spec. (No.)	Diameter (mm)	Area (mm)	L_0 (mm)	Yield strength (N/mm^2)	Tensile strength (N/mm^2)	A (%)	Z (%)
1235	**10,06**	**-**	**50**	**529**	**609**	**25.0**	**67**

BEND TEST			
Type	No.	Bend Angle	Result
SIDE TRANSVERSE	**4 OFF**	**180°**	**Acceptable**

IMPACT TEST

Full-Size 10x10x55

Spec No.	Notch location	Notch type	Test Temp. (°C)	Impact values (J)	Average (J)
VWT $_{0/1}$	**WELD**	**ISO-V**	**-20**	**143 - 131 - 79**	**118**
VHT $_{0/1}$	**FUSION LINE**	**ISO-V**	**-20**	**196 - 84 - 119**	**133**
VHT $_{2/1}$	**FUSION LINE + 2**	**ISO-V**	**-20**	**205 - 184 - 226**	**205**
VHT $_{5/1}$	**FUSION LINE + 5**	**ISO-V**	**-20**	**220 - 169 - 207**	**199**

HARDNESS TEST		
Location	Type/load	Maximum value
Parent metal(s)	**HV10**	**159**
H.A.Z.(s)	**HV10**	**378**
Weld metal	**HV10**	**205**

OTHER TEST

MACROGRAPHIC EXAMINATION	**Acceptable**
MICROGRAPHIC EXAMINATION	**Not required**

NON DESTRUCTIVE EXAMINATION

VISUAL EXAMINATION	**Acceptable**
RADIOGRAPHIC EXAMINATION	**Not required**
PENETRANT TEST	**Not required**
MAGNETIC PARTICLE	**Acceptable**
ULTRASONIC TEST	**Acceptable**

Issued at: Genova on 15 July 2021

RINA Services S.p.A.
PED No. Bo. 0474

CONCRANE A REMAZEL Group Company	WELDING QUALIFICATION RECORD	pWPS n°:	CCP09
		Date	14/05/2021
		Record n. WR06/2021	Pag. 1 / 1

Reference code	**EN ISO 15614-1; 08833.ENG.MME.SDS**	*Welding position*	**PC – 2G – HORIZONTAL POSITION**
Welding process	**135 – GNAW**	*Type*	**SEMI-AUTOMATIC**
JOINT			
Joint type	**BW- BUTT WELD**	*Preparation method*	**FLAME AND MACHINING**
Weld preparation	**SINGLE BEVEL GROOVE**	*Method*	**BRUSHING AND/OR GRIDING**
Backing	**NO**	*Root opening*	**2 mm**
Backing material	**N.A.**	*Groove angle*	**45°**
Backing gouging	**N.A.**	*Root face dimension*	**1 mm**

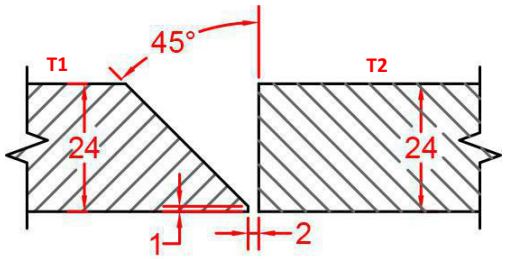
BASE MATERIAL		
Part identification	**A**	**B**
Pipe or plate	**PLATE**	**PLATE**
Material group	**1.2**	**1.2**
Material type	**EH36 (SA516GR70)**	**EH36 (SA516GR70)**
Thickness	**24mm**	**24 mm**
Heat	**477041**	**477041**
C - CEV (IIW) & Pcm	**0.42 – 0.43 – 0.26**	**0.42 – 0.43 – 0.26**

FILLER MATERIALS AND GAS DETAIL DETAILS			
Trade marker filler	**ESAB OK AristoRod 12.50**	*Specification*	**EN ISO 14175**
Classification filler	**G42 4 M21 3Si (EN ISO 14341-A)**	*Classification gas*	**M21 – 82% Ar + 18% CO_2**
Batch nr. filler	**PVV01022033B**	*Flow rate l/min*	**19 l/min**
PREHEAT AND PWHT			
Preheat temperature	**AMBIENT (>20 °C)**	*PHWT method*	**N.A.**
Max interpass temperture	**250 °C**	*Time and temperature*	**N.A.**

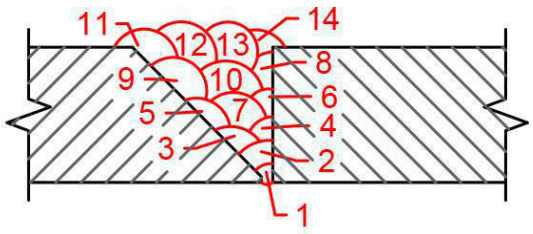
PARAMETERS RECORD

Pass weld	Welding process	Filer metal classification	Filler diameter [mm]	Current type	Ampere [A]	Voltage [V]	Travel speed [mm/min]	Heat input [kJ/mm]	Interpass temperature [°C]
1	135	G42 4 M21 3Si	Ø 1.2	DCEP	132	19.2	127	0.96	N.A.
2	135	G42 4 M21 3Si	Ø 1.2	DCEP	262	26.2	295	1.12	82 °C
3	135	G42 4 M21 3Si	Ø 1.2	DCEP	268	25.2	277	1.17	91 °C
4	135	G42 4 M21 3Si	Ø 1.2	DCEP	243	25.7	300	1.00	106 °C
5	135	G42 4 M21 3Si	Ø 1.2	DCEP	258	25.8	257	1.24	111 °C
6	135	G42 4 M21 3Si	Ø 1.2	DCEP	257	25.2	265	1.17	125 °C
7	135	G42 4 M21 3Si	Ø 1.2	DCEP	272	25.7	290	1.16	141 °C
8	135	G42 4 M21 3Si	Ø 1.2	DCEP	261	25.9	281	1.15	153 °C
9	135	G42 4 M21 3Si	Ø 1.2	DCEP	255	25.8	300	1.05	174 °C
10	135	G42 4 M21 3Si	Ø 1.2	DCEP	241	25.7	295	1.01	178 °C
11	135	G42 4 M21 3Si	Ø 1.2	DCEP	239	25.9	281	1.06	185 °C
12	135	G42 4 M21 3Si	Ø 1.2	DCEP	238	25.8	265	1.11	191 °C
13	135	G42 4 M21 3Si	Ø 1.2	DCEP	243	25.7	295	1.02	202 °C
14	135	G42 4 M21 3Si	Ø 1.2	DCEP	249	25.6	281	1.09	205 °C

Joint details



Bead sequence



Registered by	*Checked by*	*Society approved by*	*Customer approved by:*
A. Feltrin			

METAL SERVICES MATERIALS TESTING

TEST REPORT No. 21.0365 Rev.1

ISSUED ON 21/06/2021

This document replace the test report no. 21.0365 Rev.0

Customer

CONCRANE S.r.l.

Via Caboto, 26

34147 Trieste (TS)

INFORMATION

The present test report cannot be modified and cannot be reproduced in a partial way without the formal written approval of Metal Services Materials Testing Srl.
Test results are only related to the supplied tested samples; the remains of them will be stored and available for not more than 30 days after the test report issuing date, unless differently agreed on the purchase order.
Equipment used are to be intended under metrological validity.
The uncertainty of measurement is expressed as expanded uncertainty obtained by multiplying the combined uncertainty for the coverage factor of k = 2, corresponding to a confidence interval of about 95%.
(+) Supervised test by 3rd part inspector.

MATERIAL RECEPTION

Date	Delivery note no.	Offer no.	Order no.
28/05/2021	21050	-	-

Sampling data

Sampling and identification executed by the Customer

MATERIAL DESCRIPTION

Sample no.	Identification mark
1235	Sample identified as "pWPS CCP09 – BW plate thk. 24 Mm – material DNV-GL EH36/RINA DH36 – welding process GMAW – position 2G – welding consumable ESAB OK AristoRod 12.50 Ø 1.2 mm – AWS A5.18 ER 70S-6 – shielding gas EN ISO 14175 M21 82%Ar + 18% CO2 18/24 l/min"

TEST INDEX

Section no.	Test	Page
1	Visual examination (UNI EN ISO 17637:2017)	2
2	Magnetoscopic examination (UNI EN ISO 17638:2016 – ASTM E709 – API 2X)	2
3	Ultrasonic examination (UNI EN ISO 17640:2018 – API RP 2X)	3
4	Transverse tensile test on welds (UNI EN ISO 4136:2012)	4
5	Longitudinal tensile test on welds (UNI EN ISO 5178:2011)	4
6	Bend test on welds (UNI EN ISO 5173:2012)	4
7	Impact test on welds (UNI EN ISO 9016:2012)	4
8	Macrographic examination (UNI EN ISO 17639:2013)	5
9	Hardness test on welded joints (UNI EN ISO 9015-1:2011)	6
-	Other reference documents (08833.ENG.MME.SDS Rev.07)	-

NOTE

This document replaces the test report no. 21.0365 Rev.0 and it has been issued in order to integrate data of the fields "Material description" and of the section 5 "Longitudinal tensile test on welds"

//

RESERVED FOR DIGITAL SIGNATURE

Firmato digitalmente da:
PELLEGRIN LORENZO
Firmato il 21/06/2021 11:15
Seriale Certificato: 21401746878628221003275909547213633194
Valido dal 01/10/2020 al 01/10/2023
ArubaPEC S.p.A. NG CA 3

Laboratory Manager	Inspector (+)
p.i. L. Pellegrin	RINA S.p.A. F. Sedran

TEST REPORT No. 21.0365 Rev.1
ISSUED ON 21/06/2021
This document replace the test report no. 21.0365 Rev.0

1. VISUAL EXAMINATION

TEST CONDITIONS

Equipment	Visual conditions	Surface conditions	Working step
Weld Gauge, Lamp	Min. 1000 lux on tested surface	As welded	Welds completed
Test method	**Acceptance criteria**	**Procedure of examination**	**Reference drawing**
UNI EN ISO 17638:2016 – ASTM E709 – API 2X	UNI EN ISO 5817:2014 - 08833.ENG.MME.SDS Rev.07	-	pWPS CCP09
Heat Treatment	**Extention of the examination**	**-**	**-**
-	100%	-	-

RESULTS

Sample no.	Data	Position	Result of inspection
1235	31/05/2021	-	*Imperfections exceeding the acceptance criteria and their location*: No recordable indications.

Record of indications detected

Weld Id.	*Indication no.*	*Start from*	*Probe[1]*	*Length*	*Depth[1]*	*Probable type of defect*
-	-	-	-	-	-	-

Glossary: //
Note 1: Only for UT examination

2. MAGNETIC PARTICLES TESTING

TEST CONDITIONS

Equipment	Visual conditions	Surface conditions	Working step
Deltaflux DF Y/A S/N 140514	Min. 500 lux on tested surface	Welded	As finished
Contrast paint	**Type of magnetic particles**	**Magnetic particles**	**Type of current**
ProNdt 183	Wet - visible	ProNdt 181	AC
Test method	**Acceptance criteria**	**Procedure of examination**	**Reference drawing**
UNI EN ISO 17640:2018 – API RP 2X	UNI EN ISO 23278:2015 Lev.1 - 08833.ENG.MME.SDS Rev.07	-	pWPS CCP09
Heat Treatment	**Extension of the examination**	**Demagnetization**	**Lifting power**
Not declared	100%	Not required	5 Kg

RESULTS

Sample no.	Data	Position	Result of inspection
1235	31/05/2021	-	*Imperfections exceeding the acceptance criteria and their location*: No recordable indications.

Record of indications detected

Weld Id.	*Indication no.*	*Start from*	*Probe[1]*	*Length*	*Depth[1]*	*Probable type of defect*
-	-	-	-	-	-	-

Glossary: //
Note 1: Only for UT examination

NOTE

//

Laboratory Manager	Inspector (+)
p.i. L. Pellegrin	RINA S.p.A. F. Sedran

TEST REPORT No. 21.0365 Rev.1

ISSUED ON 21/06/2021

This document replace the test report no. 21.0365 Rev.0

3. ULTRASONIC EXAMINATION

TEST CONDITIONS

Material	Thickness	Heat Treatment	Testing plan
EH36	24 mm	-	100 %
Instrument	**Probe**	**Couplant**	**Note**
Sonatest D20+ s/n.:I009835	Olympus AMR 8x9 70	Gel	-
Test method		**Acceptance criteria**	
UNI EN ISO 17640:2018 – API RP 2X		UNI EN ISO 11666:2018 - 08833.ENG.MME.SDS Rev.07	

RESULTS

Sample no.	Data	Position	Result of inspection
1235	31/05/2021	-	*Imperfections exceeding the acceptance criteria and their location*: No recordable indications.

Record of indications detected

Weld Id.	*Indication no.*	*Start from*	*Probe*[1]	*Length*	*Depth*[1]	*Probable type of defect*
-	-	-	-	-	-	-

Glossary: //

Note 1: Only for UT examination

NOTE

//

Laboratory Manager	Inspector (+)
p.i. L. Pellegrin	RINA S.p.A. F. Sedran

TEST REPORT No. 21.0365 Rev.1

ISSUED ON 21/06/2021

This document replace the test report no. 21.0365 Rev.0

4. TRANSVERSE TENSILE TEST ON WELDS

Sample no.	Date	Position	T °C	a mm	b mm	So mm^2	Fm N	Rm MPa	Fracture Position
1235	07/06/2021	T to Weld	22	18.56	25.07	465.30	254439	547	Base material - ductile
1235	07/06/2021	T to Weld	22	18.50	25.09	464.17	253471	546	Base material - ductile

Instruments: Galdabini Quasar 1200 (Serial no. V9GV)
Glossary: T = transversal; L = longitudinal
Note: //

5. LONGITUDINAL TENSILE TEST ON WELDS

Sample no.	Date	Position	T °C	Ø mm	$Rp_{0.02}$ MPa	$Rp_{0.2}$ MPa	$Rp_{1.0}$ MPa	Rm MPa	L_0 mm	A %	Z %	Rs/Rm
1235	07/06/2021	All weld	22	10.06	529	-	-	609	50	25.0	67	-

Instruments: Galdabini Quasar 250 (Serial no.V901)
Glossary: //
Note: //

6. BEND TEST ON WELDS

Sample no.	Date	Type of test	T °C	t_s mm	l mm	d mm	Bend angle °	Test Result
1235	07/06/2021	SBB	22	10	65	40	180	No recordable indication
1235	07/06/2021	SBB	22	10	65	40	180	No recordable indication
1235	07/06/2021	SBB	22	10	65	40	180	No recordable indication
1235	07/06/2021	SBB	22	10	65	40	180	No recordable indication

Instruments: Caliper Sama 18148032 (766)
Glossary: t_s= specimen thickness; l= minimum clearance between the shoulders; d= ram diameter; SBB = Side bend on butt welds
Note: //

7. IMPACT TEST ON WELDS

Sample no.	Date	Position	w mm	T °C	KV_2 J			KV_2 AVG J
1235	07/06/2021	VHT 5/1	10	-20	220	169	207	199
1235	07/06/2021	VHT 2/1	10	-20	205	184	226	205
1235	07/06/2021	VHT 0/1	10	-20	196	84	119	133
1235	07/06/2021	VWT 0/1	10	-20	143	131	79	118

Instruments: Galdabini Impact 300 (Serial no.V88G)
Glossary: T = transversal; L = longitudinal
Note: When absorbed energy is < 8 J or >= 240 J the values are approximate.

NOTE

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Laboratory Manager	Inspector (+)
p.i. L. Pellegrin	RINA S.p.A. F. Sedran

TEST REPORT No. 21.0365 Rev.1

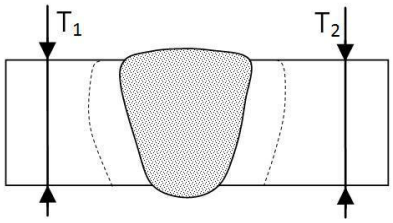
ISSUED ON 21/06/2021

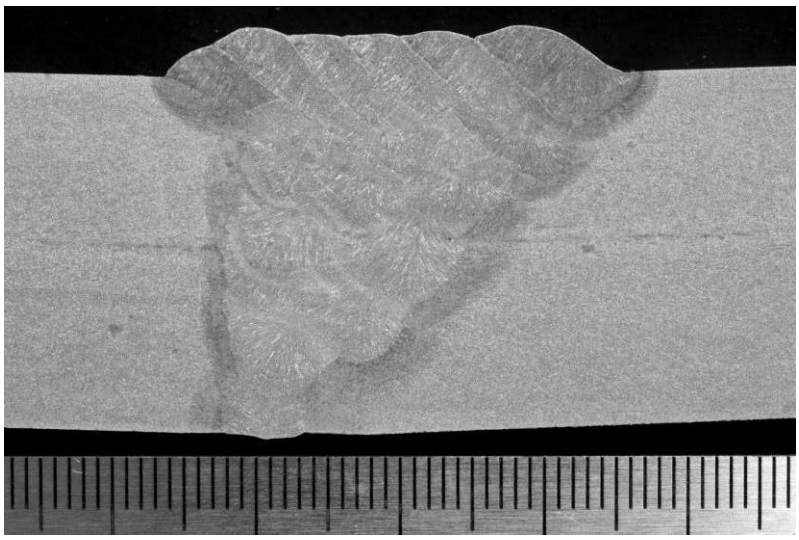
This document replace the test report no. 21.0365 Rev.0

8. MACROGRAPHIC EXAMINATION

Sample no	1235 Macro #1
Date	03/06/2021
Position	T to weld
Etching	HNO3 10%
T_1	24 mm
T_2	24 mm
Z_1	n.a.
Z_2	n.a.
Throat Thickness	n.a.

Sketch





Imperfection
No recordable indications

Instruments: Wild stereomicroscope (serial no.386471309)

Glossary: //

Note: //

NOTE

//

Laboratory Manager	Inspector (+)
p.i. L. Pellegrin	RINA S.p.A. F. Sedran

TEST REPORT No. 21.0365 Rev.1

ISSUED ON 21/06/2021

This document replace the test report no. 21.0365 Rev.0

9. HARDNESS TEST ON ARC WELDED JOINTS

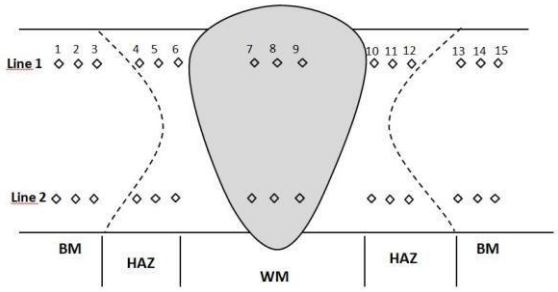
Sample no.	Date	Type of test	Indentation	Position	Line 1 (HV)	Line 2 (HV)	Line 3 (HV)
1235 Macro #1	03/06/2021	HV10	1	BM	159	159	-
			2	BM	157	157	-
			3	BM	155	155	-
			4	HAZ	241	188	-
			5	HAZ	326	213	-
			6	HAZ	306	244	-
			7	WM	205	196	-
			8	WM	202	184	-
			9	WM	192	193	-
			10	HAZ	378	218	-
			11	HAZ	372	205	-
			12	HAZ	228	183	-
			13	BM	156	154	-
			14	BM	154	157	-
			15	BM	152	159	-

Instruments: QNESS Q150+ (serial no. Q1294/02/18)

Glossary: //

Note: //

INDENTATION POSITION



NOTE

//

INSPECTOR NOTES(+)

Laboratory Manager	Inspector (+)
p.i. L. Pellegrin	RINA S.p.A. F. Sedran

CERTIFICATO DI CONTROLLO 3.1 / INSPECTION CERTIFICATE 3.1 - EN 10204:2004

A04/A05

METINVEST
METINVEST TRAMETAL SPA

(A) PROCESSO DI ELABORAZIONE / STEELMAKING PROCESS: E = ELECTRIC ; BO = BASIC OXYGEN
(B) STATO DI FORNITURA / DELIVERY CONDITION: AR = GREZZO DI LAMINAZIONE / AS ROLLED ;
N* = LAMINAZIONE A TEMPERATURA CONTROLLATA / NORMALIZING ROLLING ;
N = NORMALIZZATO / NORMALIZED at 910°C, 1,5 min/mm ; ARIA CALMA / STILL AIR;
R = RICOTTO / ANNEALED;
N+R = NORMALIZZATO + RINVENUTO / NORMALIZED + ANNEALED
(C) TRATTAMENTO TERMICO DEL CAMPIONE / HEAT TREATMENT OF SAMPLE:
N = 910°C, 1,5 min/mm ; ARIA CALMA / STILL AIR
R = 650°C, 1,5 min/mm ; ARIA CALMA / STILL AIR
(D) Ceq_1 = C + Mn/6 ; Ceq_2 = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15 ;
Pcm = C + Si/30 + (Mn + Cu + Cr)/20 + NI/60 + Mo/15 + V/10 + B*5
(1) POSIZIONE / LOCATION: 1 = TESTA / TOP ; 2 = PIEDE / BOTTOM
(2) POSIZIONE / LOCATION: C = CUORE / 1/2 THICKNESS ; P = PELLE / SURFACE ; D = 1/4 SPESSORE / THICKNESS
(3) DIREZIONE / DIRECTION: L = LONGITUDINALE / LONGITUDINAL ; T = TRASVERSALE / TRANSVERSE
(4) FORMA DEL PROVINO / SHAPE OF TEST PIECE: P = PRISMATICO / PRISMATIC ; C = CILINDRICO / CYLINDRICAL
(5) ESITO PROVA DI PIEGA / RESULT: OK = COMPLYING ; NO = NOT COMPLYING

A01
Società per azioni con socio unico soggetta a direzione e coordinamento di Metinvest B.V
Registered office: Via XII Ottobre, 3 - 16121 Genova, Italy
Phone +39 010 5762911 - Fax +39 010 5762990
Works: Via E. Fermi, 44 - 33058 San Giorgio di Nogaro UD, Italy
Phone +39 0431 629989 - Fax +39 0431 629985
Cap. Soc. Euro 300.120.000,00 i.v.
C.F., P.IVA e Iscr. Reg. Imp. GE 05956630965 - REA 437720/GE
http://trametal.metinvestholding.com

A06 Cliente / Customer

TONELLO S.P.A.

VIA D'ORMENT N. 6
33042 BUTTRIO
UD ITALY

TONELLO S.p.A.
CONTROLLO QUALITA'
PER
COPIA CONFORME
CENTRO LAVORAZIONE LAMIERE

A03 N° Certificato / Certificate no.	Z02 Data / Date
377095	05/05/2016
A08 N° Ordine Trametal / Works order	A07 N° Ordine cliente / Customer's order
31601531	B6000428
DDT	del / date
BOL 31607710	04/05/2016
Pratica / File no.	
del / date	

B06 Marcatura di prodotto / Marking of the product
LAMIERA/ORDINE/N° INFORNAMENTO/DIMENSIONI/QUALITÀ/MARCHIO DEL PRODUTTORE
PLATE/ORDER/INTERNAL N°/DIMENSIONS/STEEL GRADE/MANUFACTURER'S MARK

B01/B02/B03

Prodotto / Product	Lamiere / Hot rolled plates
Qualità / Steel grade	SA516GR70MT/LTV
Normativa / Specification	ASME

B07 ITEM	B07 LAMIERA PLATE	B07 N° INFORN. INTERNAL NUMBER	B09/B11 DIMENSIONI [mm] DIMENSIONS	B12 MASSA TEORICA [t] THEORICAL WEIGHT	B07 LOTTO BATCH NO.	C70 PROCESSO ELAB. (A) STEELMAKING PROCESS	B04 STATO FORNITURA LAMIERA (B) DELIVERY CONDITION	C00 CAMPIONE SAMPLE	B05 TRATT. CAMPIONE (C) HEAT TREATMENT	C00 CAMPIONE PWHT SAMPLE	B05 PWHT BEGINNING TEMPERATURA INIZIO °C	VELOCITA' RISCALDO C/h HEATING RATE	TEMPERATURA TRATTAMENTO °C TEMPERATURE TREATMENT	PERMANENZA Min HOLDING TIME	VELOCITA' RAFFREDDAMENTO °C/h COOLING RATE	TEMPERATURA FINE °C END TEMPERATURE	N° CICLI / CYCLES	C00 CAMPIONE Q+T SAMPLE	B05 Q+T TEMPERATURA (Q) °C TEMPERATURE	PERMANENZA (Q) Min HOLDING TIME	RAFFREDDAMENTO COOLING	TEMPERATURA (T) °C TEMPERATURE	PERMANENZA (T) Min HOLDING TIME	RAFFREDDAMENTO COOLING
~~2~~	~~1NV0820301A~~	~~1260851~~	~~60.00X2500X8500~~	~~10,01~~	~~477019~~	~~BO~~	~~N~~	~~GD930~~																
3	1NU9741803A	1260333	25.00X2500X6000	2,94	477041	BO	N	GD935		16T319														

C71/C92 COMPOSIZIONE CHIMICA DI COLATA / HEAT CHEMICAL ANALYSIS

B07	C71	C72	C73	C74	C75	C76	C77	C78	C79	C80	C81	C82	C83	C84	C85	C86	C87	C88	C89	C90	C91
COLATA	C	Mn	Si	P	S	Cu	Ni	Cr	Mo	Al	V	Nb	Ti	Sn	Ca	N	B	H	Ceq1	Ceq2	Pcm
HEAT	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	% (D)	% (D)	% (D)
Ordine Min 2																					
Ordine Max 2												0,050									
Ordine Min 3																					
Ordine Max 3												0,050									
SA51670LTV Min 12.60 - 50.00		0,85	0,15																		
SA51670LTV Max 12.60 - 50.00	0,28	1,20	0,40	0,035	0,035																
SA51670LTV Min 50.10 - 100.00		0,85	0,15																		
SA51670LTV Max 50.10 - 100.00	0,30	1,20	0,40	0,035	0,035																
1NU974	0,16	1,49	0,26	0,013	0,003	0,030	0,020	0,020	<0.005	0,030	0,004	0,023	0,004	<0.005	0,0000	0,0080	0,0005	0,0002	0,41	0,42	0,25
1NV082	0,17	1,47	0,25	0,012	0,002	0,050	0,020	0,030	<0.005	0,024	<0.005	0,024	<0.005	<0.005	0,0000	0,0070	<0.0005	0,0003	0,42	0,43	0,26

			PROVA DI TRAZIONE TENSILE TEST									PROVA DI RESILIENZA IMPACT TEST - CHARPY V-NOTCH TEST						PROVA DI PIEGA BEND TEST				PROVA DI DUREZZA HARDNESS TEST				PROVA DI STRIZIONE Z% TEST	
C00		C01	C01	C02	C03	C11	C12		C13	C14	C10	C41	C02	C03	C01	C42	C43	C02	C51	C52	C50	C01	C30	C31	C32	C53	C54
CAMPIONE SAMPLE	SPESSORE LAMIERA PLATE THICKNESS	POSIZIONE LOCATION (1)	POSIZIONE LOCATION (2)	DIREZIONE ORIENTATION (3)	TEMPERATURA TEST TEMPERATURE [°C]	ReH [Mpa] YIELD STRENGTH	Rm [Mpa] TENSILE STRENGTH	ReH/Rm	A2" ELONGATION	Rp 0.2 [Mpa] PROOF STRENGTH	FORMA PROVINO (4) SHAPE OF TEST PIECE	LARGHEZZA [mm] WIDTH	DIREZIONE ORIENTATION (3)	TEMPERATURA TEST TEMPERATURE [°C]	POSIZIONE LOCATION (2)	INDIVIDUAL [J] SINGOLI VALORI	MEDIA [J] MEAN VALUE	DIREZIONE ORIENTATION (3)	MANDRINO MANDREL [mm]	ANGOLO ANGLE [°]	ESITO RESULT (5)	POSIZIONE LOCATION (2)	METODO TEST METHOD	SINGOLI VALORI INDIVIDUAL VALUES	MEDIA MEAN VALUE	Z% INDIVIDUAL VALUES Z% SINGOLI VALORI	Z% VALORE MEDIO Z% MEAN VALUE
ORDINE Min 2														-42		20	27										
ORDINE Min 3														-42		20	27										
SA51670LTV Min 0.00 - 25.00													L	-46			20										
SA51670LTV Min 20.10 - 120.00					20		485		17,0	260																	
SA51670LTV Max 20.10 - 120.00					20		620																				
SA51670LTV Min 50.10 - 75.00													L	-35			20										
~~GD930~~	~~60,00~~	~~2~~	~~D~~	~~T~~	~~20~~		~~520~~		~~37,7~~	~~379~~	~~C~~	~~10,00~~	~~L~~	~~-42~~	~~D~~	~~194 199 181~~	~~191~~											
GD935	25,00	2	P	T	20		525		34,0	385	P	10,00	L	-42	P	187 183 189	186										

TONELLO S.p.A. CONTROLLO QUALITA' PER COPIA CONFORME CENTRO LAVORAZIONE LAMIERE

C10

ASME SA-370 FIG. 3 AND FIG. 10 (FIG. 11 a 10x10mm) - SAMPLE TAKEN AFTER PLATE HEAT TREATMENT

D02-D50 CONTROLLO ULTRASONORO / ULTRASONIC EXAMINATION

D02	D03	D04	D05	D06	D07
APPARECCHIATURA EQUIPMENT	N° SERIE SERIAL NO	CONDIZIONI SUPERFICIALI SURFACE CONDITIONS	ACCOPPIANTE COUPLANT	MODALITÀ OPERATIVE PROCEDURE	TARATURA CALIBRATION
GILARDONI RDG450	RDG450-450-140156TC	GREZZO DI LAMINAZIONE AS ROLLED	ACQUA WATER	IN ACCORDO ALLA SPECIFICA ACCORDING TO SPECIFICATION	IN ACCORDO ALLA SPECIFICA ACCORDING TO SPECIFICATION

B07 LAMIERA PLATE	D08 SONDE PROBE	D09 DIAMETRO DIAMETER MM	D10 FREQUENZA FREQUENCE MHZ	D11 ANGOLO Angle °	D12 NORMA DI RIFERIMENTO STANDARD SPECIFICATION	D13 CLASSE DI ACCETTABILITÀ ACCEPTANCE SPECIFICATIONS	D14 ESITO RESULT	D15 INDICAZIONI INDICATIONS	D16 RETICOLO RETICLE	D17 BORDI EDGES
1NV0820301A	DP25/2	mm 25	2 MHz	0	EN 10160 CL. S2 E3		OK	NO INDICATIONS FOUND	mm 100x100	75
1NU9741803A	BDD20/2	mm 20	2 MHz	0	EN 10160 CL. S2 E3		OK	NO INDICATIONS FOUND	mm 100x100	50

D18 NOTE REMARKS	D19 ENTE ISPETTIVO INSPECTOR	D20 FIRMA SIGNATURE
		METINVEST TRAMETAL S.p.a. F. Andrian III Liv. EN ISO 9712

Z01

ITEM		TOLLERANZA DI SPESSORE TOLERANCE ON THICKNESS	TOLLERANZE DI LARGHEZZA TOLERANCE ON WIDTH	TOLLERANZE DI LUNGHEZZA TOLERANCE ON LENGTH	CONDIZIONI SUPERFICIALI SURFACE FINISH	PLANARITÀ FLATNESS
2		EN 10029 CL.B	-0+100 MM	-0+200 MM	EN 10163/2 CL B2	EN 10029 CL. N
3		EN 10029 CL.B	-0+100 MM	-0+200 MM	EN 10163/2 CL B2	EN 10029 CL. N

CERTIFICHIAMO che le lamiere elencate sono conformi alla prescrizione dell'ordine, che i controlli della marcatura, dell'aspetto superficiale e dimensionale hanno dato esito positivo.
WE CERTIFY that the above mentioned plates are consistent with the order prescriptions: marking, inspection and measurement without objection.
DICHIARIAMO CHE LE LAMIERE SONO STATE CONTROLLATE IN ACCORDO ALLA NORMATIVA VIGENTE E CHE LE RADIAZIONI IONIZZANTI NON ECCEDONO IL VALORE DEL FONDO NATURALE.
WE DECLARE THAT THE PLATES WERE CONTROLLED ACCORDING TO STANDARD AND RADIATION DO NOT EXCEED THE NATURAL RADIATION.

Z06

Z07	Z03 ENTE COLLAUDO / INSPECTION BODY	Z02
PRODUCED FROM CONTINOUS CAST SLAB AND HAVE A MINIMUN REDUCTION RATIO OF 3 TO 1. ACCORDING TO ASME II PART A ED. 2013. FULLY KILLED, FINE GRAIN STEEL. Value of Mn maximun in derogation permitted up to 1.50% Plates acc. to PED 97/23/EC	TIMBRO DELL'ISPETTORE STAMP OF THE INSPECTION REPRESENTATIVE	METINVEST TRAMETAL S.p.a. F. Andrian CQ Manager

Certificazione valida per materiale fornitoVi con ns. DDT nr. C1000590 del 20/04/2021 relativo a:

PZ. 6 PART. SAGOMATO A DISEGNO: P06 SP. 25mm
PZ. 2 PART. SAGOMATO A DISEGNO: P03 SP. 25mm
PZ. 2 PART. SAGOMATO A DISEGNO: P04 SP. 25mm
RIF. VS. ORD. EMAIL DEL 13/04/2021
RIF. VS. COMM. URGENTE

CERTIFICATO DI COLLAUDO (3.1) - Analisi Chimica
ATTESTATO DI CONTROLLO (2.2) - Caratteristiche Meccaniche/
INSPECTION CERTIFICATE (3.1) - Chemical analysis
TEST REPORT (2.2) - Mechanical properties

Data/Date: 2021-02-19

Numero certificato/Cert no: EC26329874 rev. 0

Nostro ordine/Our order:	0100206249	Vostro ordine/Your order:	263/2021
Nostro riferimento/Our ref:	HYBRIS PRD account	Vostro riferimento/Your ref:	
Codice Cliente/Cust no:	ITB01537	Vostro numero fax/Your fax	
Data ordine Cliente/Your date:	20210217	Vostra e-mail/Your e-mail:	

Indirizzo di fatturazione/Invoice address
ALLOYS ITALIA SRL
.
VIA DEGLI SCHIAVETTI 9 - ZONA IND.
34074 MONFALCONE
Italy

Destinatario del certificato/Cert receiver

Indirizzo di spedizione/Delivery address
ALLOYS ITALIA SRL
VIA DEGLI SCHIAVETTI 9 - ZONA IND.
34074 MONFALCONE GO
Italy

CONSEGNA/DELIVERY Numero di lotto/Lot no: PVV01022033B Quantità/Quantity: 1098 KGM

PRODOTTO/PRODUCT

Marchio/Brand: ESAB
Descrizione/Desc: OK AristoRod 12.50 1.2mm 18kg
Codice/Item no: **1A50126910**

CLASSIFICAZIONE/CLASSIFICATIONS

EN ISO 14341-A: G 3Si1
EN ISO 14341-A: G 38 3 C1 3Si1
EN ISO 14341-A: G 42 4 M20 3Si1
EN ISO 14341-A: G 42 4 M21 3Si1
SFA/AWS A5.18: ER70S-6
CSA W48: B-G 49A 3 C1 S6
JIS Z 3312: YGW 12 (C1)

COMPOSIZIONE CHIMICA/ CHEMICAL COMPOSITION

Valori reali/Actual results: in accordo a/acc to I 3.1

Wire/strip

Altro/Auxiliary:

C		0.08%
Si		0.83%
Mn		1.47%
P		0.007%
S		0.012%
Cr		0.02%
Ni		0.01%
Mo	<	0.01%
Cu		0.05%
V	<	0.01%
Al		0.007%
Ti+Zr		0.01%

CARATTERISTICHE MECCANICHE/MECH PROPS

Valori tipici/Typical data: in accordo a/acc to EN 10204 - 2.2

Norma/Standard: EN
Altro/Auxiliary: M21
Condizione/Condition:

TRAZIONE/TENSILE

ReL	Rm	A4-A5
470 MPa	560 MPa	26 %

RESILIENZA/IMPACT

Temp	-30 °C	-40 °C	-50 °C
KV	100 J	90 J	70 J

COMMENTI/COMMENTS

Materiale fornito in accordo al Sistema Qualità conforme alla norma EN ISO 9001.
Questo certificato è stampato elettronicamente ed è valido senza firma.
Per ogni chiarimento, rivolgersi a:

ESAB Saldatura S.p.A. | Str. Provinciale 34, n.37 - 20010 Ossona MI, Italy

Product supplied under a QA Programme fulfilling the EN ISO 9001 standard.
This certificate is produced electronically and is valid without signature.
Please refer any queries to: (see above)

Validazione - analisi chimica/Validation - Chemical Analysis
Josef Moravek Quality Manager

Validazione - altro/Validation - Others
Jose Abal Lopez,H. Rasmuson Product Manager,

WELDING PROCEDURE QUALIFICATION RECORD (WPQR)

LEVEL 2

N. 21TO00308PW\3A

Manufacturer **CONCRANE S.r.l. - TRIESTE (TS)**

WPQR No. **CCP10 Rev.01 dated 15/07/2021** Dated **21/06/2021**

Manufacturer's welding procedure (WPS) No. **p-CCP10** Dated **17/05/2021**

RANGE OF QUALIFICATION

Welding process **135** Type **Partly mechanized**

Joint type **Plates and Pipes and build-up BW ssmb-bs/FW**

Single/Multiple pass **Multiple** (**Impact and Hardness properties apply**)

Parent material group(s) **1-1** ISO/TR 15608; ISO/TR20172; ISO/TR 20173; ISO/TR20174 with a specified minimum yield strength 275 < ReH ≤ 360 Mpa **DH36; AH36; DH32; AH32; D; B; A** according to Pt D, Ch 2, Sec 1 of RINA Rules

Parent material thickness (mm) Butt Joint = **7,5 to 30** Fillet Joint t_1 **= 3 to 30** t_2 **= 3 to 30**

Throat thickness (mm) **No restriction ***

Weld deposit thickness (mm) **Max 30 mm**

Outside pipe diameter (mm) **Over 150 (PA, PB, PC rotated positions); Over 500 (Other qualified positions) ****

Filler metal make **N.A.** Nr. of wires for process 12: **None**

Flux make **N.A.** Flux Designation: **N.A.**

Filler metal designation **Solid wire EN ISO 14341-A G42 4M21 3Si1**

Shielding gas (ISO 14175) **M21 with CO_2% min.14,4 max.21,6** Backing gas (ISO 14175) **None**

Type of welding current **DCEP** Kj/cm **min 7,1 ; max 15,3**

Welding position **PA** Transfer Mode **First pass: Short Arc; Other Passes: Spray, Pulse and Globular transfer**

Preheat min. (°C) +20 (if ISO/TR 17671-2 requirements are fulfilled) Interpass temp. Max. (°C) -

Interpass temp. Max. (°C) +250 Postheat min. (°C) - Time (minutes) **-**

Post weld heat treatment / Ageing **None** Time (minutes) **-**

Other information **(*) Multi-run; as for butt welds with multi-run (i.e. a=t), (**) Over 500 mm, when RINA Rules apply**

Welder's/Operator's name **Toma Alexandru** Stamp No. **TA**

Welding test conducted by **CONCRANE S.r.l. - Trieste (TS)**

Mechanical test conducted by **Metal Services Srl - R. d. Legionari (GO)** Laboratory test No. **21.0366 Rev.1**

At presence of RINA Surveyor **F. Sedran**

We confirm that statements in this record are correct and that the test welds were prepared, welded and tested and have fulfilled the requirements in accordance with **UNI EN ISO 15614-1: 2019** Standard and **RINA Rules for the Classification of Ships** requirements**.**

Issued at: Genova on 15 July 2021

RINA Services S.p.A.
PED No. Bo. 0474

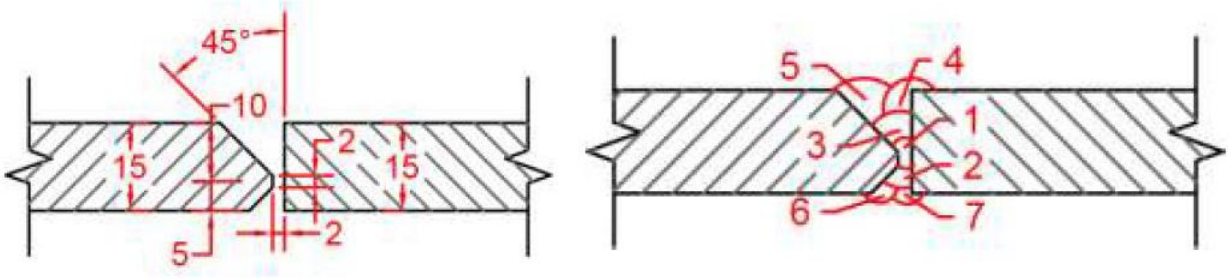
Certificate No. 21TO00308PW\3A

RECORD OF WELD TEST

JOINT DETAILS AND WELDING SEQUENCES

PLATE TO PLATE BUTT JOINT FULL PENETRATION- DOUBLE BEVEL with root face and root gap – bs ml

Pass No.	Process	Filler metal diam. (mm)	Amps	Volt	Type of Current/ Polarity	Travel speed (cm/min)	Heat input (kJ/cm)	Metal Transfer mode	Other
1	**135**	1,2	150	19.5	**DCEP**	14,9	9,4	**Short Arc**	-
3	**135**	1,2	253	27.5	**DCEP**	31,0	10,8	**Spray Arc**	-
4	**135**	1,2	252	27.9	**DCEP**	32,7	10,3	**Spray Arc**	-
5	**135**	1,2	245	27.7	**DCEP**	28,6	11,4	**Spray Arc**	-
Grinding to sound metal									
2	**135**	1,2	244	27.7	**DCEP**	29,5	11,0	**Spray Arc**	-
6	**135**	1,2	243	27.8	**DCEP**	26,5	12,2	**Spray Arc**	-
7	**135**	1,2	249	28.1	**DCEP**	29,5	11,4	**Spray Arc**	-



PARENT MATERIAL

Material specification	**EN 10028-3 (Pt D, Ch 2, Sec 1 of RINA Rules)**
Type or grade	**P355NH (DH36)**
Group(s)/Subgroup(s) No. (ISO/TR 15608; ISO/TR20172; ISO/TR 20173; ISO/TR20174)	**1.2**
Thickness (mm)	**15 to 15** Throat thickness (mm) **N.A.**
Diameter (mm)	**N.A.**
Branch connection angle	**N.A.**
Other	**-**

WELDING CONSUMABLES

Process	**135D**	**135S**
Trade name(s)	**ESAB OK AristoRod 12.50**	**ESAB OK AristoRod 12.50**
Specification	**EN ISO 14341-A**	**EN ISO 14341-A**
Classification / designation	**G42 4 M21 3Si1**	**G42 4 M21 3Si1**
Size (mm)	**1,2**	**1,2**
Deposited metal thickness		
Groove	**3 mm**	**12 mm**
Throat	**N.A.**	**N.A.**
Flux trade name	**N.A.**	**N.A.**
Consumable insert	**N.A.**	**N.A.**
Other	**-**	**-**

GAS			
	Gas	Mixture	Flow rate (l/min.)
Shielding		**Ar 82% + CO_2 18%**	**18**
Trailing			
Backing			

POSITION

Welding position **PA**

Other **-**

PREHEAT				**POSTWELD HEAT TREATMENT**			
Preheat temperature	**+20°C**			Temperature	**None**	Time	-
Interpass temperature	**+250°C**			Method	**-**		
Postheat temperature	**None**	Time	**-**	Other	**-**		

ELECTRICAL CHARACTERISTICS

Current **DCEP**

Ampere (range) **See table** Volts (Range) **See table**

Mode of metal transfer **D (Short Transfer) First pass; S (Spray Transfer) Other passes**

Tungsten electrode size and type **N.A.**

Pulse welding details **N.A.**

Plasmawelding details **N.A.**

Waveform controlled welding machine - Waveform control mode **-**

Power source - Welding mode Pulse □ Non pulse ☑

Other **-**

TECHNIQUE

Travel speed (range) **See table**

String or weave bead **String** Maximum width of run **None**

Oscillation (*) **None** (Amplitude/Frequency/Dwell time)

Method of groove/edge preparation **Flame cutting and Machining**

Interpass cleaning **Grinding/Brushing**

Method of back gouging **Grind to sound metal**

Orifice or gas cup size **16**

Distance contact tube/worpiece (*) **15-20 mm**

Multiple or single pass **Multiple**

Multiple or single electrodes **Single**

Torch angle (*) **N.A.**

Other (*) for fully mechanized/robotic only

TRANSVERSE TENSILE TEST						
Spec. (No.)	Width (mm)	Thickness (mm)	Area (mm^2)	Total load (N)	R_m. (N/mm^2)	Fracture location
1236	**25,03**	**13,00**	**325,39**	**173365**	**533**	**Base material - ductile**
1236	**25,00**	**12,99**	**324,75**	**172872**	**532**	**Base material - ductile**

ALL-WELD METAL TENSILE TEST							
Spec. (No.)	Diameter (mm)	Area (mm)	L_0 (mm)	Yield strength (N/mm^2)	Tensile strength (N/mm^2)	A (%)	Z (%)
1236	**6,02**	**-**	**30**	**470**	**584**	**28.0**	**60**

BEND TEST			
Type	No.	Bend Angle	Result
SIDE TRANSVERSE	**4 OFF**	**180°**	**Acceptable**

IMPACT TEST

Full-Size 10x10x55

Spec No.	Notch location	Notch type	Test Temp. (°C)	Impact values (J)	Average (J)
VWT 0/1	**WELD**	**ISO-V**	**-20**	**142 - 187 - 201**	**177**
VHT 0/1	**FUSION LINE**	**ISO-V**	**-20**	**237 - 125 - 187**	**183**
VHT 2/1	**FUSION LINE + 2**	**ISO-V**	**-20**	**242 - 236 - 241**	**240**
VHT 5/1	**FUSION LINE + 5**	**ISO-V**	**-20**	**236 - 239 - 234**	**236**

HARDNESS TEST		
Location	Type/load	Maximum value
Parent metal(s)	**HV10**	**163**
H.A.Z.(s)	**HV10**	**276**
Weld metal	**HV10**	**214**

OTHER TEST

MACROGRAPHIC EXAMINATION **Acceptable**

MICROGRAPHIC EXAMINATION **Not required**

NON DESTRUCTIVE EXAMINATION

VISUAL EXAMINATION **Acceptable**

RADIOGRAPHIC EXAMINATION **Not required**

PENETRANT TEST **Not required**

MAGNETIC PARTICLE **Acceptable**

ULTRASONIC TEST **Acceptable**

Issued at: Genova on 15 July 2021

RINA Services S.p.A.
PED No. Bo. 0474

CONCRANE A REMAZEL Group Company	WELDING QUALIFICATION RECORD	pWPS n°:	CCP10
		Date	14/05/2021
		Record n. WR07/2021	Pag. 1 / 1

Reference code	**EN ISO 15614-1; 08833.ENG.MME.SDS**	*Welding position*	**PA – 1G – FLAT POSITIONG**
Welding process	**135 – GNAW**	*Type*	**SEMI-AUTOMATIC**
JOINT			
Joint type	**BW- BUTT WELD**	*Preparation method*	**FLAME AND MACHINING**
Weld preparation	**DOUBLE BEVEL GROOVE**	*Method*	**BRUSHING AND/OR GRIDING**
Backing	**NO**	*Root opening*	**2 mm**
Backing material	**N.A.**	*Groove angle*	**45°**
Backing gouging	**N.A.**	*Root face dimension*	**2 mm**

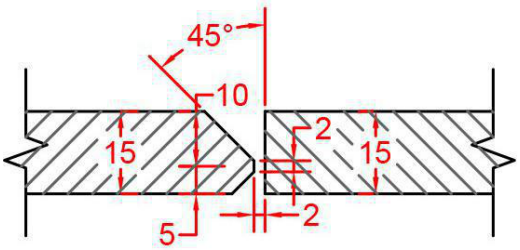
BASE MATERIAL		
Part identification	**A**	**B**
Pipe or plate	**PLATE**	**PLATE**
Material group	**1.2**	**1.2**
Material type	**EH36 (SA516GR70)**	**EH36 (SA516GR70)**
Thickness	**EH36**	**EH36**
Heat	**15 mm**	**15 mm**
C - CEV (IIW) & Pcm	**632914**	**632914**

FILLER MATERIALS AND GAS DETAIL DETAILS			
Trade marker filler	**ESAB OK AristoRod 12.50**	*Specification*	**EN ISO 14175**
Classification filler	**G42 4 M21 3Si (EN ISO 14341-A)**	*Classification gas*	**M21 – 82% Ar + 18% CO_2**
Batch nr. filler	**PVV01022033B**	*Flow rate l/min*	**19 l/min**
PREHEAT AND PWHT			
Preheat temperature	**AMBIENT (>20 °C)**	*PHWT method*	**N.A.**
Max interpass temperture	**250 °C**	*Time and temperature*	**N.A.**

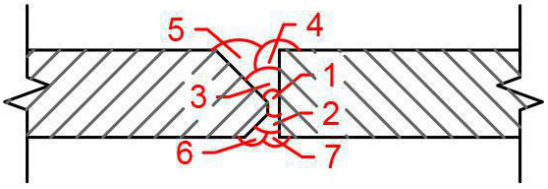
PARAMETERS RECORD

Pass weld	Welding process	Filer metal classification	Filler diameter [mm]	Current type	Ampere [A]	Voltage [V]	Travel speed [mm/min]	Heat input [kJ/mm]	Interpass temperature [°C]
\1	135	G42 4 M21 3Si	Ø 1.2	DCEP	150	19.5	149	0.94	N.A.
2	135	G42 4 M21 3Si	Ø 1.2	DCEP	244	27.7	295	1.10	72 °C
3	135	G42 4 M21 3Si	Ø 1.2	DCEP	253	27.5	310	1.08	83 °C
4	135	G42 4 M21 3Si	Ø 1.2	DCEP	252	27.9	327	1.03	112 °C
5	135	G42 4 M21 3Si	Ø 1.2	DCEP	245	27.7	286	1.14	135 °C
\6	135	G42 4 M21 3Si	Ø 1.2	DCEP	243	27.8	265	1.22	172 °C
7	135	G42 4 M21 3Si	Ø 1.2	DCEP	249	28.1	295	1.14	202 °C

Joint details



Bead sequence



Registered by	*Checked by*	*Society approved by*	*Customer approved by:*
A. Feltrin			

TEST REPORT No. 21.0366 Rev.1
ISSUED ON 21/06/2021
This document replace the test report no. 21.0366 Rev.0

Customer
CONCRANE S.r.l.
Via Caboto, 26
34147 Trieste (TS)

INFORMATION

The present test report cannot be modified and cannot be reproduced in a partial way without the formal written approval of Metal Services Materials Testing Srl.
Test results are only related to the supplied tested samples; the remains of them will be stored and available for not more than 30 days after the test report issuing date, unless differently agreed on the purchase order.
Equipment used are to be intended under metrological validity.
The uncertainty of measurement is expressed as expanded uncertainty obtained by multiplying the combined uncertainty for the coverage factor of k = 2, corresponding to a confidence interval of about 95%.
(+) Supervised test by 3rd part inspector.

MATERIAL RECEPTION

Date	Delivery note no.	Offer no.	Order no.
28/05/2021	21050	-	-

Sampling data

Sampling and identification executed by the Customer

MATERIAL DESCRIPTION

Sample no.	Identification mark
1236	Sample identified as "pWPS CCP10 – BW plate thk. 15 mm – material DNV-GL EH36/RINA DH36 – welding process GMAW – position 1G – welding consumable ESAB OK AristoRod 12.50 Ø 1.2 mm – AWS A5.18 ER 70S-6 – shielding gas EN ISO 14175 M21 82%Ar + 18% CO2 18/24 l/min"

TEST INDEX

Section no.	Test	Page
1	Visual examination (UNI EN ISO 17637:2017)	2
2	Magnetoscopic examination (UNI EN ISO 17638:2016 – ASTM E709 – API 2X)	2
3	Ultrasonic examination (UNI EN ISO 17640:2018 – API RP 2X)	3
4	Transverse tensile test on welds (UNI EN ISO 4136:2012)	4
5	Longitudinal tensile test on welds (UNI EN ISO 5178:2011)	4
6	Bend test on welds (UNI EN ISO 5173:2012)	4
7	Impact test on welds (UNI EN ISO 9016:2012)	4
8	Macrographic examination (UNI EN ISO 17639:2013)	5
9	Hardness test on welded joints (UNI EN ISO 9015-1:2011)	6
-	Other reference documents (08833.ENG.MME.SDS Rev.07)	-

NOTE

This document replaces the test report no. 21.0366 Rev.0 and it has been issued in order to integrate data of the fields "Material description" and of the section 5 "Longitudinal tensile test on welds"

//

RESERVED FOR DIGITAL SIGNATURE

Firmato digitalmente da:
PELLEGRIN LORENZO
Firmato il 21/06/2021 11:19
Seriale Certificato: 2140174687862822100327590954721363319 4
Valido dal 01/10/2020 al 01/10/2023
ArubaPEC S.p.A. NG CA 3

Laboratory Manager	Inspector (+)
p.i. L. Pellegrin	RINA S.p.A. F. Sedran

TEST REPORT No. 21.0366 Rev.1
ISSUED ON 21/06/2021
This document replace the test report no. 21.0366 Rev.0

1. VISUAL EXAMINATION

TEST CONDITIONS

Equipment	Visual conditions	Surface conditions	Working step
Weld Gauge, Lamp	Min. 1000 lux on tested surface	As welded	Welds completed
Test method	**Acceptance criteria**	**Procedure of examination**	**Reference drawing**
UNI EN ISO 17638:2016 – ASTM E709 – API 2X	UNI EN ISO 5817:2014 - 08833.ENG.MME.SDS Rev.07	-	pWPS CCP10
Heat Treatment	**Extention of the examination**	**-**	**-**
-	100%	-	-

RESULTS

Sample no.	Data	Position	Result of inspection
1236	31/05/2021	-	*Imperfections exceeding the acceptance criteria and their location*: No recordable indications.

Record of indications detected

Weld Id.	*Indication no.*	*Start from*	*Probe[1]*	*Length*	*Depth[1]*	*Probable type of defect*
-	-	-	-	-	-	-

Glossary: //
Note 1: Only for UT examination

2. MAGNETIC PARTICLES TESTING

TEST CONDITIONS

Equipment	Visual conditions	Surface conditions	Working step
Deltaflux DF Y/A S/N 140514	Min. 500 lux on tested surface	Welded	As finished
Contrast paint	**Type of magnetic particles**	**Magnetic particles**	**Type of current**
ProNdt 183	Wet - visible	ProNdt 181	AC
Test method	**Acceptance criteria**	**Procedure of examination**	**Reference drawing**
UNI EN ISO 17640:2018 – API RP 2X	UNI EN ISO 23278:2015 Lev.1 - 08833.ENG.MME.SDS Rev.07	-	pWPS CCP10
Heat Treatment	**Extension of the examination**	**Demagnetization**	**Lifting power**
Not declared	100%	Not required	5 Kg

RESULTS

Sample no.	Data	Position	Result of inspection
1236	31/05/2021	-	*Imperfections exceeding the acceptance criteria and their location*: No recordable indications.

Record of indications detected

Weld Id.	*Indication no.*	*Start from*	*Probe[1]*	*Length*	*Depth[1]*	*Probable type of defect*
-	-	-	-	-	-	-

Glossary: //
Note 1: Only for UT examination

NOTE

//

Laboratory Manager	Inspector (+)
p.i. L. Pellegrin	RINA S.p.A. F. Sedran

TEST REPORT No. 21.0366 Rev.1
ISSUED ON 21/06/2021
This document replace the test report no. 21.0366 Rev.0

3. ULTRASONIC EXAMINATION

TEST CONDITIONS

Material	Thickness	Heat Treatment	Testing plan
EH36	15 mm	-	100 %
Instrument	**Probe**	**Couplant**	**Note**
Sonatest D20+ s/n.:I009835	Olympus AMR 8x9 70	Gel	-
Test method		**Acceptance criteria**	
UNI EN ISO 17640:2018 – API RP 2X		UNI EN ISO 11666:2018 - 08833.ENG.MME.SDS Rev.07	

RESULTS

Sample no.	Data	Position	Result of inspection
1236	31/05/2021	-	*Imperfections exceeding the acceptance criteria and their location*: No recordable indications.

Record of indications detected

Weld Id.	*Indication no.*	*Start from*	*Probe*[1]	*Length*	*Depth*[1]	*Probable type of defect*
-	-	-	-	-	-	-

Glossary: //
Note 1: Only for UT examination

NOTE

//

Laboratory Manager	Inspector (+)
p.i. L. Pellegrin	RINA S.p.A. F. Sedran

TEST REPORT No. 21.0366 Rev.1

ISSUED ON 21/06/2021

This document replace the test report no. 21.0366 Rev.0

4. TRANSVERSE TENSILE TEST ON WELDS

Sample no.	Date	Position	T °C	a mm	b mm	So mm^2	Fm N	Rm MPa	Fracture Position
1236	07/06/2021	T to Weld	22	13.00	25.03	325.39	173365	533	Base material - ductile
1236	07/06/2021	T to Weld	22	12.99	25.00	324.75	172872	532	Base material - ductile

Instruments: Galdabini Quasar 1200 (Serial no. V9GV)
Glossary: T = transversal; L = longitudinal
Note: //

5. LONGITUDINAL TENSILE TEST ON WELDS

Sample no.	Date	Position	T °C	Ø mm	$Rp_{0.02}$ MPa	$Rp_{0.2}$ MPa	$Rp_{1.0}$ MPa	Rm MPa	L_0 mm	A %	Z %	Rs/Rm
1236	07/06/2021	All weld	22	6.02	470	-	-	584	30	28.0	60	-

Instruments: Galdabini Quasar 250 (Serial no.V901)
Glossary: //
Note: //

6. BEND TEST ON WELDS

Sample no.	Date	Type of test	T °C	t_s mm	l mm	d mm	Bend angle °	Test Result
1236	07/06/2021	SBB	22	10	65	40	180	No recordable indication
1236	07/06/2021	SBB	22	10	65	40	180	No recordable indication
1236	07/06/2021	SBB	22	10	65	40	180	No recordable indication
1236	07/06/2021	SBB	22	10	65	40	180	No recordable indication

Instruments: Caliper Sama 18148032 (766)
Glossary: t_s= specimen thickness; l= minimum clearance between the shoulders; d= ram diameter; SBB = Side bend on butt welds.
Note: //

7. IMPACT TEST ON WELDS

Sample no.	Date	Position	w mm	T °C	KV_2 J			KV_2 AVG J
1236	07/06/2021	VHT 5/1	10	-20	236	239	234	236
1236	07/06/2021	VHT 2/1	10	-20	242	236	241	240
1236	07/06/2021	VHT 0/1	10	-20	237	125	187	183
1236	07/06/2021	VWT 0/1	10	-20	142	187	201	177

Instruments: Galdabini Impact 300 (Serial no.V88G)
Glossary: T = transversal; L = longitudinal
Note: When absorbed energy is < 8 J or >= 240 J the values are approximate.

NOTE

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Laboratory Manager	Inspector (+)
p.i. L. Pellegrin	RINA S.p.A. F. Sedran

TEST REPORT No. 21.0366 Rev.1

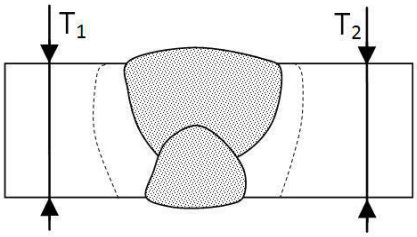
ISSUED ON 21/06/2021

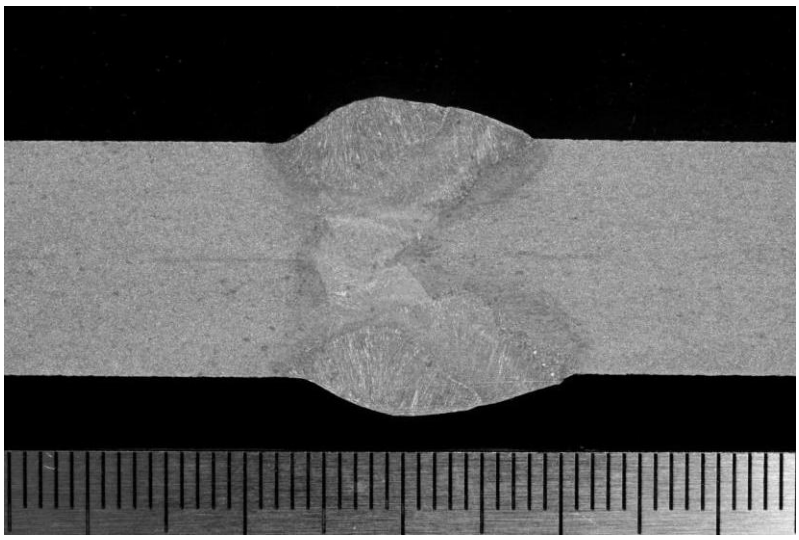
This document replace the test report no. 21.0366 Rev.0

8. MACROGRAPHIC EXAMINATION

Sample no	1236 Macro #1
Date	03/06/2021
Position	T to weld
Etching	HNO3 10%
T_1	15 mm
T_2	15 mm
Z_1	n.a.
Z_2	n.a.
Throat Thickness	n.a.

Sketch





Imperfection
No recordable indications

Instruments: Wild stereomicroscope (serial no.386471309)

Glossary: //

Note: //

NOTE

//

Laboratory Manager	Inspector (+)
p.i. L. Pellegrin	RINA S.p.A. F. Sedran

TEST REPORT No. 21.0366 Rev.1

ISSUED ON 21/06/2021

This document replace the test report no. 21.0366 Rev.0

9. HARDNESS TEST ON ARC WELDED JOINTS

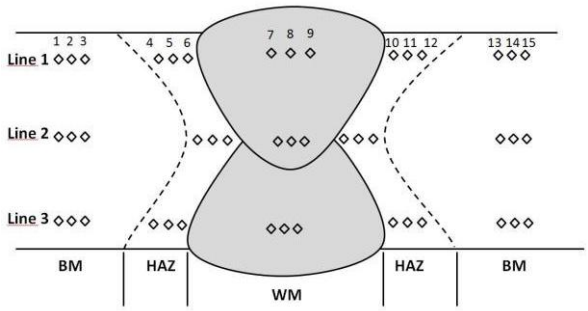
Sample no.	Date	Type of test	Indentation	Position	Line 1 (HV)	Line 2 (HV)	Line 3 (HV)
1236 Macro #1	03/06/2021	HV10	1	BM	152	162	163
			2	BM	148	154	154
			3	BM	156	157	151
			4	HAZ	210	178	191
			5	HAZ	227	188	237
			6	HAZ	228	206	276
			7	WM	199	207	209
			8	WM	201	214	207
			9	WM	200	200	208
			10	HAZ	239	195	271
			11	HAZ	195	182	192
			12	HAZ	165	159	155
			13	BM	150	158	157
			14	BM	150	161	151
			15	BM	151	153	153

Instruments: QNESS Q150+ (serial no. Q1294/02/18)

Glossary: //

Note: //

INDENTATION POSITION



NOTE

//

INSPECTOR NOTES(+)

Laboratory Manager	Inspector (+)
p.i. L. Pellegrin	RINA S.p.A. F. Sedran

DNV·GL

CERTIFICATE

Certificate No:
N141X66X

FOR STEEL MATERIAL - ROLLED STEEL FOR STRUCTURAL APPLICATION, HIGH STRENGTH

This is to certify

that the product:	**4 x Hot Rolled Steel plates**
Type designation:	**Grade VL E36**
Application/context:	**High strength steel**
Serial/tag no:	**N.A.**

Has been found to comply with relevant requirements in:
DNVGL-RU-SHIP :DNV GL rules for classification: Ships (2019-07)

The product is intended for

Yard:	-
Yard No:	-
Name of vessel:	**STOCK**
DNV GL Id No:	-

The product / material has been marked: VL Class Stamp only on: Plates Surface
VL material grades are certified and found to be in compliance with the requirements to corresponding NV and GL grades.

Particulars of Vendor and Purchaser

Vendor:	**Metinvest Trametal S.p.A.**
Vendor reference:	**31904901**
Purchaser:	**TONELLO S.P.A**
Purchaser reference:	**B9001117**

Issued at **Italy/Malta CMC** on **2019-12-12**

for **DNV GL**

This document has been digitally signed and will therefore not have handwritten signatures

Berni, Marco
Surveyor

TONELLO S.p.A.
CONTROLLO QUALITA'
PER
COPIA CONFORME
CENTRO LAVORAZIONE LAMIERE

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Certificate No: **N141X66X**

Linked Type Approvals:

AMMM000010C Rev.1, Rolled Steel Products

Surveyor Supplementary information:

For mechanical test results see manufacturer report No. 47645.



CERTIFICATO DI CONTROLLO 3.2 / INSPECTION CERTIFICATE 3.2 - EN 10204:2004

METINVEST
METINVEST TRAMETAL SPA

Società per azioni con socio unico soggetta a direzione e coordinamento di Metinvest B.V
Registered office: Via XII Ottobre, 3 - 16121 Genova, Italy
Phone +39 010 5762911 - Fax +39 010 5762990
Works: Via E. Fermi, 44 - 33058 San Giorgio di Nogaro UD, Italy
Phone +39 0431 629989 - Fax +39 0431 629985
Cap. Soc. Euro 300.120.000,00 i.v.
C.F., P.IVA e Iscr. Reg. Imp. GE 05956630965 - REA 437720/GE
http://trametal.metinvestholding.com

(A) PROCESSO DI ELABORAZIONE / STEELMAKING PROCESS: E = ELECTRIC ; BO = BASIC OXYGEN
(B) STATO DI FORNITURA / DELIVERY CONDITION: AR = GREZZO DI LAMINAZIONE / AS ROLLED ;
N* = LAMINAZIONE A TEMPERATURA CONTROLLATA / NORMALIZING ROLLING ;
N = NORMALIZZATO / NORMALIZED at 910°C, 1,5 min/mm ; ARIA CALMA / STILL AIR;
R = RICOTTO / ANNEALED;
N+R = NORMALIZZATO + RINVENUTO / NORMALIZED + TEMPERED
(C) TRATTAMENTO TERMICO DEL CAMPIONE / HEAT TREATMENT OF SAMPLE:
N = 910°C, 1,5 min/mm ; ARIA CALMA / STILL AIR
R = 650°C, 1,5 min/mm ; ARIA CALMA / STILL AIR
(D) Ceq_1 = C + Mn/6 ; Ceq_2 = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15 ;
Pcm = C + Si/30 + (Mn + Cu + Cr)/20 + Nl/60 + Mo/15 + V/10 + B*5
(1) POSIZIONE / LOCATION: 1 = TESTA / TOP ; 2 = PIEDE / BOTTOM
(2) POSIZIONE / LOCATION: C = CUORE / 1/2 THICKNESS ; P = PELLE / SURFACE ; D = 1/4 SPESSORE / THICKNESS
(3) DIREZIONE / DIRECTION: L = LONGITUDINALE / LONGITUDINAL ; T = TRASVERSALE / TRANSVERSE
(4) FORMA DEL PROVINO / SHAPE OF TEST PIECE: P = PRISMATICO / PRISMATIC ; C = CILINDRICO / CYLINDRICAL
(5) ESITO PROVA DI PIEGA / RESULT: OK = COMPLYING ; NO = NOT COMPLYING

A06 Cliente / Customer

TONELLO S.P.A.
VIA D'ORMENT N. 6
33042 BUTTRIO 33042 IT
UD ITALIA

A03 N° Certificato / Certificate no.	Z02 Data / Date
47645	12/12/2019
A08 N° Ordine Trametal / Works order	A07 N° Ordine cliente / Customer's order
31904901	B9001117
DDT	del / date
Pratica / File no.	N141X66X
del / date	09/12/2019

B06 Marcatura di prodotto / Marking of the product
LAMIERA/ORDINE/N° INFORNAMENTO/DIMENSIONI/QUALITÀ/MARCHIO DEL PRODUTTORE
PLATE/ORDER/INTERNAL N°/DIMENSIONS/STEEL GRADE/MANUFACTURER'S MARK

B01/B02/B03

Prodotto / Product	Lamiere / Hot rolled plates
Qualità / Steel grade	VL E36
Normativa / Specification	IACS-DNVGL

B07 ITEM	B07 LAMIERA PLATE	B07 N° INFORN. INTERNAL NUMBER	B09/B11 DIMENSIONI [mm] DIMENSIONS	B12 MASSA TEORICA [t] THEORICAL WEIGHT	B07 LOTTO BATCH NO.	C70 PROCESSO ELAB. (A) STEELMAKING PROCESS	B04 STATO FORNITURA LAMIERA (B) DELIVERY CONDITION	C00 CAMPIONE SAMPLE	B05 TRATT. CAMPIONE (C) HEAT TREATMENT	C00 CAMPIONE PWHT SAMPLE	B05 PWHT TEMPERATURA INIZIO °C BEGINNING TEMPERATURE	VELOCITA' RISCALDO C/h HEATING RATE	TEMPERATURA TRATTAMENTO °C TEMPERATURE TREATMENT	PERMANENZA Min HOLDING TIME	VELOCITA' RAFFREDDAMENTO °C/h COOLING RATE	TEMPERATURA FINE °C END TEMPERATURE	N° CICLI / CYCLES	C00 CAMPIONE Q+T SAMPLE	B05 Q+T TEMPERATURA (Q) °C TEMPERATURE	PERMANENZA (Q) Min HOLDING TIME	RAFFREDDAMENTO COOLING	TEMPERATURA (T) °C TEMPERATURE	PERMANENZA (T) Min HOLDING TIME	RAFFREDDAMENTO COOLING
1	1TAN850407A	1590166	15.00X2450X12000	3,46	632914	BO	N	W7849		19T829															
~~2~~	~~1NAM330204A~~	~~1590652~~	~~30.00X2450X6300~~	~~3,63~~	~~632911~~	~~BO~~	~~N~~	~~W7846~~																	
~~3~~	~~1NAM960403A~~	~~1590606~~	~~35.00X2450X7200~~	~~4,05~~	~~632912~~	~~BO~~	~~N~~	~~W7847~~																	
~~4~~	~~1NAM960503A~~	~~1590550~~	~~50.00X2450X6300~~	~~6,06~~	~~632913~~	~~BO~~	~~N~~	~~W7848~~																	
	Total	4		18,00																					

TONELLO S.p.A.
CONTROLLO QUALITA'
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CENTRO LAVORAZIONE LAMIERE

C71/C92 COMPOSIZIONE CHIMICA DI COLATA / HEAT CHEMICAL ANALYSIS

B07 COLATA HEAT	C71 C %	C72 Mn %	C73 Si %	C74 P %	C75 S %	C76 Cu %	C77 Ni %	C78 Cr %	C79 Mo %	C80 Al %	C81 V %	C82 Nb %	C83 Ti %	C84 Sn %	C85 Ca %	C86 N %	C87 B %	C88 H %	C89 Ceq1 % (D)	C90 Ceq2 % (D)	C91 Pcm % (D)
VL E36 Min 0.00 - 100.00		0,90								0,020	0,050	0,020	0,007								
VL E36 Max 0.00 - 100.00	0,18	1,60	0,50	0,035	0,035	0,350	0,400	0,200	0,080		0,100	0,050	0,020								
1NAM33	0,16	1,50	0,20	0,012	0,003	0,060	0,040	0,030	<0.005	0,035	<0.005	0,021	<0.005	<0.005	0,0000	0,0080	0,0005	0,0002	0,41	0,42	0,25
1NAM96	0,16	1,49	0,20	0,012	0,002	0,040	0,030	0,020	<0.005	0,035	<0.005	0,020	<0.005	<0.005	0,0000	0,0070	<0.0005	0,0002	0,41	0,42	0,24
1TAN85	0,16	1,51	0,22	0,008	0,002	0,030	0,020	0,030	<0.005	0,037	<0.005	<0.010	<0.005	<0.005	0,0000	0,0070	<0.0005	0,0004	0,41	0,42	0,25

	PROVA DI TRAZIONE TENSILE TEST								PROVA DI RESILIENZA IMPACT TEST - CHARPY V-NOTCH TEST						PROVA DI PIEGA BEND TEST				PROVA DI DUREZZA HARDNESS TEST				PROVA DI STRIZIONE Z% TEST	
C00		C01	C01	C02	C03	C11	C12	C13	C14	C10	C41	C02	C03	C01	C42	C43	C02	C51	C52	C50	C01	C30	C31	C32	C53	C54
CAMPIONE SAMPLE	PLATE THICKNESS SPESSORE LAMIERA	POSIZIONE (1) LOCATION	POSIZIONE (2) LOCATION	DIREZIONE (3) ORIENTATION	TEMPERATURA [°C] TEST TEMPERATURE	ReH [Mpa] YIELD STRENGTH	Rm [Mpa] TENSILE STRENGTH	ReH/Rm	A% ELONGATION	FORMA PROVINO (4) SHAPE OF TEST PIECE	LARGHEZZA [mm] WIDTH	DIREZIONE (3) ORIENTATION	TEMPERATURA [°C] TEST TEMPERATURE	POSIZIONE (2) LOCATION	SINGOLI VALORI [J] INDIVIDUAL VALUES	MEDIA [J] MEAN VALUE	DIREZIONE (3) ORIENTATION	MANDRINO [mm] MANDREL	ANGOLO [°] ANGLE	ESITO (5) RESULT	POSIZIONE (2) LOCATION	METODO TEST METHOD	SINGOLI VALORI INDIVIDUAL VALUES	MEDIA MEAN VALUE	Z% SINGOLI VALORI Z% INDIVIDUAL VALUES	Z% VALORE MEDIO Z% MEAN VALUE
VL E36 Min 0.00 - 100.00					20	355	490		21,0																	

			PROVA DI TRAZIONE TENSILE TEST									PROVA DI RESILIENZA IMPACT TEST - CHARPY V-NOTCH TEST						PROVA DI PIEGA BEND TEST				PROVA DI DUREZZA HARDNESS TEST				PROVA DI STRIZIONE Z% TEST	
C00		C01	C01	C02	C03	C11	C12		C13	C14	C10	C41	C02	C03	C01	C42	C43	C02	C51	C52	C50	C01	C30	C31	C32	C53	C54
CAMPIONE SAMPLE	SPESSORE LAMIERA PLATE THICKNESS	POSIZIONE (1) LOCATION	POSIZIONE (2) LOCATION	DIREZIONE (3) ORIENTATION	TEMPERATURA [°C] TEST TEMPERATURE	ReH [Mpa] YIELD STRENGTH	Rm [Mpa] TENSILE STRENGTH	ReH/Rm	A% ELONGATION	Rp 0.2 [Mpa] PROOF/YIELD STRENGTH	FORMA PROVINO (4) SHAPE OF TEST PIECE	LARGHEZZA [mm] WIDTH	DIREZIONE (3) ORIENTATION	TEMPERATURA [°C] TEST TEMPERATURE	POSIZIONE (2) LOCATION	SINGOLI VALORI [J] INDIVIDUAL VALUES	MEDIA [J] MEAN VALUE	DIREZIONE (3) ORIENTATION	MANDRINO [mm] MANDREL	ANGOLO [°] ANGLE	ESITO (5) RESULT	POSIZIONE (2) LOCATION	METODO TEST METHOD	SINGOLI VALORI INDIVIDUAL VALUES	MEDIA MEAN VALUE	Z% SINGOLI VALORI Z% INDIVIDUAL VALUES	Z% VALORE MEDIO Z% MEAN VALUE
VL E36 Max 0.00 - 100.00					20		630																				
VL E36 Min 6.00 - 50.00													L	-40			34										
~~W7846~~	~~30,00~~	~~2~~	~~P~~	~~T~~	~~20~~	~~401~~	~~522~~	~~0,77~~	~~32,7~~		~~P~~	~~10,00~~	~~L~~	~~-40~~	~~P~~	~~233 250 254~~	~~246~~											
~~W7847~~	~~35,00~~	~~2~~	~~P~~	~~T~~	~~20~~	~~380~~	~~511~~	~~0,74~~	~~32,3~~		~~P~~	~~10,00~~	~~L~~	~~-40~~	~~P~~	~~284 291 276~~	~~284~~											
~~W7848~~	~~50,00~~	~~2~~	~~P~~	~~T~~	~~20~~	~~378~~	~~528~~	~~0,72~~	~~30,0~~		~~P~~	~~10,00~~	~~L~~	~~-40~~	~~P~~	~~206 185 187~~	~~193~~											
W7849	15,00	2	P	T	20	413	513	0,81	31,8		P	10,00	L	-40	P	271 243 263	259										

C10
UNI EN ISO 6892-1:2016 / UNI EN ISO 148-1:2016

Z01

ITEM		TOLLERANZA DI SPESSORE TOLERANCE ON THICKNESS	TOLLERANZE DI LARGHEZZA TOLERANCE ON WIDTH	TOLLERANZE DI LUNGHEZZA TOLERANCE ON LENGTH	CONDIZIONI SUPERFICIALI SURFACE FINISH	PLANARITÀ FLATNESS
1		EN 10029 CL.B	-0+100 MM	-0+200 MM	EN 10163/2 CL B2	EN 10029 CL. N
2		EN 10029 CL.B	-0+100 MM	-0+200 MM	EN 10163/2 CL B2	EN 10029 CL. N
3		EN 10029 CL.B	-0+100 MM	-0+200 MM	EN 10163/2 CL B2	EN 10029 CL. N
4		EN 10029 CL.B	-0+100 MM	-0+200 MM	EN 10163/2 CL B2	EN 10029 CL. N

CERTIFICHIAMO che le lamiere elencate sono conformi alla prescrizione dell'ordine, che i controlli della marcatura, dell'aspetto superficiale e dimensionale hanno dato esito positivo.
WE CERTIFY that the above mentioned plates are consistent with the order prescriptions: marking, inspection and measurement without objection.
DICHIARIAMO CHE LE LAMIERE SONO STATE CONTROLLATE IN ACCORDO ALLA NORMATIVA VIGENTE E CHE LE RADIAZIONI IONIZZANTI NON ECCEDONO IL VALORE DEL FONDO NATURALE.
WE DECLARE THAT THE PLATES WERE CONTROLLED ACCORDING TO STANDARD AND RADIATION DO NOT EXCEED THE NATURAL RADIATION.

Z06

Z07

Z03 ENTE COLLAUDO / INSPECTION BODY

TIMBRO DELL'ISPETTORE
STAMP OF THE INSPECTION REPRESENTATIVE

X Witnessed ☐
And found to comply with:
DNV GL Rules
Date: 2019-12-12
Sign: Marco Bernl
DNV GL Venice

This document has been digitally signed and will therefore not have handwritten signatures.

Z02

METINVEST TRAMETAL S.p.A.
F. Andrian
CQ Manager

Certificazione valida per materiale fornitoVi con ns. DDT nr. C1000590 del 20/04/2021 relativo a:

PZ. 2 PART. SAGOMATO A DISEGNO: P01 SP. 15mm
PZ. 2 PART. SAGOMATO A DISEGNO: P02 SP. 15mm
PZ. 6 PART. SAGOMATO A DISEGNO: P05 SP. 15mm
RIF. VS. ORD. EMAIL DEL 13/04/2021
RIF. VS. COMM. URGENTE

TONELLO S.p.A.
CONTROLLO QUALITA'
PER
COPIA CONFORME
CENTRO LAVORAZIONE LAMIERE

CERTIFICATO DI COLLAUDO (3.1) - Analisi Chimica
ATTESTATO DI CONTROLLO (2.2) - Caratteristiche Meccaniche/
INSPECTION CERTIFICATE (3.1) - Chemical analysis
TEST REPORT (2.2) - Mechanical properties

Data/Date: 2021-02-19

Numero certificato/Cert no: EC26329874 rev. 0

Nostro ordine/Our order:	0100206249	Vostro ordine/Your order:	263/2021
Nostro riferimento/Our ref:	HYBRIS PRD account	Vostro riferimento/Your ref:	
Codice Cliente/Cust no:	ITB01537	Vostro numero fax/Your fax	
Data ordine Cliente/Your date:	20210217	Vostra e-mail/Your e-mail:	

Indirizzo di fatturazione/Invoice address
ALLOYS ITALIA SRL
.
VIA DEGLI SCHIAVETTI 9 - ZONA IND.
34074 MONFALCONE
Italy

Destinatario del certificato/Cert receiver

Indirizzo di spedizione/Delivery address
ALLOYS ITALIA SRL
VIA DEGLI SCHIAVETTI 9 - ZONA IND.
34074 MONFALCONE GO
Italy

CONSEGNA/DELIVERY Numero di lotto/Lot no: PVV01022033B Quantità/Quantity: 1098 KGM

PRODOTTO/PRODUCT

Marchio/Brand: ESAB
Descrizione/Desc: OK AristoRod 12.50 1.2mm 18kg
Codice/Item no: **1A50126910**

CLASSIFICAZIONE/CLASSIFICATIONS

EN ISO 14341-A: G 3Si1
EN ISO 14341-A: G 38 3 C1 3Si1
EN ISO 14341-A: G 42 4 M20 3Si1
EN ISO 14341-A: G 42 4 M21 3Si1
SFA/AWS A5.18: ER70S-6
CSA W48: B-G 49A 3 C1 S6
JIS Z 3312: YGW 12 (C1)

CARATTERISTICHE MECCANICHE/MECH PROPS

Valori tipici/Typical data: in accordo a/acc to EN 10204 - 2.2

Norma/Standard: EN
Altro/Auxiliary: M21
Condizione/Condition:

TRAZIONE/TENSILE

ReL	Rm	A4-A5
470 MPa	560 MPa	26 %

RESILIENZA/IMPACT

Temp	-30 °C	-40 °C	-50 °C
KV	100 J	90 J	70 J

COMPOSIZIONE CHIMICA/ CHEMICAL COMPOSITION

Valori reali/Actual results: in accordo a/acc to I 3.1

Wire/strip

Altro/Auxiliary:

C		0.08%
Si		0.83%
Mn		1.47%
P		0.007%
S		0.012%
Cr		0.02%
Ni		0.01%
Mo	<	0.01%
Cu		0.05%
V	<	0.01%
Al		0.007%
Ti+Zr		0.01%

COMMENTI/COMMENTS

Materiale fornito in accordo al Sistema Qualità conforme alla norma EN ISO 9001.
Questo certificato è stampato elettronicamente ed è valido senza firma.
Per ogni chiarimento, rivolgersi a:

ESAB Saldatura S.p.A. | Str. Provinciale 34, n.37 - 20010 Ossona MI, Italy

Product supplied under a QA Programme fulfilling the EN ISO 9001 standard.
This certificate is produced electronically and is valid without signature.
Please refer any queries to: (see above)

Validazione - analisi chimica/Validation - Chemical Analysis
Josef Moravek Quality Manager

Validazione - altro/Validation - Others
Jose Abal Lopez,H. Rasmuson Product Manager,

4. Welder Certificates

This document is the property of **REMAZEL Engineering S.p.A.** who will safeguard its rights according to the civil and penal provisions of the Law.

WELDER APPROVAL CERTIFICATE
ACCORDING TO UNI EN ISO 9606-1:2017

No. **24TO02491CE1**

Designation	**UNI EN ISO 9606-1 135-D/135-S P BW FM1/FM1 S/S s12 PA ss nb**				
Welder	**RADASANU GEORGENTIN IONUT**				
Born in	**ROMANIA-ROMANIA**			on	**07/05/1986**
Identification	**3249766AA**	Method of Identification	**C.I.**	Stamp No.	**RI**
Employer/Manufacturer	**REMAZEL ENGINEERING S.P.A. - Milano (MI)**				

WPS used by welder during welding of test coupon: **01/16** Job knowledge: **not tested**

Welding variables	Test piece	Range of qualification
Welding process(es)	**135-D / 135-S**	**135; 138**
Transfer mode	**Short-arc / Spray-arc**	**Short, spray, globular and pulsed-arc**
Product type	**Plate**	**Plates and pipes**
Type of weld	**BW**	**Butt weld**
Parent Metal group (ISO/TR 15608)	**1.2**	**1 to 11**
Filler material group(s)	**FM1**	**FM1, FM2**
Filler material type	**135-D**	**Root: Solid wire** **Fill/Cap: Solid wire/electrode core: M**
	135-S	**Solid wire/electrode core: M**
Shielding gas (EN ISO 14175)	**M21 /**	**All compatible**
Type of current and polarity	**135-D: DC EP; 135-S: DC EP**	**All compatible**
Deposited thickness (mm)	**12**	**135-D: 3 to 6**
		135-S: 3 to 18
		135-D / 135-S: >= 3
Pipe outside diameter (mm)	**N.A.**	**75 and over**
Welding position(s)	**PA**	**PA**
Weld details / Layer technique	**ss nb**	**135-D: ss nb, ss mb, bs, ss gb, ss fb**
		135-S: ss mb, bs

Type of test							
Visual	**Acceptable**	Radiographic	**Not tested**	Magnetic particle	**Not tested**	Penetrant	**Not tested**
Macro	**Not tested**	Fracture	**Acceptable**	Bend	**Not tested**		

Revalidation method 9.3 a)

This certificate is valid from	**29 July 2024**	to	**28 July 2027**
Issued at	**GENOVA**	on	**29 July 2024**

This certificate consist of 2 pages

The contents of this document is confidential and copyrighted.

Filippo Lago
(Italy Industrial & Personnel Certification Services Director)

ACCREDIA
L'ENTE ITALIANO DI ACCREDITAMENTO

PRS N° 066 C

Membro degli Accordi di Mutuo Riconoscimento EA, IAF e ILAC
Signatory of EA, IAF and ILAC Mutual Recognition Agreements

RINA Services S.p.A.
PED No. Bo. 0474
Via Corsica 12 - 16128 Genova

Prolongation of approval by employer / coordinator for the following 6 months			**Prolongation of approval by examiner or test body**		
Date	Signature	Position or title	Date	Signature	Position or title

WELDER APPROVAL CERTIFICATE
ACCORDING TO UNI EN ISO 9606-1:2017

No. **24TO02491CE2**

Designation	**UNI EN ISO 9606-1 135-S P FW FM1 S t12 PB ml**				
Welder	**RADASANU GEORGENTIN IONUT**				
Born in	**ROMANIA-ROMANIA**			on	**07/05/1986**
Identification	**3249766AA**	Method of Identification	**C.I.**	Stamp No.	**RI**
Employer/Manufacturer	**REMAZEL ENGINEERING S.P.A. - Milano (MI)**				

WPS used by welder during welding of test coupon: **02/16** Job knowledge: **not tested**

Welding variables	Test piece	Range of qualification
Welding process(es)	**135-S**	**135; 138**
Transfer mode	**Spray-arc**	**Spray, globular and pulsed-arc**
Product type	**Plate**	**Plates and pipes**
Type of weld	**FW**	**Fillet weld**
Parent Metal group (ISO/TR 15608)	**1.2**	**1 to 11**
Filler material group(s)	**FM1**	**FM1, FM2**
Filler material type	**Solid wire**	**Solid wire/electrode core: M**
Shielding gas (EN ISO 14175)	**M21**	**All compatible**
Type of current and polarity	**DC EP**	**All compatible**
Material thickness (mm)	**12**	**>= 3**
Pipe outside diameter (mm)	**N.A.**	**75 and over**
Welding position(s)	**PB**	**PA, PB**
Weld details / Layer technique	**ml**	**sl, ml**

Type of test							
Visual	**Acceptable**	Radiographic	**Not tested**	Magnetic particle	**Not tested**	Penetrant	**Not tested**
Macro	**Not tested**	Fracture	**Acceptable**	Bend	**Not tested**		

Revalidation method 9.3 a)

This certificate is valid from	**29 July 2024**	to	**28 July 2027**
Issued at	**GENOVA**	on	**29 July 2024**

This certificate consist of 2 pages

The contents of this document is confidential and copyrighted.

Filippo Lago
(Italy Industrial & Personnel Certification Services Director)

ACCREDIA
L'ENTE ITALIANO DI ACCREDITAMENTO

PRS N° 066 C

Membro degli Accordi di Mutuo Riconoscimento EA, IAF e ILAC
Signatory of EA, IAF and ILAC Mutual Recognition Agreements

RINA Services S.p.A.
PED No. Bo. 0474
Via Corsica 12 - 16128 Genova

Prolongation of approval by employer / coordinator for the following 6 months			**Prolongation of approval by examiner or test body**		
Date	Signature	Position or title	Date	Signature	Position or title

5. Attachments

This document is the property of **REMAZEL Engineering S.p.A.** who will safeguard its rights according to the civil and penal provisions of the Law.

SIDERTAGLIO CALANDRATURA S.R.L. Pipes Rolling & Welding	**WELDING BOOK**	R0177-01 WB **Rev.2**

WB N.	R0177-01
JOB	R0177
P.O.	24005073
CLIENT JOB	24-27012
CODE	EN 15614-1

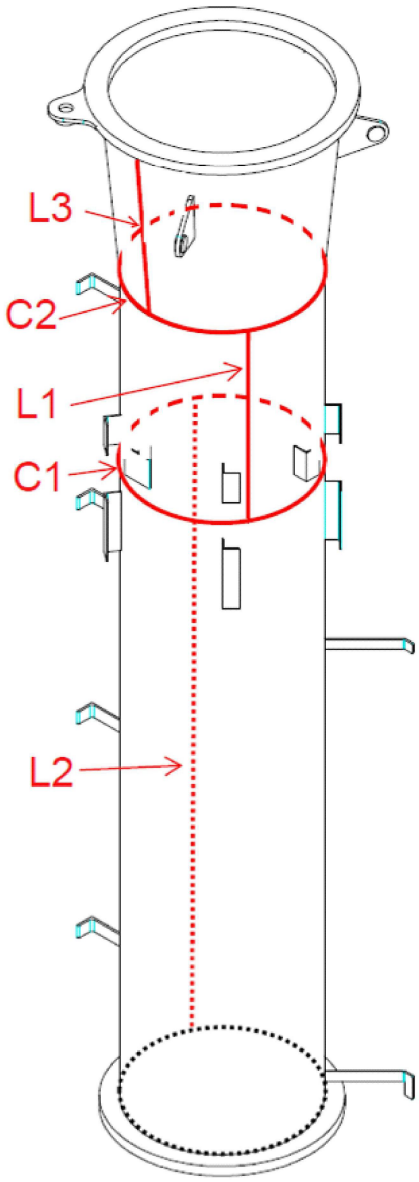
CLIENT DRAWING	**REV.**
C09-0001-P0002	D

INDEX

Sect.1	SKETCH + WELDING KEY FORM
Sect.2	WPS
Sect.3	WPQR
Sect.4	WPQ / WOPQ

REV	DATA	WC	QCM	AI / NoBo / TPI
2	**22/10/2024**	WELDING DEPUTY	SIDERTAGLIO CALANDRATURA S.R.L.	
1	04/10/2024			
0	12/09/2024			

DWG: C09-0001-P0002 Rev. D



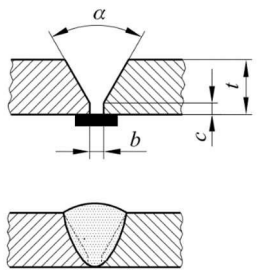
Weld ID	WPQR	WPS	Process	Material	Thickness (mm)	VT	MT	UT	Notes
L1	PROSAL-5160-2023	04E-23-01	135+121	S355J2+N	15	100%	100%	100%	
C1	PROSAL-5160-2023	04E-23-01	135+121	S355J2+N	15	100%	100%	100%	
L2	PROSAL-5160-2023	04E-23-01	135+121	S355J2+N	15	100%	100%	100%	
C2	**PROSAL-5160-2023**	**04E-23-02**	**135+121**	S355J2+N	15	100	100	100	
L3	PROSAL-5160-2023	04E-23-01	135+121	S355J2+N	15	100%	100%	100%	

SIDERTAGLIO CALANDRATURA S.R.L.
Pipes Rolling & Welding

WELDING PROCEDURE SPECIFICATION (WPS)
ACCORDING TO EN ISO 15609-1
for welder/welding operator qualificated only

MANUFACTURER	**SIDERTAGLIO CALANDRATURA S.R.L.**		
WELDING PROCEDURE SPECIFICATION No.	**04E-23-01 Rev.1**	Date	**12/9/2024**
WELDING PROCESS	**135 + 121**	Type(s)	**SEMIAUTOMATIC+MACHINE**
WPAR REFERENCE (if required)	PROSAL-5160-2023 Rev.2	Date	14/03/2024

WELD PREPARATION DETAILS/WELDING SEQUENCE



Pass	Process	Diam. mm	A	V	mm/min	KJ/mm
1	135	1,2	180 - 190	20,5 – 21,5	180-220	0,81-1,09
2	121	4,0	500 – 550	28,5 - 29,5	500-600	1,43-1,95
3n	121	4,0	500 – 550	28,5 - 29,5	500-600	1,43-1,95

α: 50±10°; b: 3±2mm; c: 1±1mm; t: thickness

JOINT

Joint type	**BW - Single V**	Method of preparation and cleaning	**Grinding - Brushing**
Backing	**Yes**	Tack welding	**135**
Backing material	**Ceramic for root pass**	Other	Preheating by flame
Back gouging	**No**		

PARENT MATERIAL

Designation	**P355NL2***				
Group(s) (ISO TR 15608)	**1.2**	to	**1.2**		
Thickness (mm)	**12,5**	to	**50**		
Outside diameter (mm)	**-**	Range	**⩾150**		

WELDING POSITION

Position tested	**PA**
Positions qualified	**PA**
Branch angle	**N.A.**
Other	***Covers equal and lower MSYS and groups**

WELDING CONSUMABLES

Process	**135**	**121**
Trade name	**Pittarc G9 Innov-acr**	**OESD3**
Designation	**G46 4 M21 4Si1**	**14171-A: S3Si**
Size (mm)	**1,2**	**4,0**
Thickness deposited	**4mm**	**Up to Thickness**
Throat thickness	**/**	

ELECTRICAL PARAMETERS

Type of current/Polarity	**DC EP**
Current range (A)	**See sequence**
Arc voltage range (V)	**See sequence**
Mode of metal transfer	**135: Spray**
Other	**/**

SHIELDING GAS

Shielding composition	**CO2 18% + Ar 82%**	**Flux: AS 630**
Flow rate (l/min)	**16-18**	**SA FB 1 55 AC H5**
Backing composition	**N.A.**	
Flow rate (l/min)	**N.A.**	

PREHEAT/INTERPASS/PWHT

Minimum preheat (°C)	**≥ 100°C**
Maximum interpass (°C)	**250°C**
PWHT temperature & time	**NO**
Preheat maintenance	**NO**

OTHER INFORMATION

Nozzle diameter (mm)	**135 = 15 121 = 25**	*Oscillation	**N.A.**
Tungsten electrode type	**N.A.**	*Stand off distance (mm)	**N.A.**
Tungsten electrode diam. (mm)	**N.A.**	*Torch angle	**N.A.**
String or weave	**String**	Travel speed (cm/min)	**See sequence**

*For fully mechanized

MANUFACTURER

WELDING DEPUTY

SIDERTAGLIO CALANDRATURA S.R.L.
Pipes Rolling & Welding

WELDING PROCEDURE SPECIFICATION (WPS)
ACCORDING TO EN ISO 15609-1
for welder/welding operator qualificated only

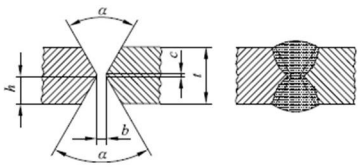
MANUFACTURER **SIDERTAGLIO CALANDRATURA S.R.L.**

WELDING PROCEDURE SPECIFICATION No. **04E-23-02** Date **14/03/2024**

WELDING PROCESS **135 + 121** Type(s) **SEMIAUTOMATIC+MACHINE**

WPAR REFERENCE (if required) PROSAL-5160-2023 Rev.2 Date 14/03/2024

WELD PREPARATION DETAILS/WELDING SEQUENCE



Pass	Process	Diam. mm	A	V	mm/min
1	135	1,2	180 - 190	20,5 – 21,5	200
2n	121	4,0	500 – 550	28,5 - 29,5	540
Back Gouging					
Rn	121	4,0	500 – 550	28,5 - 29,5	540

α: 50±10° b : 3±2mm c: 1±1mm h: t/2

JOINT

Joint type	**BW**	Method of preparation and cleaning	**Grinding - Brushing**
Backing	**Yes**	Tack welding	**135**
Backing material	**Ceramic**	Other	-
Back gouging	**Yes**		

PARENT MATERIAL

Designation	**P355NL2***		
Group(s) (ISO TR 15608)	**1.2** to **1.2**		
Thickness (mm)	**12,5** to **50**		
Ouside diameter (mm)	**N.A.** Range ⩾		

WELDING POSITION

Position tested	**PA**
Positions qualified	**PA**
Branch angle	**N.A.**
Other	***Covers equal and lower groups and MSYS**

WELDING CONSUMABLES

Process	**135**	**121**
Trade name	**Pittarc G9 Innov-acr**	**OESD3**
Designation	**G46 4 M21 4Si1**	**14171-A: S3Si**
Size (mm)	**1,2**	**4,0**
Thickness deposited	**4mm**	**Up to Thickness**
Throat thickness	**/**	

ELECTRICAL PARAMETERS

Type of current/Polarity	**DC EP**
Current range (A)	**See sequence**
Arc voltage range (V)	**See sequence**
Mode of metal transfer	**135: Spray**
Other	**/**

SHIELDING GAS

Shielding composition	**CO2 18% + Ar 82%**	**Flux: AS 630**
Flow rate (l/min)	**16-18**	**SA FB 1 55 AC H5**
Backing composition	**N.A.**	
Flow rate (l/min)	**N.A.**	

PREHEAT/INTERPASS/PWHT

Minimum preheat (°C)	**≥ 100°C**
Maximum interpass (°C)	**250°C**
PWHT temperature & time	**NO**
Preheat maintenance	**NO**

OTHER INFORMATION

Nozzle diameter (mm)	**135 = 15 121 = 25**	*Oscillation	**N.A.**
Tungsten electrode type	**N.A.**	*Stand off distance (mm)	**N.A.**
Tungsten electrode diam. (mm)	**N.A.**	*Torch angle	**N.A.**
String or weave	**String**	Travel speed (cm/min)	**See sequence**

*For fully mechanized

MANUFACTURER

WELDING DEPOTY

Form WPS EN ISO 15609-1 08-04

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TÜV SÜD Italia

CERTIFICATO DI QUALIFICA PROCEDIMENTO DI SALDATURA

WELDING PROCEDURE RECORD TEST CERTIFICATE / ZERTIFIKAT ANERKENNUNG VON SCHWEISSVERFAHREN

WPQR

PROSAL-5160-2023 Rev.2

Riferimento int. No.: Internal No / Interne No: **722331223**
Pagina: Page / Seite: **1 di 5**
pWPS del Costruttore: Manufacturer's pWPS: Hersteller Schweißanweisung: **04E-23_r.0**

Costruttore / Indirizzo: Manufacturer / Address - Hersteller / Anschrift: **SIDERTAGLIO CALANDRATURA SRL** via Marzotto, 9 – 36031 Povolaro di Dueville (VI)

Codice/norma: Code/Testing Standard - Vorschrift/Prüfnorm: **EN ISO 15614.1:2019 liv. 2**

PROCEDIMENTI DI SALDATURA: Welding Process(es) and Type(s) - Schweißprozeß(e) und Art:					
8.4.1 8.5.2.2	**Procedimento / Tipo:** Process - Schweißverfahren / Type – Sort:	**135** ☐ Manual ☒ Partly Mechanized ☐ Mechanized ☐ Automatic	**121** ☐ Manual ☐ Partly Mechanized ☒ Mechanized ☐ Automatic	--- ☐ Manual ☐ Partly Mechanized ☐ Mechanized ☐ Automatic	*EN ISO 4063*
8.4.2	**Posizione di saldatura:** Welding position – Schweißposition:	PA	PA	---	*EN ISO 6947*
	Campo di validità: Validity range - Gültigkeitsbereich:	**PA**			
8.4.3	**Tipo di giunto:** Type of Joint - Stoßart und Schweißart:	☒ **BW** *(coupon test)* ☒ **FW** *(qualified for)* ☒ TBW *(qualified for)* ☐ **Branch connection** – Set Through / Set On / Set In / **with angle ≥ 60°** *(qualified for)*			
	Dettagli di saldatura: Weld details - Schweißen angaben:	bs - sl	ss mb - ml	---	
	Campo di validità: Validity range - Gültigkeitsbereich:	**ss mb, bs - sl**	**ss mb, bs - ml**	---	*J clause for sl/ml*
METALLO BASE: Parent Metal - Grundwerkstoffes:		**EN 10028-3**		**EN 10028-3**	
8.3.1.1	**Designazione:** Classification - Klassifikation:	**P355 NL2**		**P355 NL2**	
	UNS number - Werkstoff number: UNS number - Werkstoff number:	1.1106		1.1106	
8.3 Table 5	**Sottogruppo:** Subgroup - Untergruppe:	1.2		1.2	*ISO / TR 15608*
	Campo di validità: Validity range - Gültigkeitsbereich:	**ISO/TR 15608 – 1.1; 1.2; 1.4 [ReH ≤ 355 MPa]**			
8.3.2.1 8.3.2.2 Table 7 Table 8 Table 9	**Diametro esterno:** Outside diameter - Rohraussendurchmesser:	---		---	*mm*
	Campo di validità: Validity range - Gültigkeitsbereich:	**≥ 150,0**		**≥ 150,0**	
	Spessore: Thickness - Dicke:	25,0		25,0	
	Campo di validità: Validity range - Gültigkeitsbereich:	**12,5 ÷ 50,0**			
METALLO D'APPORTO: Filler Metal - Zusatzwerkstoffes:		**EN ISO 14341-A**	**EN ISO 14171-A**	**---**	
8.4.4	**Designazione:** Classification - Klassifikation:	**G46 5 M21 4Si1**	**S3 Si**	**---**	
	Produttore: Manufacturer - Hersteller:	SIAT	LINCOLN	---	
	Nome commerciale: Trade name - Handelsname:	G9 INNOV-ARC	OESD3	---	
VdTUV Kennblattliste	**Numero Kennblatt:** Kennblatt number – Kennblatt nummer:	---	---	---	*Only for AD2000 use*
8.3.2.2 *BW-TJ-BC* Table 7	**Spessore materiale depositato:** Thickness filler metal - Schweißwerkstoff Dicke:	4,0	21,0	---	*mm*
	Campo di validità: Validity range - Gültigkeitsbereich:	**≤ 8,0**	**≤ 50,0**	**---**	
8.3.2.2 *FW "sl"* Table 8	**Altezza di gola:** Throat Thickness - Kehlnahtdicke:	---			
	Campo di validità: Validity range - Gültigkeitsbereich	**No limits** (135: 3,0 ÷ 6,0 – 121: No limits)			

Luogo Location Ort	Data di Emissione Date of Issue Datum der Ausstellung	Esaminatore Examiner's Name and Signature Name und Unterschrift des Zertifizierers	Esperto/Responsabile Tecnico Name and Signature of expert / technical manager Name und Unterschrift Sachverständiger	Rappresentante del costruttore Name and Signature of Manufacturer's Representative Name und Unterschrift des Uterschrift
Milano	**Rev.0 – 25/10/2023** **Rev.1 – 27/10/2023** **Rev.2 – 14/03/2024**	Ing. Enrico Albarelli	**Marco Serafini**	

TÜV Italia Srl Industrie Service TÜV SÜD Italia

PSAL-01_M009_rev.07_ del 1/10/2022

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TÜV SÜD Italia

CERTIFICATO DI QUALIFICA PROCEDIMENTO DI SALDATURA

WELDING PROCEDURE RECORD TEST CERTIFICATE / ZERTIFIKAT ANERKENNUNG VON SCHWEISSVERFAHREN

WPQR

PROSAL-5160-2023 Rev.1

Riferimento int. No.: 722331223
Internal No / Interne No:

TIPO DI PROTEZIONE: Type of protection - Zündschutzart:		**EN ISO 14175**	**EN ISO 14174**	**---**	
8.5.1 *12x*	**Designazione:** Designation / Bezeichnung:	---	SA FB 1 55 AC H5	---	
	Produttore: Manufacturer - Hersteller:	---	Lincoln	---	
	Nome commerciale: Trade name - Handelsname:	---	AS 630	---	
VdTUV Kennblattliste	**Numero Kennblatt:** Kennblatt number – Kennblatt nummer:	---	---	---	*Only for AD2000 use*
8.5.2.1 *13x* **8.5.3.1** *14x*	**Dritto:** Straight - Gerade:	M21 – ArC-18 ($Ar\text{-}CO_2$ 82-18%)	---	---	*%*
	Portata: Flow rate - Fließrate:	16 ÷ 18	---	---	*lt/min*
8.5.4 *15x*	**Plasma:** Plasma:	---	---	---	*%*
	Portata: Flow rate - Fließrate:	---	---	---	*lt/min*
13x **8.5.6** *14x* *15x*	**Rovescio:** Backing - Unterstützung:	---	---	---	*%*
	Portata: Flow rate - Fließrate:	---	---	---	*lt/min*
Note:	**13x - Per i procedimenti 13x la % massima ammessa di CO_2 è del ±20% rispetto a quella utilizzata nella procedura qualificata.** - For processes 13x the maximum allowable% CO_2 is ±20% compared to the one used in the qualified procedure. - Bei Prozessen 13x beträgt der maximal zulässige Prozentsatz von CO2 ± 20% im Vergleich zu dem im qualifizierten Verfahren verwend eten. **14x - Per i procedimenti 14x la % massima ammessa di He è del ±10% rispetto a quella utilizzata nella procedura qualificata.** - For processes 14x the maximum permissible percentage of He is ± 10% higher than that used in the qualified procedure. - Bei prozessen 14x ist der maximal zulässige Prozentsatz von He ± 10% höher als der im qualifizierten Verfahren verwendete.				
8.4.8	**Temperatura di preriscaldo:** Preheat Temperature - Vorwärmtemperatur:	≥ 100			*°C*
8.4.9	**Temperatura fra le passate:** Interpass temperature - Zwischenlagentemperatur:	≤ 250			*°C*
8.4.10	**Deidrogenazione:** Post-Heating - Post-Heizung:	---			
8.4.11	**Trattamento termico dopo saldatura:** Post-Weld Heat Treatment: Wärmenachbehandlung:	**Gradiente di riscaldamento:** Heating Rate – Aufheizrate:	---		*°C/h*
		Tempo di mantenimento: Holding Time – Haltedauer:	---		*min*
		Temperatura di mantenimento: Hold Temperature – Haltetemperatur:	---		*°C*
		Gradiente di raffreddamento: Cooling Rate – Abkühlrate:	---		*°C/h*
	Temperatura minima di lavoro: Minimum allowable temperature: Betriebstemperatur jedoch nicht tiefer als:	-50			*°C*

VARIABILI NON ESSENZIALI – NOT ESSENTIAL VARIABLES – NICHT WESENTLICHE VARIABLEN

Elettrodo di Tungsteno: Tungsten Electrode:	---	---	---	*EN ISO 6848*
Dimensioni: Size – Durchmesser:	---	---	---	*mm*
Nome del Saldatore: Welder's Name - Name des Schweißers:	CAETANO CLEBER WELLINGTON	CAETANO CLEBER WELLINGTON	---	
Punzone: Stamp - Stempeln:	CCW	CCW	---	
Saldatrice: Welding equipment - Schweißgeräte:	ESAB mod. ORIGO MIG 402cw	ESAB mod. LAF 1001 + ESAB mod. A6SF SAW	---	
Altre Informazioni: Other information - Weitere Informationen:	---	---	---	

Luogo Location - Ort	**Data di Emissione** Date of Issue - Datum der Ausstellung	**Esaminatore** Examiner's Name and Signatur - Name und Unterschrift des Zertifizierer
Milano	**Rev.0 – 25/10/2023** **Rev.1 – 27/10/2023** **Rev.2 – 14/03/2024**	Ing. Enrico Albarelli

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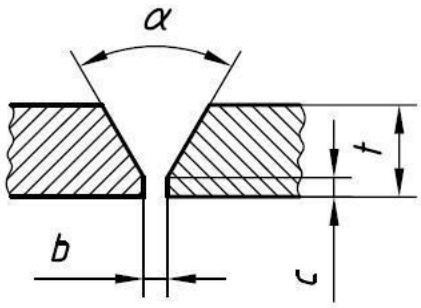
CERTIFICATO DI QUALIFICA PROCEDIMENTO DI SALDATURA

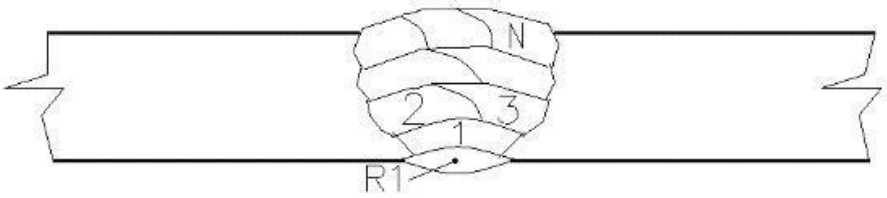
WELDING PROCEDURE RECORD TEST CERTIFICATE / ZERTIFIKAT ANERKENNUNG VON SCHWEISSVERFAHREN

WPQR

PROSAL-5160-2023 Rev.1

Disegno Giunto / Joint Design / Gestaltung	**Sequenza Saldatura** / Welding Sequence / Schweißfolge





b = 3mm; c = 0mm; α = 50 ÷ 60°

Layer Lage	**Process** Prozeß	**Filler Metal** Zusatzmetall Ø [mm]	**Designation** Bezeichnung	**Type** Art Layer Kabeltyp	Arc Lichtbogen	Current Stromart	**Voltage** Voltzahl [V]	**Current** Strom [A]	**Travel Speed** Reisegeschwindigkeit [mm/min]	**Heat Input** Wärmeeinbringung [kJ/mm]	8.4.7 [%]
1	135	1,2	G46 5 M21 4Si1	1	Spray Arc	DC+	24,5	210	200	1,23	
2	121	4,0	S3 Si + SA FB 1 55 AC H5	2	/	DC+	29	525	540	1,69	
3 ÷ n	121	4,0	S3 Si + SA FB 1 55 AC H5	3 ÷ n	/	DC+	29	525	540	1,69	
R1	135	1,2	G46 5 M21 4Si1	R1	Spray Arc	DC+	24,5	210	200	1,23	
											± 25

CONTROLLI NON DISTRUTTIVI – NON DESTRUCTIVE TESTS – NICHT ZERSTÖRENDE PRÜFUNGEN

	Effettuato ed accettabile Performed and acceptable – Ausgeführt und bestanden
Visivo – Visual test – Sichtprüfung	**EA Engineering n.063/23_r.0**
Liquidi penetranti – Penetrant test – Kerbzugprüfung	**---**
Magnetoscopia – Magnetoscopic test – Magnetoskopischer test	**Antares Control n.366/23**
Radiografia – Radiographyc test – Radiographische untersuchung	**---**
Ultrasuoni – Ultrasonic test – Ultraschallprüfung	**Antares Control n.747/23**
---	**---**

PROVA DI TRAZIONE – TENSILE TESTS – ZUGPRÜFUNG

Temperatura – Temperature – Temperatur: **+20** **°C**

N. No. Nr.	**Posizione** Location Lage	**Dimensioni** Dimensions Abmessungen [mm x mm]	**Re** [MPa]	**Rp 0,2/1,0** [MPa]	**Rm** [MPa]	**A** [%]	**Z** [%]	**Osservazioni** Remarks Bemerkungen
13443/1	TW	24,99 x 25,00	---	---	534	---	---	Ductile – Out weld
13443/2	TW	24,87 x 25,02	---	---	536	---	---	Ductile – Out weld
13443/3	LW	Ø 10,02	---	446	561	34,3	74,3	---
---	---	---	---	---	---	---	---	---

TW: Trasversale – Transversal.
LW: Longitudinale – Longitudinal – in Längsrichtung.

Luogo Location - Ort	**Data di Emissione** Date of Issue - Datum der Ausstellung	**Esaminatore** Examiner's Name and Signatur - Name und Unterschrift des Zertifizierer
Milano	**Rev.0 – 25/10/2023** **Rev.1 – 27/10/2023** **Rev.2 – 14/03/2024**	Ing. Enrico Albarelli

TÜV Italia Srl Industrie Service TÜV SÜD Italia

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PRD N° 081B
Membro degli Accordi di Mutuo Riconoscimento EA, IAF e ILAC
Signatory of EA, IAF and ILAC Mutual Recognition Agreements

TÜV SÜD Italia

CERTIFICATO DI QUALIFICA PROCEDIMENTO DI SALDATURA

WELDING PROCEDURE RECORD TEST CERTIFICATE / ZERTIFIKAT ANERKENNUNG VON SCHWEISSVERFAHREN

WPQR

PROSAL-5160-2023 Rev.1

Riferimento int. No.: 722331223
Internal No / Interne No:

PROVA DI PIEGA – BEND TEST – BIEGEPRÜFUNG

Temperatura – Temperature – Temperatur: +20 °C

N. No. Nr.	Posizione Location Lage	Dimensioni Dimensions Abmessungen [mm x mm]	Mandrino Spindle Spindel [mm]	Distanza rulli Distances rollers Abstandsrollen [mm]	Angolo Angle Winkel [°]	Esito Results Ergebnisse	Osservazioni Remarks Bemerkungen
13443/4	SBB	23,6 x 10,1	40	63	180	No defects	Accetable
13443/5	SBB	23,5 x 10,0	40	63	180	No defects	Accetable
13443/6	SBB	24,1 x 10,1	40	63	180	No defects	Accetable
13443/7	SBB	24,5 x 10,1	40	63	180	No defects	Accetable

SBB: Trasversali laterali – Transversal side – Transversal seite.
TFBB: Trasversali al dritto – Transversal face – Transversal gesicht.
TRBB: Trasversali al rovescio – Transversal root – Transversaler Wurzelbiegetest.

PROVA DI RESILIENZA – IMPACT TEST – AUFPRALLPRÜFUNG

Energia – Energy – Energie: 27 Joule

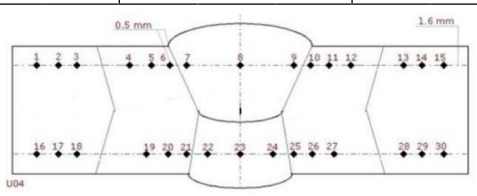
N. No. Nr.	Posizione Location Lage	Dimensioni Dimensions Abmessungen [mm x mm]	Intaglio Notch Kerb	Temperatura Temperature Temperatur [°C]	Valore Value Wert [J]	Shear [%]	Exp lat Exp lat Sei Aus [mm]	Valore Value Wert [J]	Shear [%]	Exp lat Exp lat Sei Aus [mm]	Valore Value Wert [J]	Shear [%]	Exp lat Exp lat Sei Aus [mm]	Media Average Durch. [J]
13443/4	VWT 0/22	2,5 x 10,0	KV_2	-78	39	---	1,03	41	---	1,12	38	---	1,02	**39**
13443/5	VHT 0/22	2,5 x 10,0	KV_2	-78	33	---	0,95	35	---	0,99	31	---	0,83	**33**
13443/6	VHT 2/22	2,5 x 10,0	KV_2	-78	56	---	1,16	55	---	1,15	41	---	1,00	**51**
13443/7	VHT 5/22	2,5 x 10,0	KV_2	-78	38	---	1,05	43	---	1,21	45	---	1,29	**42**
13443/4	VWT 0/2	10,0 x 10,0	KV_2	-50	293	---	2,29	280	---	2,21	257	---	2,11	**277**
13443/5	VHT 0/2	10,0 x 10,0	KV_2	-50	255	---	2,16	263	---	2,21	234	---	2,23	**251**
13443/6	VHT 2/2	10,0 x 10,0	KV_2	-50	293	---	2,33	259	---	2,03	296	---	2,39	**283**
13443/7	VHT 5/2	10,0 x 10,0	KV_2	-50	283	---	2,24	295	---	2,31	299	---	2,39	**292**

VWT: Trasversali center line – Transversal in center line – Transversal in der Mittellinie.
VHT: Trasversali ZTA – Transversal in HAZ – Transversal in der WEZ.
FLT: Trasversali fusion line – Transversal fusion line – Transversaler Transversal in der Fusionslinie.
T: Trasversale materiale base – Transversal base metal – Querbasismetall.
L: Longitudinale materiale base – Longitudinal base metal – Längslage im Grundwerkstoff.

PROVA DI DUREZZA – HARDNESS TEST – HÄRTEPRÜFUNG

Tipo – Type – Art: HV_{10}
Requisiti – Requirements – Anforderungen: ≤ 380

Materiale Base Base Metal / Grundwerkstoff			ZTA HAZ / WEZ					Zona Fusa Weld Metal / Schweißgut			ZTA HAZ / WEZ					Materiale Base Base Metal / Grundwerkstoff		
Test n.13443/16																		
1	2	3	4	5	6	Indent. Suppl.	Indent. Suppl.	7	8	9	Indent. Suppl.	Indent. Suppl.	10	11	12	13	14	15
156	155	156	183	189	206	---	---	175	173	185	---	---	216	203	192	157	153	164
16	17	18	19	20	21	Indent. Suppl.	Indent. Suppl.	22	23	24	Indent. Suppl.	Indent. Suppl.	25	26	27	28	29	30
158	159	160	198	205	227	---	---	228	239	221	---	---	216	207	184	163	162	163
Test n. 13443/17																		
1	2	3	4	5	6	Indent. Suppl.	Indent. Suppl.	7	8	9	Indent. Suppl.	Indent. Suppl.	10	11	12	13	14	15
158	155	159	187	195	209	---	---	169	175	175	---	---	216	210	184	159	158	159
16	17	18	19	20	21	Indent. Suppl.	Indent. Suppl.	22	23	24	Indent. Suppl.	Indent. Suppl.	25	26	27	28	29	30
159	161	158	183	201	223	---	---	201	221	207	---	---	216	207	185	160	160	162
Test n. 13443/18																		
1	2	3	4	5	6	Indent. Suppl.	Indent. Suppl.	7	8	9	Indent. Suppl.	Indent. Suppl.	10	11	12	13	14	15
154	156	155	187	196	201	---	---	193	178	183	---	---	212	207	196	158	158	163
16	17	18	19	20	21	Indent. Suppl.	Indent. Suppl.	22	23	24	Indent. Suppl.	Indent. Suppl.	25	26	27	28	29	30
161	159	158	198	214	227	---	---	229	221	238	---	---	221	219	183	160	162	162



Luogo Location - Ort	Data di Emissione Date of Issue - Datum der Ausstellung	Esaminatore Examiner's Name and Signatur - Name und Unterschrift des Zertifizierer
Milano	**Rev.0 – 25/10/2023** **Rev.1 – 27/10/2023** **Rev.2 – 14/03/2024**	Ing. Enrico Albarelli

TÜV Italia Srl Industrie Service TÜV SÜD Italia

TÜV Italia S.r.l. - TÜV SÜD Group
Viale Fulvio Testi, 280/6
I-20126 Milano – www.tuvsud.com/it

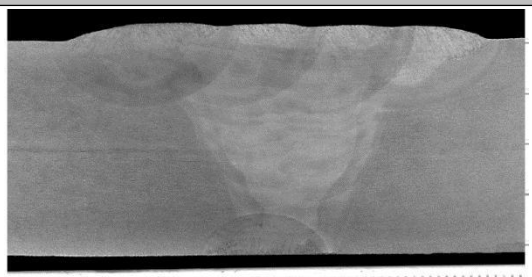
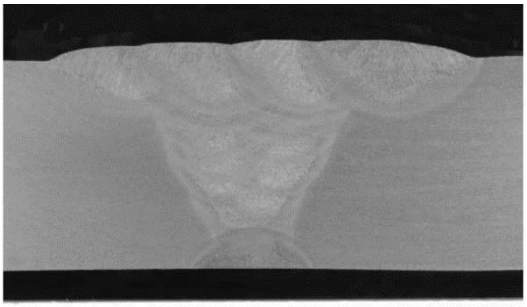
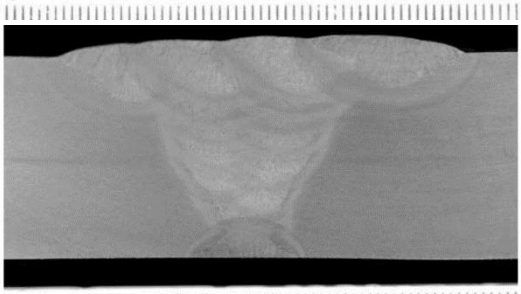
ACCREDIA L'ENTE ITALIANO DI ACCREDITAMENTO
PRD N° 081B
Membro degli Accordi di Mutuo Riconoscimento EA, IAF e ILAC
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TÜV SÜD Italia

CERTIFICATO DI QUALIFICA PROCEDIMENTO DI SALDATURA

WELDING PROCEDURE RECORD TEST CERTIFICATE / ZERTIFIKAT ANERKENNUNG VON SCHWEISSVERFAHREN

WPQR

PROSAL-5160-2023 Rev.1

MACROGRAFIA – MACROGRAPHY – MAKROGRAFIE	MICROGRAFIA – MICROGRAPHY – MICROGRAFIE
 *Test n.13443/16*  *Test n.13443/17*  *Test n.13443/18*	---
Attacco – Etching – Ätzen: Nital 10%	**Attacco** – Etching – Ätzen: ---
Ingrandimento – Magnification – Vergrößerung: ---	**Ingrandimento** – Magnification – Vergrößerung: ---
Risultato – Result – Resultat: **GLOBAL TEST SRL report n. 29616**	**Risultato** – Result – Resultat: ---

Tutte le verifiche preliminari prescritte al Cap. 8.2 della procedura PSAL _01 in rev. corrente sono state eseguite dall'esaminatore:
All preliminary checks have been performed by the examiner in accordance with the Ch. 8.2 of the procedure PSAL _01 in current rev.:
Alle vorläufigen Tests wurden vom Prüfer entsprechend Kap. 8.2 Prüfanweisung PSAL_01 bei der gegenwärtigen Revision durchgeführt: Ing. Enrico Albarelli

Luogo / Data della saldatura: Location / Date of Welding - Ort / Datum derSchweißung:	via Marzotto, 9 - 36031 Povolaro di Dueville (VI) – 2023/10/06
Il tallone è stato saldato in presenza di: Test piece was welded in the presence of - Prüfstück wurde geschweißt in Anwesenheit von:	Ing. Enrico Albarelli
Le prove meccaniche sono state effettuate in presenza di: Test carried out in the presence of - Die Prüfungen wurden ausgeführt in Anwesenheit von:	Ing. Enrico Albarelli
Le prove sono state eseguite in conformità alle norme: The tests have been performed in accordance with the specifications - Die Prüfungen wurden entsprechend den Prüfgrundlagen durchgeführt:	UNI EN ISO 15614-1 liv.2 + Spec. SNAM n.000-CA-E-17027 r.0

Si certifica che i saggi di prova sono stati preparati, saldati e controllati con esito soddisfacente in conformità ai requisiti del codice/norma di prova sopra indicato.
We certify that the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of the code/standard above mentioned.
Hiermit wird bestätigt, daß die Prüfungsschweißungen in Übereinstimmung mit den Anforderungen der vorbezeichneten Vorschriften bzw. Prüfnormen zufriedenstellend vorbereitet, geschweißt und geprüft wurden.

Allegati - Annex - Anlage

WPS n°:	04E-23_r.0
Mill certificate n°:	Metinvest n.553065
Filler Metal Certificate n°:	SIAT n.6697/2022/A – Lincoln Electric n.01845530 – Lincoln Electric n.02069342
NDT Test Report n°:	EA Engineering n.063/23_r.0 – Antares Control n.366/23 – Antares Control n.747/23
Laboratory Test Report n°:	GLOBAL TEST SRL report n. 29616

Note:

☒ **1 Qualifica valida ai sensi della direttiva PED, Allegato 1, punto 3.1.2 – TUV Italia Srl – Organismo Notificato 0948 / Welding procedure in according to PED, Annex 1, point 3.1.2 – TUV Italia Srl – Notified Body 0948**

☐ **2 - Il presente documento è conforme anche ai requisiti previsti dalla EN ISO 15614-1:2019 liv. 1 / This document also complies with the requirements of EN ISO 15614-1: 2019 liv. 1**

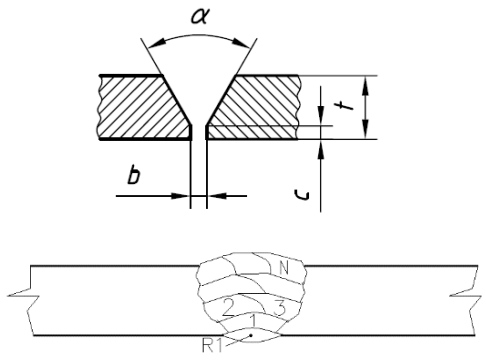
Luogo Location - Ort	Data di Emissione Date of Issue - Datum der Ausstellung	Esaminatore Examiner's Name and Signatur - Name und Unterschrift des Zertifizierer
Milano	**Rev.0 – 25/10/2023** **Rev.1 – 27/10/2023** **Rev.2 – 14/03/2024**	Ing. Enrico Albarelli

TÜV Italia Srl Industrie Service TÜV SÜD Italia

PRELIMINARY WELDING PROCEDURE SPECIFICATION (pWPS)
ACCORDING TO EN ISO 15609-1

MANUFACTURER	SIDERTAGLIO CALANDRATURA S.R.L.		
WELDING PROCEDURE SPECIFICATION No.	04E-23_r.0	Date	06/10/2023
WELDING PROCESS	EN ISO 4063 – 135 / 121	Type(s)	SEMIAUTOMATIC / MACHANIZED
WPQR REFERENCE (if required)	04E-23	Date	

WELD PREPARATION DETAILS/WELDING SEQUENCE



Pass	Process	Diam. M.A. mm	A	V	W. Speed mm/min
1	135	1,2	205 ÷ 215	24 ÷ 25	200
2	121	4,0	500 ÷ 550	28,5 ÷ 29,5	540
3 ÷ n	121	4,0	500 ÷ 550	28,5 ÷ 29,5	540
R1	135	1,2	205 ÷ 215	24 ÷ 25	200

α: 50-60° - c: 0 mm – b: 3 mm
Dopo saldatura passate da 1 a n rimuovere suporto ceramico, spianare rovescio ed eseguire ripresa R1. Spianare ripresa R1 con molatura.
Impianti di saldatura:
135: ESAB ORIGO MIG 402cw
121: ESAB mod. A6SF SAW + ESAB mod. LAF 1001

JOINT

Joint type	BW	Method of preparation and cleaning	Spazzolat. – Molatura
Backing	Si	Tack welding	Saldatura 135
Backing material	Ceramica per 135	Other	-
Back gouging	No		

PARENT MATERIAL

Designation	EN 10028-3 – P355 NL2				
Group(s) (ISO/TR 15608)	1.2	Range	-	Position tested	EN ISO 6947 - PA
Thickness (mm)	25	Range	-	Positions qualified	-
Ouside diameter (mm)	N.A.	Range	-	Branch angle	N.A.
				Other	-

WELDING CONSUMABLES

Process EN ISO 4063	135	121
Trade name	Pittarc G9 Innov-Arc	Lincoln OESD3
Designation	EN ISO 14341-A G46 4 M21 4Si1	EN ISO 14171-A S3Si
Size (mm)	Ø 1,2	Ø 4,0
Thickness deposited	4 mm	21 mm
Throat thickness	/	/

ELECTRICAL PARAMETERS

Type of current/Polarity	135: DC-EP – 121: DC-EP
Current range (A)	Vedi Sequenza
Arc voltage range (V)	Vedi Sequenza
Mode of metal transfer	135: Spray Arc
Other	/

SHIELDING GAS

Shielding composition	135: EN ISO 14175 M21 – ArC-18	121: FLUX Lincoln AS 630
Flow rate (l/min)	135: 16-18	121: EN ISO 14174: SA FB 1 55 AC H5
Backing gas composition	-	
Flow rate (l/min)	-	

PREHEAT/INTERPASS/PWHT

Minimum preheat (°C)	EN ISO 13916 – Tp 100°C
Maximum interpass (°C)	EN ISO 13916 – Ti 250°C
PWHT temperature & time	NO
Preheat maintenance	NO

OTHER INFORMATION

Nozzle diameter (mm)	135 = 15 121 = 25	*Oscillation	N.A.
Tungsten electrode type	N.A.	*Stand off distance (mm)	N.A.
Tungsten electrode diam. (mm)	N.A.	*Torch angle	N.A.
String or weave	Tirati	Travel speed (cm/min)	Vedi Sequenza

*For fully mechanized

Review
Witness
Date 06/10/23 Name:

MANUFACTURER

SIDERTAGLIO CALANDRATURA S.R.L.
Pipes Rolling & Welding

RAPPORTO DI CONTROLLO VISIVO

VISUAL TEST CONTROL REPORT
mod. 006_r.0

Committente Customer	SIDERTAGLIO CALANDRATURA SRL	**Fabbricante** Manufacturer	idem
Committente prove Test customer	☒ Committente Customer ☐ Fabbricante Manufacturer	**Ordine di lavoro** Job order	23036C_r.0
Commessa Job	23036C_r.0	**Procedura di controllo** Control procedure	IST_VT_EA_r.0
Norma di prodotto Product code	UNI EN ISO 15614-1 liv.2	**Disegno/ WPS** Drawing/ WPS	vedere tabella
Oggetto Object	QW	**Identificazione** Identification	vedere tabella
Norma di controllo Control code	UNI EN ISO 17637	**Accettabilità** Acceptability	§7.5 – UNI EN ISO 15614-1 liv.2
Materiale base Base metal	gr. 1.2 – EN ISO/TR 15608	**Spessore** Thickness	vedere tabella
Processo EN ISO 4063 Welding process	135+121	**Tipo di giunto** Joint type	vedere tabella
Tecnica di controllo Control technique	Diretto	**Attrezzatura** Equipment	Calibro di Saldatura, Lenti
Estensione controllo Control extension	100%	**Illuminazione** Lighting	≥ 500 Lx

Tipologia campione Sample type		**WPS**	**Superficie** Surface	**Giunto** Joint	**Dimensioni** Size				**Indicazioni EN ISO 6520** Indications	**Esito**[1] Result
Personale Personel	**Processo** Procedure				**Spessore** Thickness	**Diametro** Diameter	**Spes. dep.** Dep. thick.	**Gola** Throat		
CCW	04E-23	04E-23_r.0	as welded	BW	25	-	25 (4+21)	-	Nothing relevant	OK
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
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-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-

Note – notes
[1] OK = Accettabile – Accetable; KO = Non Accettabile – Not Accetable

Tecnico controllore Controller technician	**Esaminatore/ Ispettore** Examiner/ Inspector	**Ente/ Cliente** Body/ Client
Ing. Enrico Albarelli EA Engineering III° liv. VT, PT, MT, UT, RT – EN ISO 9712 IWE-C	☐ Review ☒ Witness Date: 06/10/23 Name:	

RAPPORTO DI ESAME MAGNETOSCOPICO

MAGNETOSCOPIC
EXAMINATION REPORT

N° 366/23

del of 07/10/2023

Pag. Sheet 1 di of 1

ANTARES CONTROL
di Righetto Davide
Via Roma,15/7
36040 Grumolo delle Abbad.(VI)
P.IVA: 04382150243
Cell. 3487376550
antarescontrolli@gmail.com

Cliente SIDERTAGLIO GALANDRATURA S.R.L.
Customer Via Marzotto, 9, 36031 Povolaro VI

Ordine* **Del**
Order* Of

Comm. Vs cliente* **Comm.*** 04E-23
Custoner Job* Job

Incarico 04E-23-01
Assignment*

Data/Luogo del controllo 07/10/2023 SIDERTAGLIO S.R.L.
Date and place of the check Via Marzotto, 9, 36031 Povolaro VI

Descrizione del pezzo* TALLONE SALDATO
Description object* L= 570 mm Thk = 25 mm pWPS 04E-23

Disegno* **Quantità** 1
Drawing* Quantity

Codice pezzo* pWPS 04E-23
Code name*

Materiale* P355NL2 **Colata***
Material* Heat*

Tipo Giunto Testa a Testa
Joint type Butt Weld

Tipo prodotto Laminato / Saldato
Product Type Laminate / welded

Fase di controllo Finale
Inspection Phase Final

Stadio di controllo Trattamento termico non richiesto
Inspection Phase Heat treatment not required

Condizioni superficiali Spazzolato
Tests surface status Brushed

WPS di riferimento* **Norme di rif. :**
Reference WPS* Procedure

Procedura/Specifica* UNI EN ISO 17638
Specification - Standard* ***Ultima edizione / Latest edition***

Classe accettazione* UNI EN ISO 23278 Lev. 2
Acceptance criteria* ***Ultima edizione / Latest edition***

Estensione del controllo* Come disegno allegato
Extension examination* As shown in the annex

* DATI FORNITI DAL CLIENTE - *THESE DATA ARE SUPPLIED BY THE CUSTOMER Allegato/Annex : 07/10/2023

Corrente corrente alternata
Current alternating current

Metodo di controllo Diretto
Examination method Direct

Apparecch. ***Model KY-2 Matricola 220824***
Equipment ***CONFORMITY REPORT n. PRONDT 22-Y02***

Metodo di magnetizzazione elettromagnete
Magnetizing method electromagnet

Tipo di magnetizzazione Longitudinale
Type of magnetization Longitudinal

Tipo di polvere Umido
Type of podwer Wet

Distanza tra i poli 75 - 200 mm
Poles pitch 75 - 200 mm

Piastra di sollevamento 10 LB (4500 g)
Matricola - Lifting plate Matr. PRO - NDT 21 - 054

Intensità di corrente >2,4 kA/m
Current intensity

Intensità di Campo >2,4 kA/m
Field intensity

Densità di flusso **> T**
Density flux

Gaussmetro- Gaussmeter - LINKJOIN + SONDA LZ-643
Matricola/ Serial n° S180423355 SONDA 64100782160117

Radiometer UV-A Delta Ohm HD2102,2 + LP 471 UVA
Matricola/ Serial n° **14004390 + 13041178**

Tipo luce Artificiale luce fredda
Light type Artificial warm light

Intensità di luce Superfice del pezzo >500 LUX
Light intensity Piece surface >500 LUX

Temperatura ambiente tra 20° 40° Attuale 21 C°
Temperature environment from 20° to 40° Actual 21 C°

Produttore PRO NDT
Productor

Vernice a contrasto di colore **FLUXO 4**
White contrast paint ***Lotto - Batch L220619/1*** ***scad. 19/06/2027***

Mezzo Rilevatore Magnetico Nero base acqua **FLUXO 215**
Detector type ***Lotto - Batch L220406/1 scad. 06/04/2025***

Smagnetizzazione non richiesta
Demagnetization not required

Note o schizzo : **Sessione esame TUV: 722331223**
Notes or sketch:

Risultato / Result	OPERATORE - OPERATOR	RESPONSABILE - WORD REFERENCE	ISPETTORE - INSPECTOR
Conforme a Norma Acceptable	Righetto Davide II° Liv. SNT-TC1A / ISO 9712	SIDERTAGLIO CALANDRATURA S.R.L.	☒ Review ☐ Witness Date: 20/10/23 Name:

RAPPORTO DI PROVA ULTRASUONI

ULTRASONIC
EXAMINATION REPORT

Pag. Sheet *1 di of 1*

N° *747/23*

del of **07/10/2023**

ANTARES CONTROL
di Righetto Davide
Via Roma,15/7
36040 Grumolo delle Abbad.(VI)
P.IVA: 04382150243
Cell. 3487376550
antarescontrolli@gmail.com

Cliente SIDERTAGLIO GALANDRATURA S.R.L.
Customer Via Marzotto, 9, 36031 Povolaro VI

Descrizione del pezzo* TALLONE SALDATO
Description object* L= 570 mm Thk = 25 mm pWPS 04E-23

Ordine* **Del**
Order* Of

Disegno* **Quantità** 1
Drawing* Quantity

Comm. Vs cliente* **Comm.*** 04E-23
Custoner Job* Job

Codice pezzo* pWPS 04E-23
Code name*

Incarico 04E-23-01
Assignment*

Materiale* P355NL2 **Colata***
Material* Heat*

Data/Luogo del controllo 07/10/2023 SIDERTAGLIO S.R.L.
Date and place of the check Via Marzotto, 9, 36031 Povolaro VI

Tipo Giunto Testa a Testa
Joint type Butt Weld

Tipo prodotto Laminato / Saldato
Product Type Laminate / welded

WPS di riferimento* **Norme di rif. :**
Reference WPS* Procedure

Fase di controllo Intermedio
Inspection Phase Intermediate

Procedura/Specifica* ISO 17640 liv. B
Specification* ***Ultima Edizione***

Stadio di controllo Trattamento termico non richiesto
Inspection Phase Heat treatment not required

Classe accettazione* UNI EN ISO 11666 Met.1 Liv.2
Acceptance criteria* ***Ultima Edizione***

Condizioni superficiali Spazzolato
Tests surface status Brushed

Estensione del controllo* 100% saldatura
Extension examination* weld 100%

* DATI FORNITI DAL CLIENTE - *THESE DATA ARE SUPPLIED BY THE CUSTOMER Allegato/Annex : 07/10/2023

Metodo di controllo Manuale - contatto **Accoppiante** COUPLANT FYp **Sovrap. Sonda** 10%
Scanning method Manual - contact reflection Coupling medium COUPLANT FYp Overlap

Strumento tipo GE Sensing & Inspection Technologies **Cavo** MPKLL2 **Vel. di scans.**
Instrument : Type USM 36S Serial namber 15017577 Cable L 2000 Scanning velocity

Report taratura - calibration EN n° E220182 scad. 24/11/23
Report taratura - calibration ASME n° A220215 scad. 24/11/2023

Blocco di calibrazione Eco di fondo/ Back Raflection
Calibration Block

Sonde piane ad onde long. PRO NDT MD10-4 N°178220
Probes Long. waves type Matricola - Serial n°

Foro di Riferimento FBH Ø 2 mm
Reference pole Sonde piane / Plain Probes

Dimens. crist. Ø 10 mm. **freq.** 4 MHZ
Crystal dim. freq.

Curve di riferimento
Reference curve Sonde piane / Plain Probes

Sonde angol. ad onde trasv. PRO NDT MA45-4 2031 12
Probes Transv. waves type Matricola - Serial n°

Limite di Registrazione <20% Back raflection
Recording level Sonde piane / Plain Probes

Dimens. crist. 8 X 9 **freq.** 4 MHZ
Crystal dim. freq.

Blocco di calibrazione V2 - IIW 1018 STEEL 21-V2-01
Calibration Block Sonde angolate / Angular Probes

Sonde angol. ad onde trasv. PRO NDT MA60-4 2032 10
Probes Transv. waves type Matricola - Serial n°

Foro di Riferimento SDH Ø 3 mm
Reference pole Sonde angolate / Angular Probes

Dimens. crist. 8 X 9 **freq.** 4 MHZ
Crystal dim. freq.

Curve di riferimento Curva DAC
Reference curve Sonde angolate / Angular Probes

Sonde angol. ad onde trasv. PRO NDT MA70-4 2033 08
Probes Transv. waves type Matricola - Serial n°

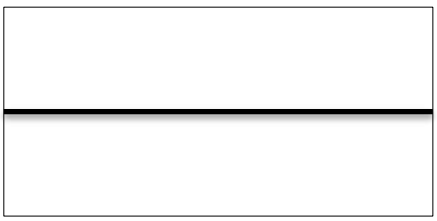
Limite di Registrazione -4 dB Curva DAC
Recording level Sonde angolate / Angular Probes

Dimens. crist. 8 X 9 **freq.** 4 MHZ
Crystal dim. freq.

Cavo PKLL1 **Vel. di scans.**
Cable L 2000 Scanning velocity

Note o schizzo : **Sessione esame TUV: 722331223**
Notes or sketch:

CONTROLLO MATERIALE BASE:
Non sono state riscontrate indicazioni degne di nota.
BASIC MATERIAL CHECK:
No noteworthy indications were found.



Risultato / Result	OPERATORE - OPERATOR	RESPONSABILE - WORD REFERENCE	ISPETTORE - INSPECTOR
Conforme a Norma Acceptable	Davide Righetto II° Liv. SNT-TCIA / ISO 9712	SIDERTAGLIO CALANDRATURA S.R.L.	☒ Review ☐ Witness Date: 20/10/23 Name:

GLOBAL TEST srl

LAB N° 1230 L

Seda A: legale, amministrativa e operativa
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Tel 041923994 - E-mail: laboratorio@globaltest.it
Seda B: operativa
Via A. Moro 10/C, 45026 Lendinara (RO)

CLIENTE / CUSTOMER
SIDERTAGLIO CALANDRATURA S.r.l.
Via Marzotto, 8 - 36031 Dueville (VI)

ORDINE / ORDER N°	DATA / DATE
Conferma Ordine	20/10/2023
RAPPORTO DI PROVA N° / TEST REPORT	DATA / DATE
29616	20/10/2023
	PAG. 1 di 12

RAPPORTO DI PROVA / TEST REPORT

Prodotto Product	Id. Cliente Client Id.	Ricevuto il Received on	Id. Global Test Global Test Id.	Dimensioni dichiarate Declared dimensions	Materiale dichiarato Declared material	Note Remarks
Weld Coupon	WPS 04E-23	10/10/2023	13121	Thk 25 mm	P355NL2	Welding Process: 135 + 121 Welding Type: Semiautomatic + Machine Welding Position: PA Pratica TUV: 722331223 **Qualifica procedimento UNI EN ISO 15614-1:2019 Lev. 2**

Prove eseguite e Normative di riferimento Performed Tests and Reference Standards	Eseguita il Performed on	Esecuzione Testing by
Room temperature tensile test according to UNI EN ISO 4136:2022 + UNI EN ISO 6892-1:2020	20/10/2023	Sede A ☒ Sede B ☐ Altro ☐
Room temperature tensile test according to UNI EN ISO 5178:2019 + UNI EN ISO 6892-1:2020	20/10/2023	Sede A ☒ Sede B ☐ Altro ☐
Bend test according to UNI EN ISO 5173:2023	20/10/2023	Sede A ☒ Sede B ☐ Altro ☐
Charpy Impact test according to UNI EN ISO 148-1:2016 + UNI EN ISO 9016:2022	20/10/2023	Sede A ☒ Sede B ☐ Altro ☐
Macrographic examination according to UNI EN ISO 17639:2022	20/10/2023	Sede A ☒ Sede B ☐ Altro ☐
Hardness test according UNI EN ISO 6507-1:2018	20/10/2023	Sede A ☒ Sede B ☐ Altro ☐

Non è permessa la riproduzione parziale del presente rapporto di prova senza l'autorizzazione di Global Test. Il campionamento dei saggi è stato effettuato a cura del Cliente. I risultati riportati nel presente documento si riferiscono esclusivamente alle prove effettuate sui saggi consegnati in laboratorio così come ricevuti ed indicate in tabella "identificazione cliente". I residui dei saggi lavorati e le provette verranno conservati per 1 mese; dopo tale periodo verranno rottamati. Il presente documento è archiviato per minimo di 10 anni. Quando riportata, l'incertezza di misura è espressa con fattore di copertura k=2 pari a livello di fiducia del 95% circa.

Partial reproduction of this report without Global Test authorization is strictly forbidden. The sampling of materials was performed by Customer. The test results given here, only refer to tests carried out on materials delivered in the laboratory as received and shown in table "Client identification". The residual of samples machined and test samples will be kept for 1 month; after which they will be scrapped. This document will be kept in memory for 10 years at least. When reported, the uncertainty of measurement is expressed with a coverage factor k = 2 equal to 95% level of confidence.

Approvato da: RESPONSABILE LABORATORIO
Marco Canato
GLOBAL TEST Srl

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☒ Review ☐ Witness
Date: 23/10/23 Name:

Prove eseguite e Normative di riferimento - Performed Tests and Reference Standards
Room temperature tensile test according to UNI EN ISO 4136:2022 + UNI EN ISO 6892-1:2020

Standards Correlati - Related Standards
None

PROVA DI TRAZIONE / TENSILE TEST

Identificativo Campione Sample Identification		**Provino** Specimen	**Posizione** Position	**Dimensioni** Dimensions	**Area** Area	**Carico Max** Maximum Load F_m	**Carico Rottura** Ultimate Tensile Strength **Rm**	**Aspetto frattura** Fracture Appearance	**Zona rottura** Fracture Location
Cliente / Client	**Lab**. / Lab.			mm	mm^2	N	MPa		
WPS 04E-23	13443 / 1	F	TW	24.99 x 25.00	624.8	333617	534	Ductile	Out Weld
WPS 04E-23	13443 / 2	F	TW	24.87 x 25.02	622.3	333526	536	Ductile	Out Weld

Posizione: *Position:*	**Tipo di campione:** *Specimen Tipe:*	**Tipo di velocità di prova:** *Testing Rate method:*
TB: trasversale in materiale base / transversal on base metal LB: longitudinale in materiale base / longitudinal on base metal TW: trasversale attraverso saldatura / transversal across weld metal LW: longitudinale su saldatura / longitudinal on weld metal	F – prismatica / flat C – cilindrica / cilyndrical T – tubo intero / entire pipe P – provetta da tubo / specimen from pipe	"A224" method

Approvato da: RESPONSABILE LABORATORIO
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Date: 23/10/23 Name:

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LAB N° 1230 L

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Tel 041923994 - E-mail: laboratorio@globaltest.it
Seda B: operativa
Via A. Moro 10/C, 45026 Lendinara (RO)

CLIENTE / CUSTOMER
SIDERTAGLIO CALANDRATURA S.r.l.
Via Marzotto, 8 - 36031 Dueville (VI)

ORDINE / ORDER N°	DATA / DATE
Conferma Ordine	20/10/2023
RAPPORTO DI PROVA N° / TEST REPORT	DATA / DATE
29616	20/10/2023
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Prove eseguite e Normative di riferimento - Performed Tests and Reference Standards
Room Temperature tensile test according to UNI EN ISO 5178:2019 + UNI EN ISO 6892-1:2020

Standards Correlati - Related Standards
None

PROVA DI TRAZIONE / TENSILE TEST

Identificativo Campione Sample Identification		**Provino** Specimen	**Posizione** Position	**Dimensioni** Dimensions	**Area** Area	**Lunghezza Iniziale** Original Length L_0	**Snervamento** Yield Strength **Rp0.2%**	**Rottura** Tensile Strength **Rm**	**Allungamento** Elongation **A**	**Strizione** Area Reduction **Z**	**Zona di rottura** Break position
Cliente / Client	**Lab**. / Lab.			mm	mm^2	mm	MPa	MPa	%	%	
WPS 04E-23	13443 / 3	C	LW	Ø 10.02	78.9	50.0	446	561	34.3	74.3	***

Posizione: *Position:*	**Tipo di campione:** *Specimen Tipe:*	**Tipo di velocità di prova:** *Testing Rate method:*
TB: trasversale in materiale base / transversal on base metal LB: longitudinale in materiale base / longitudinal on base metal TW: trasversale attraverso saldatura / transversal across weld metal LW: longitudinale su saldatura / longitudinal on weld metal	F – prismatica / flat C – cilindrica / cilyndrical T – tubo intero / entire pipe P – provetta da tubo / specimen from pipe	"A224" method

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SIDERTAGLIO CALANDRATURA S.r.l.
Via Marzotto, 8 - 36031 Dueville (VI)

ORDINE / ORDER N°	DATA / DATE
Conferma Ordine	20/10/2023
RAPPORTO DI PROVA N° / TEST REPORT	DATA / DATE
29616	20/10/2023
	PAG. 4 di 12

Prove eseguite e Normative di riferimento - Performed Tests and Reference Standards
Bend test according to UNI EN ISO 5173:2023

Standards Correlati - Related Standards
None

PROVA DI PIEGA / BEND TEST

Identificativo Campione Sample Identification		**Posizione** Position	**Dimensioni** Dimensions	**Mandrino** Jig	**Angolo** Angle	**Distanza Rulli** Rolls Distance	**Esito** Results
Cliente / Client	**Lab.** / Lab.		mm	mm	mm	mm	
WPS 04E-23	13443 / 4	SBB	23.6 x 10.1	40	180°	63	Not defects noted according to UNI EN ISO 15614-1:2019 Par. 7.4.2 (*)
WPS 04E-23	13443 / 5	SBB	23.5 x 10.0	40	180°	63	Not defects noted according to UNI EN ISO 15614-1:2019 Par. 7.4.2 (*)
WPS 04E-23	13443 / 6	SBB	24.1 x 10.1	40	180°	63	Not defects noted according to UNI EN ISO 15614-1:2019 Par. 7.4.2 (*)
WPS 04E-23	13443 / 7	SBB	24.5 x 10.1	40	180°	63	Not defects noted according to UNI EN ISO 15614-1:2019 Par. 7.4.2 (*)

Tipo di provino: *Specimen Type:*	**Note:** Remarks:
TFBB: Piega trasversale al dritto / transversal face bend test TRBB: Piega trasversale al rovescio / transversal root bend test SBB: Piega trasversale laterali / transversal side bend test	Testing Procedure: Former Bend Test Test Temperature: (23±5)°C

Approvato da: RESPONSABILE LABORATORIO
Marco Canato
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Spazio riservato ad eventuali approvazioni esterne / Space reserved for possible external approvals

TÜV Italia
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☐ Witness
Date: 23/10/23 Name:

Prove eseguite e Normative di riferimento - Performed Tests and Reference Standards
Charpy Impact test according to UNI EN ISO 148-1:2016

Standards Correlati - Related Standards
UNI EN ISO 9016:2022

PROVA DI RESILIENZA / CHARPY IMPACT TEST

Identificativo Campione Sample Identification		**Temperatura** Temperature	**Posizione** Position	**Dimensioni** Dimensions	**Intaglio** Notch	**Resilienza** Impact energy Joule				**Espansione laterale** Lateral expansion mm			
Cliente / Client	**Lab**. / Lab.	°C		mm		1	2	3	AVG	1	2	3	AVG
WPS 04E-23	13443 / 8	- 78	VWT 0/22	2.5 x 10.0	KV_2	39	41	38	39	1,03	1,12	1,02	1,06
WPS 04E-23	13443 / 9	- 78	VHT 0/22	2.5 x 10.0	KV_2	33	35	31	33	0,95	0,99	0,83	0,92
WPS 04E-23	13443 / 10	- 78	VHT 2/22	2.5 x 10.0	KV_2	56	55	41	51	1,16	1,15	1,00	1,10
WPS 04E-23	13443 / 11	- 78	VHT 5/22	2.5 x 10.0	KV_2	38	43	45	42	1,05	1,21	1,29	1,18
WPS 04E-23	13443 / 12	- 50	VWT 0/2	10.0 x 10.0	KV_2	293	280	257	277	2,29	2,21	2,11	2,20
WPS 04E-23	13443 / 13	- 50	VHT 0/2	10.0 x 10.0	KV_2	255	263	234	251	2,16	2,21	2,23	2,20
WPS 04E-23	13443 / 14	- 50	VHT 2/2	10.0 x 10.0	KV_2	293	259	296	283	2,33	2,03	2,39	2,25
WPS 04E-23	13443 / 15	- 50	VHT 5/2	10.0 x 10.0	KV_2	283	295	299	292	2,24	2,31	2,39	2,31

Posizione provino: *Position of specimen:*	**Note:** *Remarks:*
BM: Materiale Base / Base Metal VHT: Linea di Fusione / Fusion Line VWT: Zona Fusa / Weld Metal	Tempo di condizionamento provini: >15 min Conditioning time: >15 min 1) Valore approssimativo KV eccede 80% della capacità dell'apparecchiatura - Approximate KV value exceeds 80% of the equipment's capacity 2) Valore approssimativo di provino non rotto – Approximate value of unbroken specimen

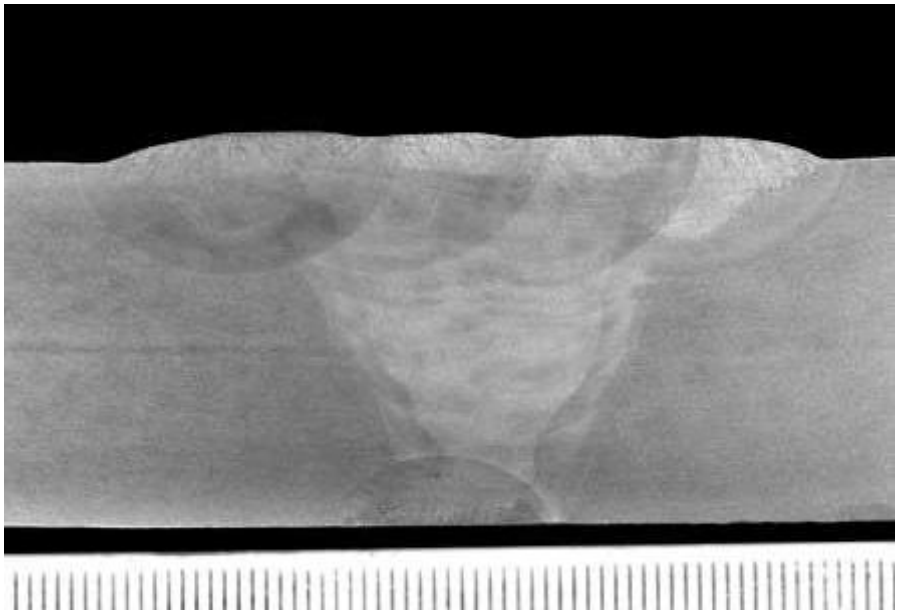
Approvato da: RESPONSABILE LABORATORIO
Marco Canato
GLOBAL TEST Srl

Spazio riservato ad eventuali approvazioni esterne / Space reserved for possible external approvals

☒ Review
☐ Witness
Date: 23/10/23 Name: .....

Prove eseguite e Normative di riferimento - Performed Tests and Reference Standards	Standards Correlati - Related Standards
Macrographic examination according to UNI EN ISO 17639:2022	UNI 3138:1984

ESAME MACROGRAFICO / MACROGRAPHIC EXAMINATION



Identificativo Campione Sample Identification	**Cliente** Client	WPS 04E-23
	Lab. Lab.	13443 / 16
Posizione Prelievo / Sampling position **Zona Esaminata /** Examinated Area		Transversal Weld Joint
Tipo di saldatura/ Weld Joint type		Butt Weld
Tipo di Attacco / Etching Type		Nital 10%
Metodo di attacco / Ethching method		Immersione – 30s Swabbing – 30s
Designazione / Designation		Esame-ISO 17639-A-E-1.2/1.2-1.2/1.2-A.1
Esito / Result (*)		No defects noted according to UNI EN ISO 5817:2023 Lev. B + UNI EN ISO 15614-1:2019 Lev.2 Para 7.5

Approvato da: RESPONSABILE LABORATORIO
Marco Canato
GLOBAL TEST Srl

Spazio riservato ad eventuali approvazioni esterne / Space reserved for possible external approvals

☒ Review ☐ Witness
Date: 23/10/23 Name: .....

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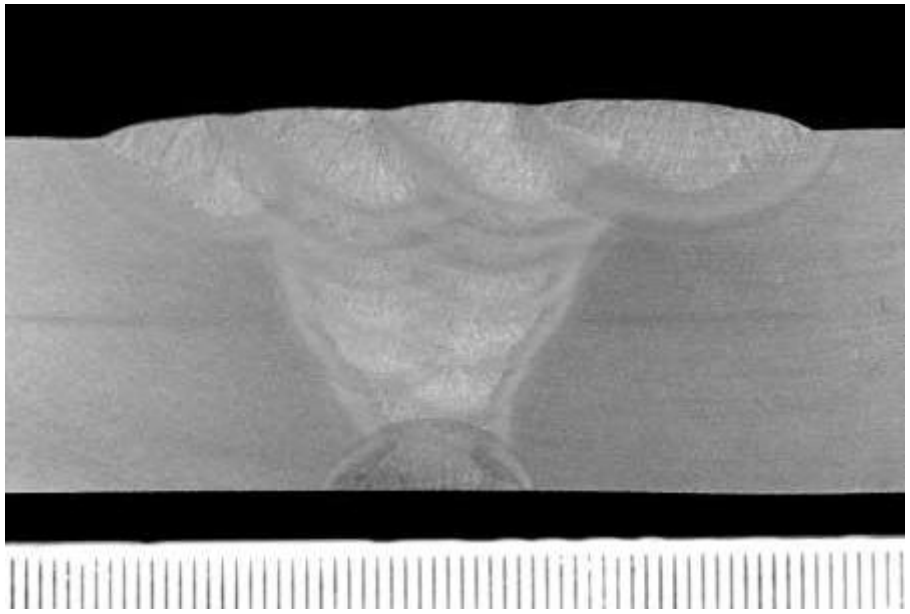
LAB N° 1230 L

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Tel 041923994 - E-mail: laboratorio@globaltest.it
Seda B: operativa
Via A. Moro 10/C, 45026 Lendinara (RO)

CLIENTE / CUSTOMER	
SIDERTAGLIO CALANDRATURA S.r.l. Via Marzotto, 8 - 36031 Dueville (VI)	
ORDINE / ORDER N° Conferma Ordine	DATA / DATE 20/10/2023
RAPPORTO DI PROVA N° / TEST REPORT **29616**	DATA / DATE 20/10/2023
	PAG. 7 di 12

Prove eseguite e Normative di riferimento - Performed Tests and Reference Standards	Standards Correlati - Related Standards
Macrographic examination according to UNI EN ISO 17639:2022	UNI 3138:1984

ESAME MACROGRAFICO / MACROGRAPHIC EXAMINATION



Identificativo Campione Sample Identification	**Cliente** Client	WPS 04E-23
	Lab. Lab.	13443 / 17
Posizione Prelievo / Sampling position **Zona Esaminata /** Examinated Area		Transversal Weld Joint
Tipo di saldatura/ Weld Joint type		Butt Weld
Tipo di Attacco / Etching Type		Nital 10%
Metodo di attacco / Ethching method		Immersione – 30s Swabbing – 30s
Designazione / Designation		Esame-ISO 17639-A-E-1.2/1.2-1.2/1.2-A.1
Esito / Result (*)		No defects noted according to UNI EN ISO 5817:2023 Lev. B + UNI EN ISO 15614-1:2019 Lev.2 Para 7.5

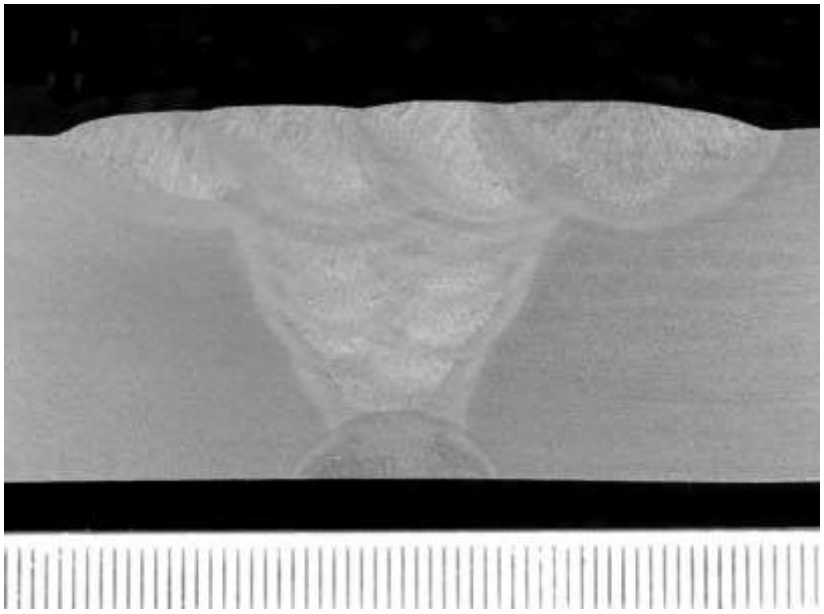
Approvato da: RESPONSABILE LABORATORIO
Marco Canato
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☒ Review ☐ Witness
Date: 23/10/23 Name:

Prove eseguite e Normative di riferimento - Performed Tests and Reference Standards	Standards Correlati - Related Standards
Macrographic examination according to UNI EN ISO 17639:2022	UNI 3138:1984

ESAME MACROGRAFICO / MACROGRAPHIC EXAMINATION



Identificativo Campione Sample Identification	**Cliente** Client	WPS 04E-23
	Lab. Lab.	13443 / 18
Posizione Prelievo / Sampling position **Zona Esaminata /** Examinated Area		Transversal Weld Joint
Tipo di saldatura/ Weld Joint type		Butt Weld
Tipo di Attacco / Etching Type		Nital 10%
Metodo di attacco / Ethching method		Immersione – 30s Swabbing – 30s
Designazione / Designation		Esame-ISO 17639-A-E-1.2/1.2-1.2/1.2-A.1
Esito / Result (*)		No defects noted according to UNI EN ISO 5817:2023 Lev. B + UNI EN ISO 15614-1:2019 Lev.2 Para 7.5

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Marco Canato
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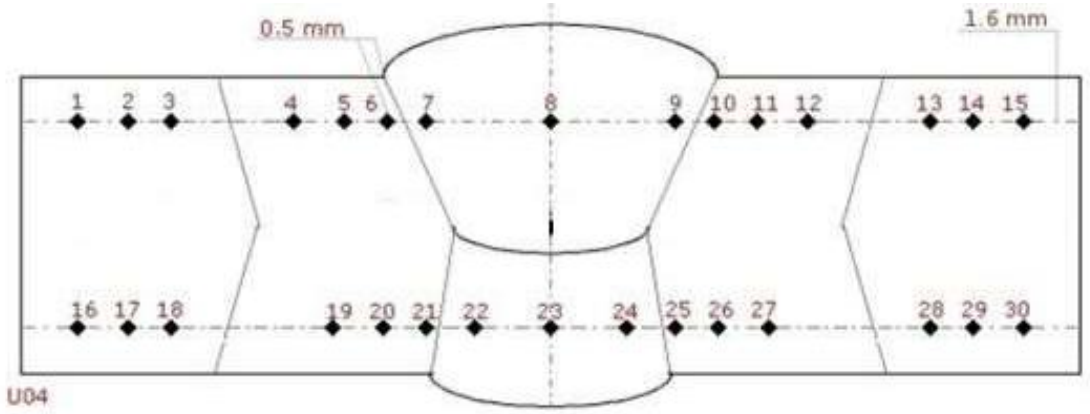
☒ Review ☐ Witness
Date: 23/10/23 Name:

Prove eseguite e Normative di riferimento - Performed Tests and Reference Standards
Hardness test according to UNI EN ISO 6507-1:2018

Standards Correlati - Related Standards
UNI EN ISO 9015-1:2011

PROVA DI DUREZZA / HARDNESS TEST

Identificativo Campione Sample Identification		**Prova di durezza** Hardness Test
Cliente / Client	**Lab.** / Lab.	
WPS 04E-23	13443 / 16	HV10



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
156	155	156	183	189	206	175	173	185	216	203	192	157	153	164
16	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
158	159	160	198	205	227	228	239	221	216	207	184	163	162	163

Approvato da: RESPONSABILE LABORATORIO
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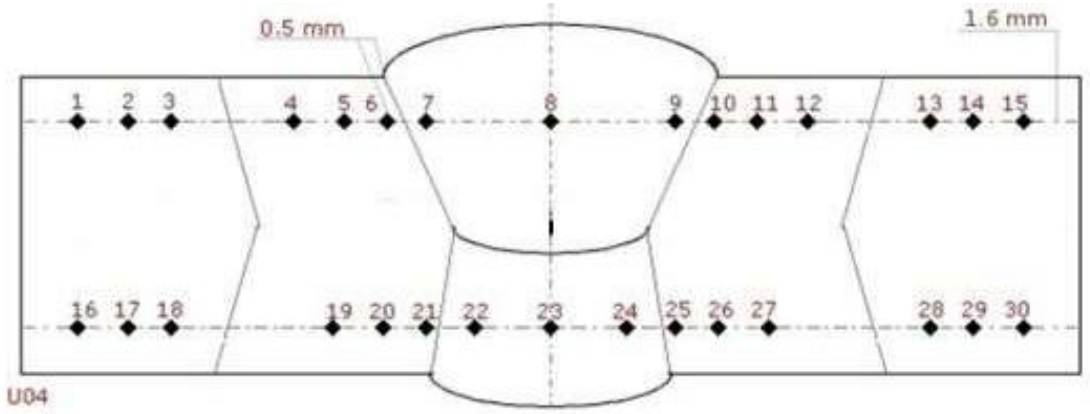
Spazio riservato a eventuali approvazioni esterne / Space reserved for possible external approvals

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☐ Witness
Date: 23/10/23 Name:

Prove eseguite e Normative di riferimento - Performed Tests and Reference Standards	Standards Correlati - Related Standards
Hardness test according to UNI EN ISO 6507-1:2018	UNI EN ISO 9015-1:2011

PROVA DI DUREZZA / HARDNESS TEST

Identificativo Campione Sample Identification		**Prova di durezza** Hardness Test
Cliente / Client	**Lab.** / Lab.	
WPS 04E-23	13443 / 17	HV10



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
158	155	159	187	195	209	169	175	175	216	210	184	159	158	159
16	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
159	161	158	183	201	223	201	221	207	216	207	185	160	160	162

Approvato da: RESPONSABILE LABORATORIO
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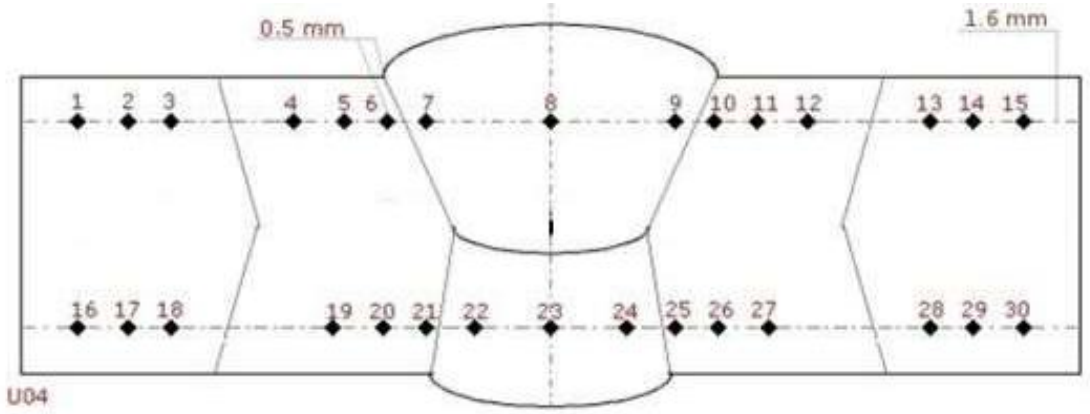
Review
Witness
Date: 23/10/23 Name:

Prove eseguite e Normative di riferimento - Performed Tests and Reference Standards
Hardness test according to UNI EN ISO 6507-1:2018

Standards Correlati - Related Standards
UNI EN ISO 9015-1:2011

PROVA DI DUREZZA / HARDNESS TEST

Identificativo Campione Sample Identification		**Prova di durezza** Hardness Test
Cliente / Client	**Lab.** / Lab.	
WPS 04E-23	13443 / 18	HV10



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
154	156	155	187	196	201	193	178	183	212	207	196	158	158	163
16	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
161	159	158	198	214	227	229	221	238	221	219	183	160	162	162

Approvato da: RESPONSABILE LABORATORIO
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☒ Review ☐ Witness
Date: 23/10/23 Name: .....

STRUMENTI USATI PER LE PROVE / EQUIPMENT USED FOR TESTS

Equipment used	Trademark		Calibration expiry (±15 days)
Digital Caliper	Borletti CDJB15	Sn: 032819-186295	27/10/2025
Tensile Test Machine – 1200kN	GALDABINI QUASAR 1200	Sn: VB3Z	13/03/2024
Electronic Exstensometer	GALDABINI MICRO	Sn: 34547	13/03/2024
Hydraulic Press	OMCN P30/MR	Sn: 589557	-
Charpy pendulum	Wolpert PW30/15K	Sn: 1216	13/03/2024
Digital Thermometer + Probe	TC Direct + PT100	Sn: 220606695 + 220606695/PT100	05/12/2023
Camera	CANON EOS 4000D	Sn: 153070020586	-
Hardness Testing Machine	QNESS Q30A+	Sn: Q1788/02/20	13/03/2024

(*) Metodo di prova non accreditata da ACCREDIA – Ente Italiano di Accreditamento
Test method not accredited by ACCREDIA - Italian Accreditation System

La decorrenza del presente Rapporto di Prova coincide con la data di emissione del documento, posta in alto a destra. Non rileva il fatto che la firma digitale sia eventualmente apposta successivamente.
The effective date of this Test Report corresponds with the emission date, placed in the upper right corner. It does not have relevance the fact that the digital signature is eventually affixed afterwards.

Approvato da: RESPONSABILE LABORATORIO
Marco Canato
GLOBAL TEST Srl

Spazio riservato ad eventuali approvazioni esterne / Space reserved for possible external approvals

Review ☒ Witness ☐
Date: 23/10/23 Name:

A02

CERTIFICATO DI CONTROLLO 3.1 / INSPECTION CERTIFICATE 3.1 - EN 10204:2004

A04/A05

METINVEST
METINVEST TRAMETAL SPA

(A) PROCESSO DI ELABORAZIONE / STEELMAKING PROCESS: E = ELECTRIC ; BO = BASIC OXYGEN
(B) STATO DI FORNITURA / DELIVERY CONDITION: AR = GREZZO DI LAMINAZIONE / AS ROLLED ;
N* = LAMINAZIONE A TEMPERATURA CONTROLLATA / NORMALIZING ROLLING ;
N = NORMALIZZATO / NORMALIZED at 910°C, 1,5 min/mm ; ARIA CALMA / STILL AIR;
R = RICOTTO / ANNEALED;
N+R = NORMALIZZATO + RINVENUTO / NORMALIZED + TEMPERED
(C) TRATTAMENTO TERMICO DEL CAMPIONE / HEAT TREATMENT OF SAMPLE:
N = 910°C, 1,5 min/mm ; ARIA CALMA / STILL AIR
R = 650°C, 1,5 min/mm ; ARIA CALMA / STILL AIR
(D) Ceq_1 = C + Mn/6 ; Ceq_2 = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15 ;
Pcm = C + Si/30 + (Mn + Cu + Cr)/20 + NI/60 + Mo/15 + V/10 + B*5
(1) POSIZIONE / LOCATION: 1 = TESTA / TOP ; 2 = PIEDE / BOTTOM
(2) POSIZIONE / LOCATION: C = CUORE / 1/2 THICKNESS ; P = PELLE / SURFACE ; D = 1/4 SPESSORE / THICKNESS
(3) DIREZIONE / DIRECTION: L = LONGITUDINALE / LONGITUDINAL ; T = TRASVERSALE / TRANSVERSE
(4) FORMA DEL PROVINO / SHAPE OF TEST PIECE: P = PRISMATICO / PRISMATIC ; C = CILINDRICO / CYLINDRICAL
(5) ESITO PROVA DI PIEGA / RESULT: OK = COMPLYING ; NO = NOT COMPLYING

A01

Società per azioni con socio unico soggetta a direzione e coordinamento di Metinvest B.V
Registered office: Via XII Ottobre 1, 5° piano - 16121 Genova, Italy
Phone +39 010 5762911 - Fax +39 010 5762990
Works: Via E. Fermi, 44 - 33058 San Giorgio di Nogaro UD, Italy
Phone +39 0431 629989 - Fax +39 0431 629985
Cap. Soc. Euro 300.120.000,00 i.v.
C.F., P.IVA e Iscr. Reg. Imp. GE 05956630965 - REA 437720/GE
http://trametal.metinvestholding.com

A06 Cliente / Customer

SIDERURGICA LEONESSA S.R.L.

Via Don. Milani 13-19
25020 FLERO 25020 IT
BS ITALIA

A03 N° Certificato / Certificate no.	Z02 Data / Date
553065	01/04/2022
A08 N° Ordine Trametal / Works order	A07 N° Ordine cliente / Customer's order
32200448	6-2022
DDT	del / date
BOL 32205952	30/03/2022
Pratica / File no.	
del / date	

B06 Marcatura di prodotto / Marking of the product

LAMIERA/ORDINE/N° INFORNAMENTO/DIMENSIONI/QUALITÀ/MARCHIO DEL PRODUTTORE
PLATE/ORDER/INTERNAL N°/DIMENSIONS/STEEL GRADE/MANUFACTURER'S MARK

Review ☒ Witness ☐
Date: 06/10/23 Name:

B01/B02/B03

Prodotto / Product	Lamiere / Hot rolled plates
Qualità / Steel grade	P355NL2
Normativa / Specification	EN10028-3:2017

B07 ITEM	B07 LAMIERA PLATE	B07 N° INFORN. INTERNAL NUMBER	B09/B11 DIMENSIONI DIMENSIONS [mm]	B12 MASSA TEORICA [t] THEORICAL WEIGHT	B07 LOTTO BATCH NO.	C70 PROCESSO ELAB. (A) STEELMAKING PROCESS	B04 STATO FORNITURA LAMIERA (B) DELIVERY CONDITION	C00 CAMPIONE SAMPLE	B05 TRATT. CAMPIONE (C) HEAT TREATMENT	C00 CAMPIONE PWHT SAMPLE	B05 PWHT BEGINNING TEMPERATURA INIZIO °C	HEATING RATE VELOCITA' RISCALDO C/h	TEMPERATURE TREATMENT TEMPERATURA TRATTAMENTO °C	HOLDING TIME PERMANENZA Min	COOLING RATE VELOCITA' RAFFREDDAMENTO °C/h	END TEMPERATURE TEMPERATURA FINE °C	N° CICLI / CYCLES	C00 CAMPIONE Q+T SAMPLE	B05 Q+T TEMPERATURE TEMPERATURA (Q) °C	HOLDING TIME PERMANENZA (Q) Min	COOLING RAFFREDDAMENTO	TEMPERATURE TEMPERATURA (T) °C	HOLDING TIME PERMANENZA (T) Min	COOLING RAFFREDDAMENTO
22	1NAR920901A	1779110	25.00X3000X12000	7,07	728735	BO	N	GD860																
~~22~~	~~1NAR920902A~~	~~1779109~~	~~25.00X3000X12000~~	~~7,07~~	~~728736~~	~~BO~~	~~N~~	~~GD861~~																

C71/C92 COMPOSIZIONE CHIMICA DI COLATA / HEAT CHEMICAL ANALYSIS

B07	C71	C72	C73	C74	C75	C76	C77	C78	C79	C80	C81	C82	C83	C84	C85	C86	C87	C88	C89	C90	C91
COLATA HEAT	C %	Mn %	Si %	P %	S %	Cu %	Ni %	Cr %	Mo %	Al %	V %	Nb %	Ti %	Sn %	Ca %	N %	B %	H %	Ceq1 % (D)	Ceq2 % (D)	Pcm % (D)
Ordine Min 22																					
Ordine Max 22		1,50										0,050									
P355NL2 Min 0.00 - 60.00		1,10								0,020											
P355NL2 Max 0.00 - 60.00	0,18	1,70	0,50	0,020	0,005	0,300	0,500	0,300	0,080		0,100	0,050	0,030			0,0120				0,43	
1NAR92	0,17	1,18	0,27	0,013	0,002	0,020	0,180	0,020	<0.005	0,030	<0.005	0,022	<0.005	<0.005	0,0000	0,0060	0,0003	0,0002	0,37	0,38	0,24

C00		C01	PROVA DI TRAZIONE TENSILE TEST C01	C02	C03	C11	C12		C13	C14	C10	PROVA DI RESILIENZA IMPACT TEST - CHARPY V-NOTCH TEST C41	C02	C03	C01	C42	C43	PROVA DI PIEGA BEND TEST C02	C51	C52	C50	PROVA DI DUREZZA HARDNESS TEST C01	C30	C31	C32	PROVA DI STRIZIONE Z% TEST C53	C54
CAMPIONE SAMPLE	SPESSORE LAMIERA PLATE THICKNESS	POSIZIONE (1) LOCATION	POSIZIONE (2) LOCATION	ORIENTATION (3)	TEMPERATURA [°C] TEST TEMPERATURE	YIELD STRENGTH ReH [Mpa]	TENSILE STRENGTH Rm [Mpa]	ReH/Rm	ELONGATION A%	PROOF/YIELD STRENGTH Rp 0.2 [Mpa]	SHAPE OF TEST PIECE FORMA PROVINO (4)	LARGHEZZA [mm] WIDTH	DIREZIONE (3) ORIENTATION	TEMPERATURA [°C] TEST TEMPERATURE	POSIZIONE (2) LOCATION	SINGOLI VALORI [J] INDIVIDUAL VALUES	MEDIA [J] MEAN VALUE	DIREZIONE (3) ORIENTATION	MANDREL [mm]	ANGOLO [°] ANGLE	ESITO (5) RESULT	POSIZIONE (2) LOCATION	METODO TEST METHOD	SINGOLI VALORI INDIVIDUAL VALUES	MEDIA MEAN VALUE	Z% SINGOLI VALORI Z% INDIVIDUAL VALUES	Z% VALORE MEDIO Z% MEAN VALUE
ORDINE Min 22													L	-46		27	0										
P355NL2 Min 16.10 - 40.00					20	345	490		22,0																		
P355NL2 Max 16.10 - 40.00					20		630																				

			PROVA DI TRAZIONE TENSILE TEST									PROVA DI RESILIENZA IMPACT TEST - CHARPY V-NOTCH TEST						PROVA DI PIEGA BEND TEST				PROVA DI DUREZZA HARDNESS TEST				PROVA DI STRIZIONE Z% TEST	
C00		C01	C01	C02	C03	C11	C12		C13	C14	C10	C41	C02	C03	C01	C42	C43	C02	C51	C52	C50	C01	C30	C31	C32	C53	C54
CAMPIONE SAMPLE	SPESSORE LAMIERA PLATE THICKNESS	POSIZIONE (1) LOCATION	POSIZIONE (2) LOCATION	DIREZIONE (3) ORIENTATION	TEMPERATURA [°C] TEST TEMPERATURE	ReH [Mpa] YIELD STRENGTH	Rm [Mpa] TENSILE STRENGTH	ReH/Rm	A% ELONGATION	Rp 0.2 [Mpa] PROOF/YIELD STRENGTH	FORMA PROVINO (4) SHAPE OF TEST PIECE	LARGHEZZA [mm] WIDTH	DIREZIONE (3) ORIENTATION	TEMPERATURA [°C] TEST TEMPERATURE	POSIZIONE (2) LOCATION	SINGOLI VALORI [J] INDIVIDUAL VALUES	MEDIA [J] MEAN VALUE	DIREZIONE (3) ORIENTATION	MANDRINO [mm] MANDREL	ANGOLO [°] ANGLE	ESITO (5) RESULT	POSIZIONE (2) LOCATION	METODO TEST METHOD	SINGOLI VALORI INDIVIDUAL VALUES	MEDIA MEAN VALUE	Z% SINGOLI VALORI Z% INDIVIDUAL VALUES	Z% VALORE MEDIO Z% MEAN VALUE
P355NL2 Min 6.00 - 999.00													T	-50			27										
GD860	25,00	2	P	T	20	407	518	0,79	32,0		P	10,00	L	-46	P	278 222 267	256						HRC <	22			
GD860	25,00	2										10,00	T	-50	P	135 126 126	129										
GD861	25,00	2	P	T	20	405	531	0,76	32,9		P	10,00	L	-46	P	259 241 236	245						HRC <	22			
GD861	25,00	2										10,00	T	-50	P	110 105 111	109										

C10
UNI EN ISO 6892-1:2020 / UNI EN ISO 148-1:2016

Z01

ITEM		TOLLERANZA DI SPESSORE TOLERANCE ON THICKNESS	TOLLERANZE DI LARGHEZZA TOLERANCE ON WIDTH	TOLLERANZE DI LUNGHEZZA TOLERANCE ON LENGTH	CONDIZIONI SUPERFICIALI SURFACE FINISH	PLANARITÀ FLATNESS
22		-0 +2 MM	-0 +100 MM	-0 +200 MM	EN 10163/2 CL B3	EN 10029 CL. N

CERTIFICHIAMO che le lamiere elencate sono conformi alla prescrizione dell'ordine, che i controlli della marcatura, dell'aspetto superficiale e dimensionale hanno dato esito positivo.
WE CERTIFY that the above mentioned plates are consistent with the order prescriptions: marking, inspection and measurement without objection.
DICHIARIAMO CHE LE LAMIERE SONO STATE CONTROLLATE IN ACCORDO ALLA NORMATIVA VIGENTE E CHE LE RADIAZIONI IONIZZANTI NON ECCEDONO IL VALORE DEL FONDO NATURALE.
WE DECLARE THAT THE PLATES WERE CONTROLLED ACCORDING TO STANDARD AND RADIATION DO NOT EXCEED THE NATURAL RADIATION.

Z06

FULLY KILLED FINE GRAIN STEEL

HARDNESS IN ACC. TO NACE MR 0175 / ISO15156

STEEL VACUUM DEGASSED

Z07	Z03 ENTE COLLAUDO / INSPECTION BODY	Z02
Plates acc. to PED 2014/68/EU	**TIMBRO DELL'ISPETTORE STAMP OF THE INSPECTION REPRESENTATIVE**	**METINVEST TRAMETAL S.p.A/ F. Andrian CQ Manager**

S.I.A.T. S.p.A. - Società Italiana Acciai Trafilati
Via Facini 54, 33013 Gemona del Friuli, UD - Italy
Tel +39 0432 062811, Fax +39 0432 062960
s.i.a.t.spa@legalmail.it, www.siatspa.com

Partita I.V.A., Cod. Fisc., Reg. Imprese C.C.I.A.A. Udine 00166750307
Rea Udine 115789 - Cap. Soc. € 5.000.000 I.V.
"Società soggetta all'attività di direzione e coordinamento da parte di Compagnia Siderurgica Italiana S.r.l."

Divisione Pittarc
Via Cartiera 3, 33010 Osoppo, UD - Italy
Tel +39 0432 062811, Fax +39 0432 062903
www.pittarc.com

Azienda con i seguenti sistemi di gestione certificati:
- qualità secondo UNI EN ISO 9001:2015
- ambiente secondo UNI EN ISO 14001:2015

CERTIFICATO DI COLLAUDO

Inspection Certificate - Abnahmeprüfzeugins - Certificate de Réception

CHEMICAL ANALYSIS ACCORDING TO EN 10204:2004 TYPE 3.1

N° 6697/2022/A
DATA 05/12/2022

PRODOTTO C1200196
Product FILO G9 INNOV-ARC Ø 1,20
Erzeugnis
Produit

NORMATIVA AWS A5.18 ER70S-6
Standard EN ISO 14341 A G46 5 M21/2C1 4Si1

N° DOC. di TRASP. 10507 del 05/12/2022
Dispatch Note / Lieferschein / Avis d'expédition

N° ORDINE 202207232 / 0001
Order / Bestellung / Commande

CONFERMA 5884 SCHIO
Confirmation / Auftragsbestätigung / Confirmation de commande

CLIENTE **051108**
Customer / Besteller / Client

AIRGAS NORDEST S.R.L.
VIA GLORIA 2, MARGHERA 30175 VENEZ

COLATA N°
Heat / Schmelze / Coulée

13616/2022

ANALISI CHIMICA di COLATA % - Heat Chemical composition % - Schmelze Chemische zusammensetzung % - Composition chimique sur coulée %

C	Mn	Si	P	S	Cr	Ni	Mo	Cu*	Sn	Al	V	Ti	B	N
0,06	1,64	0,91	0,006	0,002	0,03	0,03	0,01	0,03	0,004	0,002	0,000			

*Se non specificato, %Cu totale del filo entro i limiti norme prodotto di riferimento / Wenn nicht angegeben liegt der Gesamtwert von %CU am Draht in der von der Produkt-Richtlinien eingesetzten Grenzen / Si non spécifié %Cu total sur le fil rentre dans les limites fixées par la norme de référence du produit / If not specified the total %CU on wire is within the limits set up by the Product Reference Standard

CARATTERISTICHE MECCANICHE - Mechanical properties - Mechanische kennwerte - Characteristics mecaniques

	Diametro effettivo Actual diameter	Larghezza effettiva Actual Width	Altezza Effettiva Actual Height	Resistenza snervamento Yield strength ReL (Rp0,2)	Resistenza rottura Tensile strength Rm	Allungamento Elongation A5	Strizione Reduction Z	Resilienza KV Impact Test		Durezza Hardness HRB
	mm	mm	mm	MPa	MPa	%	%	C°	J	
SUL PRODOTTO On product Am Endprodukt / Sur produit	10,00			500	586	24,0	70	-50	55	

ALTRE PROVE:
Other tests

ANNOTAZIONI:
Notes
Mechanical test all weld metalAccording to EN 10204 2.2.With gas M21

TÜV Italia
☒ Review
☐ Witness
Date: 06/10/23 Name:

SIDERTAGLIO CALANDRATURA S.R.L.
Pipes Rolling & Welding

Si certifica che il materiale sopra descritto è conforme all'ordine.
We hereby certify that the material described above complies with the terms of the order contract.
Es wird bestatig dass die Lieferung den Vereinbarungen bei der bestellannahme entspricht.
Nous certifions que la livraison est conforme aux stipulations de l'acceptation de la commande.

S.I.A.T. Società Italiana Acciai Trafilati S.P.A.
Controllo Qualità / Quality Control / Qualitätsstelle / Contrôle de Qualité
R. Maida

Inspection Certificate 3.1

LINCOLN ELECTRIC
THE WELDING EXPERTS

Product Line	SAW
Product	OESD3
Size(s) mm	4,0
Item No.	OESD3-4-400
Lot/Batch	F1SW220311
Class	AWS A5.17/A5.17M : EH12K ISO 14171-A : S3Si

Customer Ref	20721788
Our Reference	817785451
Quantity	2400.0 KG
Customer	SIDERTAGLIO CALANDRATURA S.R.L

VIA MARZOTTO 9
DUEVILLE 36031
Italia

Chemical analysis (%)

According to EN10204 3.1

C	Si	Mn	P	S	Cr	Ni	Mo	Cu	V	Al	Co	N
0.120	0.30	1.76	0.009	0.002	0.02	0.02	0.01	0.02	<0.01	<0.01	0.007	0.003

TÜV Italia
☒ Review
☐ Witness
Date: 06/10/23 Name:

Mechanical tests, all weld metal

Remarks

Rivestimento di rame aggiuntivo : 0,12% max

The product identified above has been manufactured, tested and supplied in compliance with a certified ISO 9001 Quality Assurance Programme.

Company
Lincoln Electric Italia srl
Loc. Casalmenini 3
37010 Rivoli Veronese
Italy

Issued By

Printed By: Christian Grigoli
Function: Warehouse Operator
Date: 20/SEP/2022

Cert. No. 01845530
ZEU_CMN , 1

METRODE

Inspection Certificate 3.1

Product Line	FLUX
Product	AS 630
Item No.	W000280317
Lot/Batch	D1FX230030
Wire Class	OESD3-4-25VCI OESD3 4.0x25 STEIN +
	EN ISO 14174: SA FB 1 55 AC H5
	AWS/ASME Sec. II C / SFA 5.17: F7A8-EH12K

LINCOLN ELECTRIC
THE WELDING EXPERTS

TÜV Italia Review ☒ Witness ☐ Date: 06/10/23 Name:

Customer Ref	42
Our Reference	818848531
Quantity	2000.0 KG
Customer	SIDERTAGLIO CALANDRATURA S.R.L

VIA MARZOTTO 9
DUEVILLE 36031
Italia

Flux Composition (%) According to EN10204 3.1

Al2O3	Fe2O3	SiO2	TiO2	MnO	CaO	MgO	CaF2
20.7	1.3	14.0	0.1	1.0	6.5	27.5	24.1

Sieve analysis (%) According to EN10204 3.1

<0,315	0,315-0.5	0,5-1 mm	1-1.6 mm	>1,6 mm
0.30	5.50	62.20	28.80	3.30

Chemical analysis (%) / Batch: F1SW190366 OESD3 4.0x25 STEIN + VCI 25KG According to EN10204 3.1

C	Si	Mn	P	S	Cr	Ni	Mo	Cu	V	Al	N
0.10	0.28	1.75	0.008	0.002	0.04	0.03	<0.01	0.030	<0.01	<0.01	0.004

Chemical analysis (%) / Weld Metal According to EN10204 2.2

C	Si	Mn	P	S	Cr	Ni	Mo
0.10	0.36	1.52	0.010	0.005	0.03	0.02	0.01

Mechanical tests, all weld metal According to EN10204 2.2

Tensile testing **Impact testing**

Cond.	Temp. °C	Rp0.2 MPa	Rm MPa	A5 %	Z %	Temp. °C	C1a J	C1b J	C1c J	KV J
AW	20	501	638	25	67	-60	163	163	162	162

Remarks

QC 6/6/23 SIDERTAGLIO CALANDRATURA S.R.L.

The product identified above has been manufactured, tested and supplied in compliance with a certified ISO 9001 Quality Assurance Programme.

Company	D.Weismann	Printed By	Emil Cristian Pavel	Cert. No.
Lincoln Electric Italia srl Loc. Casalmenini 3 37010 Rivoli Veronese Italy	QC Manager	Function Date	Warehouse operator 05/JUN/2023	02069342 ZEU_FLUX , 1

METRODE SPECIAL ALL

Calibration 11.01.2023.3

MEI SERVICE S.R.L.
Via Pascoli 42/s
30020 - Quarto d'Altino - VE
P.IVA/C.F. 03786710271
0422-1628348
info@meiservice.it

Procedure complies: IEC 60974-14 and ISO 17662

Verification accuracy Standard class

☒ Review ☐ Witness
Date 06/10/23 Name:

Customer **SIDERTAGLIO CALANDRATURA S.r.l.**

Location:	Via Marzotto 9, 36031 - Povolaro di Dueville - VI, P.IVA/C.F. 04069960245
Department:	-------
Date:	11/01/2023
Time	11:02:56

Equipment

Manufacturer:	ESAB
Type:	ORIGO MIG 402cw
Serial No.:	712-939-0045
Asset Number:	170/D
No-load voltage	53 V
Max. rated welding current	400 A
Inspection Interval:	annually

Test procedure

Technology:	Calib DC (RAMV)
Method of test:	Load resistor
Type:	Accuracy
Function Under Test:	GMAW_CV
Characteristic:	U = 14 V + 0.05 Ω * I
Meas. range:	Section, A (100/400)
Next Inspection:	11/01/2024

1. Additional Equipment:	Feed 304	Serial Number:	620-937-9418
2. Additional Equipment:	___	Serial Number:	___
3. Additional Equipment:	___	Serial Number:	___
4. Additional Equipment:	___	Serial Number:	___
5. Additional Equipment:	___	Serial Number:	___

Calibrator

Manufacturer:	HKS	Software version:	1.4.1.5
Type:	S3		
Serial No.:	7022209		

	Type:	SN:	Calib. valid:
Current:	P350/500	15422045	07.2023
Voltage:	P350/500	15422045	07.2023
Gas flow:	___	___	___
Wire:	___	___	___
Speed	___	___	___

The measurement system is tested and suitable according to VDI/VDE/DGQ/DKD guideline 2622.

Conditions:

Voltage	400V
Temperature	10deg.

Remark

Inspection result:

PASS	X
FAIL	

Safety test

PASS	X
FAIL	

MEI SERVICE s.r.l.
Via Pascoli, 42/S
30020 QUARTO D'ALTINO (VE)
Tel. 0422 1628348
C.F. / P. IVA 03786710271

Company stamp

QCL 13/1/23
SIDERTAGLIO CALANDRATURA S.R.L.

___ ZAFFALON ALBERTO, 11/01/2023

Inspector name, date and signature

Current, Standard class: 2.50 %

Measuring points	Calibrator, A	Device, A	Resistance, Ω	Permitted tolerance, A	Difference, A	Results
1	102.4	98.0	0.190	10.0	-4.4	pass
2	189.6	186.0	0.130	10.0	-3.6	pass
3	264.8	262.0	0.106	10.0	-2.8	pass
4	341.6	338.0	0.093	10.0	-3.6	pass
5	404.5	402.0	0.085	10.0	-2.5	pass

Voltage, Standard class: +/-1.50 V

Measuring points	Calibrator, V	Device, V	Resistance, Ω	Permitted tolerance, V	Difference, V	Results
1	19.00	19.3	0.190	1.50	0.30	pass
2	22.82	23.0	0.130	1.50	0.18	pass
3	26.90	27.5	0.106	1.50	0.60	pass
4	30.94	31.7	0.093	1.50	0.76	pass
5	33.64	34.5	0.085	1.50	0.86	pass

Gas flow: 20.00 %

Measuring points	Calibrator, l/min	Device, l/min	Resistance, Ω	Permitted tolerance, l/min	Difference, l/min	Results
1	11.9	10.0		2.4	-1.9	pass
2	15.3	13.0		3.1	-2.3	pass
3	18.2	16.0		3.6	-2.2	pass
4	22.6	20.0		4.5	-2.6	pass
5	25.4	25.0		5.1	-0.4	pass

Calibration 23.03.2023.1

MEI SERVICE S.R.L.
Via Pascoli 42/s
30020 - Quarto d'Altino - VE
P.IVA/C.F. 03786710271
0422-1628348
info@meiservice.it

Procedure complies: IEC 60974-14

Verification accuracy Standard class

☒ Review ☐ Witness
Date: 06/10/23 Name:

Customer **SIDERTAGLIO CALANDRATURA S.r.l.**

Location:	Via Marzotto 9, 36031 - Povolaro di Dueville - VI, P.IVA/C.F. 04069960245
Department:	-------
Date:	23/03/2023
Time	10:20:54

Equipment

Manufacturer:	ESAB
Type:	LAF 1001
Serial No.:	126-311-0090
Asset Number:	171/A
No-load voltage	53 V
Max. rated welding current	1000 A
Inspection Interval:	annually

Test procedure

Technology:	Calib DC (RAMV)
Method of test:	Load resistor
Type:	Accuracy
Function Under Test:	SAW_CC
Characteristic:	U = 20 V + 0.04 Ω * I
Meas. range:	Section, A (300/700)
Next Inspection:	23/03/2024

1. Additional Equipment:	PEK	Serial Number:	049-314-0370
2. Additional Equipment:	___	Serial Number:	___
3. Additional Equipment:	___	Serial Number:	___
4. Additional Equipment:	___	Serial Number:	___
5. Additional Equipment:	___	Serial Number:	___

Calibrator

Manufacturer:	HKS	Software version:	1.4.1.5
Type:	S3		
Serial No.:	7022209		

	Type:	SN:	Calib. valid:
Current:	P1400/2000	12422046	07.2023
Voltage:	P1400/2000	12422046	07.2023
Gas flow:	___	___	___
Wire:	___	___	___
Speed	___	___	___

The measurement system is tested and suitable according to VDI/VDE/DGQ/DKD guideline 2622.

Conditions:

Voltage	400V
Temperature	15deg.

Inspection result:

PASS	X
FAIL	

Safety test

PASS	X
FAIL	

Remark

MEI SERVICE s.r.l.
Via Pascoli, 42/S
30020 QUARTO D'ALTINO (VE)
Tel. 0422 1628348
C.F. / P. IVA 03786710271

Company stamp

ZAFFALON ALESSANDRO, 23/03/2023

Inspector name, date and signature

SIDERTAGLIO CALANDRATURA S.R.L. 23/03/23

Current, Standard class: 2.50 %

Measuring points	Calibrator, A	Device, A	Resistance, Ω	Permitted tolerance, A	Difference, A	Results
1	292.4	295.0	0.107	25.0	2.6	pass
2	374.9	379.0	0.090	25.0	4.1	pass
3	451.1	453.0	0.080	25.0	1.9	pass
4	630.6	635.0	0.073	25.0	4.4	pass
5	689.0	698.0	0.063	25.0	9.0	pass

Voltage, Standard class: +/-1.50 V

Measuring points	Calibrator, V	Device, V	Resistance, Ω	Permitted tolerance, V	Difference, V	Results
1	31.05	31.9	0.107	1.50	0.85	pass
2	34.84	35.9	0.090	1.50	1.06	pass
3	38.73	39.8	0.080	1.50	1.07	pass
4	42.36	43.8	0.073	1.50	1.44	pass
5	41.91	43.4	0.063	1.50	1.49	pass

23/03/23

Welding Procedure Qualification Certificate (EN ISO 15614-1)

Manufacturer's Welding Procedure Qualification Record No.:	**01E-22**	Examining body Reference No:	**- / -**

Manufacturer:	**SIDERTAGLIO CALANDRATURA S.R.L**
Address:	**Via Marzotto , 9 - 36031 Povolaro di Dueville - Vicenza - Italy**
Welders Name	**Stefanut Rosca (ID. S)**
Code/Testing Standard:	**EN ISO 15614-1:2019 Level 2**
Date of Welding:	**20 July 2022**

Range of Qualification

Welding Process(es):	**135 (GMAW) Semi-automatic**
Type of joint and weld:	**Butt Weld full and partial penetration; T-butt weld; FW (T & P)**
Parent material group(s) and sub-group(s):	**1 - 1 cover the equal or lower specified yield strength steels of the same group.**
Parent Material Thickness (mm):	**20 to 80mm**
Weld Metal Thickness (mm):	**up to 80mm**
Throat Thickness (mm)	**All**
Single Run/Multi Run	**Multi-run**
Outside Pipe Diameter (mm):	**OD>500mm or when OD>150mm if welded in rotated position PC, PF or PA**
Filler Material Designation:	**EN ISO 14341-A G465M21/2C1 4Si1 and othe similar characterist**
Filler Material Make:	**All with equivalent mechanical prop. same covering or flux core,same nom. chem. composition****
Filler Material Size:	**All**
Designation of Shielding Gas/Flux:	**EN ISO 14175: M21 (Argon 82% + CO2 18%)**
Designation of Backing Gas:	**------**
Type of Welding Current and Polarity:	**DC EP**
Mode of Metal Transfer:	**Spray , Pulse and Globular transfer mode**
Heat Input:	**+25% (for impact test requirements); -25% (for hardness requirements) - see table on page 2**
Welding Positions:	**ALL except PJ - J-L045 if impact/hardness not required_ Otherwise 135) PA;**
Preheat Temperature:	**>=100° C (a decrease according to 8.4.8 of 15614-1 is permitted)**
Interpass Temperature:	**Max 250 °C**
Post-Heating:	**Yes and No**
Post-Weld Heat Treatment and/or Ageing:	**None**

Other Information

**** and the same or Lower H" than ones used in this Wpar. See page 2**

Certified that test welds were prepared, welded and tested satisfactorily in accordance with the requirements of the code/testing standard indicated above.

Location: **Genoa**

Date of Issue: **20 September 2022**

Surveyor

Germano De Grandis
Surveyor to Lloyd's Register EMEA

A subsidiary of Lloyd's Register Group Limited

Examining Body **Lloyd's Register**

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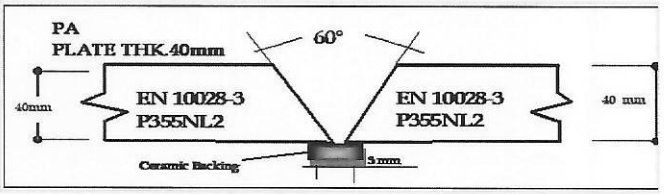
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Details of Test Weld

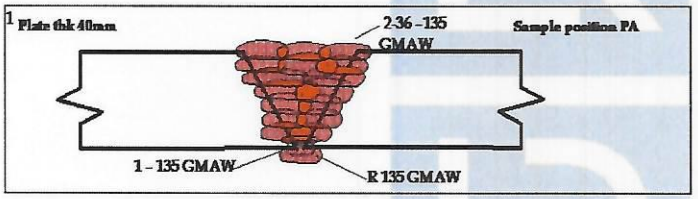
Manufacturer's provisional Welding Procedure Specification Reference No.	**pWPS n 01E-22 rev.0**	Examining Body: Reference No:	-/ -
Manufacturer's Welding Procedure Qualification Record No.:	**01E-22**		
Manufacturer:	**SIDERTAGLIO CALANDRATURA S.R.L**	Date of Welding:	**20 July 2022**
		Location:	**Via Marzotto , 9 - 36031 Povolaro di Dueville - Vicenza - Italy**
Welder's Name:	**Stefanut Rosca (ID. S)**	Method of Preparation and Cleaning:	**Preparation by Grinding; Cleaning by Grinding and Brushing**
Mode of Metal Transfer:	**Spary Arc**	Parent Material Specification: (attach material certificates)*	**EN 10028-3 P355NL2**
Joint Type and Weld:	**Butt joint in plate with fulll penetration**	Parent Material Thickness (mm):	**40mm**
Test Piece/Welding Position:	**PA**	Outside Pipe Diameter (mm):	**--**

Weld Preparation Details (Sketch)

Joint Design



Welding Sequences



Welding Details

Run	Process	Size of Filler Metal	Current A	Voltage V	Type current Polarity	Wire Feed m/min	Travel Speed mm/min	Heat Input kJ/mm	Metal Transfer
1	**135**	**1.2 mm**	**250**	**31.2**	**DCEP**	**Autoreg.**	**200**	**1.872**	**Spray Arc**
2-12	**135**	**1.2 mm**	**270**	**31.5**	**DCEP**	**Autoreg.**	**200**	**2.041**	**Spray Arc**
13-20	**135**	**1.2 mm**	**270**	**32**	**DCEP**	**Autoreg.**	**200**	**2.074**	**Spray Arc**
21-35	**135**	**1.2 mm**	**250**	**32**	**DCEP**	**Autoreg.**	**200**	**1.920**	**Spray Arc**
36	**135**	**1.2 mm**	**270**	**31.7**	**DCEP**	**Autoreg.**	**200**	**2.054**	**Spray Arc**
Back	**Gauging**								
R	**135**	**1.2 mm**	**255**	**31.5**	**DCEP**	**Autoreg.**	**200**	**1.928**	**Spray Arc**

Filler Material:	**135) G9 Innov-Arc**	**Diameter 1,2mm ;**		
Type, Designation, Trade Name:		**135) EN ISO 14341-A G465M21/2C1 4Si1;**		
Any Special Baking or Drying:		**None**	Other Information*:	
Gas/Flux:	Shielding	**ISO 14175 M21 - Ar+Co2**	**Weld metal deposit __135) 40mm**	
	Backing	-----		
Gas Flow Rate :	Shielding	**16-18 l/min**		
	Backing	-----	Post-Weld Heat Treatment and/or Ageing	**NO**
Tungsten Electrode – Type/Size:		-----	Time, Temperature, Method:	**None**
Details of Back Gouging/Backing:		**by grinding**	Heating and Cooling Rates*:	**None**
Preheat Temperature:		**Min 100° C**		
Interpass Temperature:		**Max 250° C**		
Post-Heating:		**None**		
Manufacturer's Name		SIDERTAGLIO **CALANDRATURA S.R.L**	Surveyor	
Manufacturer's Signature				

Germano De Grandis
Surveyor to Lloyd's Register EMEA
A subsidiary of Lloyd's Register Group Limited

Date: **20 September 2022** Examining Body **Lloyd's Register**

* *As Required*

Form 4102 (2016.10)

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Test Results

Manufacturer's Welding Procedure Qualification Record No.: **01E-22**

Examining Body: Reference No: **- / -**

Visual Examination: **Acceptable - Report n° 144/2022**

Radiography*: **Acceptable - Report n° 2248/2022**

Penetrant/Magnetic Particle Test*: **Acceptable - Report n° 365/2022**

Ultrasonic Examination*: **-**

Coloration Assessment**: **None**

Tensile Tests*

Type/No	Re N/mm²	Rm N/mm²	A% on	Z%	Fracture Location	Temperature:	Remarks
Requirements		490 to 630					
47653A1-Upper	-------	535	--------	-------	In Base metal	room	ductile break
47653A1-Lower	-------	528	--------	-------	In Base metal	room	ductile break
47653A2-Upper	-------	533	--------	-------	In Base metal	room	ductile break
47653A2-Lower	-------	532	--------	-------	In Base metal	room	ductile break

Bend Tests*

Type/No	Bend Angle	Former Diameter	Elongation*	Result
47653A1-1	180	64	-------	Side bend - Satisfactory
47653A1-2	180	64	-------	Side bend - Satisfactory
47653A1-3	180	64	-------	Side bend - Satisfactory
47653A1-4	180	64	-------	Side bend - Satisfactory

Macroscopic Examination: **Acceptable**

Microscopic Examination: **None**

Impact Tests*

Type: **KV** Size: **10 x 10 x 55** Requirement: **30 Joule**

Notch Location/Direction	Temp °C	Values (J) 1	2	3	Average (J)	Remarks
47653A - VWT0/0	-40°	55	62	67	61	/
47653A - VHT2/0	-40°	73	43	56	57	/

Hardness Tests*

Type/Load: **Vikers KV10**

Values - Parent Metal: **145 to 160**

- H.A.Z.: **161 to 273**

- Weld Metal: **204 to 218**

Other Tests: -------

Remarks: -------

Location of Measurements (Sketch)* see attached

Tests carried out in accordance with the requirements of: **UNI EN 15614-1:2019**

Laboratory Report Reference No: **Laboratorio Prove Materiali S.Marco srl, report no. 57148 r.0 dated 05-08-2022**

Test Results were acceptable

Test carried out in the presence of: **LR Surveyor**

Surveyor

Germano De Grandis
Surveyor to Lloyd's Register EMEA

A subsidiary of Lloyd's Register Group Limited

Examining Body **Lloyd's Register**

* *As Required*
** *15614-5 only*

Form 4102 (2016.10)

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TEST REPORT 57148 rev0 dated 05/08/2022 - sheet 1 of 4

Customer	SIDERTAGLIO CALANDRATURA S.r.l. - Via Marzotto, 9 - 36031 POVOLARO DI DUEVILLE (VI) - info@sidertagliocalandratura.com
Material	n° 1 butt weld (single side, V, welding process 135 semiatomatic) with full penetration between plates declared th.40 mm in P355NL2 (Gr. 1.2) qualification testing of qualification of welding procedures acc. to UNI EN ISO 15614-1:2019
Documents	delivery note 383 dated 28/07/2022; e-mail dated 22/07/2022 and 29/07/2022
Customer reference	job P0186
Receipt date	29/07/2022
Sampling	by Customer and LRQA. The results refer to the sample as received.
Third party	LRQA (Mr. Mattia Crivellari) and Sidertaglio Calandratura (Mr. Davide De Rizzo)
Remarks	

Required test	Applicable test standard	Remarks
Transverse tensile test on weld	UNI EN ISO 4136:2012 + UNI EN ISO 6892-1:2020	
Bend test	UNI EN ISO 5173:2012	
Impact test	UNI EN ISO 9016:2012 + UNI EN ISO 148-1:2016	
Macroscopic examination	UNI EN ISO 17639:2013	
Vickers hardness test	UNI EN ISO 6507-1:2018	

Reference standards for Customer	UNI EN ISO 15614-1:2019 para.7.5 level 2; UNI EN ISO 9015-1:2011

Internal identification	Customer identification
47653A	WPS 01E-22

SIDERTAGLIO CALANDRATURA S.R.L. Pipes Rolling & Welding

☐ LRQA verification ltd ☐ 0094 ☐
☑ Witnessed ☐ Monitored ☐ Reviewed
MATTIA CRIVELLARI
Ref. No.:
Office: Milan 05/08/2022

The results refer to the tested articles exclusively – The information in the fields "Material", "Customer reference" and "Customer identification" are provided by Customer and the Laboratory refuses any responsibility - All the tests are intended to be performed at Laboratory headquarters, unless otherwise specified - Test specimens and any remaining material will be retained for three months - If a statement of conformity is issued, it's intended to be expressed according to the "shared risk" rules without taking into account measurement uncertainty, unless otherwise specified - The end on the Test Report corresponds with the Technical Director signature - This document shall not be reproduced partially.

LABORATORIO PROVE MATERIALI S. MARCO srl
36015 Schio - VI - Via Lago di Alleghe, 30/32 - Tel. 0445 575623 - info@labsanmarco.it - C.F. e P.IVA IT01983950245

TEST RESULTS

Transverse tensile test on weld acc. to UNI EN ISO 4136:2012 + UNI EN ISO 6892-1:2020 A4

Equipment:
Macchina Universale Galdabini CTM60 matr. 33814; Calibro Mitutoyo 200 mm matr. A19102596, Micrometro Alpa matr. 180602697, Proiettore Profili LTF Orion 400H Matr. 24FCN0024

Internal identification	Customer Identification	Dimensions [mm]	S_0 [mm²]	R_m [MPa]	Failure location	Date of test
47653A1 upper	WPS 01E-22	16,70x25,00	417,5	535	B.M.	05/08/2022
47653A1 lower	WPS 01E-22	18,20x25,00	455,0	528	B.M.	05/08/2022
47653A2 upper	WPS 01E-22	18,40x25,00	460,0	533	B.M.	05/08/2022
47653A2 lower	WPS 01E-22	16,50x25,00	412,5	532	B.M.	05/08/2022

Bend test acc. to UNI EN ISO 5173:2012

Equipment:
Pressa OMCN 204/WEC64 matr.587819/2017; Calibro Mitutoyo 200 mm matr. A19102596

Internal identification	Customer identification	Dimensions [mm]	Bend type	Bend angle [°]	Former diameter [mm]	Distance between rollers [mm]	Result[a]	Date of test
47653A1÷4	WPS 01E-22	16x40x150	n° 4 side bends	180	64	99	Satisfactory	03/08/2022

[a] According to UNI EN ISO 15614-1:2019 para. 7.4.2

Impact test acc. to UNI EN ISO 9016:2012 + UNI EN ISO 148-1:2016

Equipment:
Pendolo GALDABINI IMPACT 300 matr. VADV, Calibro Mitutoyo 200 mm matr. A19102596, Micrometro Alpa matr. 180602697, Proiettore Profili LTF Orion 400H Matr.24FCN0024, Catena termometrica DELTAOHM HD2107.1 + TP472I Pt100 matr. 14013876+15005743

Internal identification	Customer identification	Location	Dimensions [mm]	Temp. [°C]	Impact values KV_2 [J]	Date of test
47653A	WPS 01E-22	VWT0/0	10x10x55	-40	55 - 62 - 67	05/08/2022
47653A	WPS 01E-22	VHT2/0	10x10x55	-40	73 - 43 - 56	05/08/2022

SIBERTAGLIO CALANDRATURA S.R.L. Pipes Rolling & Welding

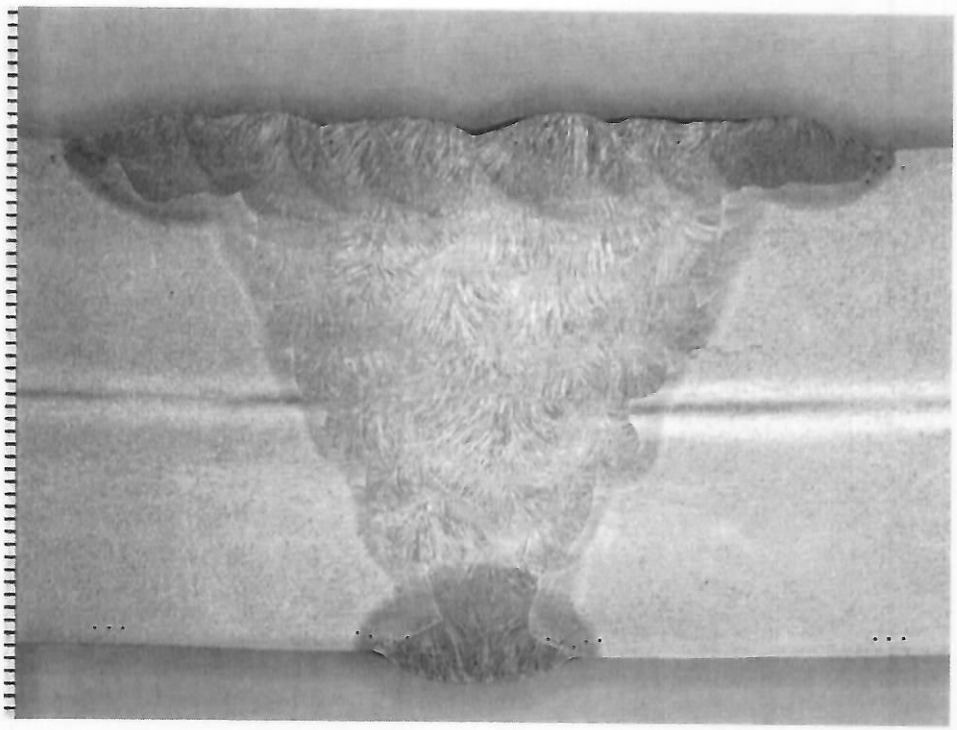
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Office: Milan 05/08/2022
IRQA

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36015 Schio - VI - Via Lago di Alleghe, 30/32 - Tel. 0445 575623 - info@labsanmarco.it - C.F. e P.IVA IT01983950245

TEST RESULTS

Macroscopic examination acc. to UNI EN ISO 17639:2013

Equipment:
Direct examination



The metric reference spacing is 1 mm

Internal identification	47653A
Customer identification	WPS 01E-22
Designation	UNI EN ISO 17639-A-E-1.2-1.2/A.6
Magnification	1,7X
Etching	Ammonium persulfate
Notes	Satisfactory according to UNI EN ISO 15614-1:2019 paragraph 7.5 level 2.
Date of test	02/08/2022

SIDERTAGLIO - CALANDRATURA S.R.L. Pipes Rolling & Welding

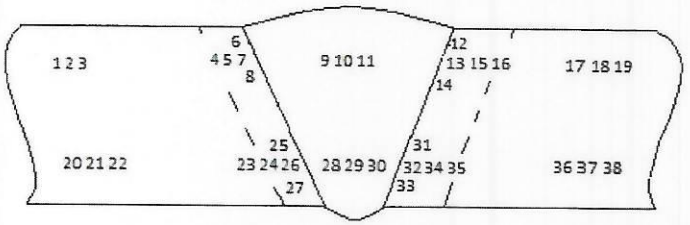
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☐ Witnessed ☐ Monitored ☐ Reviewed
MATTIA CRIVELLARI
Ref. No.:
Office: Milan 05/08/2022

TEST RESULTS

Vickers hardness test acc. to UNI EN ISO 6507-1:2018

Equipment:
Durometro Qness Q30A+ matr. Q02110313

Internal identification	Customer identification	Date of test
47653A	WPS 01E-22	02/08/2022



Indentations rows sketch according to UNI EN ISO 9015-1:2011

Hardness values HV10 obtained on position:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
154	159	160	163	177	229	255	264	204	206	218	266	224	206	186	161	153	152	152

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
145	148	148	170	195	216	222	228	210	211	209	273	265	254	191	165	148	147	148

Laboratorio Prove Materiali S. Marco S.r.l.
The Technical Director: Ing. Fabio Toldo
Firmato digitalmente da: TOLDO FABIO
Data: 05/08/2022 12:09:38

SIDERTAGLIO CALANDRATURA S.R.L.

IRQA verification ltd 0094
Witnessed Monitored Reviewed
MATTIA CRIVELLARI
Ref. No
Office: Milan 05/08/2022

LABORATORIO PROVE MATERIALI S. MARCO srl
36015 Schio - VI - Via Lago di Alleghe, 30/32 - Tel. 0445 575623 - info@labsanmarco.it - C.F. e P.IVA IT01983950245

RAPPORTO RADIOGRAFICO
RADIOGRAPHIC REPORT

N° 2248/2022
del of 29/07/2022
Pag. Sheet 1 di of 1

M.C. CONTROL s.r.l. TEL.0444/411135 - FAX 0444 / 412154 - Viale Venezia,40 - 36043 CAMISANO VIC. (VI)

Cliente SIDERTAGLIO CALANDRATURA S.R.L.
Customer

Ordine* | **Del** Of | **Commessa*** Job

Descrizione* N°01 TALLONE 300x400 THK. 40 mm (BW PA) | **Tipo Giunto** Testa a Testa
Description

Fase di lavoro Dopo saldatura - After welding | **Materiale*** P355NL2 | **PROC.SALD.*** Welding process
Work stage | Material

Marche di riferimento* 01E-22 | **Tipo di marcatura** Pennarel. Indel. | **Rinf. di Sald.** Weld reinforcement
Reference marking | Type of marking | Perm. marker

Norme di riferimento: **Procedura/specifica** ISO 17636-1 | **Accettabilità difetti** ISO 10675-1 LIV. 2
Procedure | Specification | Ultima ed. - Last ed. | Acceptance criteria | Ultima ed. - Last ed.

Tipo prodotto Laminato / Saldato | **Stadio di controllo** Finale | **Fase di controllo**
Product Type | Inspection Phase | Inspection Phase

**Dati forniti dal Cliente - * these data are supplied by the custoner* Allegato/Annex :

Sorgente Raggi x / x-Ray | **Corrente mA** 3 | **Tensione kV** 300 | mC /// | **Distanza Fuoco Oggetto (D)** 700 mm
Source | Current | Voltage | F - object distance (D)

Distanza Oggetto - Film (d) 40 mm | **Apparecchio** SEIFERT ERESCO 65MF4 | **Dimensione Sorgente** 3 mm (1,5 x 1,5)
Object - film distance (d) | Radiog. apparatus | Source size

Tipo penetrametro 6 FE EN | **Posizione** Lato Sorgente | **Tipo Pellicola** CARESTREAM T200 - C4
I.Q.I. Type | Position | Source side | Film type

Film per cassetta Singolo | **Tempo di esposizione** 8' | **Penombra geometrica** $Ug = \frac{F * d}{D}$
N° Film on film older | single | Exposition Time | Geometric unsharpness

Schermi al piombo Sp. : Lato sorgente 0,05 | **LATO PELLICOLA** 0,10 | **Densità** >=2,3 ÷ 3,2 | **Filo Essenziale**
Lead screen | Source side | Film side | Density | Essenzial wire

Metodo di sviluppo Automatico | Note : | **Filo Visibile**
Film processing tecnique | Automatic | Notes : | Visible wire

Tratto Position	Esito Result	Difetti Defects	Disp. di rip. Test. Arrang.	Densità Density
01E-22				
1 - 2	C		7.1.3 f2	
2 - 3	C		7.1.3 f2	

Difetti - Defects

0 -	C	Cricca Crack	2015-	IG	Inclusione di gas allungata Elongated cavity	3041-	IW	Inclusione di tungsteno Tungsten inclusion	517-	RD	Ripresa difettosa Poor restart
1 -	MF	Mancanza di fusione Lack of fusion (Incollatura)	2016-	T	Tarlo Worm-hole	5011 -	IM	Incisione marginale Undercut	601 -	CD	Colpo d'arco Stray flash , arc strike
2 -	MP	Mancanza di penetrazione Lack of penetration	202 -	CA	Cavità di ritiro Shrinkage cavity	504 -	EP	Eccesso di penetrazione Excessive penetration	602 -	SP	Spruzzi Spatters
11-	P	Porosità (isolate) Gas pore	2024 -	K	Cavità di cratere Crater pipe	5041 -	SG	Sgocciolamento Local protusion	514 -		Superficie irregolare Irregular surface
12-	PD	Porosità distribuita uniform. Uniformly distribuited porosity	301-	IS	Inclusioni di scoria Slag inclusion	507 -	SL	Slivellamento Linear misalignment	606 -	EM	Eccesso di molatura Underflushing
13-	PP	Nido di soffiature Clustered porosity	302-	IF	Inclusioni di flusso Flux inclusion	509 -	SL	Avvallamento Sagging		H	Difetto superficiale Superficial defect
14-	PA	Pori allineati Linear porosity	303-	IO	Inclusione di ossido Oxide inclusion	511-	IN	Insellamento Incompletely filled groove		DF	Difetto film Film defect

ESITO : RESULT **C = CONFORME** - ACCEPTABLE **R = RIPARARE** - TO REPEIR **RR = RIPETERE RX** - TO REPEAT RX

RESPONSABILE - WORD REFERENCE | OPERATORE - OPERATOR | ISPETTORE - ISPECTOR

SIDERTAGLIO CALANDRATURA S.R.L.

Esposito Maurizio

☐ LRQA verification nd ☐ 003 ☐
☐ Witnessed ☐ Monitored ☑ Reviewed
MATTIA CRIVELLARI
Ref. No..
Office: Milan 29/07/2022

VERBALE DI CONTROLLO VISIVO
VISUAL EXAMINATION REPORT

N. 144/2022

del of 29/07/2022

Pag. Sheet 1 di of 1

M.C. CONTROL s.r.l. TEL.0444/411135 - FAX 0444 / 412154 - Viale Venezia,40 - 36043 CAMISANO VIC. (VI)

Cliente SIDERTAGLIO CALANDRATURA S.R.L.
Customer

Ordine* | **Del** | **Commessa***
Order | Of | Job

Codice pezzo* 01E-22 | **Oggetto** | **Tipo Giunto**
Code name | Subject | Joint type

Descrizione del pezzo* N°01 TALLONE 300x400 THK. 40 mm (BW PA) | **Quantità** 1
Description object | Quantity

Materiale* P355NL2 | **Disegno*** | **WPS di riferimento***
Material | Drawing | Reference WPS

Estensione del controllo su saldatura | **Condizioni superficiali** Spazzolato
Extension examination | Tests surface status | Brushed

Norme di rif. : **Procedura/Specifica** ISO 5817 | **Classe accettazione** ISO 5817 LIV. C
Procedure | Specification | Ultima ed. - Last ed. | Acceptance criteria | Ultima ed. - Last ed.

Illuminamento **> 1000 Lux** | **Luxometro DT -1306** **Matr. 00070681** | **Distanza massima 600 mm** Max distance 600 mm | **Angolo di visione > 30°** Visual angle >30° | **Diretto / Direct**
Light

Controllo Non assistito | **Controllo** Localizzato | **Strumenti di controllo**
Test | No support | Test | Localized | Equipment

Tipo prodotto | **Stadio di controllo** | **Fase di controllo**
Product Type | Inspection Phase | Inspection Phase

* DATI FORNITI DAL CLIENTE - *THESE DATA ARE SUPPLIED BY THE CUSTOMER Allegato/Annex : 00/01/19

Risultato / result

■ **Conforme a Norma**
Acceptable

RESPONSABILE - WORD REFERENCE	OPERATORE - OPERATOR	ISPETTORE - INSPECTOR
SIDERTAGLIO CALANDRATURA S.R.L. Pipes Rolling & Welding	II° Liv. SNT-TC-1A / ISO 9712	☐ IRQA verification ltd ☐ 0094 ☐ ☑ Witnessed ☐ Monitored ☐ Reviewed MATTIA CRIVELLARI Ref. No.. Office: Milan 29/07/2022

VERBALE DI CONTROLLO LIQUIDI PENETRANTI
PENETRANT EXAMINATION REPORT

N. 365/2022
del of 29/07/2022
Pag. Sheet 1 di of 1

M.C. CONTROL s.r.l. TEL.0444/411135 - FAX 0444 / 412154 - Viale Venezia,40 - 36043 CAMISANO VIC. (VI)

Cliente SIDERTAGLIO CALANDRATURA S.R.L.
Customer

Ordine* | **Del** | **Commessa***
Order | Of | Job

Codice pezzo* 01E-22 | **Oggetto** | **Tipo Giunto**
Code name | Subject | Joint type

Descrizione del pezzo* N°01 TALLONE 300x400 THK. 40 mm (BW PA) | **Quantità** 1
Description object | Quantity

Materiale* P355NL2 | **Disegno*** | **WPS di riferimento***
Material **Colata* - Heat** | Drawing | Reference WPS

Estensione del controllo su saldatura | **Condizioni superficiali** Spazzolato
Extension examination | Tests surface status | Brushed

Norme di rif. : Procedura/Specifica UNI EN ISO 3452-1 | **Classe accettazione** UNI EN ISO 23277 CL. 2
Procedure Specification | Acceptance criteria

Tipo prodotto Laminato / Saldato | **Stadio di controllo** Finale | **Fase di controllo**
Product Type | Inspection Phase | Inspection Phase

* DATI FORNITI DAL CLIENTE - *THESE DATA ARE SUPPLIED BY THE CUSTOMER Allegato/Annex :

Visibile a contrasto di colore - Visible color contrast
Lavabile con acqua - water washable
Marca - type : CGM
Illuminamento - enviroment : Naturale - natural
Superfice del pezzo - Piece surface >500 LUX
Luxometro DT -1307 Matr. 00070683
Temp. amb. /enviroment 10 C°> T° < 52°C Actual 21 C°

Pulizia superfice VELNET-SOLNET
surface cleaning Lotto - Batch L20/546 scad. 01/2023

Penetrante RED WW
Penetrant : Lotto - Batch L21/021 scad. 02/2023

Applicazione penetrante con Spray
Penetrant application by Spray

Tempo minimo di penetrazione Dwell time 10'
Penetration minimum time

Rimozione penetrante con Acqua - Panno
Penetrant removal Water - dust cloth

Pressione acqua ≤ 3,5 bar actual 1,3 bar
Water spray - pressure

Rilevatore : ROTRIVEL U
Developer : Lotto - Batch L 20/480 scad. 11/2022

Tempo minimo di Sviluppo Dwell time 15'
Developing minimun time

Tempo interpretazione finale > 10' ÷ < 60'
Final interpretation time

Note :
Notes :

■ **Conforme a Norma**
Acceptable

RESPONSABILE - WORD REFERENCE	OPERATORE - OPERATOR	ISPETTORE - INSPECTOR	
SIDERTAGLIO CALANDRATURA S.R.L.	Cavion Maurizio II° Liv. SNT - TC-1A / ISO 9712	☐ IRQA verification ltd ☐ 0094 ☐ ☑ Witnessed ☐ Monitored ☐ Reviewed MATTIA CRIVELLARI Ref. No.. Office: Milan 29/07/2022	IRQA

CERTIFICATO DI CONTROLLO 3.1 / INSPECTION CERTIFICATE 3.1 - EN 10204:2004

METINVEST
METINVEST TRAMETAL SPA

Società per azioni con socio unico soggetta a direzione e coordinamento di Metinvest B.V
Registered office: Via XII Ottobre, 3 - 16121 Genova, Italy
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Phone +39 0431 629989 - Fax +39 0431 629985
Cap. Soc. Euro 300.120.000,00 i.v.
C.F., P.IVA e Iscr. Reg. Imp. GE 05956630965 - REA 437720/GE
http://trametal.metinvestholding.com

(A) PROCESSO DI ELABORAZIONE / STEELMAKING PROCESS: E = ELECTRIC ; BO = BASIC OXYGEN
(B) STATO DI FORNITURA / DELIVERY CONDITION: AR = GREZZO DI LAMINAZIONE / AS ROLLED ;
N° = LAMINAZIONE A TEMPERATURA CONTROLLATA / NORMALIZING ROLLING ;
N = NORMALIZZATO / NORMALIZED at 910°C, 1,5 min/mm ; ARIA CALMA / STILL AIR;
R = RICOTTO / ANNEALED;
N+R = NORMALIZZATO + RINVENUTO / NORMALIZED + TEMPERED
(C) TRATTAMENTO TERMICO DEL CAMPIONE / HEAT TREATMENT OF SAMPLE:
N = 910°C, 1,5 min/mm ; ARIA CALMA / STILL AIR
R = 650°C, 1,5 min/mm ; ARIA CALMA / STILL AIR
(D) Ceq_1 = C + Mn/6 ; Ceq_2 = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15 ;
Pcm = C + Si/30 + (Mn + Cu + Cr)/20 + Ni/60 + Mo/15 + V/10 + B*5
(1) POSIZIONE / LOCATION: 1 = TESTA / TOP ; 2 = PIEDE / BOTTOM
(2) POSIZIONE / LOCATION: C = CUORE / 1/2 THICKNESS ; P = PELLE / SURFACE ; D = 1/4 SPESSORE / THICKNESS
(3) DIREZIONE / DIRECTION: L = LONGITUDINALE / LONGITUDINAL ; T = TRASVERSALE / TRANSVERSE
(4) FORMA DEL PROVINO / SHAPE OF TEST PIECE: P = PRISMATICO / PRISMATIC ; C = CILINDRICO / CYLINDRICAL
(5) ESITO PROVA DI PIEGA / RESULT: OK = COMPLYING ; NO = NOT COMPLYING

A06 Cliente / Customer

SIDERTAGLIO LAMIERE S.R.L.

VIA DELL'AGRICOLTURA9 FRAZIONE MELEDO

36040 SAREGO 36040 IT
VI ITALIA

A01 N° Certificato / Certificate no.	A02 Data / Date
545196	10/01/2022
A03 N° Ordine Trametal / Works order	A07 N° Ordine cliente / Customer's order
32107033	mail 29/10
DDT	del / date
BOL 32200079	05/01/2022
Pratica / File no.	
del / date	

B06 Marcatura di prodotto / Marking of the product
LAMIERA/ORDINE/N° INFORNAMENTO/DIMENSIONI/QUALITÀ/MARCHIO DEL PRODUTTORE
PLATE/ORDER/INTERNAL N°/DIMENSIONS/STEEL GRADE/MANUFACTURER'S MARK

B01/B02/B03

Prodotto / Product	Lamiere / Hot rolled plates
Qualità / Steel grade	P355NL2
Normativa / Specification	EN10028-3:2017

B07 ITEM	B07 LAMIERA PLATE	B07 N° INFORN. INTERNAL NUMBER	B09/B11 DIMENSIONI [mm] DIMENSIONS	B12 MASSA TEORICA [t] THEORICAL WEIGHT	B07 LOTTO BATCH NO.	C70 PROCESSO ELAB. (A) STEELMAKING PROCESS	B04 STATO FORNITURA LAMIERA (B) DELIVERY CONDITION	C00 CAMPIONE SAMPLE	B05 C00 TRATT. CAMPIONE (C) HEAT TREATMENT	C00 CAMPIONE PWHT SAMPLE	B05 PWHT TEMPERATURA INIZIO °C BEGINNING TEMPERATURE	VELOCITA' RISCALDO C/h HEATING RATE	TEMPERATURA TRATTAMENTO °C TEMPERATURE TREATMENT	HOLDING TIME PERMANENZA Min	COOLING RATE VELOCITA' RAFFREDDAMENTO °C/h	TEMPERATURA FINE °C END TEMPERATURE	N° CICLI / CYCLES	C00 CAMPIONE Q+T SAMPLE	B05 Q+T TEMPERATURA (Q) °C TEMPERATURE	HOLDING TIME PERMANENZA (Q) Min	RAFFREDDAMENTO COOLING	TEMPERATURA (T) °C TEMPERATURE	HOLDING TIME PERMANENZA (T) Min	RAFFREDDAMENTO COOLING
9	1NAY560302A	1755576	40.00X2450X12000	9,23	718026	BO	N	GQ851																	
12	1NAY390501A	1755438	70.00X2450X8000	10,77	717717	BO	N	GQ739																	
13	1NAY360202A	1755349	80.00X2450X6000	9,23	717712	BO	N	GQ735																	

C71/C92 COMPOSIZIONE CHIMICA DI COLATA / HEAT CHEMICAL ANALYSIS

B07 COLATA HEAT	C71 C %	C72 Mn %	C73 Si %	C74 P %	C75 S %	C76 Cu %	C77 Ni %	C78 Cr %	C79 Mo %	C80 Al %	C81 V %	C82 Nb %	C83 Ti %	C84 Sn %	C85 Ca %	C86 N %	C87 B %	C88 H %	C89 Ceq1 % (D)	C90 Ceq2 % (D)	C91 Pcm % (D)
Ordine Min 12																					
Ordine Max 12		1,50										0,040									
Ordine Min 13																					
Ordine Max 13		1,50										0,040									
Ordine Min 9																					
Ordine Max 9		1,50										0,040									
P355NL2 Min 0.00 - 60.00		1,10								0,020											
P355NL2 Max 0.00 - 60.00	0,18	1,70	0,50	0,020	0,005	0,300	0,500	0,300	0,080		0,100	0,050	0,030			0,0120				0,43	
P355NL2 Min 60.10 - 150.00		1,10								0,020											
P355NL2 Max 60.10 - 150.00	0,18	1,70	0,50	0,020	0,005	0,300	0,500	0,300	0,080		0,100	0,050	0,030			0,0120				0,45	
1NAY36	0,16	1,47	0,22	0,014	0,002	0,050	0,020	0,040	<0.005	0,031	<0.005	0,023	<0.005	<0.005	0,0000	0,0050	<0.0005	0,0003	0,41	0,42	0,25
1NAY39	0,17	1,47	0,20	0,014	0,002	0,030	0,030	0,040	<0.005	0,027	<0.005	0,022	<0.005	<0.005	0,0000	0,0070	<0.0005	0,0002	0,42	0,43	0,25
1NAY56	0,16	1,46	0,21	0,012	0,002	0,040	0,020	0,040	<0.005	0,032	<0.005	0,022	<0.005	<0.005	0,0000	0,0080	<0.0005	0,0002	0,40	0,42	0,24

☐ LRQA verification Id ☐ 0084 ☐
☐ Witnessed ☐ Monitored ☑ Reviewed
MATTIA CRIVELLARI
Ref. No..
Office: Milan 28/07/2022

LRQA

SIDERTAGLIO CALANDRATURA S.R.L.

			PROVA DI TRAZIONE TENSILE TEST									PROVA DI RESILIENZA IMPACT TEST - CHARPY V-NOTCH TEST						PROVA DI PIEGA BEND TEST				PROVA DI DUREZZA HARDNESS TEST				PROVA DI STRIZIONE Z% TEST	
C00		C01	C01	C02	C03	C11	C12		C13	C14	C10	C41	C02	C03	C01	C42	C43	C02	C51	C52	C50	C01	C30	C31	C32	C53	C54
CAMPIONE SAMPLE	SPESSORE LAMIERA PLATE THICKNESS	POSIZIONE LOCATION (1)	POSIZIONE LOCATION (2)	DIREZIONE ORIENTATION (3)	TEMPERATURA TEST TEMPERATURE [°C]	ReH [Mpa] YIELD STRENGTH	Rm [Mpa] TENSILE STRENGTH	ReH/Rm	A% ELONGATION	Rp 0.2 [Mpa] PROOF/YIELD STRENGTH	FORMA PROVINO (4) SHAPE OF TEST PIECE	LARGHEZZA [mm] WIDTH	ORIENTAMENTO (3) ORIENTATION	TEMPERATURA [°C] TEST TEMPERATURE	POSIZIONE (2) LOCATION	SINGOLI VALORI [J] INDIVIDUAL VALUES	MEDIA [J] MEAN VALUE	DIREZIONE (3) ORIENTATION	MANDRINO [mm] MANDREL	ANGOLO [°] ANGLE	ESITO (5) RESULT	POSIZIONE (2) LOCATION	METODO TEST METHOD	SINGOLI VALORI INDIVIDUAL VALUES	MEDIA MEAN VALUE	Z% SINGOLI VALORI Z% INDIVIDUAL VALUES	Z% VALORE MEDIO Z% MEAN VALUE
ORDINE Min 12													L	-46		27	0										
ORDINE Min 13													L	-46		27	0										
ORDINE Min 9													L	-46		27	0										
P355NL2 Min 16.10 - 40.00					20	345	490		22,0																		
P355NL2 Max 16.10 - 40.00					20		630																				
P355NL2 Min 6.00 - 999.00													T	-50			27										
P355NL2 Min 60.10 - 100.00					20	315	470		21,0																		
P355NL2 Max 60.10 - 100.00					20		610																				
GQ735	80,00	2	D	T	20	376	513	0,73	35,2		C	10,00	L	-46	D	238 218 246	234						HRC <	22			
GQ735	80,00	2										10,00	T	-50	D	127 153 151	144										
GQ739	70,00	2	D	T	20	379	526	0,72	34,6		C	10,00	L	-46	D	258 255 263	259						HRC <	22			
GQ739	70,00	2										10,00	T	-50	D	163 187 177	176										
GQ851	40,00	2	D	T	20	414	523	0,79	34,2		C	10,00	L	-46	P	224 201 229	218						HRC <	22			
GQ851	40,00	2										10,00	T	-50	P	140 119 158	139										

C10

UNI EN ISO 6892-1:2020 / UNI EN ISO 148-1:2016

Z01

ITEM		TOLLERANZA DI SPESSORE TOLERANCE ON THICKNESS	TOLLERANZE DI LARGHEZZA TOLERANCE ON WIDTH	TOLLERANZE DI LUNGHEZZA TOLERANCE ON LENGTH	CONDIZIONI SUPERFICIALI SURFACE FINISH	PLANARITÀ FLATNESS
9		-0.3 +2.3 MM	-0 +100 MM	-0 +200 MM	EN 10163/2 CL B2	EN 10029 CL. N
12		-0.3 +2.3 MM	-0 +100 MM	-0 +200 MM	EN 10163/2 CL B2	EN 10029 CL. N
13		-0.3 +2.9 MM	-0 +100 MM	-0 +200 MM	EN 10163/2 CL B2	EN 10029 CL. N

CERTIFICHIAMO che le lamiere elencate sono conformi alla prescrizione dell'ordine, che i controlli della marcatura, dell'aspetto superficiale e dimensionale hanno dato esito positivo.
WE CERTIFY that the above mentioned plates are consistent with the order prescriptions: marking, inspection and measurement without objection.
DICHIARIAMO CHE LE LAMIERE SONO STATE CONTROLLATE IN ACCORDO ALLA NORMATIVA VIGENTE E CHE LE RADIAZIONI IONIZZANTI NON ECCEDONO IL VALORE DEL FONDO NATURALE.
WE DECLARE THAT THE PLATES WERE CONTROLLED ACCORDING TO STANDARD AND RADIATION DO NOT EXCEED THE NATURAL RADIATION.

Z06

FULLY KILLED FINE GRAIN STEEL

HARDNESS IN ACC. TO NACE MR 0175 / ISO15156

STEEL VACUUM DEGASSED

Z07	Z03 ENTE COLLAUDO / INSPECTION BODY	Z02
Plates acc. to PED 2014/68/EU	**TIMBRO DELL'ISPETTORE STAMP OF THE INSPECTION REPRESENTATIVE**	**METINVEST TRAMETAL S.p.a. F. Andrian CQ Manager**

SIDERTAGLIO LAMIERE srl
Via dell'Agricoltura, 8/D
36040 MELEDO DI SAREGO (VI)
Tel. 0444 823059
Fax Amm. 0444 823364
Uff. Tec. 0444 823201
C. F. e Part. IVA 02510610245

CERTIFICATO DI CONTROLLO 3.1 / INSPECTION CERTIFICATE 3.1 - EN 10204:2004

METINVEST
METINVEST TRAMETAL SPA

Società per azioni con socio unico soggetta a direzione e coordinamento di Metinvest B.V
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Cap. Soc. Euro 300.120.000,00 i.v.
C.F., P.IVA e Iscr. Reg. Imp. GE 05956630965 - REA 437720/GE
http://trametal.metinvestholding.com

(A) PROCESSO DI ELABORAZIONE / STEELMAKING PROCESS: E = ELECTRIC ; BO = BASIC OXYGEN
(B) STATO DI FORNITURA / DELIVERY CONDITION: AR = GREZZO DI LAMINAZIONE / AS ROLLED ;
N* = LAMINAZIONE A TEMPERATURA CONTROLLATA / NORMALIZING ROLLING ;
N = NORMALIZZATO / NORMALIZED at 910°C, 1,5 min/mm ; ARIA CALMA / STILL AIR;
R = RICOTTO / ANNEALED;
N+R = NORMALIZZATO + RINVENUTO / NORMALIZED + TEMPERED
(C) TRATTAMENTO TERMICO DEL CAMPIONE / HEAT TREATMENT OF SAMPLE:
N = 910°C, 1,5 min/mm ; ARIA CALMA / STILL AIR
R = 650°C, 1,5 min/mm ; ARIA CALMA / STILL AIR
(D) Ceq_1 = C + Mn/6 ; Ceq_2 = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15 ;
Pcm = C + Si/30 + (Mn + Cu + Cr)/20 + NI/60 + Mo/15 + V/10 + B*5
(1) POSIZIONE / LOCATION: 1 = TESTA / TOP ; 2 = PIEDE / BOTTOM
(2) POSIZIONE / LOCATION: C = CUORE / 1/2 THICKNESS ; P = PELLE / SURFACE ; D = 1/4 SPESSORE / THICKNESS
(3) DIREZIONE / DIRECTION: L = LONGITUDINALE / LONGITUDINAL ; T = TRASVERSALE / TRANSVERSE
(4) FORMA DEL PROVINO / SHAPE OF TEST PIECE: P = PRISMATICO / PRISMATIC ; C = CILINDRICO / CYLINDRICAL
(5) ESITO PROVA DI PIEGA / RESULT: OK = COMPLYING ; NO = NOT COMPLYING

A06 Cliente / Customer

SIDERTAGLIO LAMIERE S.R.L.

VIA DELL'AGRICOLTURA9 FRAZIONE MELEDO

36040 SAREGO 36040 IT
VI ITALIA

A03 N° Certificato / Certificate no.	Z02 Data / Date
545199	10/01/2022
A08 N° Ordine Trametal / Works order	A07 N° Ordine cliente / Customer's order
32107033	mail 29/10
DDT	del / date
BOL 32200079	05/01/2022
Pratica / File no.	
del / date	

B06 Marcatura di prodotto / Marking of the product
LAMIERA/ORDINE/N° INFORNAMENTO/DIMENSIONI/QUALITÀ/MARCHIO DEL PRODUTTORE
PLATE/ORDER/INTERNAL N°/DIMENSIONS/STEEL GRADE/MANUFACTURER'S MARK

B01/B02/B03

Prodotto / Product	Lamiere / Hot rolled plates
Qualità / Steel grade	SA516GR70MT/LTV
Normativa / Specification	ASME

B07 ITEM	B07 LAMIERA PLATE	B07 N° INFORN. INTERNAL NUMBER	B09/B11 DIMENSIONI DIMENSIONS [mm]	B12 MASSA TEORICA [t] THEORICAL WEIGHT	B07 LOTTO BATCH NO.	C70 PROCESSO ELAB. (A) STEELMAKING PROCESS	B04 STATO FORNITURA LAMIERA (B) DELIVERY CONDITION	C00 CAMPIONE SAMPLE	B05 TRATT. CAMPIONE (C) HEAT TREATMENT	C00 CAMPIONE PWHT SAMPLE	B05 PWHT TEMPERATURA INIZIO °C BEGINNING TEMPERATURE	VELOCITA' RISCALDO C/h HEATING RATE	TEMPERATURA TRATTAMENTO °C TEMPERATURE TREATMENT	PERMANENZA Min HOLDING TIME	VELOCITA' RAFFREDDAMENTO °C/h COOLING RATE	TEMPERATURA FINE °C END TEMPERATURE	N° CICLI / CYCLES	C00 CAMPIONE Q+T SAMPLE	B05 Q+T TEMPERATURA (Q) °C TEMPERATURE	HOLDING TIME (Q) Min PERMANENZA (Q)	COOLING RAFFREDDAMENTO	TEMPERATURA (T) °C TEMPERATURE	HOLDING TIME (T) Min PERMANENZA (T)	COOLING RAFFREDDAMENTO
9	1NAY560302A	1755576	40.00X2450X12000	9,23	718026	BO	N	GQ851																	
12	1NAY390501A	1755438	70.00X2450X8000	10,77	717717	BO	N	GQ739																	
13	1NAY360202A	1755349	80.00X2450X6000	9,23	717712	BO	N	GQ735																	

C71/C92 COMPOSIZIONE CHIMICA DI COLATA / HEAT CHEMICAL ANALYSIS

B07 COLATA HEAT	C71 C %	C72 Mn %	C73 Si %	C74 P %	C75 S %	C76 Cu %	C77 Ni %	C78 Cr %	C79 Mo %	C80 Al %	C81 V %	C82 Nb %	C83 Ti %	C84 Sn %	C85 Ca %	C86 N %	C87 B %	C88 H %	C89 Ceq1 % (D)	C90 Ceq2 % (D)	C91 Pcm % (D)
Ordine Min 12																					
Ordine Max 12		1,50										0,040									
Ordine Min 13																					
Ordine Max 13		1,50										0,040									
Ordine Min 9																					
Ordine Max 9		1,50										0,040									
SA51670LTV Min 12.60 - 50.00		0,85	0,15																		
SA51670LTV Max 12.60 - 50.00	0,28	1,20	0,40	0,025	0,025																
SA51670LTV Min 50.10 - 100.00		0,85	0,15																		
SA51670LTV Max 50.10 - 100.00	0,30	1,20	0,40	0,025	0,025																
1NAY36	0,16	1,47	0,22	0,014	0,002	0,050	0,020	0,040	<0.005	0,031	<0.005	0,023	<0.005	<0.005	0,0000	0,0050	<0.0005	0,0003	0,41	0,42	0,25
1NAY39	0,17	1,47	0,20	0,014	0,002	0,030	0,030	0,040	<0.005	0,027	<0.005	0,022	<0.005	<0.005	0,0000	0,0070	<0.0005	0,0002	0,42	0,43	0,25
1NAY56	0,16	1,46	0,21	0,012	0,002	0,040	0,020	0,040	<0.005	0,032	<0.005	0,022	<0.005	<0.005	0,0000	0,0080	<0.0005	0,0002	0,40	0,42	0,24

			PROVA DI TRAZIONE TENSILE TEST										PROVA DI RESILIENZA IMPACT TEST - CHARPY V-NOTCH TEST						PROVA DI PIEGA BEND TEST				PROVA DI DUREZZA HARDNESS TEST				PROVA DI STRIZIONE Z% TEST	
C00		C01	C01	C02	C03	C11	C12		C13	C14	C10	C41	C02	C03	C01	C42	C43	C02	C51	C52	C50	C01	C30	C31	C32	C53	C54
CAMPIONE SAMPLE	SPESSORE LAMIERA PLATE THICKNESS	POSIZIONE (1) LOCATION	POSIZIONE (2) LOCATION	DIREZIONE (3) ORIENTATION	TEMPERATURA [°C] TEST TEMPERATURE	ReH [Mpa] YIELD STRENGTH	Rm [Mpa] TENSILE STRENGTH	ReH/Rm	A2" ELONGATION	Rp 0.2 [Mpa] PROOF/YIELD STRENGTH	FORMA PROVINO (4) SHAPE OF TEST PIECE	LARGHEZZA [mm] WIDTH	DIREZIONE (3) ORIENTATION	TEMPERATURA [°C] TEST TEMPERATURE	POSIZIONE (2) LOCATION	SINGOLI VALORI [J] INDIVIDUAL VALUES	MEDIA [J] MEAN VALUE	DIREZIONE (3) ORIENTATION	MANDRINO [mm] MANDREL	ANGOLO [°] ANGLE	ESITO (5) RESULT	POSIZIONE (2) LOCATION	METODO TEST METHOD	SINGOLI VALORI INDIVIDUAL VALUES	MEDIA MEAN VALUE	Z% SINGOLI VALORI Z% INDIVIDUAL VALUES	Z% VALORE MEDIO Z% MEAN VALUE
ORDINE Min 12													L	-46		27	0										
ORDINE Min 13													L	-46		27	0										
ORDINE Min 9													L	-46		27	0										
SA51670LTV Min 20.10 - 120.00					20		485		21,0	260																	
SA51670LTV Max 20.10 - 120.00					20		620																				
SA51670LTV Min 25.10 - 50.00													L	-40			20										
SA51670LTV Min 50.10 - 75.00													L	-35			20										
SA51670LTV Min 75.10 - 125.00													L	-29			20										
GQ735	80,00	2	D	T	20		513		35,2	363	C	10,00	L	-46	D	238 218 246	234						HRC <	22			
GQ735	80,00	2										10,00	T	-50	D	127 153 151	144										
GQ739	70,00	2	D	T	20		526		34,6	368	C	10,00	L	-46	D	258 255 263	259						HRC <	22			
GQ739	70,00	2										10,00	T	-50	D	163 187 177	176										
GQ851	40,00	2	D	T	20		523		34,2	407	C	10,00	L	-46	P	224 201 229	218						HRC <	22			
GQ851	40,00	2										10,00	T	-50	P	140 119 158	139										

C10

ASME SA-370 FIG. 3 AND FIG. 10 / 11 - SAMPLE TAKEN AFTER PLATE HEAT TREATMENT

Z01

ITEM		TOLLERANZA DI SPESSORE TOLERANCE ON THICKNESS	TOLLERANZE DI LARGHEZZA TOLERANCE ON WIDTH	TOLLERANZE DI LUNGHEZZA TOLERANCE ON LENGTH	CONDIZIONI SUPERFICIALI SURFACE FINISH	PLANARITÀ FLATNESS
9		-0.3 +2.3 MM	-0 +100 MM	-0 +200 MM	EN 10163/2 CL B2	EN 10029 CL. N
12		-0.3 +2.3 MM	-0 +100 MM	-0 +200 MM	EN 10163/2 CL B2	EN 10029 CL. N
13		-0.3 +2.9 MM	-0 +100 MM	-0 +200 MM	EN 10163/2 CL B2	EN 10029 CL. N

CERTIFICHIAMO che le lamiere elencate sono conformi alla prescrizione dell'ordine, che i controlli della marcatura, dell'aspetto superficiale e dimensionale hanno dato esito positivo.
WE CERTIFY that the above mentioned plates are consistent with the order prescriptions: marking, inspection and measurement without objection.
DICHIARIAMO CHE LE LAMIERE SONO STATE CONTROLLATE IN ACCORDO ALLA NORMATIVA VIGENTE E CHE LE RADIAZIONI IONIZZANTI NON ECCEDONO IL VALORE DEL FONDO NATURALE.
WE DECLARE THAT THE PLATES WERE CONTROLLED ACCORDING TO STANDARD AND RADIATION DO NOT EXCEED THE NATURAL RADIATION.

Z06

FULLY KILLED FINE GRAIN STEEL

HARDNESS IN ACC. TO NACE MR 0175 / ISO15156

STEEL VACUUM DEGASSED

Z07	Z03 ENTE COLLAUDO / INSPECTION BODY	Z02
PRODUCED FROM CONTINOUS CAST SLAB AND HAVE A MINIMUN REDUCTION RATIO OF 3 TO 1. ACCORDING TO ASME II PART A ED. 2019. FULLY KILLED, FINE GRAIN STEEL. Value of Mn maximun in derogation permitted up to 1.50% Plates acc. to PED 2014/68/EU	**TIMBRO DELL'ISPETTORE STAMP OF THE INSPECTION REPRESENTATIVE**	**METINVEST TRAMETAL S.p.a F. Andrian CQ Manager**

SIDERTAGLIO LAMIERE srl
Via dell'Agricoltura, 8/D
36040 MELEDO DI SAREGO (VI)
Tel. 0444 823059
Fax Amm. 0444 823364
Uff. Tec. 0444 823201
C. F. e Part. IVA 02510610245

SIAT
S.I.A.T. S.p.A. - Società Italiana Acciai Trafilati
Via Facini 54, 33013 Gemona del Friuli, UD - Italy
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s.i.a.t.spa@legalmail.it, www.siatspa.com

Partita I.V.A., Cod. Fisc., Reg. Imprese C.C.I.A.A. Udine 00166750307
Rea Udine 115789 - Cap. Soc. € 5.000.000 I.V.
"Società soggetta all'attività di direzione e coordinamento da parte di Compagnia Siderurgica Italiana S.r.l."

Divisione Pittarc
Via Cartiera 3, 33010 Osoppo, UD - Italy
Tel +39 0432 062811, Fax +39 0432 062903
www.pittarc.com

PITTARC

Azienda con i seguenti sistemi di gestione certificati:
- qualità secondo UNI EN ISO 9001:2015
- ambiente secondo UNI EN ISO 14001:2015

CERTIFICATO DI COLLAUDO

Inspection Certificate - Abnahmeprüfzeugins - Certificate de Réception

CHEMICAL ANALYSIS ACCORDING TO EN 10204:2004 TYPE 3.1

N°	7249/2021/A
DATA	01/12/2021

PRODOTTO C1200196
Product
Erzeugnis
Produit
FILO G9 INNOV-ARC Ø 1,20

NORMATIVA AWS A5.18 ER70S-6
Standard
EN ISO 14341 A G46 5 M21/2C1 4Si1

N° DOC. di TRASP. 12126 del 01/12/2021
Dispatch Note / Lieferschein / Avis d'expédition

N° ORDINE 202107548 / 0001
Order / Bestellung / Commande

CONFERMA 4961 BRUGINE
Confirmation / Auftragsbestätigung / Confirmation de commande

CLIENTE 051108
Customer / Besteller / Client
AIRGAS NORDEST S.R.L.
VIA GLORIA 2, MARGHERA 30175 VENEZ

COLATA N°
Heat / Schmelze / Coulée

13896/2021

ANALISI CHIMICA di COLATA % - Heat Chemical composition % - Schmelze Chemische zusammensetzung % - Composition chimique sur coulée %

C	Mn	Si	P	S	Cr	Ni	Mo	Cu*	Sn	Al	V	Ti	B	N
0,07	1,63	1,00	0,007	0,018	0,04	0,02	0,01	0,03	0,003	0,002	0,000			

*Se non specificato, %Cu totale del filo entro i limiti norme prodotto di riferimento / Wenn nicht angegeben liegt der Gesamtwert von %CU am Draht in der von der Produkt-Richtlinien eingesetzten Grenzen / Si non spécifié %Cu total sur le fil rentre dans les limites fixées par la norme de référence du produit / If not specified the total %CU on wire is within the limits set up by the Product Reference Standard

CARATTERISTICHE MECCANICHE - Mechanical properties - Mechanische kennwerte - Characteristics mecaniques

	Diametro effettivo Actual diameter	Larghezza effettiva Actual Width	Altezza Effettiva Actual Height	Resistenza snervamento Yield strength ReL (Rp0,2)	Resistenza rottura Tensile strength Rm	Allungamento Elongation A5	Strizione Reduction Z	Resilienza KV Impact Test		Durezza Hardness HRB
	mm	mm	mm	MPa	MPa	%	%	C°	J	
SUL PRODOTTO On product Am Endprodukt / Sur produit	10,00			500	586	24,0	70	-50	55	

ALTRE PROVE:
Other tests

ANNOTAZIONI:
Notes
Mechanical test all weld metalAccording to EN 10204 2.2.

LRQA verification ltd ☐ 0064 ☐
☐ Witnessed ☐ Monitored ☑ Reviewed
MATTIA CRIVELLARI
Ref. No.
Office: Milan 27/07/2022

SIDERTAGLIO CALANDRATURA S.R.L.

Si certifica che il materiale sopra descritto è conforme all'ordine.
We hereby certify that the material described above complies with the terms of the order contract.
Es wird bestatig dass die Lieferung den Vereinbarungen bei der bestellannahme entspricht.
Nous certifions que la livraison est conforme aux stipulations de l'acceptation de la commande.

Controllo Qualità / Quality Control / Qualitätsstelle / Contrôle de Qualité
R. Maida

SCHEDA TECNICA

ARCAR C18

Scheda N. 010 C18

Specifiche di Fornitura						
Gas Base/Componenti			Purezza	Impurezze		
Simb.	Composizione			Simb.	Requisiti	
CO2	18 %v	± 10 %v (nom.)	≥ 99,9 %v	H2O	≤ 80	ppmv
Ar	Resto	-		N2	≤ 1.000	ppmv
-	-	-		-	-	-
-	-	-		-	-	-
-	-	-		-	-	-
-	-	-		-	-	-

Specifiche di Imballaggio						
	Cap.tà*	Contenuto	Pressione	Valvola	Colore Ogiva	Colore Fusto
Bombole	40 lt	9,5 m3	200 bar	8-UNI 11144:2005 W 24,51 x 1/14" Fil. Femm. DX	Verde Brillante RAL 6018	Qualsiasi
	50 lt	11,5 m3				
Pacchi Bombola	12 bb x 40 lt	114 m3			Verde Brillante RAL 6018	
	16 bb x 40 lt	152 m3				
	12 bb x 50 lt	138 m3				
	16 bb x 50 lt	184 m3				
-						

* Altri formati sono disponibili su richiesta e previa disponibilità

Applicazioni
Saldatura MAG degli acciai al carbonio
-
-

Informazioni sulle Regolamentazioni
Prodotto conforme alla norma UNI EN ISO 14175:2008 - Gas e miscele di gas per la saldatura per fusione e per i processi connessi; Classificazione ISO 14175 - M21; Designazione ISO 14175 - M21 - ArC - 18
-

Per tutte le altre informazioni fare riferimento alla Scheda di Dati di Sicurezza Sico MIX 036

SICO S.p.A. non è responsabile circa l'uso e relative conseguenze delle informazioni contenute nella presente ST

LRQA verification ltd 0004
Witnessed Monitored Reviewed
MATTIA CRIVELLARI
Ref. No.
Office: Milan
27/07/2021

SIDERTAGLIO CALANDRATURA S.R.L.

SICO Società Italiana Carburo Ossigeno S.p.A.
Via Giovanni Morandi, 10 - 21047 Saronno (VA)
Tel. +39 02 9642661, Fax +39 02 9603044

TÜV Italia s.r.l.
TÜV SÜD Group
Viale Fulvio Testi 280/6 Milano
I-20126 www.tuvsud.com

ACCREDIA L'ENTE ITALIANO DI ACCREDITAMENTO
PRS N° 077C
Membro degli Accordi di Mutuo Riconoscimento EA, IAF e ILAC
Signatory of EA, IAF and ILAC Mutual Recognition Agreements

TÜV SÜD Italia

Certificato n° - Certificate No – Zertifikat Nr:

SAL-4536-2024

CERTIFICATO DI QUALIFICA DEL SALDATORE

WELDER APPROVAL TEST CERTIFICATE – SCHWEISSER PRÜFUNGSBESCHEINIGUNG-ZERTIFIKAT

Designazione:
Designation -Bezeichnung: **EN ISO 9606-1 135 T/P BW FM2 S s20 D20 PB bs**

WPS del Costruttore:
Manufacturer's WPS - Hersteller -Schwelßanweisung: **05E/24_r.0**

Data della Saldatura:
Date of Welding - Datum derSchweißung: **10/05/2024**

Rapporto di Prova n°
Test Report Nr - Prüfbericht Nr..: **See page 2**

Riferimento interno No.:
Internal Reference No. – Interne Referenz No: **722351772**

Nome del Saldatore:
Welder's name - Name des Schweißers: **HAMZA MUHAMMAD BHATTI – code: BMH**

Identificazione:
Identification - Legitimation: **AY2750689**

Metodo di identificazione:
Method of identification - Art der Legitimation: **CARTA IDENTITA'**

Data e luogo di nascita:
Date and place of birth - Geburtsdatum und Ort: **12/10/1996 - GUJRAT PAK [PAK]**

Foto (se richiesto)
Photo (if required)
Fotografie (falls nötig)

Datore di lavoro:
Employer - Beschäftigt bei: **SIDERTAGLIO CALANDRATURA SRL**
via Marzotto, 9 – 36031 Povolaro di Dueville (VI)

Codice / Norma di collaudo:
Code / testing standard - Vorschrift / Prüfnorm: **EN ISO 9606-1: 2017 + AD 2000-Merkblatt HP3**

Conoscenze tecniche:
Job knowledge - Fachprüfung: ☒ **Acceptable** ☐ **Not Tested**

Prova supplementare di saldatura ad angolo:
Supplementary fillet weld test - Ergänzende Kehlnaht Test: ☐ **Yes** ☒ **No**

☒ **Qualifica valida ai sensi della direttiva PED, Allegato 1, punto 3.1.2. – TUV Italia Srl – Organismo Notificato 0948**

		Dettagli della prova di saldatura Weld Test Details – Prüfdaten-Angaben	Campo di validità Range of Approval –Geltungsbereich
5.2	**Procedimento di saldatura:** Welding process - Schweißprozess(e):	**135**	**135, 138**
	Modalità di Trasferimento [131 – 135 – 138] Transfer Mode - Transfermodus:	**SPRAY**	**All but not Short**
5.3	**Tipo di prodotto:** Product Type – Produkttyp:	**Round on plate**	**Round on plate**
5.4	**Tipo di giunto:** Joint Type – Nahtart:	**BW**	**BW**
5.5	**Materiale(i) d'apporto (Tabella 2-3) :** Filler Metal (Table 2-3) – Schweißzusatz(e) (Tabelle 2-3)	**FM2**	**FM1, FM2**
5.6	**Tipo di Materiale d'apporto (Tabella 4-5):** Filler Metal Type (Table 4-5) – Zusatzwerktyp (Tabelle 4-5)	**S**	**S, M**
5.7	**Spessore del materiale [mm]:** Material thickness [mm] - Werkstoffdicke [mm]:	**40,0**	**---**
	Spessore depositato [mm]: Deposited thickness [mm] - Schweißgutdicke[mm]:	**20,0** **---**	**≥ 3,0** **---**
	Diametro esterno del tubo - ∅ [mm] : Tube-∅ (outside) - Rohr-∅ (außen) [mm]:	**20**	**20,0 ÷ 40,0**
5.8	**Posizione di saldatura (Tabelle 9-10):** Welding position (Tab. 9-10) – Schweißpositionen (Tab. 9-10) :	**PB**	**PB**
5.9	**Dettagli di saldatura (Tabella 11):** Weld Details (Tab.11) – Schweißnahteinzelheiten (Tab.11):	**bs**	**ss mb, bs**
	Saldatura passata singola / Multipla (Tabella 12): Multi layer/Single Layer (Tab.12)-Einlagig/Mehrlagig (Tab. 12):	**---**	**---**
Informazioni addizionali – Additional Information – Zusätzliche Hinweise:			
Gruppo di Materiali: [CEN ISO/TR 15608] Parent metals (groups) – Werkstotffgruppe(n):		**1.2 / 1.1**	**1 ÷ 11**
Gas di protezione: [EN ISO 14175] Shielding gas – Schutzgas:		**M21 – ArC-18**	**All Active Gases**
Ausiliari: Auxiliaries – Hilfsstoffe:		**---**	**---**

Data e luogo: Date and location Datum und ort:	Riqualificazione 9.3 a) Requalification 9.3 a) Requalifizierung 9.3 a)		Rivalidazione 9.3 b) Revalidation 9.3 b) Revalidierung 9.3 b)		Rivalidazione 9.3 c) Revalidation 9.3 c) Revalidierung 9.3 c)		**Nome e firma del certificatore:** Certifier's Name and Signature Name und Unterschrift des Zertifizierers:
01/07/2024 - Milano	**Validità fino a** Validity until Gültigkeit	**09/05/2027**	**Validità fino a** Validity until Gültigkeit	**/**	**Validità fino a** Validity until Gültigkeit	**/**	**A.Carelli**

Welder Qualification Test Certificate EN ISO 9606-1: 2017

Designation:	**EN ISO 9606-1:2017 135 P FW FM1 S t40 PB ml**
Welding Procedure Specification Reference No.	**pWPS 03E-22**
Examining Body: Reference No:	**- / -**
Welder's Name	**BHATTI M.ASAD (ID. C)**
Identification:	**AY 1606057**
Method of Identification:	**Identity card**
Date and place of birth:	**03-08-1965 GUJRAT - PAKISTAN**
Employer:	**SIDERTAGLIO CALANDRATURA SRL**
Code/Testing Standard:	**EN ISO 9606-1:2017**
Code/Testing Standard:	**EN ISO 9606-1: 2017**
Job knowledge:	**Not Tested**

Photograph (if required)

	Test piece	Range of qualification
Welding process(es)	**135 semiautomatic**	**135,138 semiautomatic**
Transfer Mode	**Spary Arc**	**Spray, globular and pulsed arc.**
Product type (plate or pipe)	**Plate**	**Pipe (T) & Plate (P)**
Type of weld	**T Joint, Fillet Weld**	**FW**
Parent material group(s)/subgroups	**1**	**1 to 11**
Filler material group(s)	**FM1**	**FM1 - FM2**
Filler material (Designation)	**EN ISO 14341 A G46 5 M21/2C1 4Si1 and others with similar caracteristique**	**S and M (solid and metal cored electrode)**
Shielding gas	**EN ISO 14175: M21 AR 82% + CO2 18%**	**all compatible**
Auxiliaries	**---**	**---**
Type of current and polarity	**DCEP**	**all compatible**
Material thickness (mm)	**40**	**3 to unlimited**
Deposited thickness (mm)	**Fillet weld**	**No restriction**
Outside pipe diameter (mm)	**N.A**	**≥ 75 (PA,PB rotating pipe); ≥ 500 (fixed pipe)**
Welding positions	**PB**	**PA - PB**
Weld details	**---**	**---**
Multi-layer/single layer	**Multi-layer**	**Single and Multi-layer (sl, ml)**

Supplementary fillet weld test (completed in conjunction with a butt weld qualification): **Not Applicable**
Additional information is available on attached sheet and/or welding procedure specification: **pWPS 03E-22**

Type of test	Performed and acceptable	Not tested	Notes (Report Numbers, etc)
Visual testing	X		**146/2022**
Radiographic testing		X	
Ultrasonic testing		X	
Magnetic particle / Penetrant test	X		**367/2022**
Macroscopic examination	X		**57150 Rev.0**
Fracture test		X	
Bend test		X	
Notch tensile test		X	

Germano De Grandis
Surveyor to LR EMEA
A subsidiary of Lloyd's Register Group Limited

Date of issue: **20 September 2022**
Location: **Genoa**
Date of welding: **20 July 2022**

Revalidation 9.3 a)		Next review **19 July 2025**

Revalidation 9.3 b)		Next review

Revalidation 9.3 c)		Next review

Note: /

Approved for Pressure Equipment Directive (PED) Annex I Par. 3.1.2. on behalf LRQA Inspection Iberia, SA NoBo 0094
Milan Office
04 SET. 2023

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Form 4125 (2018.10)

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Confirmation of the validity by employer / welding coordinator / examiner or examining body for the following 6 months [refer 9.2)]
**Revalidation for qualification by examiner or examining body for the following 2 years [refer to 9.3 b)] (if applicable)

	Date	Valid until	Confirmation based on (Report numbers etc)	Signature / Position or Title
	19/01/2023	19/07/2023	P0186	WC
	09/06/2023	09/12/2023	Q0084	WC
	08/12/2023	08/06/2024	Q0208	QCR/WD
**	08/06/2024	08/12/2024	R0033	QCR/WD
**				
**				
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**				

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TÜV Italia s.r.l.
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PRS N° 077C
Membro degli Accordi di Mutuo Riconoscimento EA, IAF e ILAC
Signatory of EA, IAF and ILAC Mutual Recognition Agreements

TÜV SÜD
Italia

Certificato n° - Certificate No – Zertifikat Nr:

SAL-4817-2024

CERTIFICATO DI QUALIFICA DELL'OPERATORE DI SALDATURA

WELDING OPERATOR APPROVAL TEST CERTIFICATE – BEDIENER VON SCHWEISSEINRICHTUNGEN-ZERTIFIKAT

WPS del Costruttore:
Manufacturer's WPS - Hersteller -Schwelßanweisung: **09E-24 r.0**

Data della Saldatura:
Date of Welding - Datum derSchweißung **10/05/2024**

Rapporto di Prova No.
Test Report Nr. - Prüfbericht Nr..: **See page 2**

Riferimento interno No.:
Internal Reference Nr. – Interne Referenz Nr: **722351772**

Nome dell'operatore di saldatura:
Weldeing Operator's name - Name des Bedieners: **BHATTI MUHAMMAD ASAD**

Identificazione:
Identification - Legitimation: **AV 9488035**

Metodo di identificazione:
Method of identification - Art der Legitimation: **CARTA IDENTITA'**

Data e luogo di nascita:
Date and place of birth - Geburtsdatum und Ort: **03/08/1965 – GUJRAT PAKISTAN (PAK)**

Foto (se richiesto)
Photo (if required)
Fotografie (falls nötig)

Datore di lavoro:
Employer - Beschäftigt bei: **SIDERTAGLIO CALANDRATURA SRL**
via Marzotto, 9 – 36031 Povolaro di Dueville (VI)

Codice / Norma di collaudo:
Code / testing standard - Vorschrift / Prüfnorm: **UNI EN ISO 14732: 2013 + AD 2000-Merkblatt HP3**

Prova di conoscenza del funzionamento:
Functional knowledge test -Functional Fachprüfung: **Acceptable (according to Annex A)**

Conoscenze tecniche:
Job knowledge – Fachprüfung: ☒ **Acceptable** ☐ **Not Tested**

Note:
Remarks – Bemerkung: **Code: C**

☒ **Qualifica valida ai sensi della direttiva PED, Allegato 1, punto 3.1.2. – TUV Italia Srl – Organismo Notificato 0948**

	Dettagli della prova di saldatura Weld Test Details - Prüfdaten-Angaben	**Campo di validità** Range of Approval - Geltungsbereich
Procedimento di saldatura: Welding process - Schweißprozeß:	**121**	**121**
Impianto di saldatura: Welding equipment - Schweißeinrichtung:	-	-
Unità di saldatura: Welding unit - Schweißgerät:	-	-
Particolari per saldatura automatizzata in accordo a par 4.2.2 Specifications for automatic welding according to par. 4.2.2 - Angaben nur für automatisches Schweißen nach 4.2.2		
Sensore del giunto: Joint sensor - Nahtsensor:	-	-
Controllo del sensore dell'arco Arc Sensor Control -	-	-
Passata singola / Passate multiple: Single run / Multi run - Einlagig / Mehrlagig:	-	-
Tipo di unità di saldatura: Type of Welding unit - Art des Schweißgerät:	-	-
Particolari per saldatura automatica in accordo a par 4.2.3 Specifications for mechanized welding according to par. 4.2.3 - Angaben nur für Mechanisches Schweißen nach 4.2.3		
Controllo Visivo / Controllo visivo remoto Visual control/visual remote control–Visuelle Kontrolle/visuelle Fernbedienung	**DIRECT**	**THE SAME**
Controllo automatico della lunghezza dell'arco Automatic arc length control – Automatische Lichtbogenlängensteuerung	**WITHOUT**	**WITH AND WITHOUT**
Monitoraggio automatico del giunto Automatic joint tracking - Automatische Fugenfolge	**WITHOUT**	**WITH AND WITHOUT**
Posizione di saldatura: Welding position - Schweißposition:	**PA**	**PA**
Passata singola / Passate multiple: Single run / Multi run - Einlagig / Mehrlagig:	**MULTIPLE**	**SINGLE AND MULTIPLE**
Materiale di supporto: Material Backing – Material Badsicherung	**ss mb**	**ss mb, bs**
Inserto Consumabile: Consumable Insert Verbrauchsmaterial insert	**WITHOUT**	**WITH AND WITHOUT**

Informazioni addizionali – Additional Information – Zusätzliche Hinweise:

Data e luogo: Date and location Datum und ort:	Riqualificazione 5.3 a) Requalification 5.3 a) Requalifizierung 5.3 a)		Rivalidazione 5.3 b) Revalidation 5.3 b) Revalidierung 5.3 b)		Rivalidazione 5.3 c) Revalidation 5.3 c) Revalidierung 5.3 c)		**Nome e firma del certificatore:** Certifier's Name and Signature Name und Unterschrift des Zertifizierers:
12/07/2024 **Milano**	**Validità fino a** Validity until Gültigkeit	2030/05/09	**Validità fino a** Validity until Gültigkeit		**Validità fino a** Validity until Gültigkeit		**Alberto Carelli**

ZERTIFIKAT | CERTIFICATE | CERTIFICAT | CERTIFICADO | СЕРТИФИКАТ | شهادة | 证书 | 인증서

Qualification test certificate for ☒ welding operators ☐ weld setter

according EN ISO 14732:2013

welding procedure specification:	01E-23	Certificate No:	IT/23/P/0367
Reference No. (if applicable):		Examiner:	Mariano Polichetti
Name:	Muhammad Hamza Bhatti	Welder sign:	E
Method of Identification:	ID-Card	Examining body:	TÜV AUSTRIA CERT GMBH 1230 Vienna, Deutschstraße 10 Recognized third party organization according article 20, 24 and annex I 3.1.2. of directive 2014/68/EU
Identification no.:	AY2750689		
Date and place of birth:	12/10/1996 Gujrat Pak (Pakostan)		
Employer:	Sidertaglio Calandratura S.r.l.		
Code/testing standard:	EN ISO 14732:2013 + AD2000HP3		

Functional knowledge: ☒ acceptable ☐ not acceptable (cross where applicable)

Job knowledge: ☒ acceptable ☐ not tested (cross where applicable)

Weld details		Range of qualification
Welding process:	121 mechanized	121 mechanized
Welding equipment:		
Welding unit:	FRO STARMATIC 1200 I SN: 217-4894262	No restriction

Details for mechanized welding:

Visual control:	☒ direct	☐ remote	Direct visual control
Automatic arc length control:	☐ yes	☒ no	No restriction
Automatic joint tracking:	☐ yes	☒ no	No restriction
Welding position:	PA		PA
☐ Single run technique	☒ Multi run technique		Multi run & single run
Material backing:	☒ yes	☐ no	With backing
Consumable insert:	☐ yes	☒ no	No restriction

Details for automatic welding:

Joint sensor:	☐ yes	☐ no	
Arc sensor control:	☐ yes	☐ no	
☐ Single run technique	☐ Multi run technique		

Additional information is available on welding procedure specification No: 01E-23

The qualification is based on:

- welding procedure test (see 4.1a)) ☒
- pre-production welding test (see 4.1b)) ☐
- standard test piece (see 4.1c)) ☐
- production test or production sample testing (see 4.1d)) ☐

Results of the qualification test see document No.:

1201/2023, UT 090-2023, 59128, VT 088-2023

Certification body: TÜV AUSTRIA CERT GMBH

Name and signature: Ing. Daniele Tempesti

Place of issue: Erbusco (BS)

Date of issue: 24/05/2023

Place of welding: Povaloro (VI)

Date of welding: 27/03/2023

Validity according 5.3: ☒a) ☐b) ☐c)

Valid until: 26/03/2029

Re-validation for qualification by employer/welding coordinator for the following 6 months (see clause 5.2):

Date	Signature	Position or title	Date	Signature	Position or title
27/09/2023		QCM/WD			
27/03/2024		QCM/WD			
27/09/2024		QCM/WD			

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TÜV SÜD Italia

Certificato n° - Certificate No – Zertifikat Nr:

SAL-4687-2023

CERTIFICATO DI QUALIFICA DEL SALDATORE

WELDER APPROVAL TEST CERTIFICATE – SCHWEISSER PRÜFUNGSBESCHEINIGUNG-ZERTIFIKAT

Designazione:
Designation -Bezeichnung: **EN ISO 9606-1 – 135 P BW FM1 S t15 PA ss mb**

WPS del Costruttore:
Manufacturer's WPS - Hersteller -Schwelßanweisung: **P28912315-01**

Data della Saldatura:
Date of Welding - Datum derSchweißung: **2023/09/15**

Rapporto di Prova n°
Test Report Nr - Prüfbericht Nr..: **see page 2**

Riferimento interno No.:
Internal Reference No. – Interne Referenz No: **722329947**

Nome del Saldatore:
Welder's name - Name des Schweißers: **ASAD MUHAMMAD BHATTI – code: C**

Identificazione:
Identification - Legitimation: **AV9488035**

Metodo di identificazione:
Method of identification - Art der Legitimation: **CARTA IDENTITA'**

Data e luogo di nascita:
Date and place of birth - Geburtsdatum und Ort: **03/08/1965 – GUJRAT PAKISTAN [PAK]**

Datore di lavoro:
Employer - Beschäftigt bei: **SIDERTAGLIO CALANDRATURA SRL**
via Marzotto, 9 – 36031 Povolaro di Dueville (VI)

Foto (se richiesto)
Photo (if required)
Fotografie (falls nötig)

Codice / Norma di collaudo:
Code / testing standard - Vorschrift / Prüfnorm: **EN ISO 9606-1: 2017**

Conoscenze tecniche:
Job knowledge - Fachprüfung: ☐ **Acceptable** ☒ **Not Tested**

Prova supplementare di saldatura ad angolo:
Supplementary fillet weld test - Ergänzende Kehlnaht Test: ☐ **Yes** ☒ **No**

☒ **Qualifica valida ai sensi della direttiva PED, Allegato 1, punto 3.1.2. – TUV Italia Srl – Organismo Notificato 0948**

		Dettagli della prova di saldatura Weld Test Details – Prüfdaten-Angaben	**Campo di validità** Range of Approval –Geltungsbereich
5.2	**Procedimento di saldatura:** Welding process - Schweißprozess(e):	135	135, 138
	Modalità di Trasferimento [131 – 135 – 138] Transfer Mode - Transfermodus:	SPRAY ARC	All but not Short
5.3	**Tipo di prodotto:** Product Type – Produkttyp:	P	P, T
5.4	**Tipo di giunto:** Joint Type – Nahtart:	BW	BW
5.5	**Materiale(i) d'apporto (Tabella 2-3) :** Filler Metal (Table 2-3) – Schweißzusatz(e) (Tabelle 2-3)	FM1	FM1, FM2
5.6	**Tipo di Materiale d'apporto (Tabella 4-5):** Filler Metal Type (Table 4-5) – Zusatzwerktyp (Tabelle 4-5)	S	S, M
5.7	**Spessore del materiale [mm]:** Material thickness [mm] - Werkstoffdicke [mm]:	15,0	-
	Spessore depositato [mm]: Deposited thickness [mm] - Schweißgutdicke[mm]:	15,0 -	≥ 3,0 -
	Diametro esterno del tubo - Ø [mm] : Tube-Ø (outside) - Rohr-Ø (außen) [mm]:	-	≥ 75,0
5.8	**Posizione di saldatura (Tabelle 9-10):** Welding position (Tab. 9-10) – Schweißpositionen (Tab. 9-10) :	PA	PA
5.9	**Dettagli di saldatura (Tabella 11):** Weld Details (Tab.11) – Schweißnahteinzelheiten (Tab.11):	ss mb	ss mb, bs, ss gb
	Saldatura passata singola / Multipla (Tabella 12): Multi layer/Single Layer (Tab.12)-Einlagig/Mehrlagig (Tab. 12):	-	-
Informazioni addizionali – Additional Information – Zusätzliche Hinweise:			
Gruppo di Materiali: [CEN ISO/TR 15608] Parent metals (groups) – Werkstoffgruppe(n):		1.2	1 ÷ 11
Gas di protezione: [EN ISO 14175] Shielding gas – Schutzgas:		M21 – ArC-18	All Active Gas
Ausiliari: Auxiliaries – Hilfsstoffe:		-	-

Data e luogo: Date and location Datum und ort:	Riqualificazione 9.3 a) Requalification 9.3 a) Requalifizierung 9.3 a)		Rivalidazione 9.3 b) Revalidation 9.3 b) Revalidierung 9.3 b)		Rivalidazione 9.3 c) Revalidation 9.3 c) Revalidierung 9.3 c)		**Nome e firma del certificatore:** Certifier's Name and Signature Name und Unterschrift des Zertifizierers:
02/10/2023 Milano	**Validità fino a** Validity until Gültigkeit	**2026/09/14**	**Validità fino a** Validity until Gültigkeit		**Validità fino a** Validity until Gültigkeit		**Maria Fernandez**

C249606-1.007 (ex PSAL-07-M010)

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Signatory of EA, IAF and ILAC Mutual Recognition Agreements

Certificato n° - Certificate No – Zertifikat Nr:

SAL-4687-2023

CERTIFICATO DI QUALIFICA DEL SALDATORE

WELDER APPROVAL TEST CERTIFICATE – SCHWEISSER PRÜFUNGSBESCHEINIGUNG-ZERTIFIKAT

Tipo di prova Type of test Art der Prüfung	**Effettuato ed accettabile** Performed and accepted Ausgeführt und bestanden	**Non Eseguito** Not tested Nicht geprüft
Esame visivo (EN ISO 17637) Visual Test – Sichtprüfung	☒ **EA Engineering n.051-23_r.0**	☐
Radiografia (EN ISO 17636) Radiography- Durchstrahlungsprüfung	☐	☒
Ultrasuoni (EN ISO 17640) Ultrasonic – Ultraschall	☒ **Antares Control n.714/23**	☐
Macrografia (EN ISO 17639) Macro – Makroskop	☐	☒
Frattura (EN ISO 9017) Fracture – Bruchprüfung	☐	☒
Piega (EN ISO 5173) Bend – Biegeprüfung	☐	☒
Test addizionali Additional Test - Zusätzliche tests	///	

PROLUNGAMENTO DELLA QUALIFICA DA PARTE DEL DATORE DI LAVORO O DEL SUPERISORE (9.2) PROLONGATION FOR APPROVAL BY EMPLOYER OR SUPERVISOR (9.2) VERLÄNGERUNG DER PRÜFUNG DURCH BESTÄTIGUNG DES(R) ARBEITGEBER(S) ODER AUFSICHTSPERSON (9.2)			**PROLUNGAMENTO DELLA QUALIFICA DA PARTE DELL'ESAMINATORE E DELL'ENTE DI PROVA (9.3 b)** PROLONGATION FOR APPROVAL BY INSP. AUTHORITY (9.3 b) VERLÄNGERUNG DER PRÜFUNG DURCH PRÜFSTELLE (9.3 b)		
Data Date Datum	**Firma** Signature Unterschrift	**Posizione o titolo** Position or title Dienststellung oder Titel	**Data** Date Datum	**Firma** Signature Unterschrift	**Posizione o titolo** Position or title Dienststellung oder Titel
15/03/24		QCR/WD			
13/09/24		QCR/WD			

Nota 1 : La qualificazione deve essere confermata ogni sei mesi .
Note 1 : The certificate needs to be confirmed every 6 months.
Note 1: Das Zertifikat braucht alle 6 Monate zu bestätigt werden.

Data e luogo: Date and location Datum und ort:	Riqualificazione 9.3 a) Requalification 9.3 a) Requalifizierung 9.3 a)		Rivalidazione 9.3 b) Revalidation 9.3 b) Revalidierung 9.3 b)		Rivalidazione 9.3 c) Revalidation 9.3 c) Revalidierung 9.3 c)		**Nome e firma del certificatore:** Certifier's Name and Signature Name und Unterschrift des Zertifizierers:
02/10/2023 **Milano**	**Validità fino a** Validity until Gültigkeit	**2026/09/14**	**Validità fino a** Validity until Gültigkeit		**Validità fino a** Validity until Gültigkeit		**Maria Fernandez**

C249606-1.007 (ex PSAL-07-M010)

Base Load Power Hub (BLPH)

NDE PROCEDURE and OPERATORS LIST QUALIFICATIONS

For DAVIT CRANE

Document Number: 1724001010-NDT-PRO-00006

Document Class: 2

ROSETTI MARINO

1	APPROVED - WORK MAY PROCEED
2N	REVISE AND RE-SUBMIT - DO NOT PROCEED
2Y	REVISE AND RE-SUBMIT - WORK MAY PROCEED
3	REJECTED
4	APPROVAL NOT REQUIRED

NOTE: Approval doesn't relieve the supplier from mandatory compliance with contractual documents and specifications. Comments made do not imply acceptance of any cost or delivery impact.

Sign	Date
Comandini Massimo Level III NDT EN - ISO9712 WI CSWIP 3.1	07-10-2024

Rev.	Date	Description	Prepared	Reviewed	Approved
03	04/10/2024	Accepted for Construction (AFC)	CZB	MPU	MPU
02	05/09/2024	Accepted for Construction (AFC)	CZB	MPU	MPU
01	21/08/2024	Issue for Review (IFR)	CZB	MPU	MPU
00	11/07/2024	Issue for Review (IFR)	CZB	MPU	MPU

REMAZEL ENGINEERING

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Revision / Change Log

Rev.	Description
00	Issue for Review (IFR)
01	Issue for Review (IFR)
02	Accepted for Construction (AFC)
03	Accepted for Construction (AFC)

HOLDS LIST

No.	Description
1	
2	
3	
4	

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1.1.2 Project Concept 6

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1 INTRODUCTION

1.1 PROJECT OVERVIEW

Crosswind, a Shell and Eneco joint venture, was awarded the tender to develop the offshore Hollandse Kust Noord (HKN) wind farm, located 18.5km off the coast of Netherlands near the town of Egmond aan Zee. The consortium plans to have HKN operational in 2023 with an installed capacity of 759MW generating at least 3.3TWh per year. This is sufficient renewable power to supply more than 1 million Dutch households with green electricity.

Offshore wind farms produce intermittent electricity and balancing these dips and peaks and integrating this electricity into the national energy system requires new technologies. For this reason, the offshore wind farm will include several new technologies that could be implemented at full-scale in the future. The new technologies being explored include a floating solar park, a short-duration battery storage as well as long-term storage via green hydrogen produced by water electrolysis and subsequently consumed in a fuel cell. The combination of these individual measures, herein referred to as the Base Load Power Hub (BLPH) will ensure a continuous power supply regardless of the wind situation.

1.1.1 Project Location

The Hollandse Kust Noord (HKN) wind farm is located 18.5km off the coast of the Netherlands near the town of Egmond aan Zee.

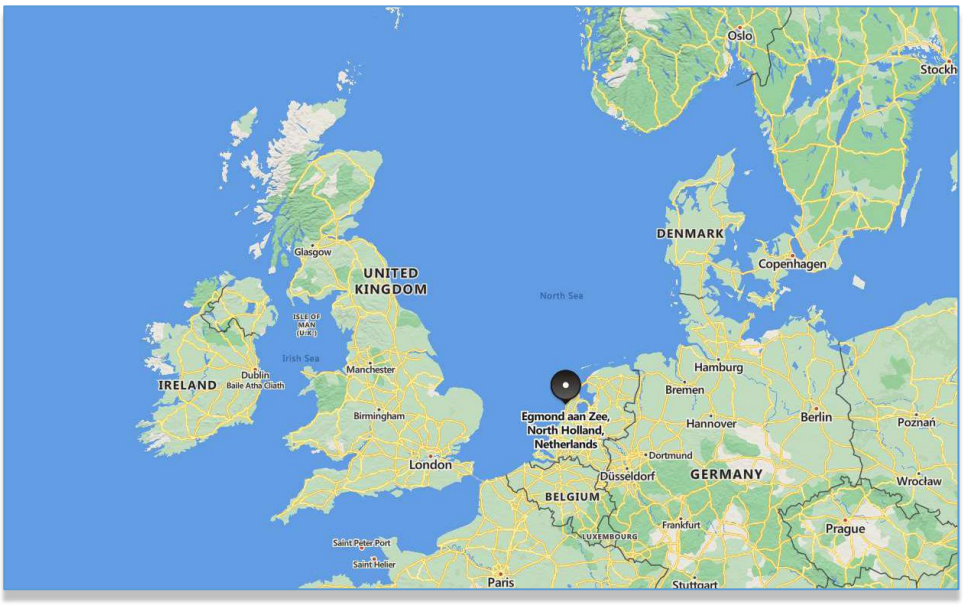


Figure 1 HOLLANDSE KUST NOORD WIND PARK Location Map



Figure 2 - Wind Park Details

The wind farm will consist of No. 69 x 11.5MW wind turbine generators each to be installed on a dedicated monopile structure. A 70th monopile located on coordinates E 590719.1, N 5841602.3 is reserved for installing the platform accommodating the BLPH. The monopile structure was designed and installed by Van Oord Offshore Wind (VooW) and therefore not part of the BLPH scope.

1.1.2 Project Concept

All components included in the BLPH will be integrated onshore on a topsides and installed in an offshore location within the boundaries of the HKN wind farm. At its simplest, the BLPH will store energy during periods of high electricity generation from renewable sources (a wind turbine generator and the floating solar PV farm) and release it during periods of low generation. In practice. It is expected that the energy stored will supplement generation from renewable sources to ensure that at least 1.0MW of power is exported to the electrical grid regardless of wind/solar availability.

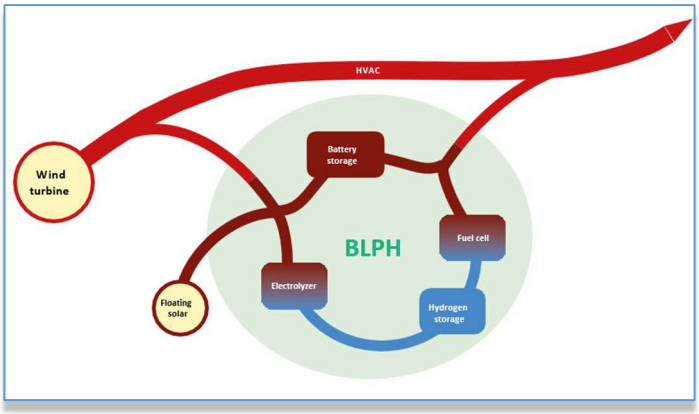


Figure 3 – BLPH Concept

Electricity in the BLPH will be stored in the form of electrons in a battery energy storage system (BESS) as well as converted into green hydrogen via water electrolysis. When the power output from the connecting wind turbine drops to below 1 MWe, the BLPH will return its stored energy to supplement the remaining power output. This will be by discharging the BESS, while stored hydrogen will be converted back into electricity using a fuel cell to extend the discharge duration.

The purpose of the BLPH s to function as a testbed for the integration of energy storage technologies with renewable generation. It is expected that equipment installed on the BLPH will operate as Normally Unmanned Installation for at least two (2) years with no or minimal maintenance and it will have its own independent control room with the ability to communicate with Crosswind's control room.

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2 DOCUMENT SCOPE

NDE PROCEDURE and OPERATORS LIST QUALIFICATIONS

2.1 REFERENCES

Doc. No.	Description
24-27012-ITP-001	ITP

Table 1 - Reference Documents

2.2 DEFINITIONS AND ABBREVIATIONS

COMPANY or Client (CPY):	Crosswind
CONTRACTOR (CTR):	ROSETTI MARINO S.p.A.
PROJECT:	HOLLANDSE KUST NOORD WIND PARK Project

Table 2 - Definitions and Abbreviations

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3 NDT PROCEDURE

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Davit Crane

NDT PROCEDURE
24-27012-NDE-001

Rev	Date	Revision Description	Prepared	Checked	Approved
02	05/09/2024	IFR	CZB	MPU	ATR
01	21/08/2024	IFR	CZB	MPU	ATR
00	11/07/2024	IFR	CZB	MPU	ATR

SUMMARY OF REVISION

Rev.	Revised chapters	Revision description	Reason for revision
00	///	///	IFR
01	8.10	Page Number / Block reference table	IFR
02	2	Corrected standard reference	IFR

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REMAZEL ENGINEERING	RAPPORTO DI CONTROLLO VISIVO SALDATURE	Certificate n°
	(Certificate Visual Control Weldings)	DATE *Date*
		page 1/1

FORNITORE *Supplier*		**ORDINE** *Order*	
COMMESSA *Job*		**OGGETTO** *Object*	
PROGETTO *Project*		**DISEGNO** *Drawing*	
QCP N° *Qcp N°*		**Fase** *Phase*	

Materiale: *Material:*	
Tipo di giunto: *Type of joint:*	
Spessore del materiale: *Material thickness:*	
Processo di saldatura: *Welding process:*	
Criterio di accettazione: *Acceptance criteria:*	
Mezzi usati: *Examination devices used:*	
Estensione dell'esame con riferimento al disegno: The extent of examination with reference to drawings as appropriate:	
Indicazioni che eccedono i limiti di accettazione: Imperfections exceeding the acceptance criteria and their location:	

RISULTATI / Results	CONFORME / Accepted	☒
	NON CONFORME / Not Accepted	☐
	SCARTO / Rejection	☐

NOTE *(Notes):*

Remazel Engineering	Enti Collaudatori *Inspect.Officials*	Ispettore Cliente *Customer Inspector*	

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REMAZEL ENGINEERING	SISTEMA QUALITA' *QUALITY SYSTEM*	REU N°
	RAPPORTO DI ESAME ULTRASUONI *Ultrasonic test report*	COMM. *Job*
		DATA *Date*

CLIENTE *Customer*	ORDINE *Order*	DEL *Of*	COMM. CLIENTE *Customer's job*
OGGETTO *Subject*	DISEGNO RIF. *Ref. Drw*		QUANTITA' *Quantity*

Stato di controllo *Testing status*	☐ Preliminare *Preliminary*	☐ Finale REMAZEL *Final REMAZEL*	☐ Finale ufficiale *Final official*
Condizioni superficiali *Surface conditions*	☐ Sabbiate *Sandblasted*	☐ Lavoraz. meccanica *Machined*	☐ Come fornito *As delivery*
Specifica *Specification*			
Mezzo di accoppiamento *Coupling method*			

Calibrazione *Calibration*	☐ AVG scala *AVG scale*	☐ Blocco di riferimento V 1 *Reference block V 1*
	☐ DGS Diagramma *DGS diagram*	☐ Blocco di riferimento V 2 *Reference block V 2*
	☐ Eco di riferimento *Reference echo*	☐ Blocchi di calibrazione *Calibration blocks*

SONDE *Probes*					REGOLAZIONE *Adjustment*		
Tipo *Type*	Frequenza *Freq. MHz*	Dimensioni *Size mm*	Angolo *Angle*	Costruttore *Manifacture*	Potenza *Power*	Amplificazione *Amplification*	Note *Rermarks*

Apparecchiatura *Apparatus*	Costruttore *Manufact.*	Tipo *Type*	Matricola *Serial N*
Risultati *Results*	☐ Conforme *According to*	☐ Non conforme *Not according to*	☐ Scarto *Rejection*

Note *Remarks*

Operatore *Operator*	Enti collaudatori *Inspect. officials*	Ispettore cliente *Customer inspect.*	Capo collaudo *Inspect. Dept. manager*

MODULO - MD009 Rev.00

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9 Qualified operators list: 67

1 Purpose

The purpose of this document is to provide guidelines for the NDE of the components for the Offshore & Cargo Deck cranes.

2 References

24-27012-ITP-001_01	Inspection and Test Plan
EN 10228-1 ED.2016	Non-destructive testing of steel forgings – Magnetic particle inspection
EN 10228-3 ED.2016	Non-destructive testing of steel forgings – Ultrasonic inspection
EN ISO 9712 ED.2022	Non-destructive testing – Qualification and certification of NDT personnel
EN ISO 17637 ED.2017	Non-destructive testing of welds – Visual testing of fusion-welded joints
EN ISO 23277 ED.2015	Non-destructive testing of welds – Penetrant testing – Acceptance levels
EN ISO 17638 ED.2016	Non-destructive testing of welds – Magnetic particle testing
EN ISO 23278 ED.2015	Non-destructive testing of welds – Magnetic particle testing – Acceptance levels
EN ISO 17640 ED.2019	Non-destructive testing of welds. Ultrasonic testing. Techniques, testing levels, and assessment
EN ISO 11666 ED.2018	Non-destructive testing of welds. Ultrasonic testing. Acceptance levels
EN ISO 5817 ED.2023	Welding – Fusion-welded joints in steel, nickel, titanium and their alloys (beam welding excluded) – Quality levels for imperfections
EN ISO 3452 ED.2021	Non-destructive testing of welds – Penetrant testing – General
UNI EN 10308 ED.2004	Non-destructive testing of welds – Ultrasonic testing –steel bars

3 Abbreviations

QC: Quality Control
ITP: Inspection and Test Plan
Company: Rosetti Marino
Project Davit Cranes
Third Part: /
Sub-Supplier: a company awared by Remazel to manufacture
DAC Curve: *Distance Amplitude Correction Curve.*
DGS Curve: *Distance Gain Size Curve.*
FBH: Flat Bottom Hole.
EFBH: Equivalent Flat Bottom Hole.
ERS: Equivalent Reflector Size.
NDE: Non Destructive Examination.
VT: Visual Test.
MT: Magnetic Test.
PT: Penetrant Test.
UT: Ultrasonic Test.

4 Magnetic Test on Forged components and Weld Chamfer

4.1 Purpose

This procedure prescribes the minimum requirements to apply during magnetic examination of Weld Chamfer (ferromagnetic material).

Questa procedura prescrive i requisiti minimi da applicare durante il test magnetoscopico di cianfrini (materiale ferromagnetico).

4.2 Reference Documents

EN ISO 9712 Non-destructive testing Qualification and certification of NDT personnel
EN 10228-1 Non-destructive testing of steel forgings. Magnetic particle inspection
EN ISO 9934-2 Non-destructive testing. Magnetic particle testing. Detection media
EN ISO 9934-3 Non-destructive testing. Magnetic particle testing. Equipment

4.3 Personnel Qualification

Operators shall be qualified according to EN ISO 9712 level II or III. NDT operators shall have Acuity test certificate, not older than one year, attesting that minimum requirements for `Near vision' and `Colour Vision' according to EN ISO 9712 Clause 7 are fulfilled.

Tutto il personale che effettua il controllo accordo a questa procedura dovrà essere qualificato in accordo ai livelli II o III della EN ISO 9712. Gli operatori NDT devono avere la certificazione di acuità visiva, non più vecchia di un anno, attestante i requisiti minimi di vista da vicino e distinzione colori, in accordo alla EN ISO 9712 Clausola 7.

4.4 Instruments

Alternate current yoke shall be used.
Yoke shall be endowed by jointed poles to test T-joint.
Equipment used shall be conforming according to EN ISO 9934-3 specification.
Equipment shall be calibrated every year and every time it is damaged or when it is considered necessary.
Calibration procedure foresees the lifting of a calibration block of 4.5 kg weight in alternating current.
The magnetizing power of yokes shall be verified prior to use each day the yoke is used. Each alternating current electromagnetic yoke shall have a lifting power of at least 4.5 kg at the maximum pole spacing, with contact similar to what will be used during the examination. Lifting test shall be repeated every time it is required by Company Inspector.
The following equipment can be used:

- Yoke PARKER.
- Yoke NDT ELITE.
- Yoke KARL DEUTSCH.
- Equivalent instruments

Deve essere utilizzato un gioco magnetico con corrente alternata.
Il giogo deve essere dotato di poli snodabili per il controllo su giunti a "T".
Le apparecchiature devono essere conformi alla specifica EN ISO 9934-3
Le apparecchiature devono essere tarate ogni anno e ogni qualvolta subiscano un danneggiamento o quando fattori obiettivi lo rendano necessario.
La procedura di taratura prevede il sollevamento di un blocco campione del peso di 4.5 kg in corrente alternata.
La forza di magnetizzazione del giogo deve essere verificata prima di ogni utilizzo. Il giogo in corrente alternata deve essere verificato sollevando un peso di 4.5Kg con i puntali al massimo dell'estensione con

una superficie di contatto simile a quella che verrà utilizzata nel corso dell'ispezione. La prova di sollevamento deve essere eseguita ogni volta che l'Ispettore del cliente lo richiede.
Possono essere impiegate le seguenti apparecchiature:

- *Giogo PARKER corrente alternata o continua.*
- *Giogo NDT ELITE corrente alternata o continua.*
- *Giogo KARL DEUTSCH corrente alternata o continua.*
- *Equivalenti.*

4.5 Examination Medium

Colour contrast or fluorescent (for welds can be used only after flushing) magnetic particles in suspension shall be used.
The magnetic particles supplied in spray cans shall be used.
Spray cans content concentration shall not be subjected to check.
Magnetic particles shall have high permeability, low retentively and such dimension to allow a high mobility on surface.
Magnetic particles to be used can be supplied by:

- CGM
- NDT Elite
- Equivalent suppliers

The temperatures of use are supplied directly by the manufacturer.

Saranno utilizzate particelle magnetiche a contrasto di colore o fluorescenti (per le saldature possono essere utilizzati solo dopo lisciatura) in sospensione.
Le particelle magnetiche da utilizzare dovranno essere soluzioni già preparate in bombolette spray.
Nell'utilizzo di bombolette spray, non è richiesto il controllo della concentrazione.
Le particelle magnetiche da utilizzare devono avere elevata permeabilità, bassa retentività e dimensioni tali da consentire un'elevata mobilità sulla superficie.
Le particelle magnetiche da utilizzare possono essere:

- *CGM*
- *NDT Elite*
- *Equivalenti*

Le temperature di utilizzo sono fornite direttamente dal produttore.

4.6 Lighting Condition

For colour contrast method the surface shall be illuminated with an intensity of minimum 1000 Lux.
For fluorescent method the surface shall be illuminated with an intensity of maximum 20 Lux while the intensity of the UV-A irradiation on the surface shall be minimum 1000 µW/cm^2.
Lightning intensity and UV-A irradiation shall be checked with a calibrated lux meter or radiometer.
Examiners shall be in a darkened area for at least 5 min prior to performing examinations to enable their eyes to adapt to dark viewing. Glasses or lenses worn by examiners shall not be photosensitive.

Per il metodo a contrasto di colore la superfice deve essere illuminata con un'intensità minima di 1000 Lux.
Per il metodo fluorescente la superfice deve essere illuminata con un'intensità massima di 20 Lux mentre l'intensità dell'irradiazione UV-A deve essere minimo di 1000 µW/cm^2.
L'intensità dell'illuminazione e l'irradiazione UV-A devono essere controllate con un luxometro o un radiometro calibrati.
L'esaminatore, prima di eseguire l'ispezione, deve rimanere in un'area buia per almeno 5 minuti prima dell'ispezione per adattare la vista agli ambienti bui. Occhiali o lenti indossate dagli esaminatori non devono essere fotosensibili.

4.7 Surfaces preparation

The surface under examination shall be dry and free of dust, grease, scale, oil or any other substances which could interfere with the examination.
The surfaces to be examined shall not be painted.
If is necessary to increase the contrast, a layer of lacquer can be applied by brush or spray.
The manufacturer of lacquer and magnetic particles shall be the same.
Surface temperature shall be in the range established by the magnetic particles supplier.
The surface shall be sandblasted, grinded or machined.
Surface roughness shall comply with the requirements of Table 1

La superficie in esame dovrà essere asciutta e libera da polvere, grasso, incrostazioni, olio, scaglie o ogni altra sostanza estranea che possa interferire con l'esame.
Le superfici da esaminare non dovranno essere verniciate, tuttavia nel caso di controllo con giogo magnetico i poli dello stesso possono poggiare su superfici rivestite da vernice.
Nel caso di controllo con puntali, le aree di contatto non possono essere verniciate.
Se necessario, per aumentare il contrasto uno strato uniforme di lacca può essere applicato tramite spray o pennello.
Il fornitore della lacca di contrato deve essere lo stesso delle particelle magnetiche.
La superficie in esame deve avere una temperatura compresa entro i limiti stabiliti dal produttore delle particelle magnetiche.
La superficie può essere sabbiata, molata o lavorata.
La rugosità superficiale deve essere in accordo ai requisiti della Table 1.

Table 1 — Surface condition

Surface roughness parameter R_a *), in µm	Quality classes[a]			
	1	2	3	4
$6,3 < R_a \leq 12,5$	X	X	–	–
$R_a \leq 6,3$	X	X	X[b]	X[c]

a X signifies the quality class that can be achieved for the specified surface finish.

b Quality class not applicable to the testing of surfaces with a machining allowance greater than 3 mm per face.

c Quality class not applicable to the testing of surfaces with a machining allowance greater than 1 mm per face.

*) R_a = arithmetical mean deviation of the profile.

4.8 Magnetization

Before starting the exam, is necessary to check the strength and direction of the magnetic field through a field indicator.
The test will be performed with the continuous method.
This provides that the magnetization is kept active during the application of the magnetic particles, during the removal of particles in excess and for the examination of the surface.
Each area will be examined at least twice.
During the second test, the flux lines of the magnetic field generated, have to be perpendicular to those obtained with the first control.

The examination shall be conducted following the techniques described in EN ISO 10228-1.
The temperatures within which the products are used, are defined by the manufacturer of the same.
The application of the particles shall be carried out by spray.
The entire area between two poles must be covered by the application of the magnetic liquid.
The removal of excess particles in the wet method, will be helped by the action of fluid drainage of the suspension.
The maximum distance between the poles of the yoke shall be the one verified with the calibration block.
For tests carried out according to this procedure, demagnetization is not necessary.

Prima di iniziare l'esame, è necessario verificare l'intensità e la direzione del campo magnetico mediante un apposito indicatore di campo.
Il test sarà eseguito con il metodo continuo.
Questo prevede che la magnetizzazione sia tenuta attiva durante l'applicazione delle particelle magnetiche, durante la rimozione delle particelle in eccesso e durante l'esame della superficie.
Ogni area sarà esaminata almeno due volte, durante il secondo esame, le linee di flusso del campo magnetico generato, dovranno essere perpendicolari a quelle ottenute nel primo controllo.
L'esame sarà condotto seguendo le tecniche descritte nella EN ISO 10228-1.
Le temperature entro il quale i prodotti possono essere utilizzati, sono definite dal produttore degli stessi.
L'applicazione delle particelle deve essere spray.
L'intera area compresa tra in due poli deve essere coperta dall'applicazione del liquido magnetico.
La rimozione delle particelle in eccesso nel controllo in umido, sarà favorita dall'azione di drenaggio del fluido della sospensione.
La massima distanza tra i poli deve essere quella verificata con il blocco campione.
Per controlli effettuati secondo questa procedura, non è necessaria la smagnetizzazione.
In presenza di false indicazioni, il test deve essere rieseguito dopo le azioni di rimozione e pulizia.

4.9 Instruments

Equipment used shall be conforming according to EN ISO 9934-3 specification.
Equipment shall be verified every year, if damaged or when an objective factor makes it necessary.
Before each inspection the lifting strength of joke shall be verified.
Calibration procedure foresees the lifting of a calibration block, of 4.5 kg (10 lbs) weight in alternating current.

Le apparecchiature devono essere conformi alla specifica EN ISO 9934-3.
Le apparecchiature devono essere verificate ogni anno, se danneggiate o quando un fattore oggettivo lo rende necessario.
Prima di ogni ispezione deve essere verificata la forza di sollevamento del giogo.
La procedura di taratura prevede il sollevamento di un blocco campione del peso di 4.5 kg (10 lbs) in corrente alternata.

4.10 Evaluation of Indications

Definitions:

- False indication: an indication is caused by a process error or technique, such as a poor cleaning, etc.
  Any surface discontinuity that may cause false indications shall be smoothly grind.
  In the presence of false indications, the test shall be re-executed after the removal and cleaning actions.
- Non relevant indication: is an indication that it is due to an accumulation of magnetic particles which is not caused by a significant discontinuity.
- Non relevant indications may be caused by geometric variations, machining etc.
- Linear indication: is an indication in which the length / width ratio is greater than 3.

- Round indication: is an indication in which the length / width ratio is lower than 3.

Definizioni:

- *Falsa indicazione: è un'indicazione causata da un errore di processo o di tecnica, come ad esempio una cattiva pulizia.*
  Le discontinuità superficiali che possono causare false indicazioni devono essere molate.
  In presenza di false indicazioni, il test deve essere re eseguito dopo le azioni di rimozione e pulizia.
- *Indicazione non rilevante: è un'indicazione che è causa di un accumulo di particelle magnetiche non provocato da una discontinuità significativa.*
- *Le indicazioni non rilevanti possono essere causate da variazioni geometriche, lavorazioni di macchina ecc.*
- *Indicazione lineare: è un'indicazione in cui il rapporto lunghezza / larghezza è maggiore di 3.*
- *Indicazione tondeggiante: è un'indicazione in cui il rapporto lunghezza / larghezza è minore di 3.*

4.11 Acceptance Criteria

For forged components and weld bevel, the acceptance criteria are defined in the EN ISO 10228-1, the Level 3.

Per componenti forgiati e cianfrini di saldatura, i criteri di accettabilità sono definiti secondo la EN ISO 10228-1, il Livello 3.

Table 2 — Quality classes, recording levels and acceptance criteria[c]

Parameter	Quality class			
	1	2	3[a]	4[b]
Recording level: indication length (mm)	≥ 5	≥ 2	≥ 2	≥ 1
allowable length L of isolated indications and allowable length L_g of interacting indications (mm)	≤ 20	≤ 8	≤ 4	≤ 2
allowable cumulative length of indications in the reference surface (mm)	≤ 75	≤ 36	≤ 24	≤ 5
Maximum allowable number of indications in the reference surface	15	10	7	5

[a] Quality class not applicable to the examination of areas with a machining allowance greater than 3 mm per face.

[b] Quality class not applicable to the examination of areas with a machining allowance greater than 1 mm per face.

[c] Reference surface = 148 mm × 105 mm (i.e. A6 format) For objects smaller than the reference surface, or if only an area is examined smaller than the reference surface. then the maximum allowable number of indications should be determined and agreed accordingly (the acceptance criteria for the dimensions remain unchanged).

4.12 Defect Removal

All the discontinuities that exceed the standards acceptance criteria have to be removed and/or repaired and re-checked according to this procedure.

Tutte le discontinuità che superano gli standard di accettabilità devono essere rimosse e/o riparate e ricontrollate in accordo a questa procedura.

4.13 Test report

The report should include at least the following information:

- Inspection date
- Name, qualification and signature of the operator
- Component identification
- Place and extension of the test
- Thermal treatment status
- Type of component
- Surface conditions
- Reference to the operating procedure and to the codes used
- Instrumentation used
- Possible mapping of defects to be registered and / or non-compliant
- Final result of the test with acceptability

Il report dovrà includere almeno le seguenti informazioni:

- *Data di ispezione*
- *Nome, qualifica e firma dell'operatore*
- *Identificazione del componente*
- *Luogo ed estensione del test*
- *Stato di trattamento termico*
- *Tipo di componente*
- *Condizioni superficiali*
- *Riferimento alla procedura operativa ed ai codici utilizzati*
- *Strumentazione utilizzata*
- *Eventuale mappatura di difetti da registrare e/o non conformi*
- *Risultato definitivo del test con accettabilità*

4.14 Test report Sample (Only for reference)

REMAZEL ENGINEERING	SISTEMA QUALITA' *QUALITY SYSTEM* RAPPORTO DI ESAME MAGNETOSCOPICO *Magnetoscopic test report*	REM N° COMM. *Job* DATA *Date*

CLIENTE *Customer*	**ORDINE** *Order* **DEL** *Of*		**COMM. CLIENTE** *Customer's job*
OGGETTO *Subject*	**DISEGNO RIF.** *Ref. Drw*		**QUANTITA'** *Quantity*
Stato di controllo *Testing status*	☐ **Preliminare** *Preliminary*	☐ **Finale REMAZEL** *Final REMAZEL*	☐ **Finale ufficiale** *Final official*
Condizioni superficiali *Surface conditions*	☐ **Sabbiate** *Sandblasted*	☐ **Lavoraz. meccanica** *Machined*	☐ **Come saldato** *As Welded*
Specifica *Specification*			
Limiti di accettazione *Acceptance standars*			
Metodo *Method*	☐ **Puntali** *Pods*	☐ **Giogo** *Yoke*	☐ **Bobina** *Coil*
Polvere *Powder*	☐ **Secco** *Dry*	☐ **Umido** *Wet*	☐ **Fluorescente** *Fluorescent*
Tipo di polvere *Type of powder*	☐ **Grigia** *Grey*	☐ **Blu** *Blue*	☐ **Nera** *black*
Sospensione *Suspension*	☐ **In olio** *In oil*	☐ **In acqua** *In water*	☐ **KEROSENOIL**
Magnetizzazione *Magnetization*	**Corrente** *Current* **Amperspira** *Ampere turns* /	**Intensità** *Intensity* **Flusso magnetico** *Magnetic flux* /	**Distanza** *Distance* **Diametro** *Diameter mm* /
Apparecchiatura *Apparatus*	**Costruttore** *Manufacture*	**Tipo** *Type*	**Matricola** *Serial*
Pulitura *Cleaning method*			
Smagnetizzazione *Demagnetization*	/		
Risultati *Results*	☐ **Conforme** *According to*	☐ **Non conforme** *Not according to*	☐ **Scarto** *Rejection*
Note *Remarks*			

Operatore *Operator*	**Enti collaudatori** *Inspect. officials*	**Ispettore cliente** *Customer inspect.*	**Capo collaudo** *Inspect. Dept. manager*

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4.15 Safety Instruction

The magnetic particles are not toxic however they can cause cutaneous irritations.
Therefore:

- Use the protection gloves having care to hold them clean inside.
- Use for all the time the protective mask.
- Wash the hands and the gloves with care at the end of the job.
- Is recommended the use of protective glasses during the job.

Spray cans contain FREON 12 so:

- Protect from sunlight.
- Don’t expose to a temperature higher than 50° C.
- Don’t pierce or burn after the use.
- Don’t spray on flames or on incandescent bodies.
- Don’t inhale or spray in the eyes.
- Bring away from the job place at the end of shift.

Le particelle magnetiche non sono tossiche ma possono causare irritazioni cutanee.
Si raccomanda di:

- *Usare i guanti di protezione avendo cura di tenerli puliti all'interno;*
- *Usare per tutta la durata del lavoro la maschera protettiva;*
- *Lavare con cura le mani ed i guanti a fine lavoro;*
- *L'uso di occhiali protettivi durante il lavoro.*

Le bombolette spray contengono FREON 12 quindi:

- *Proteggere dai raggi solari.*
- *Non esporre a temperature superiori a 50° C.*
- *Non forare o bruciare dopo l'uso.*
- *Non spruzzare su fiamme o su corpi incandescenti.*
- *Non inalare o spruzzare negli occhi.*
- *Portare via dal posto di lavoro a fine turno.*

5 Procedure for the Visual Control of Welds

5.1 Purpose

This procedure defines minimum requirements to be applied during visual test of welded joint in tubing and structures, when required by applicable Code.

Questa procedura prescrive i requisiti minimi da applicare durante l'esame visivo di giunti saldati, strutture e tubazioni, quando richiesto dal Codice applicabile.

5.2 Reference Documentation

EN ISO 9712 Non-destructive testing Qualification and certification of NDT personnel
EN ISO 6520 Classification of geometric imperfections in metallic materials
EN ISO 5817 Fusion-welded joints in steel, Quality levels for imperfections
EN ISO 17637 Non-destructive testing of welds. Visual testing of fusion-welded joints

5.3 Extension Of Test

The applicability of the test is defined in the drawings, extension shall be 100%.

L'applicabilità del controllo è definita nel disegno l'estensione deve essere al 100%.

5.4 Personnel Qualifications

The personnel carrying out the test according to this procedure shall be qualified according to EN ISO 9712 level II or III. NDT operators shall have Acuity test certificate, not older than one year, attesting that minimum requirements for `Near vision' and `Colour Vision' according to EN ISO 9712 Clause 7 are fulfilled.

Tutto il personale che effettua il controllo accordo a questa procedura dovrà essere qualificato in accordo ai livelli II o III della EN ISO 9712. Gli operatori NDT devono avere la certificazione di acuità visiva, non più vecchia di un anno, attestante i requisiti minimi di vista da vicino e distinzione colori, in accordo alla EN ISO 9712 Clausola 7.

5.5 Inspection time

The inspection shall be performed 48 hours after the complete welding cooling down, in case of PWHT the NDE shall be performed at the end of the heat treatment.

I controlli andranno eseguiti 48 ore dopo il completo raffreddamento delle saldature, in caso di PWHT i controlli NDE devono essere eseguiti al termine del trattamento termico.

5.6 Surface Preparation

The surface under examination can be machined, grinded, brushed, sandblasted or as welded.
The surface to be examined adjacent zone for at least 10mm shall be dry and free from dust, grease, scale, oil, weld spatter, defects of lamination, burning, tack, nicks made by lifting clamps or any substance that could interfere with the examination.

La superfice da esaminare può essere lavorata di macchina, molata, spazzolata, sabbiata o saldata.
La superfice da esaminare e la zona adiacente per almeno 10mm deve essere asciutta e libera da polvere, grasso, calamina, spruzzi di saldatura, difetti di laminazione, bruciature, tratti di saldatura, segni di pinze per il sollevamento o qualsiasi altra sostanza che può interferire con l'esame.

5.7 Test Condition

The minimum lighting on surface, shall be min. 500 lux and shall be measured by a calibrated lux meter.
The visual examination shall be performed at a maximum distance of 600 mm, with the direction of observation such that the angle of observation with the surface to be examined is not less than 30°.
Mirrors can be used to improve the viewing.
If it is not possible to comply with the direct method, the test can be performed using a suitable remotely controlled equipment (endoscopes, cameras, etc.), in any case, the resolving power of the equipment used shall be equivalent to that obtained with the direct visual examination.
A magnifying lens may also be used in case of doubt or for the analysis of small anomalies.
The size of bevels and welds shall be verified against the drawing and WPS requirements and shall be measured with gauges defined by EN ISO 17637 Annex A.

L'illuminazione minima della superficie sotto esame, deve essere min. 500 lux e deve essere misurata con un luxmetro calibrato.
L'esame visivo dovrà essere eseguito ad una distanza massima di 600 mm, con direzione di osservazione tale che l'angolo di osservazione con la superficie da esaminare non risulti inferiore a 30°.
Potranno essere utilizzati degli specchietti per facilitare l'angolazione visiva.
Qualora non sia possibile eseguire l'esame con il metodo diretto, esso può essere eseguito ricorrendo a sistemi remoti (endoscopio, telecamere, ecc.) opportuni, in ogni caso, il potere risolutivo delle apparecchiature utilizzate e dovrà essere equivalente a quello ottenibile con l'esame visivo diretto.
Potrà anche essere usata una lente d'ingrandimento in caso di dubbio o per l'analisi di piccole anomalie.
La dimensione dei cianfrini e delle saldature deve essere verificata con i requisiti dei disegni o delle WPS misurati con calibri definiti in accordo alla EN ISO 17637 Annex A.

Table A.1 — Measuring instruments and weld gauges — Measuring ranges and reading accuracy

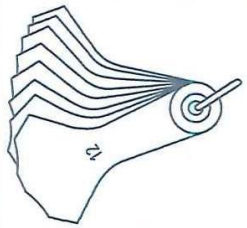
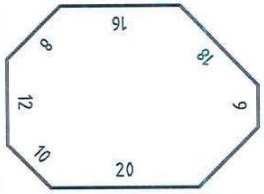
Weld gauge	Description	Type of weld				Measuring range	Reading accuracy	Included or fillet angle	Permissible deviation of included or fillet angle
		Fillet weld			Butt weld				
		Flat weld	Concave weld	Convex weld		mm	mm	degrees	
	**Simple weld gauge** a) Measures fillet weld from 3 mm to 15 mm thickness. The gauge is placed by the curved part in the fusion faces so as to have three points of contact with the work piece and the fillet weld. b) Measures butt welds reinforcement with the straight part. Because the gauges consist of relatively soft aluminium, they wear out rapidly.	x	x	—	x	3 to 15	≈ 0,5	90	Small
	**Set of welding gauges** Measures fillet welds from 3 mm to 12 mm thickness; from 3 mm to 7 mm: graduations of 0,5 mm; above 8 mm, 10 mm and 12 mm. The gauge measures by using the principle of three-point contact.	x	x	—	—	3 to 12	according to fan part	90	None

Table A.1 (*continued*)

Weld gauge	Description	Type of weld				Measuring range	Reading accuracy	Included or fillet angle	Permissible deviation of included or fillet angle
		Fillet weld			Butt weld				
		Flat weld	Concave weld	Convex weld		mm	mm	degrees	
	**Weld gauge with Vernier** Measures fillet welds; also reinforcement of butt welds can be determined. The legs of the gauge are so formed that included angles of 60°, 70°, 80° and 90° of V- and single-V butt weld with broad face can be measured. Slight deviations from these lead to significant errors.	x	x	—	x	0 to 20	0,1	90	None
	**Self made weld gauge** Measures 7 throat thicknesses of fillet welds with an included angle of 90°.	x	—	—	—	0 to 20	0,2	90	None
	**Three-scale weld gauge** Measures throat thickness and leg length. Can also measure weld reinforcement of butt welds. Easy to use. Also appropriate for asymmetric fillet welds.	x	x	x	x	0 to 15	0,1	90	Small

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Table A.1 (*continued*)

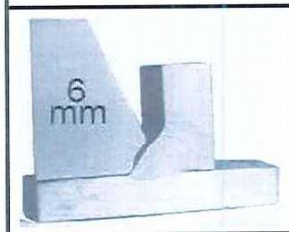
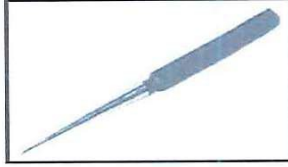
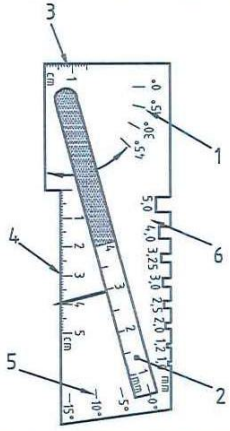
Weld gauge	Description	Type of weld				Measuring range	Reading accuracy	Included or fillet angle	Permissible deviation of included or fillet angle
		Fillet weld			Butt weld				
		Flat weld	Concave weld	Convex weld		mm	mm	degrees	
	**Gauge for checking profile of fillet welds** Checking the profile of one shape for one size of fillet welds. This type of gauge needs one model for each size of fillet weld.	—	—	—	—	—	—	—	—
	**Multi-purpose gauge** Measures angle of bevel, leg length of fillet weld, undercut, misalignment, throat thickness and weld reinforcement.	x	x	x	x	0 to 50	0,3	0 to 45 (angle of bevel)	None
	**Universal weld gauge** Measurement tasks: — fillet welds: shape and dimensions. — butt welds: misalignment of plates, joint preparation (angle width), weld reinforcement, weld width, undercuts.	x	x	x	x	0 to 30	0,1	—	± 25 %
	**Gap gauge** Measures the width of gaps.	—	—	—	x	0 to 6	0,1	—	—

Table A.1 (*continued*)

Weld gauge	Description	Type of weld				Measuring range	Reading accuracy	Included or fillet angle	Permissible deviation of included or fillet angle
		Fillet weld			Butt weld				
		Flat weld	Concave weld	Convex weld		mm	mm	degrees	
	**Hook gauge for misalignment** Measures the misalignment of the preparation for butt welds on plates and pipes.	—	—	—	x	0 to 100	0,05	—	—
	**Universal butt weld gauge** Measures the preparation and the finished butt weld: 1 angle of bevel, 2 width of root gap, 3 weld reinforcement, 4 width of weld surface, 5 depth of undercut, 6 diameter of consumables.	x	x	x	x	0 to 30	0,1	—	± 25 %

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5.8 Definition of Defects

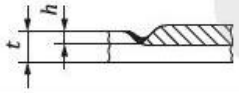
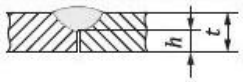
The defects shall be defined as per EN ISO 6520-1

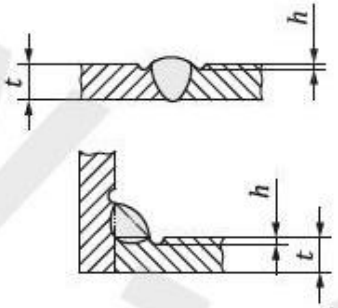
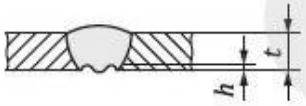
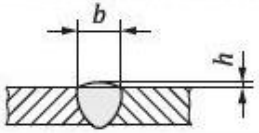
I difetti devono essere definiti secondo la EN ISO 6520-1

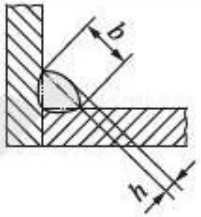
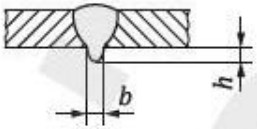
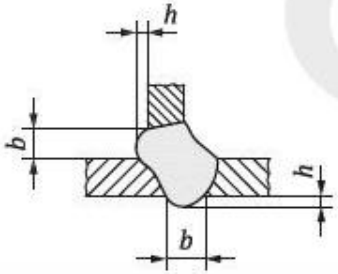
5.9 Acceptance Criteria

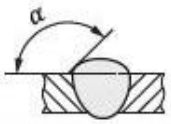
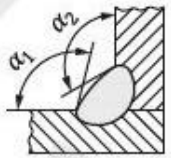
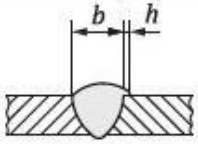
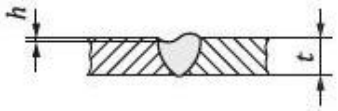
The acceptance criteria are the level C of the EN ISO 5817

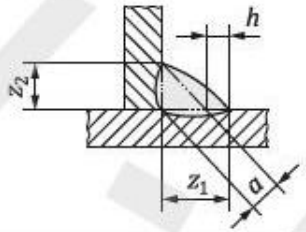
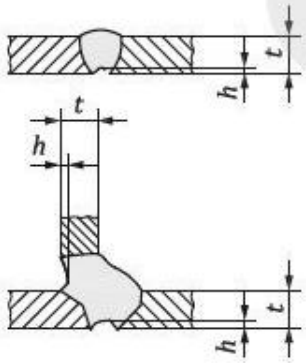
I criteri di accettabilità sono quelli del livello C della EN ISO 5817

No.	Reference to ISO 6520-1	Imperfection designation	Remarks	t mm	Limits for imperfections for quality levels		
					D	C	B
1 Surface imperfections							
1.1	100	Crack		≥ 0,5	Not permitted	Not permitted	Not permitted
1.2	104	Crater crack		≥ 0,5	Not permitted	Not permitted	Not permitted
1.3	2017	Surface pore	Maximum dimension of a single pore for — butt welds — fillet welds	0,5 to 3	 $d \le 0,3\ s$ $d \le 0,3\ a$	Not permitted	Not permitted
			Maximum dimension of a single pore for — butt welds — fillet welds	> 3	 $d \le 0,3\ s$, but max. 3 mm $d \le 0,3\ a$, but max. 3 mm	 $d \le 0,2\ s$, but max. 2 mm $d \le 0,2\ a$, but max. 2 mm	Not permitted
1.4	2025	End crater pipe		0,5 to 3 > 3	$h \le 0,2\ t$ $h \le 0,2\ t$, but max. 2 mm	Not permitted $h \le 0,1\ t$, but max. 1 mm	Not permitted Not permitted
1.5	401	Lack of fusion (incomplete fusion)	—	≥ 0,5	Not permitted	Not permitted	Not permitted
		Micro lack of fusion	Only detectable by micro examination	≥ 0,5	Permitted	Permitted	Not permitted
1.6	4021	Incomplete root penetration	Only for single side butt welds 	≥ 0,5	Short imperfections: $h \le 0,2\ t$ but max. 2 mm	Not permitted	Not permitted

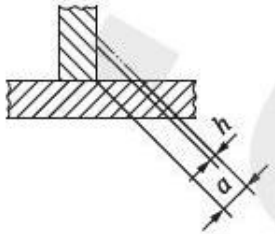
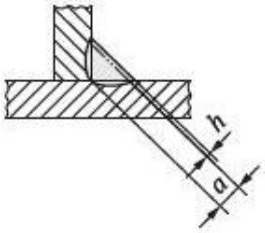
No.	Reference to ISO 6520-1	Imperfection designation	Remarks	t mm	Limits for imperfections for quality levels		
					D	C	B
1.7	5011	Continuous undercut	Smooth transition is required. This is not regarded as a systematic imperfection.	0,5 to 3	Short imperfections: $h \le 0{,}2\ t$	Short imperfections: $h \le 0{,}1\ t$	Not permitted
	5012	Intermittent undercut		> 3	$h \le 0{,}2\ t$, but max. 1 mm	$h \le 0{,}1\ t$, but max. 0,5 mm	$h \le 0{,}05\ t$, but max. 0,5 mm
1.8	5013	Shrinkage groove	Smooth transition is required. 	0,5 to 3	Short imperfections: $h \le 0{,}2$ mm + $0{,}1\ t$	Short imperfections: $h \le 0{,}1\ t$	Not permitted
				> 3	Short imperfections: $h \le 0{,}2\ t$, but max. 2 mm	Short imperfections: $h \le 0{,}1\ t$, but max.1 mm	Short imperfections: $h \le 0{,}05\ t$, but max. 0,5 mm
1.9	502	Excess weld metal (butt weld)	Smooth transition is required. 	≥ 0,5	$h \le 1$ mm + $0{,}25\ b$, but max. 10 mm	$h \le 1$ mm + $0{,}15\ b$, but max. 7 mm	$h \le 1$ mm + $0{,}1\ b$, but max. 5 mm

No.	Reference to ISO 6520-1	Imperfection designation	Remarks	t mm	Limits for imperfections for quality levels		
					D	C	B
1.10	503	Excessive convexity (fillet weld)		≥ 0,5	$h \leq 1$ mm + 0,25 b, but max. 5 mm	$h \leq 1$ mm + 0,15 b, but max. 4 mm	$h \leq 1$ mm + 0,1 b, but max. 3 mm
1.11	504	Excess penetration	 	0,5 to 3 > 3	$h \leq 1$ mm + 0,6 b $h \leq 1$ mm + 1,0 b, but max. 5 mm	$h \leq 1$ mm + 0,3 b $h \leq 1$ mm + 0,6 b, but max. 4 mm	$h \leq 1$ mm + 0,1 b $h \leq 1$ mm + 0,2 b, but max. 3 mm

No.	Reference to ISO 6520-1	Imperfection designation	Remarks	t mm	Limits for imperfections for quality levels D	C	B
1.12	505	Incorrect weld toe	— butt welds 	≥ 0,5	$\alpha \geq 90°$	$\alpha \geq 110°$	$\alpha \geq 150°$
			— fillet welds  $\alpha_1 \geq \alpha$ and $\alpha_2 \geq \alpha$	≥ 0,5	$\alpha \geq 90°$	$\alpha \geq 100°$	$\alpha \geq 110°$
1.13	506	Overlap		≥ 0,5	$h \leq 0,2\ b$	Not permitted	Not permitted
1.14	509	Sagging	Smooth transition is required	0,5 to 3	Short imperfections: $h \leq 0,25\ t$	Short imperfections: $h \leq 0,1\ t$	Not permitted
	511	Incompletely filled groove		> 3	Short imperfections: $h \leq 0,25\ t$, but max. 2 mm	Short imperfections: $h \leq 0,1\ t$, but max. 1 mm	Short imperfections: $h \leq 0,05\ t$, but max. 0,5 mm

No.	Reference to ISO 6520-1	Imperfection designation	Remarks	t mm	Limits for imperfections for quality levels		
					D	C	B
1.15	510	Burn through	—	≥ 0,5	Not permitted	Not permitted	Not permitted
1.16	512	Excessive asymmetry of fillet weld (excessive unequal leg length)	In cases where an asymmetric fillet weld has not been prescribed. 	≥ 0,5	$h \le 2$ mm + 0,2 a	$h \le 2$ mm + 0,15 a	$h \le 1,5$ mm + 0,15 a
1.17	515	Root concavity	Smooth transition is required. 	0,5 to 3 > 3	$h \le 0,2$ mm + 0,1 t Short imperfections: $h \le 0,2\ t$, but max. 2 mm	Short imperfections: $h \le 0,1\ t$ Short imperfections: $h \le 0,1\ t$, but max. 1 mm	Not permitted Short imperfections: $h \le 0,05\ t$, but max. 0,5 mm

FOR REVIEW ONLY

No.	Reference to ISO 6520-1	Imperfection designation	Remarks	t mm	Limits for imperfections for quality levels		
					D	C	B
1.18	516	Root porosity	Spongy formation at the root of a weld due to bubbling of the weld metal at the moment of solidification (e. g. lack of gas backing)	≥ 0,5	Locally permitted	Not permitted	Not permitted
1.19	517	Poor restart	—	≥ 0,5	Permitted The limit depends on the type of imperfection occurred due to restart.	Not permitted	Not permitted
1.20	5213	Insufficient throat thickness	Not applicable to processes with proof of greater depth of penetration 	0,5 to 3 > 3	Short imperfections: $h \le 0{,}2$ mm + 0,1 a Short imperfections: $h \le 0{,}3$ mm + 0,1 a, but max. 2 mm	Short imperfections: $h \le 0{,}2$ mm Short imperfections: $h \le 0{,}3$ mm + 0,1 a, but max. 1 mm	Not permitted Not permitted
1.21	5214	Excessive throat thickness	The actual throat thickness of the fillet weld is too large. 	≥ 0,5	Permitted	$h \le 1$ mm + 0,2 a, but max. 4 mm	$h \le 1$ mm + 0,15 a, but max. 3 mm

VIEW ONLY

No.	Reference to ISO 6520-1	Imperfection designation	Remarks	t mm	Limits for imperfections for quality levels		
					D	C	B
1.22	601	Stray arc	—	≥ 0,5	Permitted, if the properties of the parent metal are not affected.	Not permitted	Not permitted
1.23	602	Spatter	—	≥ 0,5	Acceptance depends on application, e.g. material, corrosion protection	Acceptance depends on application, e.g. material, corrosion protection	Acceptance depends on application, e.g. material, corrosion protection
1.24	610	Temper colour (Discolouration)	—	≥ 0,5	Acceptance depends on application, e.g. material, corrosion protection	Acceptance depends on application, e.g. material, corrosion protection	Acceptance depends on application, e.g. material, corrosion protection

5.10 Defect Removal

All the discontinuities that exceed the standards acceptance criteria have to be removed and/or repaired and re-checked according to this procedure.

Tutte le discontinuità che superano gli standard di accettabilità devono essere rimosse e/o riparate e ricontrollate in accordo a questa procedura.

5.11 Test Report

The report should include at least the following information:

- Name of the Manufacturer
- Name of the Examining Company
- Identification of the tested component
- Material
- Type of Weld Joint
- Material Thickness
- Welding Process
- Acceptance Criteria
- Not Acceptable Indications (if any)
- Extension of the Exam
- Instrumentation used for the test
- Test Result
- Name, qualification and signature of the operator
- Inspection Date

The report shall be issued maximum 24 hours after the end of the inspection.

Il report dovrà includere almeno le seguenti informazioni:

- *Nome del Costruttore*
- *Nome della Società Esaminante*
- *Identificazione del componente testato*
- *Materiale*
- *Tipo di Giunto*
- *Spessore del materiale*
- *Processo di Saldatura*
- *Criteri di Accettabilità*
- *Indicazioni non Accettabili (se presenti)*
- *Estensione dell'esame*
- *Strumentazione Utilizzata*
- *Risultati di Prova*
- *Nome, Qualifica e Firma dell'Operatore*
- *Data di Ispezione*

Il report deve essere redatto al massimo 24 ore dopo il termine dell'ispezione.

5.12 Test Report Sample (Only for reference)

REMAZEL ENGINEERING	RAPPORTO DI CONTROLLO VISIVO SALDATURE (Certificate Visual Control Weldings)	Certificate n°
		DATE / Date
		page 1/1

FORNITORE *Supplier*		**ORDINE** *Order*	
COMMESSA *Job*		**OGGETTO** *Object*	
PROGETTO *Project*		**DISEGNO** *Drawing*	
QCP N° *Qcp N°*		**Fase** *Phase*	

Materiale: *Material:*	
Tipo di giunto: *Type of joint:*	
Spessore del materiale: *Material thickness:*	
Processo di saldatura: *Welding process:*	
Criterio di accettazione: *Acceptance criteria:*	
Mezzi usati: *Examination devices used:*	
Estensione dell'esame con riferimento al disegno: The extent of examination with reference to drawings as appropriate:	
Indicazioni che eccedono i limiti di accettazione: Imperfections exceeding the acceptance criteria and their location:	

RISULTATI / Results	CONFORME / Accepted	☒
	NON CONFORME / Not Accepted	☐
	SCARTO / Rejection	☐

NOTE *(Notes):*

Remazel Engineering	Enti Collaudatori *Inspect.Officials*	Ispettore Cliente *Customer Inspector*	

6 Procedure for Dye Penetrant Check on Welds

6.1 Purpose

This procedure prescribes the minimum requirements to apply during Dye Penetrant examination of welds.

Questa procedura prescrive i requisiti minimi da applicare durante l'esame di saldature con Liquidi Penetranti a contrasto di colore.

6.2 Reference Documents

EN ISO 9712 Non-destructive testing Qualification and certification of NDT personnel
EN ISO 3059 Non-destructive testing - Penetrant testing - Viewing conditions
EN ISO 3452-1 Non-destructive testing - Penetrant testing - Part 1: General principles
EN ISO 3452-2 Non-destructive testing - Penetrant testing - Part 2: Testing of penetrant materials
EN ISO 23277 Non-destructive testing of welds - Penetrant testing - Acceptance levels

6.3 Extension of Test

The minimum extent of inspection is defined per production drawings, the inspection shall be performed as per extent drawings indications.

La minima estensione dell'esame deve essere in accordo ai disegni del progetto, l'ispezione deve essere eseguita in accordo all'estensione indicata a disegno.

6.4 Personnel Qualification

Operators shall be qualified according to EN ISO 9712 level II or III. NDT operators shall have Acuity test certificate, not older than one year, attesting that minimum requirements for `Near vision' and `Colour Vision' according to EN ISO 9712 Clause 7 are fulfilled.

Tutto il personale che effettua il controllo accordo a questa procedura dovrà essere qualificato in accordo ai livelli II o III della EN ISO 9712. Gli operatori NDT devono avere la certificazione di acuità visiva, non più vecchia di un anno, attestante i requisiti minimi di vista da vicino e distinzione colori, in accordo alla EN ISO 9712 Clausola 7.

6.5 Inspection time

The inspection shall be performed 48 hours after the complete welding cooling down, in case of PWHT the NDE shall be performed at the end of the heat treatment.

I controlli andranno eseguiti 48 ore dopo il completo raffreddamento delle saldature, in caso di PWHT i controlli NDE devono essere eseguiti al termine del trattamento termico.

6.6 Inspection Temperature

The temperature of the materials, of the ambient and of the surface to be examined shall be between 10°C and 50°C.

La temperatura dei materiali, dell'ambiente e della superficie da esaminare deve essere compresa tra 10°C e 50°C.

6.7 Inspection Condition

For colour contrast method the surface shall be illuminated with an intensity of minimum 1000 Lux.
For fluorescent method the surface shall be illuminated with an intensity of maximum 20 Lux while the intensity of the UV-A irradiation on the surface shall be minimum 1000 µW/cm^2.
Lightning intensity and UV-A irradiation shall be checked with a calibrated lux meter or radiometer.

Per il metodo a contrasto di colore la superfice deve essere illuminata con un'intensità minima di 1000 Lux.
Per il metodo fluorescente la superfice deve essere illuminata con un'intensità massima di 20 Lux mentre l'intensità dell'irradiazione UV-A deve essere minimo di 1000 µW/cm^2.
L'intensità dell'illuminazione e l'irradiazione UV-A devono essere controllate con un luxometro o un radiometro calibrati.

6.8 Surfaces preparation

The surface under examination can be machined, grinded, brushed or as welded.
The surface to be examined with dye penetrant and the adjacent zone for at least 10mm shall be dry and free from dust, grease, scale, oil, weld spatter or any other substance that could interfere with the examination.
After cleaning, the area under examination shall be dried by normal evaporation for at least 5 minutes, before the application of the penetrant.
Surfaces under examination have to be cleaned by solvent.

La superficie in esame può essere lavorata di macchina, molata, spazzolata, o come saldata.
La superfice da esaminare con liquidi penetranti e la zona ad essa adiacente per almeno 10mm deve essere asciutta e libera da polvere, grasso, incrostazioni, olio, spruzzi di saldatura o ogni altra sostanza estranea che possa interferire con l'esame.
Si dovrà utilizzare solvente per pulire le superfici da esaminare.
Dopo la pulizia delle superfici, l'area da esaminare dovrà essere asciugata per normale evaporazione per un periodo non inferiore a 5 minuti, prima dell'applicazione del penetrante.

6.9 Penetrant Materials

With the term penetrant material we refer to all the penetrant, solvents, cleaning and development agents used in the examination process.
Color contrast or fluorescent (for welds can be used only after flushing) water washable dye penetrant shall be used, as per EN ISO 3452-1 Table 1, penetrant shall be type « III » and developer type shall be « form e ».
The penetrant materials have to be selected from the same supplier and they shall belong to the same type for every examination.
It is not permitted to mix the type of penetrant products.
The penetrant materials shall not contain mercury or halogens over the 200 ppm, the Sulphur shall not exceed the 200 ppm, every other element with low melting point shall not exceed the 100 ppm.
Material shall be certified according to international recognized standards.
The product manufacturer used for the test shall be:

- CGM
- NDT Elite
- Equivalent

Con il termine materiali penetranti si intendono tutti i penetranti, solventi, agenti di pulizia e di rilevazione usati nel processo in esame.

Dovranno essere utilizzati liquidi penetranti a contrasto di colore o fluorescenti (per le saldature possono essere utilizzati solo dopo lisciatura) lavabili in acqua, come da EN ISO 3452-1 Table 1, il penetrante deve essere di tipo « III » e lo sviluppatore di forma « e ».
I materiali penetranti dovranno essere selezionati dallo stesso produttore e devono appartenere alla stessa famiglia.
Non è permesso mescolare le famiglie di penetranti.
I materiali penetranti non dovranno contenere mercurio o alogeni oltre le 200 ppm, lo zolfo non dovrà eccedere le 200 ppm, ogni altro elemento a basso punto di fusione non dovrà eccedere le 100 ppm.
Il materiale dovrà essere certificato in accordo a standard riconosciuti a livello internazionale.
I produttori di prodotti per l'esecuzione dei controlli sono:

- *CGM*
- *NDT Elite*
- *Equivalenti*

6.10 Penetrant Application

The penetrant can be applied by brush, by roll, by spray or by immersion.

Il penetrante può essere applicato a pennello, a rullo, a spruzzo o per immersione.

6.11 Dwell Time

The penetrant shall remain on the surface under examination in a time interval between 10 to 30 minutes. Care shall be taken when the surface under examination exceed the 30°, in this case the penetrant shall be frequently monitored and if necessary revived to avoid drying

Il penetrante dovrà rimanere sulla superficie in esame per un tempo compreso tra 10 e 30 minuti.
Si dovrà prestare attenzione quando la temperatura della superfice eccede i 30°, in questo caso il penetrante deve essere frequentemente monitorato e se necessario ravvivato per evitare l'essicazione.

6.12 Excess Penetrant Removal

After dwell time, the excess of penetrant shall be removed by spray water taking care to avoid mechanical removal of penetrant from discontinuity.
The water pressure shall not exceed 3.4 Bar (50 PSI), and the water temperature shall not exceed 43°C.
A proper washing is obtained when visible traces of penetrant are not evident.

Dopo il tempo di penetrazione il penetrante andrà rimosso con spruzzi d'acqua evitando la rimozione meccanica del penetrante dalle discontinuità.
La pressione dell'acqua non deve eccedere i 3.4 Bar (50 PSI)*, la temperatura dell'acqua non deve eccedere i 43°C.*
Un lavaggio adeguato è ottenuto quanto non vi sono più tracce visibili di penetrante.

6.13 Drying

For the water washable penetrant liquids, the drying of the surfaces can be made by clean rags or using low pressure air, provided the temperature of the surface is not raised above 50°C
The drying shall be performed at maximum 10 minutes.

Per i liquidi penetranti lavabili in acqua, l'asciugatura della superficie può essere fatta utilizzando stracci puliti o utilizzando aria a bassa pressione, assicurandoci che la superfice non ecceda i 50°C.
L'asciugatura deve essere eseguita in un intervallo di tempo non più lungo di 10 minuti.

6.14 Developing Time

The examination of the surface will be performed after developing time (10 to 30 minutes) after the complete drying of the developer.
To help the final interpretation, the surface under examination shall be kept under observation during the developing period to monitor the nature of the indications.

L'esame della superficie sarà eseguito dopo aver atteso la fuoriuscita del penetrante da 10 a 0 minuti dopo la completa asciugatura dello sviluppatore.
Per aiutare l'interpretazione finale, la superficie in esame sarà tenuta sotto osservazione durante lo sviluppo per monitorare la natura delle indicazioni.

6.15 Evaluation of Indications

Discontinuities of the surface will be indicated from the bleeding of penetrant; however, local imperfections of the surface, can produce false indications not related to not acceptable discontinuities.
In case of doubtful indications, upon agreement between the parts, the surface can be grinded to level the surface, the test shall be repeated.
False indications and wide areas of pigmentation, that could hide indications, are not acceptable.
These areas have to be smoothly grinded, other method for the removal of the defects shall be authorized by the client.
After cleaning, the surfaces shall be re-examined.
The real indications are the ones produced by mechanical discontinuities.
Linear indications are those which the length is greater than three times the width.
Round indications are those with the length less than three times the width.
The dimension of the indications (and not the type of discontinuity) it is the criteria for the rejection of the component under examination.

Le discontinuità della superficie saranno indicate dalla fuoriuscita di penetrante; comunque, imperfezioni locali della superficie, possono produrre false indicazioni non relative a discontinuità non accettabili.
In caso di indicazioni dubbie, in accordo con le parti, la superfice dovrà essere raccordata in modo da uniformare la superficie, il test dovrà essere ripetuto.
Le false indicazioni ed ampie aree di pigmentazione, che potrebbero mascherare indicazioni, non sono accettabili.
Tali aree dovranno essere uniformate tramite molatura, altri metodi per la rimozione dovranno essere autorizzati dal cliente.
Dopo la pulizia le superfici andranno ri-esaminate.
Le indicazioni utili sono quelle prodotte da discontinuità meccaniche.
Le indicazioni lineari sono quelle in cui la lunghezza è maggiore di 3 volte la larghezza.
Le indicazioni tondeggianti sono quelle con la lunghezza inferiore a tre volte la larghezza.
La dimensione delle indicazioni (e non il tipo di discontinuità) è la base per l'accettabilità del componente in esame.

6.16 Acceptance Criteria

The acceptance criteria are ones for the level 1 of the EN ISO 23277.

I criteri di accettabilità sono quelli del livello 1 della EN ISO 23277

Tipi di indicazione	Livelli di accettabilità[a]		
	1	2	3
Indicazione lineare l = Lunghezza dell'indicazione	$l \leq 2$	$l \leq 4$	$l \leq 8$
Indicazione non lineare d = Dimensione dell'asse principale	$d \leq 4$	$d \leq 6$	$d \leq 8$

a) I livelli di accettabilità 2 e 3 possono essere specificati con un suffisso, "X", che denota che tutte le indicazioni lineari rilevate devono essere valutate al livello 1. Tuttavia, la probabilità di rilevamento di indicazioni più piccole di quelle denotate dal livello di accettabilità originario può essere bassa.

6.17 Defect Removal

All the discontinuities that exceed the standards acceptance criteria have to be removed and/or repaired and re-checked according to this procedure.

Tutte le discontinuità che superano gli standard di accettabilità devono essere rimosse e/o riparate e ricontrollate in accordo a questa procedura.

6.18 Test Report

The report should include at least the following information:

- Name of the Manufacturer
- Name of the Examining Company
- Identification of the tested component
- Material
- Type of Weld Joint
- Material Thickness
- Welding Process
- Acceptance Criteria
- Not Acceptable Indications (if any)
- Extension of the Exam
- Instrumentation used for the test
- Test Result
- Name, qualification and signature of the operator
- Inspection Date

The report shall be issued maximum 24 hours after the end of the inspection.

Il report dovrà includere almeno le seguenti informazioni:

- *Nome del Costruttore*
- *Nome della Società Esaminante*
- *Identificazione del componente testato*
- *Materiale*
- *Tipo di Giunto*
- *Spessore del materiale*
- *Processo di Saldatura*
- *Criteri di Accettabilità*
- *Indicazioni non Accettabili (se presenti)*
- *Estensione dell'esame*
- *Strumentazione Utilizzata*

- *Risultati di Prova*
- *Nome, Qualifica e Firma dell'Operatore*
- *Data di Ispezione*

Il report deve essere redatto al massimo 24 ore dopo il termine dell'ispezione.

6.19 Test Report Sample (Only for reference)

REMAZEL

RAPPORTO DI CONTROLLO LIQUIDI PENETRANTI

PENETRANT TEST REPORT

N°
DATA
Date
FOGLIO
Sheet

DATI GENERALI general data

CLIENTE / Client	LUOGO / Place	COMMESSA / Job	
DESCRIZIONE ESAME / Test Details		ORD / order	Q.TA' / Q.ty
DOC. DI RIFERIMENTO / Reference Documents		ACCETTABILITA' / Acceptance Criteria	
COSTRUTTORE / Manufacturer		ENTE DI COLLAUDO / Inspecting Authority	-

COMPONENTE ESAMINATO examined part

NUMERO DI FABBRICA / Serial Number	COLATA / Heat N.	MATERIALE / Material	DIS. / Dwg

ESECUZIONE DEL TEST / Test Carried Out: ☐ PRIMA PWHT / Before PWHT ☐ DOPO HT / After HT ☐ PRIMA PROVA IDRAULICA / Before Hydraulic Test ☐ DOPO PROVA IDRAULICA / After Hydraulic Test

SUPERFICIE / Surface: ☐ LAMINATA / As Rolled ☐ GREZZA / Rough ☐ MOLATA / Ground ☐ SABBIATA / Sand Blasted ☐ LAVORATA DI MACCHINA / Machined

SOVRAMETALLO SALDATURA / Welding Reinforcement: ☐ COME SALDATO / As Welded ☐ LAVORATO DI MACCHINA / Machined ☐ MOLATO / Ground ☐ RACCORDATO / Blended

TECNICA Tecnique

LIQUIDO PENETRANTE: ELITE K71B2 / Penetrant: ☐ ROSSO A CONTRASTO DI COLORE / Red, colour contrast ☐ GIALLO FLUORESCENTE / Yellow fluorescent ☐ POST EMULSIONABILE / Post emulsionable

RIMOZIONE PENETRANTE / Penetrant removal: ☐ ACQUA / Water ☐ SOLVENTE / Solvent

SVILUPPATORE: ELITE D 112A / Developper: ☐ ACQUOSO / Watery ☐ NON ACQUOSO / Dry

TEMPO DI PENETRAZIONE / Penetration time

TEMPO DI SVILUPPO / Developing time

CONDIZIONI DI ILLUMINAMENTO / Lighting conditions: ☐ LUCE NERA / Black light ☐ LUCE BIANCA / Light ☐ NATURALE / Natural ☐ ARTIFICIALE / Artificial

INDICAZIONI DA REGISTRARE Indications to be Recorded

COMPONENTE / Item	NOTE / Remarks

NOTE Remarks

☐ RISULTATI CONFORMI AI REQUISITI / Results Conforming to the Specified Requirements

☐ RISULTATI NON CONFORMI AI REQUISITI / Results Not Conforming to the Specified Requirements

DATA / Date	LUOGO / Place	OPERATORI / Operators	Oprandi Matteo
II LEVEL	CLIENTE Customer	ENTE DI COLLAUDO Inspecting Authority	

6.20 Instruction for Safety

The penetrant liquids are not toxic however they can cause cutaneous irritations therefore:
Use the protection gloves having care to hold them clean inside.
Use for all the time the protective mask.
Wash the hands and the gloves with care at the end of the job.
Is recommended the use of protective glasses (UVEX) during the job.

Spray cans contain FREON 12 so:
Protect from sunlight.
Don’t expose to a temperature higher than 50° C.
Don’t pierce or burn after the use.
Don’t spray on flames or on incandescent bodies.
Don’t inhale or spray in the eyes.
Bring away from the job place at the end of shift.

I liquidi penetranti non sono tossici ma possono causare irritazioni cutanee.
Si raccomanda di:
Usare i guanti di protezione avendo cura di tenerli puliti all'interno;
Usare per tutta la durata del lavoro la maschera protettiva;
Lavare con cura le mani ed i guanti a fine lavoro;
L'uso di occhiali protettivi (UVEX) durante il lavoro.

Le bombolette spray contengono FREON 12 quindi:
Proteggere dai raggi solari.
Non esporre a temperature superiori a 50° C.
Non forare o bruciare dopo l'uso.
Non spruzzare su fiamme o su corpi incandescenti.
Non inalare o spruzzare negli occhi.
Portare via dal posto di lavoro a fine turno.

7 Procedure for Magnetic Test on Welds

7.1 Purpose

This procedure prescribes the minimum requirements to apply during Magnetic Particles Test examination of welds (ferromagnetic materials).

Questa procedura prescrive i requisiti minimi da applicare durante l'esame con Particelle Magnetiche su saldature (materiale ferromagnetico).

7.2 Reference Documents

EN ISO 9712 Non-destructive testing Qualification and certification of NDT personnel
EN ISO 3059 Non-destructive testing - Magnetic testing - Viewing conditions
EN ISO 9934-3 Non-destructive testing - Magnetic particle testing - Part 3: Equipment
EN ISO 17638 Non-destructive testing of welds - Magnetic particle testing
EN ISO 23278 Non-destructive testing of welds - Magnetic particle testing - Acceptance levels

7.3 Extension of Test

The minimum extent of inspection is defined per production drawings, the inspection shall be performed as per extent drawings indications.

La minima estensione dell'esame deve essere in accordo ai disegni di progetto, l'ispezione deve essere eseguita in accordo all'estensione indicata a disegno.

7.4 Personnel Qualification

Operators shall be qualified according to EN ISO 9712 level II or III. NDT operators shall have Acuity test certificate, not older than one year, attesting that minimum requirements for `Near vision' and `Colour Vision' according to EN ISO 9712 Clause 7 are fulfilled.

Tutto il personale che effettua il controllo accordo a questa procedura dovrà essere qualificato in accordo ai livelli II o III della EN ISO 9712. Gli operatori NDT devono avere la certificazione di acuità visiva, non più vecchia di un anno, attestante i requisiti minimi di vista da vicino e distinzione colori, in accordo alla EN ISO 9712 Clausola 7.

7.5 Inspection time

The inspection shall be performed 48 hours after the complete welding cooling down, in case of PWHT the NDE shall be performed at the end of the heat treatment.

I controlli andranno eseguiti 48 ore dopo il completo raffreddamento delle saldature, in caso di PWHT i controlli NDE devono essere eseguiti al termine del trattamento termico.

7.6 Instruments

Alternate current yoke shall be used.
Yoke shall be endowed by jointed poles to test T-joint.
Equipment used shall be conforming according to EN ISO 9934-3 specification.
Equipment shall be calibrated every year and every time it is damaged or when it is considered necessary.
Calibration procedure foresees the lifting of a calibration block of 4.5 kg weight in alternating current.
The magnetizing power of yokes shall be verified prior to use each day the yoke is used. Each alternating current electromagnetic yoke shall have a lifting power of at least 4.5 kg at the maximum pole spacing, with

contact similar to what will be used during the examination. Lifting test shall be repeated every time it is required by Company Inspector.
The following equipment can be used:

- Yoke PARKER.
- Yoke NDT ELITE.
- Yoke KARL DEUTSCH.
- Equivalent instruments

Deve essere utilizzato un gioco magnetico con corrente alternata.
Il giogo deve essere dotato di poli snodabili per il controllo su giunti a "T".
Le apparecchiature devono essere conformi alla specifica EN ISO 9934-3
Le apparecchiature devono essere tarate ogni anno e ogni qualvolta subiscano un danneggiamento o quando fattori obiettivi lo rendano necessario.
La procedura di taratura prevede il sollevamento di un blocco campione del peso di 4.5 kg in corrente alternata.
La forza di magnetizzazione del giogo deve essere verificata prima di ogni utilizzo. Il giogo in corrente alternata deve essere verificato sollevando un peso di 4.5Kg con i puntali al massimo dell'estensione con una superficie di contatto simile a quella che verrà utilizzata nel corso dell'ispezione. La prova di sollevamento deve essere eseguita ogni volta che l'Ispettore del cliente lo richiede.
Possono essere impiegate le seguenti apparecchiature:

- *Giogo PARKER corrente alternata o continua.*
- *Giogo NDT ELITE corrente alternata o continua.*
- *Giogo KARL DEUTSCH corrente alternata o continua.*
- *Equivalenti.*

7.7 Examination Medium

Colour contrast or fluorescent (for welds can be used only after flushing) magnetic particles in suspension shall be used.
The magnetic particles supplied in spray cans shall be used.
Spray cans content concentration shall not be subjected to check.
Magnetic particles shall have high permeability, low retentively and such dimension to allow a high mobility on surface.
Magnetic particles to be used can be supplied by:

- CGM
- NDT Elite
- Equivalent suppliers

The temperatures of use are supplied directly by the manufacturer.

Saranno utilizzate particelle magnetiche a contrasto di colore o fluorescenti (per le saldature possono essere utilizzati solo dopo lisciatura) in sospensione.
Le particelle magnetiche da utilizzare dovranno essere soluzioni già preparate in bombolette spray.
Nell'utilizzo di bombolette spray, non è richiesto il controllo della concentrazione.
Le particelle magnetiche da utilizzare devono avere elevata permeabilità, bassa retentività e dimensioni tali da consentire un'elevata mobilità sulla superficie.
Le particelle magnetiche da utilizzare possono essere:

- *CGM*
- *NDT Elite*
- *Equivalenti*

Le temperature di utilizzo sono fornite direttamente dal produttore.

7.8 Lighting Condition

For colour contrast method the surface shall be illuminated with an intensity of minimum 1000 Lux.
For fluorescent method the surface shall be illuminated with an intensity of maximum 20 Lux while the intensity of the UV-A irradiation on the surface shall be minimum 1000 µW/cm^2.
Lightning intensity and UV-A irradiation shall be checked with a calibrated lux meter or radiometer.
Examiners shall be in a darkened area for at least 5 min prior to performing examinations to enable their eyes to adapt to dark viewing. Glasses or lenses worn by examiners shall not be photosensitive.

Per il metodo a contrasto di colore la superfice deve essere illuminata con un'intensità minima di 1000 Lux.
Per il metodo fluorescente la superfice deve essere illuminata con un'intensità massima di 20 Lux mentre l'intensità dell'irradiazione UV-A deve essere minimo di 1000 µW/cm^2.
L'intensità dell'illuminazione e l'irradiazione UV-A devono essere controllate con un luxometro o un radiometro calibrati.
L'esaminatore, prima di eseguire l'ispezione, deve rimanere in un'area buia per almeno 5 minuti prima dell'ispezione per adattare la vista agli ambienti bui. Occhiali o lenti indossate dagli esaminatori non devono essere fotosensibili.

7.9 Surfaces preparation

The surface under examination can be machined, grinded, brushed or as welded.
The surface to be examined with dye penetrant and the adjacent zone for at least 10mm shall be dry and free from dust, grease, scale, oil, weld spatter or any other substance that could interfere with the examination.

La superficie in esame può essere lavorata di macchina, molata, spazzolata, o come saldata.
La superfice da esaminare con liquidi penetranti e la zona ad essa adiacente per almeno 10mm deve essere asciutta e libera da polvere, grasso, incrostazioni, olio, spruzzi di saldatura o ogni altra sostanza estranea che possa interferire con l'esame.

7.10 Magnetization

Before starting the exam, is necessary to check the strength and direction of the magnetic field through a field indicator, in accordance with EN ISO 9934-3.
The test will be performed with the continuous method.
This provides that the magnetization is kept active during the application of the magnetic particles, during the removal of particles in excess and for the examination of the surface.
Each area will be examined at least twice.
During the second test, the flux lines of the magnetic field generated, have to be perpendicular to those obtained with the first control.
The examination shall be conducted following the techniques described in EN ISO 17638.
The temperatures within which the products are used, are defined by the manufacturer of the same.
The application of the particles shall be carried out by spray.
The entire area between two poles must be covered by the application of the magnetic liquid.
The removal of excess particles in the wet method, will be helped by the action of fluid drainage of the suspension.
The maximum distance between the poles of the yoke shall be the one verified with the calibration block.
For tests carried out according to this procedure, demagnetization is not necessary.

Prima di iniziare l'esame, è necessario verificare l'intensità e la direzione del campo magnetico mediante un apposito indicatore di campo, in accordo alla EN ISO 9934-3.
Il test sarà eseguito con il metodo continuo.

Questo prevede che la magnetizzazione sia tenuta attiva durante l'applicazione delle particelle magnetiche, durante la rimozione delle particelle in eccesso e durante l'esame della superficie.
Ogni area sarà esaminata almeno due volte, durante il secondo esame, le linee di flusso del campo magnetico generato, dovranno essere perpendicolari a quelle ottenute nel primo controllo.
L'esame sarà condotto seguendo le tecniche descritte nella EN ISO 17638.
Le temperature entro il quale i prodotti possono essere utilizzati, sono definite dal produttore degli stessi.
L'applicazione delle particelle deve essere spray.
L'intera area compresa tra in due poli deve essere coperta dall'applicazione del liquido magnetico.
La rimozione delle particelle in eccesso nel controllo in umido, sarà favorita dall'azione di drenaggio del fluido della sospensione.
La massima distanza tra i poli deve essere quella verificata con il blocco campione.
Per controlli effettuati secondo questa procedura, non è necessaria la smagnetizzazione.

7.11 Evaluation of Indications

Definitions:

- False indication: an indication is caused by a process error or technique, such as a poor cleaning, etc.
  Any surface discontinuity that may cause false indications shall be smoothly grind.
  In the presence of false indications, the test shall be re-executed after the removal and cleaning actions.
- Non relevant indication: is an indication that it is due to an accumulation of magnetic particles which is not caused by a significant discontinuity.
  Non relevant indications may be caused by geometric variations, machining etc.
- Linear indication: is an indication in which the length / width ratio is greater than 3.
- Round indication: is an indication in which the length / width ratio is lower than 3.

Definizioni:

- *Falsa indicazione: è un'indicazione causata da un errore di processo o di tecnica, come ad esempio una cattiva pulizia.*
  Eventuali disomogeneità che possono causare false indicazioni dovranno essere raccordate.
  In presenza di false indicazioni, il test deve essere rieseguito dopo le azioni di rimozione e pulizia.
- *Indicazione non rilevante: è un'indicazione che è causa di un accumulo di particelle magnetiche non provocato da una discontinuità significativa.*
  Le indicazioni non rilevanti possono essere causate da variazioni geometriche, lavorazioni di macchina ecc.
- *Indicazione lineare: è un'indicazione in cui il rapporto lunghezza / larghezza è maggiore di 3.*
- *Indicazione tondeggiante: è un'indicazione in cui il rapporto lunghezza / larghezza è minore di 3.*

7.12 Acceptance criteria

The acceptance criteria are the level 2 of the EN ISO 23278.
I criteri di accettabilità sono quelli del livello 2 della EN ISO 23278.

Dimensions in millimetres

Type of indication	Acceptance level[a]		
	1	2	3
Linear indication l = length of indication	$l \leqslant 1{,}5$	$l \leqslant 3$	$l \leqslant 6$
Non-linear indication d = major axis dimension	$d \leqslant 2$	$d \leqslant 3$	$d \leqslant 4$

[a] Acceptance levels 2 and 3 may be specified with a suffix "X", which denotes that all linear indications detected shall be assessed to level 1. However, the probability of detection of indications smaller than those denoted by the original acceptance level can be low.

7.13 Defect Removal

All the discontinuities that exceed the standards acceptance criteria have to be removed and/or repaired and re-checked according to this procedure.

Tutte le discontinuità che superano gli standard di accettabilità devono essere rimosse e/o riparate e ricontrollate in accordo a questa procedura.

7.14 Test report

The report should include at least the following information:

- Name of the Manufacturer
- Name of the Examining Company
- Identification of the tested component
- Material
- Type of Weld Joint
- Material Thickness
- Welding Process
- Acceptance Criteria
- Not Acceptable Indications (if any)
- Extension of the Exam
- Instrumentation used for the test
- Test Result
- Name, qualification and signature of the operator
- Inspection Date

The report shall be issued maximum 24 hours after the end of the inspection.

Il report dovrà includere almeno le seguenti informazioni:

- *Nome del Costruttore*
- *Nome della Società Esaminante*
- *Identificazione del componente testato*
- *Materiale*
- *Tipo di Giunto*
- *Spessore del materiale*
- *Processo di Saldatura*
- *Criteri di Accettabilità*
- *Indicazioni non Accettabili (se presenti)*
- *Estensione dell'esame*

- *Strumentazione Utilizzata*
- *Risultati di Prova*
- *Nome, Qualifica e Firma dell'Operatore*
- *Data di Ispezione*

Il report deve essere redatto al massimo 24 ore dopo il termine dell'ispezione.

7.15 Test report Sample (Only for reference)

REMAZEL ENGINEERING	SISTEMA QUALITA' *QUALITY SYSTEM* RAPPORTO DI ESAME MAGNETOSCOPICO *Magnetoscopic test report*	REM N° COMM. *Job* DATA *Date*

CLIENTE *Customer*	**ORDINE** *Order* **DEL** *Of*		**COMM. CLIENTE** *Customer's job*
OGGETTO *Subject*	**DISEGNO RIF.** *Ref. Drw*		**QUANTITA'** *Quantity*
Stato di controllo *Testing status*	☐ **Preliminare** *Preliminary*	☐ **Finale REMAZEL** *Final REMAZEL*	☐ **Finale ufficiale** *Final official*
Condizioni superficiali *Surface conditions*	☐ **Sabbiate** *Sandblasted*	☐ **Lavoraz. meccanica** *Machined*	☐ **Come saldato** *As Welded*
Specifica *Specification*			
Limiti di accettazione *Acceptance standars*			
Metodo *Method*	☐ **Puntali** *Pods*	☐ **Giogo** *Yoke*	☐ **Bobina** *Coil*
Polvere *Powder*	☐ **Secco** *Dry*	☐ **Umido** *Wet*	☐ **Fluorescente** *Fluorescent*
Tipo di polvere *Type of powder*	☐ **Grigia** *Grey*	☐ **Blu** *Blue*	☐ **Nera** *black*
Sospensione *Suspension*	☐ **In olio** *In oil*	☐ **In acqua** *In water*	☐ **KEROSENOIL**
Magnetizzazione *Magnetization*	**Corrente** *Current* -	**Intensità** *Intensity*	**Distanza** *Distance*
	Amperspira *Ampere turns* /	**Flusso magnetico** *Magnetic flux* /	**Diametro** *Diameter mm* /
Apparecchiatura *Apparatus*	**Costruttore** *Manufacture*	**Tipo** *Type*	**Matricola** *Serial*
Pulitura *Cleaning method*			
Smagnetizzazione *Demagnetization*	/		
Risultati *Results*	☐ **Conforme** *According to*	☐ **Non conforme** *Not according to*	☐ **Scarto** *Rejection*
Note *Remarks*			

Operatore *Operator*	**Enti collaudatori** *Inspect. officials*	**Ispettore cliente** *Customer inspect.*	**Capo collaudo** *Inspect. Dept. manager*

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7.16 Safety Instruction

The magnetic particles are not toxic however they can cause cutaneous irritations therefore:
Use the protection gloves having care to hold them clean inside.
Use for all the time the protective mask.
Wash the hands and the gloves with care at the end of the job.
Is recommended the use of protective glasses (UVEX) during the job.

Spray cans contain FREON 12 so:
Protect from sunlight.
Don’t expose to a temperature higher than 50° C.
Don’t pierce or burn after the use.
Don’t spray on flames or on incandescent bodies.
Don’t inhale or spray in the eyes.
Bring away from the job place at the end of shift.

Le particelle magnetiche non sono tossiche ma possono causare irritazioni cutanee.
Si raccomanda di:
Usare i guanti di protezione avendo cura di tenerli puliti all'interno;
Usare per tutta la durata del lavoro la maschera protettiva;
Lavare con cura le mani ed i guanti a fine lavoro;
L'uso di occhiali protettivi (UVEX) durante il lavoro.

Le bombolette spray contengono FREON 12 quindi:
Proteggere dai raggi solari.
Non esporre a temperature superiori a 50° C.
Non forare o bruciare dopo l'uso.
Non spruzzare su fiamme o su corpi incandescenti.
Non inalare o spruzzare negli occhi.
Portare via dal posto di lavoro a fine turno.

8 Procedure for Ultrasonic Check on Welds

8.1 Purpose

This procedure prescribes the minimum requirements to apply during Ultrasonic Test examination of welded joint in carbon steel or low-alloy steel.

Questa procedura prescrive i requisiti minimi da applicare durante l'esame con Ultrasuoni di giunti saldati in acciaio basso legato o al carbonio.

8.2 Reference Documents

UNI EN ISO 9712 Non-destructive Testing Qualification and Certification of NDT Personnel
EN ISO 17640 Non-destructive testing of welds - Ultrasonic testing - Techniques, testing levels, and assessment
EN ISO 16811 Non-destructive testing - Ultrasonic testing - Sensitivity and range setting
EN 12668-1 Characterization and verification of ultrasonic examination Equipment - Part 1: Instruments
EN 12668-2 Characterization and verification of ultrasonic examination equipment - Part 2: Probes
EN ISO 11666 Non-destructive Testing of Welds - Ultrasonic testing - Acceptance Levels
EN ISO 23279 Non-destructive Testing of Welds - Ultrasonic testing – Charaterization of discontinuities in welds

8.3 Extension Of Test

The minimum extent of inspection is defined per production drawings, the inspection shall be performed as per extent drawings indications.

La minima estensione dell'esame deve essere in accordo ai disegni di produzione, l'ispezione deve essere eseguita in accordo all'estensione indicata a disegno.

8.4 Personnel Qualification

Operators shall be qualified according to EN ISO 9712 level II or III. NDT operators shall have Acuity test certificate, not older than one year, attesting that minimum requirements for `Near vision' and `Colour Vision' according to EN ISO 9712 Clause 7 are fulfilled.

Tutto il personale che effettua il controllo accordo a questa procedura dovrà essere qualificato in accordo ai livelli II o III della EN ISO 9712. Gli operatori NDT devono avere la certificazione di acuità visiva, non più vecchia di un anno, attestante i requisiti minimi di vista da vicino e distinzione colori, in accordo alla EN ISO 9712 Clausola 7.

8.5 Inspection time

The inspection shall be performed 48 hours after the complete welding cooling down, in case of PWHT the NDE shall be performed at the end of the heat treatment.

I controlli andranno eseguiti 48 ore dopo il completo raffreddamento delle saldature, in caso di PWHT i controlli NDE devono essere eseguiti al termine del trattamento termico.

8.6 Surfaces Preparation

Scanned areas shall be free of loose dirt, scale, weld spatter and any surface irregularities which can interfere with the exam.

Scanned areas can be machined, ground, brushed or sandblasted.
The surface roughness shall be such that allow a good ultrasonic waves transmission and free movement of transducer.

Le superfici interessate dalla scansione devono essere libere da sporcizia, scaglie, spruzzi di saldatura e qualsiasi irregolarità superficiale che possa interferire con l'esame.
Le superfici interessate dalla scansione possono essere lavorate di macchina, molate, spazzolate o sabbiate.
La rugosità superficiale deve essere tale da consentire una buona trasmissione degli ultrasuoni e il libero movimento del trasduttore.

8.7 Equipment

A pulse-echo type of ultrasonic instrument shall be used. The instrument shall be capable of operation at frequencies over the range of at least 1 MHz to 5 MHz.
The instrument and the probes have to meet the requirements of the EN 12668.
A nominal 2 MHz or 4 MHz beam will be used.
Other frequencies may be used if desirable for better resolution, penetrability, or detectability of flaws.
Transducer to be used are in following table.
In case of using an angle beam, it's necessary verify the angle and the emission point with calibration block V1 or V2.
The equipment (also calibration blocks) shall conform to EN 12668.
The probe shall conform to EN 12668.

L'apparecchiatura sarà del tipo impulso-eco con frequenza d'eccitazione compresa tra 1 MHz e 5 MHz.
Lo strumento e le sonde devono rispettare i requisiti della EN 12668.
Verranno utilizzati trasduttori aventi frequenza pari a 2 MHz o 4 MHz.
E' comunque consentito l'uso di altre frequenza per ottenere un miglioramento di risoluzione, penetrabilità o rilevabilità dei difetti.
È necessario utilizzare i blocchi tipo V1 e V2 per la verifica del trasduttore utilizzato.
Ogni apparecchio (anche i blocchi di calibrazione) impiegato deve essere conforme ai requisiti della norma EN 12668.
Ogni trasduttore impiegato deve essere conforme ai requisiti della norma EN 12668.

8.8 Couplant

A coupling consisting of oil, glycerine, water-based paste, water-based cellulose paste or specific gel couplant will be interposed between the transducer and the test material. The same coupling shall be used for calibration and examination.
Redidues of couplant shall be removed after the completion of the inspection in order to avoid to affect the further operations

Tra il trasduttore e il materiale in esame, sarà interposto un mezzo di accoppiamento costituito da olio, glicerina, pasta a base di acqua, colla per carta da parati oppure gel specifico. Sarà utilizzato lo stesso mezzo di accoppiamento per effettuare la calibrazione e l'esame.
I residui di accoppiante devono essere rimossi dopo completamento dell'ispezione per non influenzare le attività successive.

8.9 Time Base Calibration

The time axis shall be calibrated using reference blocks type V1 or V2
Time base calibration shall guarantee the coverage of the entire weld volume and the heat affected zone per each transducer used.

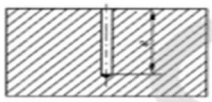
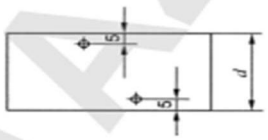
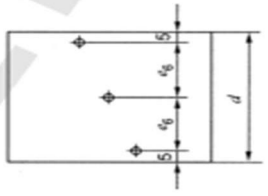
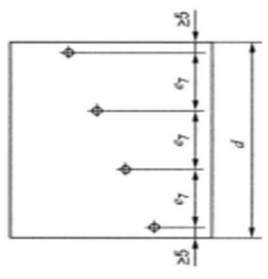
La taratura dell'asse dei tempi deve essere eseguita utilizzando i blocchi tipo V1 o V2.
La taratura dell'asse dei tempi dovrà in ogni caso garantire la copertura al 100% del volume di saldatura e della zona termicamente alterata per ciascun trasduttore da impiegare.

8.10 Test Sensitivity

Test sensitivity shall be established using the Technique 1 with reference block as per Table 2.
These blocks shall be made of same material and shall have same heat treatment of the joint under examination, furthermore shall have same surface condition of the component to be tested.

La sensibilità di controllo sarà stabilita utilizzando la Tecnica 1 con blocchi di riferimento come in Tabella 2 .
Tali blocchi dovranno essere dello stesso materiale del giunto da esaminare dovranno possedere lo stesso trattamento termico, inoltre le condizioni superficiali dovranno essere comparabili a quelle della superficie di scansione del componente in esame

Blocchi di riferimento e riflettori di riferimento per oggetti di classe 1

Spessore della parete, d, in mm	Blocchi di riferimento e riflettori di riferimento	Condizioni
		
$10 \le d \le 15$		
$15 < d \le 20$		$e > \frac{2\lambda s}{D_{eq}}$
$20 < d \le 40$		$D_{SDH} \ge 1{,}5\ \lambda$ $e_6 = \frac{d-10}{2}$
$d > 40$		$e_7 \le \frac{d-10}{2}$

CONSULTAZIONE

Sensitivity level will be established by DAC curve built using described blocks.
First point shall be placed at an amplitude of 80% of full screen height.
Curve will be built by at minimum three point.

La sensibilità sarà stabilita dalla curva DAC costruita utilizzando i suddetti blocchi.
Il primo punto della curva DAC dovrà essere portato ad un'ampiezza compresa tra il 80% dello schermo. La curva sarà costruita utilizzando almeno tre punti.

8.11 Transfer Losses

To measure transfer losses will be used two transducers of the same type, one as a transmitter and one as a receiver.
They will be placed on the block facing each other at a pitch of distance.
The resulting signal will be brought to the DAC height setting the gain.
Without modifying the gain, the probes will be positioned on the joint to be checked, possibly in the scanning direction.
The resulting echo must be brought up to the DAC curve. The gain difference, performing this operation, represents the transfer losses which must be added or subtracted to the level of amplification of the DAC construction.
The level of amplification so corrected, represents the reference level.
For transfer loss minor equal to 2dB no correction Is needed.
For transfer loss between 2dB and minor equal to 12dB the correction have to be compensated.
For transfer loss major than 12dB special consideration about surface and material condition shall be made.

Per misurare le perdite di trasferimento saranno utilizzati due trasduttori dello stesso tipo, uno come trasmittente ed uno come ricevente.
Essi saranno disposti sul blocco uno di fronte all'altro ad un passo di distanza.
Il segnale risultante sarà portato all'altezza della DAC agendo sul guadagno.
Senza modificare quest'ultimo, le sonde saranno posizionate sul giunto da controllare, possibilmente nella direzione di scansione. L'eco risultante dovrà essere portato all'altezza della curva DAC.
La differenza nel guadagno rilevato nell'eseguire questa operazione, rappresenta la perdita di trasferimento che deve essere aggiunta o sottratta al livello di amplificazione della costruzione della DAC.
Il livello di amplificazione così corretto, rappresenta il livello di riferimento.

8.12 Calibration Verification

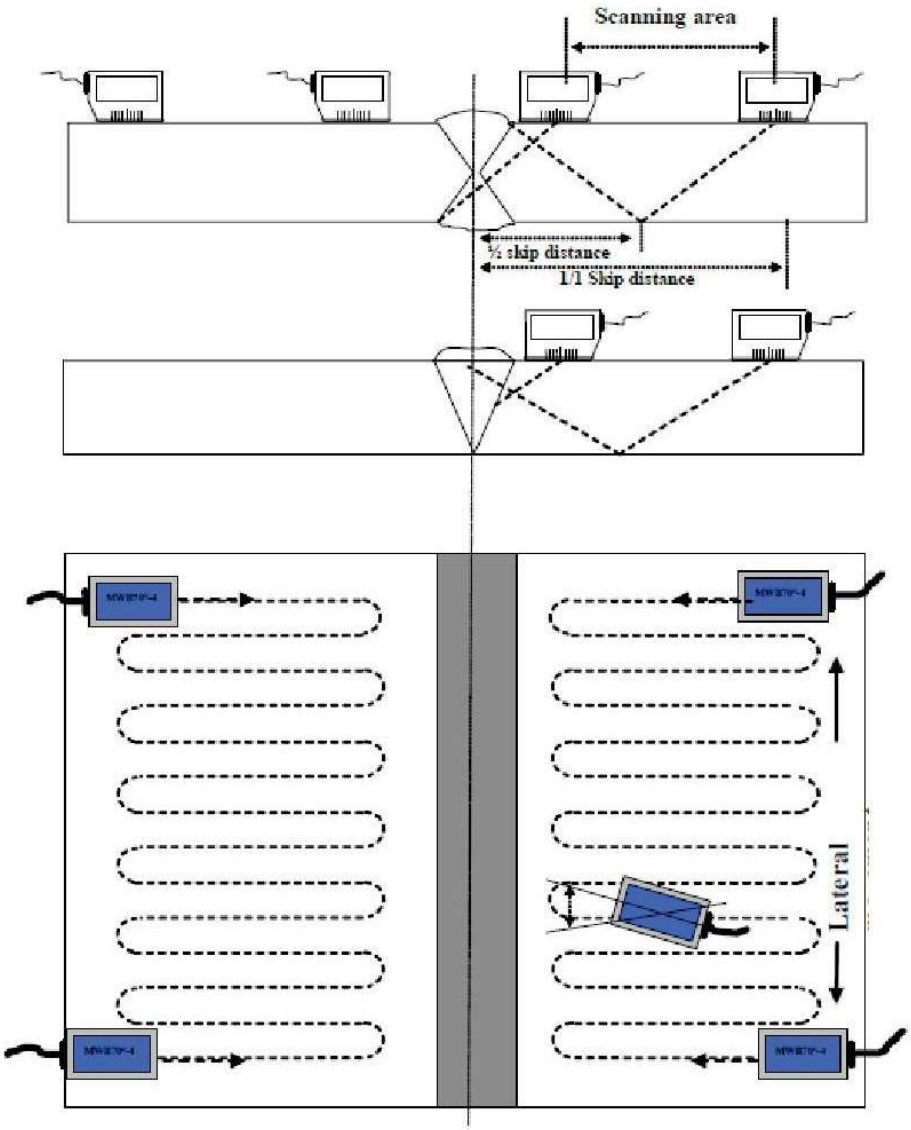
Calibration will be checked at the end of each shift and whenever operator, transducer or coaxial cable has been changed or when the operator deems it necessary.
If during calibration verification, the sensitivity is found more than 2 dB different from the established initial level, the calibration shall be repeated.

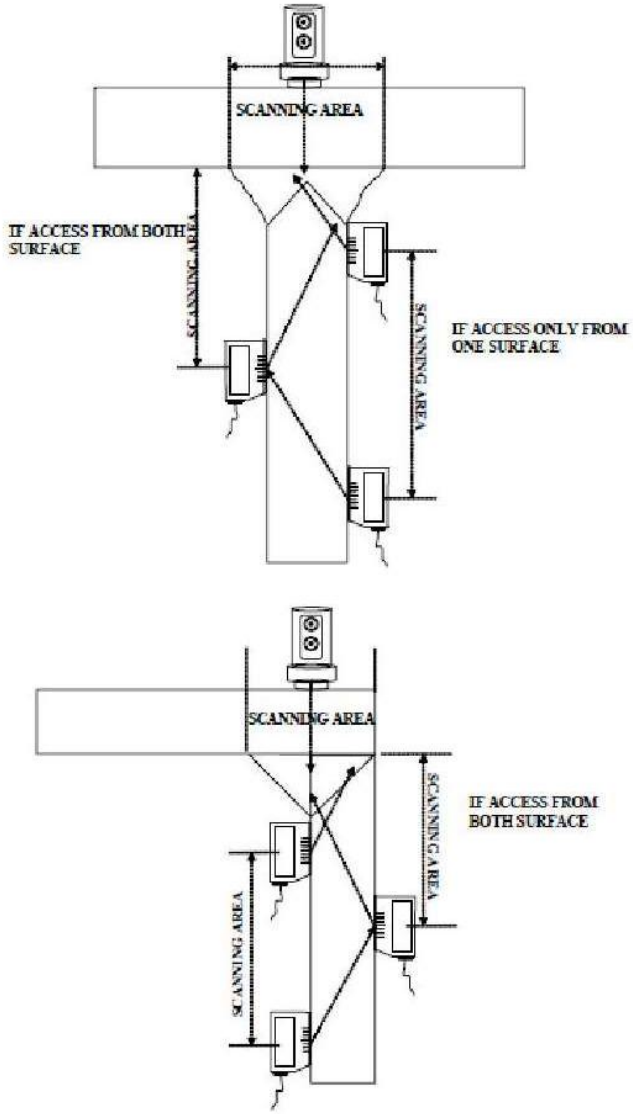
La calibrazione sarà verificata alla fine di ogni turno di lavoro e ogni qual volta dovesse cambiare operatore, trasduttore o cavo coassiale, oppure quando l'operatore lo ritenga opportuno.
Se durante la verifica della calibrazione la sensibilità di riferimento varia di oltre 2 dB rispetto a quella iniziale, la calibrazione dovrà essere ripetuta.

8.13 Scanning Technique

Before carrying out the test a check of the base material shall be performed with a normal probe, to ensure that there are no indications that could interfere with the angled beams to be used during the welding check.
Before proceed with the test the amplification of the system shall be raised of 6dB
The examination shall be performed on the entire volume of the weld and 10 mm of the base material adjacent to it on both sides.
The scan shall be made in compliance with EN ISO 17640:2018 Annex A, where due to the geometry of the joint is not possible follow the requirements of the norm the deviations shall be reported in the final test report.
The welding shall be examined, if possible, by two sides and internally and externally.
The minimum overlap between two consecutive scans must be 10% of the diameter of the transducer, while the speed of execution must not exceed 150 mm/s.
During the examination, the equipment shall be calibrated every 4 hours and whenever it is replaced operator, cable or transducer.
At least two angles must be used for each of the planes where the probes lie.
One of the beam angles used shall ensure that the weld fusion faces are tested at, or as near as possible to, normal incident.
The difference of the two nominal beam angles shall be 10° or greater.
Depending on the thickness and the shape of the joint, the operator can choose the most suitable probes.

Prima di eseguire il test il materiale base deve essere controllato con una sonda ortogonale, per verificare che non vi siano indicazioni che possano interferire con i fasci angolati che si dovranno utilizzare durante il controllo della saldatura.
Prima di procedere con il controllo l'amplificazione del sistema deve essere aumentata di 6dB.
L'esame deve essere eseguito sull'intero volume della saldatura e sui 10 mm di materiale base adiacenti ad essa da entrambi i lati.
La scansione deve essere fatta in accordo con la EN ISO 17640 Annex A, quando data la geometria del pezzo non è possibile seguire i requisiti della norma le deviazioni devono essere riportate nel rapporto di prova.
La sovrapposizione minima fra due scansioni consecutive deve essere del 10% del diametro del trasduttore, mentre la velocità d'esecuzione non deve eccedere i 150 mm/s.
Durante l'esame, l'apparecchiatura deve essere tarata ogni 4 ore e comunque ogni volta che venga sostituito operatore, cavo o trasduttore stesso.
Si dovranno utilizzare almeno due angoli per ciascuno dei piani in cui le sonde giacciono.
Uno dei fasci angolati deve assicurare che le facce di saldature siano sottoposte a prova a un'incidenza normale, o quanto più vicina ad essa.
La differenza dei due angoli selezionati deve essere di almeno 10°
In base allo spessore ed alla conformazione del giunto, l'operatore potrà scegliere le sonde più consone.


Scanning area
½ skip distance
1/1 Skip distance
Lateral



8.14 Characterization of Indications

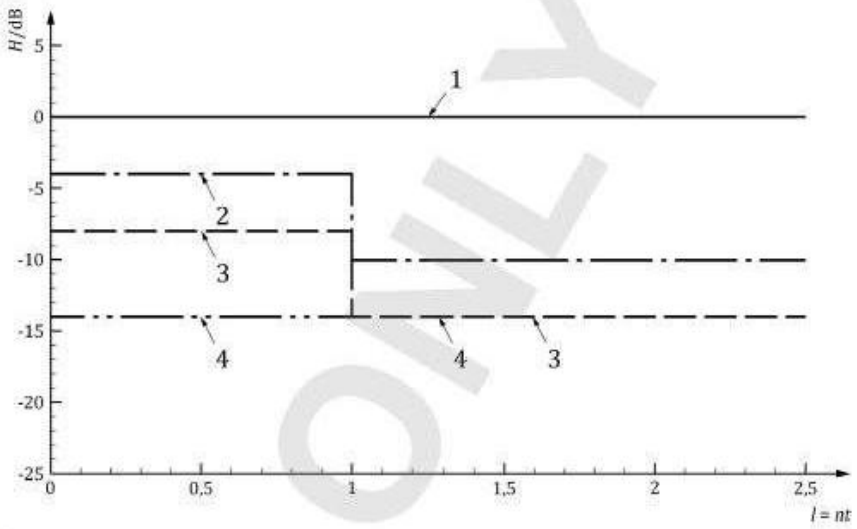
The indications shall be characterized in compliance with EN ISO 23279

La caratterizzazione delle indicazioni dovrà essere eseguita in accordo alla EN ISO 23279

8.15 Acceptance and Record Criteria

The acceptance and recording criteria are the ones for the level 2 of the EN ISO 11666

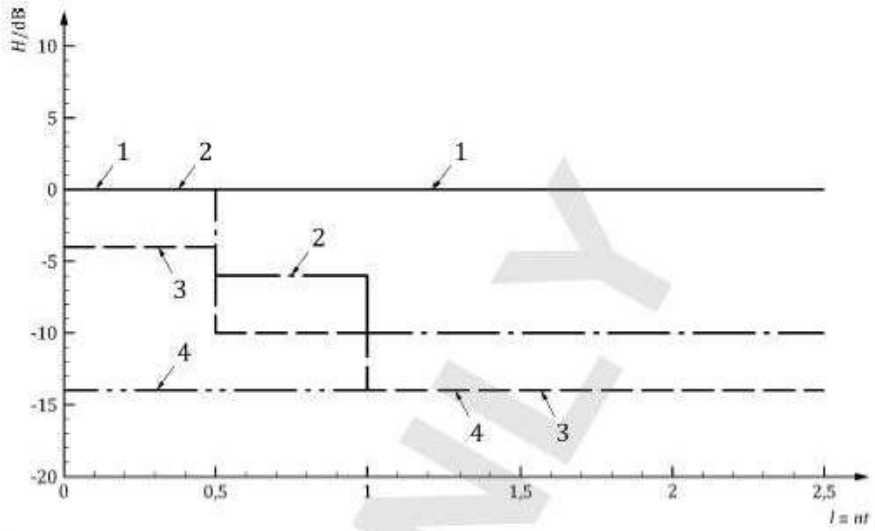
I criteri di accettabilità e di registrazione sono quelli del livello 2 della EN ISO 11666



Key

1	reference level
2	acceptance level 2
3	recording level
4	evaluation level
H	amplitude
l	length of discontinuities
n	multiplier of *t*
t	thickness

Figure A.1 — Levels for techniques 1 and 3 for thicknesses 8 mm to 15 mm — Acceptance level 2



Key

1	reference level
2	acceptance level 2
3	recording level
4	evaluation level
H	amplitude
l	length of discontinuities
n	multiplier of *t*
t	thickness

Figure A.3 — Levels for technique 1 for thicknesses 15 mm to 100 mm — Acceptance level 2

IN - ONLY

8.16 Defect Removal

All the discontinuities that exceed the standards acceptance criteria have to be removed and/or repaired and re-checked according to this procedure.

Tutte le discontinuità che superano gli standard di accettabilità devono essere rimosse e/o riparate e ricontrollate in accordo a questa procedura

8.17 Test report

The report should include at least the following information:

- name of supplier
- order number
- Inspection date
- Name, qualification and signature of the operator
- Component identification
- scope of examination: examination zones and applicable quality classes
- technique(s) used to set sensitivity;
- Place and extension of the test
- Thermal treatment status
- Type of component / welded joint and configuration
- Surface conditions
- Reference to the operating procedure and to the codes used
- Instrumentation used (flaw detector, probes, calibration and reference blocks)
- Possible mapping of defects to be registered and / or non-compliant (location, classification and amplitude in terms of FBH-equivalent diameter, or in percent of SDH)
- Final result of the test

Il report dovrà includere almeno le seguenti informazioni:

- *Nome del fornitore*
- *Numero d'ordine*
- *Data di ispezione*
- *Nome, qualifica e firma dell'operatore*
- *Identificazione del componente*
- *Scopo dell'esame: zone esaminate e livello di qualità*
- *Technica utilizzata per il settaggio della sensibilità*
- *Luogo ed estensione del test*
- *Stato di trattamento termico*
- *Tipo di componente/giunto saldato e configurazione*
- *Condizioni superficiali*
- *Riferimento alla procedura operativa ed ai codici utilizzati*
- *Strumentazione utilizzata (strumento, sonde, blocchi di calibrazione e di riferimento)*
- *Eventuale mappatura di difetti da registrare e/o non conformi (localizzazione, classificazione e altezza echo di riferimento come FBH o SDH)*
- *Risultato definitivo del test*

8.18 Test report Sample (Only for reference)

REMAZEL ENGINEERING	SISTEMA QUALITA' *QUALITY SYSTEM* RAPPORTO DI ESAME ULTRASUONI *Ultrasonic test report*	REU N° COMM. *Job* DATA *Date*

CLIENTE *Customer*	**ORDINE** *Order* **DEL** *Of*		**COMM. CLIENTE** *Customer's job*
OGGETTO *Subject*	**DISEGNO RIF.** *Ref. Drw*		**QUANTITA'** *Quantity*
Stato di controllo *Testing status*	☐ **Preliminare** *Preliminary*	☐ **Finale REMAZEL** *Final REMAZEL*	☐ **Finale ufficiale** *Final official*
Condizioni superficiali *Surface conditions*	☐ **Sabbiate** *Sandblasted*	☐ **Lavoraz. meccanica** *Machined*	☐ **Come fornito** *As delivery*
Specifica *Specification*			
Mezzo di accoppiamento *Coupling method*			
Calibrazione *Calibration*	☐ **AVG scala** *AVG scale*		☐ **Blocco di riferimento V 1** *Reference block V 1*
	☐ **DGS Diagramma** *DGS diagram*		☐ **Blocco di riferimento V 2** *Reference block V 2*
	☐ **Eco di riferimento** *Reference echo*		☐ **Blocchi di calibrazione** *Calibration blocks*

SONDE *Probes* — **REGOLAZIONE** *Adjustment*

Tipo *Type*	Frequenza *Freq. MHz*	Dimensioni *Size mm*	Angolo *Angle*	Costruttore *Manifacture*	Potenza *Power*	Amplificazione *Amplification*	Note *Rermarks*

Apparecchiatura *Apparatus*	**Costruttore** *Manufact.*	**Tipo** *Type*	**Matricola** *Serial N*
Risultati *Results*	☐ **Conforme** *According to*	☐ **Non conforme** *Not according to*	☐ **Scarto** *Rejection*
Note *Remarks*			
Operatore *Operator*	**Enti collaudatori** *Inspect. officials*	**Ispettore cliente** *Customer inspect.*	**Capo collaudo** *Inspect. Dept. manager*

MODULO - MD009 Rev.00

9 Qualified operators list:

In attached:

CICPND
CENTRO ITALIANO
DI COORDINAMENTO
PER LE PROVE NON DISTRUTTIVE

Via C. Pisacane, 46
20025 Legnano (MI)
PEC: info@pec.cicpnd.it
C.F. e P.I. 09510020150

ACCREDIA
L'ENTE ITALIANO DI ACCREDITAMENTO
PRS N° 012C
Membro degli Accordi di Mutuo Riconoscimento EA, IAF e ILAC
Signatory of EA, IAF and ILAC Mutual Recognition Agreement

CERTIFICATO DI LIVELLO 2
LEVEL 2 CERTIFICATE

N° 38625/PND/C

Si certifica la qualificazione per esami in Prove Non Distruttive al **LIVELLO 2**
*This is to certify qualification by examinations in Non-Destructive Testing at the **LEVEL 2***

di / of

Natale Estevan

nato a / *born in* **Trieste (TS)**

il / *on* **15 dicembre 1981**

per il metodo / *for the method:*

Esame Visivo (VT)

per i settori / *for the sectors:*

Collaudi pre e in servizio che comprendono la fabbricazione

(c; f; w; t; wp)

Il presente certificato viene rilasciato in conformità alla Norma UNI EN ISO 9712:2022.
This certificate is issued according to UNI EN ISO 9712:2022.

Direttore Generale
General Manager

Reggiani Michael
M. Reggiani

Data Delibera: 20/05/2024
Approval Date

Data Scadenza: 27/03/2029 R
Expiry Date

AIPnD

CICPND
CENTRO ITALIANO
DI COORDINAMENTO
PER LE PROVE NON DISTRUTTIVE

Via C. Pisacane, 46
20025 Legnano (MI)
PEC: info@pec.cicpnd.it
C.F. e P.I. 09510020150

ACCREDIA
L'ENTE ITALIANO DI ACCREDITAMENTO
PRS N° 012C
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Signatory of EA, IAF and ILAC Mutual Recognition Agreement

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di / of

Natale Estevan

nato a / *born in* **Trieste (TS)**

il / *on* **15 dicembre 1981**

per il metodo / *for the method:*

Magnetoscopia (MT)

per i settori / *for the sectors:*

Collaudi pre e in servizio che comprendono la fabbricazione

(c; f; w; t; wp)

Il presente certificato viene rilasciato in conformità alla Norma UNI EN ISO 9712:2022.
This certificate is issued according to UNI EN ISO 9712:2022.

Direttore Generale
General Manager

Reggiani Michael
M. Reggiani

Data Delibera: 20/05/2024
Approval Date

Data Scadenza: 27/03/2029 R
Expiry Date

Approvazione per l'esecuzione di prove non distruttive secondo l'Allegato I paragrafo 3.1.3 della **Direttiva attrezzature in pressione 2014/68/UE/PED** (CEM/TR 15589 Route A).

AIPnD

NDT OPERATOR QUALIFICATION CERTIFICATE

No. **22TO00081PN2/RN**

Operator	**PELLIS MICHELE**		
Born in	**TRIESTE (TS)**	on	**17/03/1984**
Employed by	**MICHELE PELLIS**		
Located in	**Trieste (TS)**		

THIS IS TO CERTIFY that the non destructive test operator is qualified by examinations at the LEVEL 2 according to UNI EN ISO 9712:2012 standard and to RINA Rule RC/C 14

in the method:

VISUAL

for the sectors:

Pre-service and in service testing of equipment, plants and structures

This certificate is valid from	**5 December 2021**	to	**4 December 2026**
Issued at	**GENOVA**	on	**5 December 2021**

Filippo Lago
(Italy Welding & Pressure Equipments, Personnel Certification & Laboratories, Director)

Operator

RINA Services S.p.A.
Via Corsica 12 - 16128 Genova

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PRS N° 066 C

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NDT OPERATOR QUALIFICATION CERTIFICATE

No. **22TO00081PN1/RN**

Operator	**PELLIS MICHELE**		
Born in	**TRIESTE (TS)**	on	**17/03/1984**
Employed by	**MICHELE PELLIS**		
Located in	**Trieste (TS)**		

THIS IS TO CERTIFY that the non destructive test operator is qualified by examinations at the LEVEL 2 according to UNI EN ISO 9712:2012 standard and to RINA Rule RC/C 14

in the method:

DYE PENETRANT

for the sectors:

Pre-service and in service testing of equipment, plants and structures

This certificate is valid from	**5 December 2021**	to	**4 December 2026**
Issued at	**GENOVA**	on	**5 December 2021**

Filippo Lago
(Italy Welding & Pressure Equipments, Personnel Certification & Laboratories, Director)

Operator

RINA Services S.p.A.
Via Corsica 12 - 16128 Genova

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NDT OPERATOR QUALIFICATION CERTIFICATE

No. **20VE00614PN1**

Operator	**PELLIS MICHELE**		
Born in	**TRIESTE (TS)**	on	**17/03/1984**
Employed by	**MICHELE PELLIS**		
Located in	**Trieste (TS)**		

THIS IS TO CERTIFY that the non destructive test operator is qualified by examinations at the LEVEL 3 according to UNI EN ISO 9712:2012 standard and to RINA Rule RC/C 14

in the method:

MAGNETIC PARTICLE

for the sectors:

Pre-service and in service testing of equipment, plants and structures

This certificate is valid from	**7 August 2020**	to	**6 August 2025**
Issued at	**GENOVA**	on	**7 August 2020**

Filippo Lago
(Italy Welding & Pressure Equipment Certification Head)

Operator

RINA Services S.p.A.
Via Corsica 12 - 16128 Genova

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Signatory of EA, IAF and ILAC Mutual Recognition Agreements

NDT OPERATOR QUALIFICATION CERTIFICATE

No. **21TO00389PN1/RN**

Validity renewal of certificate n° 16VE00823PO7

Operator	**PELLIS MICHELE**		
Born in	**TRIESTE (TS)**	on	**17/03/1984**
Employed by	**MICHELE PELLIS**		
Located in	**Trieste (TS)**		

THIS IS TO CERTIFY that the non destructive test operator is qualified by examinations at the LEVEL 2 according to UNI EN ISO 9712:2012 standard and to RINA Rule RC/C 14

in the method:

ULTRASONIC

for the sectors:

Pre-service and in service testing of equipment, plants and structures

This certificate is valid from	**29 June 2021**	to	**29 June 2026**
Issued at	**GENOVA**	on	**5 July 2021**

Filippo Lago
(Italy Welding & Pressure Equipments, Personnel Certification & Laboratories, Director)

Operator

RINA Services S.p.A.
Via Corsica 12 - 16128 Genova

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Membro degli Accordi di Mutuo Riconoscimento EA, IAF e ILAC
Signatory of EA, IAF and ILAC Mutual Recognition Agreements

CERTIFICATO DI LIVELLO 2
LEVEL 2 CERTIFICATE

n° DTC-CND-A01649-22

Si certifica la qualificazione per esami in Prove Non Distruttive al Livello 2
This is to certify qualification by examination in Non Destructive Testing Level 2

di / *of*

Giuliano Segato

Nato a / *born in: Trieste (TS)*

Il */ on: 21 Marzo 1994*

Per i seguenti metodi */ for the following methods:*

VT
(Esame Visivo - Visual Testing)

Per i settori industriali / for the industrial sectors:

MM, P/S

Il presente certificato viene rilasciato in conformità alla norma UNI EN ISO 9712 e Allegato I, P.to 3.1.3 Dir. 2014/68 UE
This certificate is issued according to UNI EN ISO 9712 and Annex I, 3.1.3 Dir. 2014/68 EU

Antonio Fimiani
Consigliere Delegato



Data di emissione/*issue date* : 01/07/2022
Data di scadenza/*expiry date* : 30/06/2027

Certificato conforme ai Regolamenti DEKRA Testing and Certification / *Certificate in compliance with the Regulations DEKRA Testing and Certification:*
Regolamento generale per la certificazione del personale/ *General Rules for the certification of personnel*
Regolamento per la certificazione del personale addetto PND / *Regulations for the qualification of NTD personnel*
Regolamento Generale per la Direttiva 2014/68/UE e D.Lgs n° 26 del 15/02/2016 / *General Rules for Directive 2014/68 EU and D.Lgs. n°26 os 15/02/2016*

DEKRA Testing and Certification S.r.l.
Via Fratelli Gracchi 27 – 20092 Cinisello Balsamo (MI) – ITALY
Phone : +39 02 899.29090 / Fax +39 02 899.29200
info@dekra-certification.it *www.dekra.it*

ACCREDIA
L'ENTE ITALIANO DI ACCREDITAMENTO

PRS091C PRD198B
Membro degli Accordi di Mutuo Riconoscimento EA, IAF e ILAC

Form 1207PED Rev. 02 09/01/2019

CERTIFICATO DI LIVELLO 2
LEVEL 2 CERTIFICATE

n° DTC-CND-A01648-22

Si certifica la qualificazione per esami in Prove Non Distruttive al Livello 2
This is to certify qualification by examination in Non Destructive Testing Level 2

di / *of*

Giuliano Segato

Nato a / *born in: Trieste (TS)*

Il */ on: 21 Marzo 1994*

Per i seguenti metodi */ for the following methods:*

MT
(Particelle Magnetiche – Magnetic Testing)

Per i settori industriali / for the industrial sectors:

MM, P/S

Il presente certificato viene rilasciato in conformità alla norma UNI EN ISO 9712 e Allegato I, P.to 3.1.3 Dir. 2014/68 UE
This certificate is issued according to UNI EN ISO 9712 and Annex I, 3.1.3 Dir. 2014/68 EU

Antonio Fimiani
Consigliere Delegato

Data di emissione/*issue date* : 01/07/2022
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Membro degli Accordi di Mutuo Riconoscimento EA, IAF e ILAC

Form 1207PED Rev. 02 09/01/2019

NDT OPERATOR QUALIFICATION CERTIFICATE

No. **23TO00821PN2**

Operator	**SEGATO GIULIANO**		
Born in	**TRIESTE (TS)**	on	**21/03/1994**
Employed by	**SGP TESTING S.R.L.**		
Located in	**San Dorligo Della Valle (TS)**		

this is to certify that the non destructive test operator is qualified by examinations at the level 2 according to ISO 9712:2021 standard and to RINA Rule RC/C 14

in the method:

DYE PENETRANT

in the following product sectors:

CASTINGS (c)
FORGINGS (f)
WELDS (w)
WROUGHT PRODUCTS (wp)
TUBES AND PIPES (t)

for the following industrial sectors:

PRE AND IN-SERVICE TESTING (s)

This certificate is valid from	**30 October 2023**	to	**29 October 2028**
Issued at	**GENOVA**	on	**30 October 2023**

The above mentioned Operator is approved for the Method and Level specified, according to Par. 3.1.3 of Annex I 2014/68/EU Directive (CEN/TR 15589 Route A)

Filippo Lago
(Italy Welding & Pressure Equipments, Personnel Certification & Laboratories, Director)

Operator

This certificate consist of 1 page

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L'ENTE ITALIANO DI ACCREDITAMENTO

PRS N° 066 C

Signatory of EA, IAF and ILAC Mutual Recognition Agreements

RINA Services S.p.A.
RTPO 2014/68/EU Directive, Art. 20
Via Corsica 12 - 16128 Genova

NDT OPERATOR QUALIFICATION CERTIFICATE

No. **21TO00456PN3**

Operator	**SEGATO GIULIANO**		
Born in	**TRIESTE (TS)**	on	**21/03/1994**
Employed by	**SGP TESTING S.R.L.**		
Located in	**San Dorligo Della Valle (TS)**		

THIS IS TO CERTIFY that the non destructive test operator is qualified by examinations at the LEVEL 2 according to UNI EN ISO 9712:2012 standard and to RINA Rule RC/C 14

in the method:

ULTRASONIC

for the sectors:

Pre-service and in service testing of equipment, plants and structures

This certificate is valid from	**1 September 2021**	to	**31 August 2026**
Issued at	**GENOVA**	on	**1 September 2021**

Filippo Lago
(Italy Welding & Pressure Equipments, Personnel Certification & Laboratories, Director)

Operator

RINA Services S.p.A.
Via Corsica 12 - 16128 Genova

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PRS N° 066 C

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CERTIFICATO DI LIVELLO 2
LEVEL 2 CERTIFICATE

n° DTC-CND-A01970-22

Si certifica la qualificazione per esami in Prove Non Distruttive al Livello 2
This is to certify qualification by examination in Non Destructive Testing Level 2

di / *of*

Eric Marini

Nato a / *born in: Trieste (TS)*

Il */ on: 25 Luglio 1994*

Per i seguenti metodi */ for the following methods:*

VT
(Esame Visivo - Visual Testing)

Per i settori industriali / for the industrial sectors:

MM, P/S

Il presente certificato viene rilasciato in conformità alla norma UNI EN ISO 9712 e Allegato I, P.to 3.1.3 Dir. 2014/68 UE
This certificate is issued according to UNI EN ISO 9712 and Annex I, 3.1.3 Dir. 2014/68 EU

Antonio Fimiani
Consigliere Delegato

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Data di scadenza/*expiry date* : 17/11/2027

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CERTIFICATO DI LIVELLO 2
LEVEL 2 CERTIFICATE

n° DTC-CND-A02681-23

Si certifica la qualificazione per esami in Prove Non Distruttive al Livello 2
This is to certify qualification by examination in Non Destructive Testing Level 2

di / *of*

Eric Marini

Nato a / *born in: Trieste (TS)*

Il */ on: 25 Luglio 1994*

Per i seguenti metodi */ for the following methods:*

PT
(Liquidi Penetranti - Penetrant Testing)

Per i settori industriali / for the industrial sectors:

MM, P/S

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CERTIFICATO DI RINNOVO LIVELLO 2
LEVEL 2 RENEWAL CERTIFICATE

n° DTC-CND-A02489-23

Si certifica il possesso dei requisiti per il rinnovo del Certificato in Prove Non Distruttive al Livello 2

This is to certify the mastery of requirements for renewal of Certificate in Non Destructive Testing Level 2

di / *of*

Eric Marini

Nato a / *born in: Trieste (TS)*

Il / *on: 25 Luglio 1994*

Per i seguenti metodi / *for the following methods:*

MT
(Particelle Magnetiche - Magnetic Testing)

Per i settori industriali / for the industrial sectors:

MM, P/S

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Consigliere Delegato

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Data di scadenza/*expiry date* : 18/04/2028 R

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CERTIFICATO DI LIVELLO 2
LEVEL 2 CERTIFICATE

n° DTC-CND-A01969-22

Si certifica la qualificazione per esami in Prove Non Distruttive al Livello 2
This is to certify qualification by examination in Non Destructive Testing Level 2

di / *of*

Eric Marini

Nato a / *born in: Trieste (TS)*

Il */ on: 25 Luglio 1994*

Per i seguenti metodi */ for the following methods:*

UT
(Ultrasuoni - Ultrasonic Testing)

Per i settori industriali / for the industrial sectors:

MM, P/S

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CERTIFICATO DI LIVELLO 2
LEVEL 2 CERTIFICATE

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Si certifica la qualificazione per esami in Prove Non Distruttive al Livello 2
This is to certify qualification by examination in Non Destructive Testing Level 2

di / *of*

Oliver De Iaco

Nato a / *born in: Francoforte Sul Meno (Germania)*

Il / *on: 04 Agosto1973*

Per i seguenti metodi */ for the following methods:*

PT
(Liquidi Penetranti - Penetrant Testing)

Per i settori industriali / for the industrial sectors:

MM, P/S

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CERTIFICATO DI LIVELLO 2
LEVEL 2 CERTIFICATE

n° DTC-CND-A02126-23

Si certifica la qualificazione per esami in Prove Non Distruttive al Livello 2
This is to certify qualification by examination in Non Destructive Testing Level 2

di / *of*

Oliver De Iaco

Nato a / *born in: Francoforte sul Meno (Germania)*

Il / *on: 04 Agosto 1973*

Per i seguenti metodi / *for the following methods:*

MT
(Particelle Magnetiche – Magnetic Testing)

Per i settori industriali / for the industrial sectors:

MM

Il presente certificato viene rilasciato in conformità alla norma UNI EN ISO 9712 e Allegato I, P.to 3.1.3 Dir. 2014/68 UE
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Antonio Fimiani
Consigliere Delegato

Data di emissione/*issue date* : 30/01/2023
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Form 1207PED Rev. 02 09/01/2019

Base Load Power Hub (BLPH)

DAVIT CRANE

PAINTING PROCEDURE

Document Number: 1724001010-MAT-PRO-00007

Document Class: 2

ROSETTI MARINO

1	NO COMMENTS - APPROVED - WORK MAY PROCEED
2	MINOR COMMENTS - REVISE AND RESUBMIT - WORK MAY PROCEED
3	MAJOR COMMENTS – REJECTED – DO NOT PROCEED
4	APPROVAL NOT REQUIRED

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Sign	Date
Michele Sacchi	10-12-2024

Rev.	Date	Description	Prepared	Reviewed	Approved
04	26/11/2024	Accepted for Construction (AFC)	CZB	MPU	MTO
03	31/10/2024	Accepted for Construction (AFC)	CZB	MPU	MTO
02	15/10/2024	Issue for Review (IFR)	CZB	MPU	MTO
01	23/09/2024	Issue for Review (IFR)	CZB	MPU	MTO
00	21/08/2024	Issue for Review (IFR)	CZB	MPU	MTO

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Revision / Change Log

Rev.	Description
00	Issue for Review (IFR)
01	Issue for Review (IFR)
02	Issue for Review (IFR)
03	Accepted for construction (AFC) / added Paint system for safety equipment
04	Accepted for construction (AFC)

HOLDS LIST

No.	Description
1	
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1.1.1 Project Location 5
1.1.2 Project Concept 6
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1 INTRODUCTION

1.1 PROJECT OVERVIEW

Crosswind, a Shell and Eneco joint venture, was awarded the tender to develop the offshore Hollandse Kust Noord (HKN) wind farm, located 18.5km off the coast of Netherlands near the town of Egmond aan Zee. The consortium plans to have HKN operational in 2023 with an installed capacity of 759MW generating at least 3.3TWh per year. This is sufficient renewable power to supply more than 1 million Dutch households with green electricity.

Offshore wind farms produce intermittent electricity and balancing these dips and peaks and integrating this electricity into the national energy system requires new technologies. For this reason, the offshore wind farm will include several new technologies that could be implemented at full-scale in the future. The new technologies being explored include a floating solar park, a short-duration battery storage as well as long-term storage via green hydrogen produced by water electrolysis and subsequently consumed in a fuel cell. The combination of these individual measures, herein referred to as the Base Load Power Hub (BLPH) will ensure a continuous power supply regardless of the wind situation.

1.1.1 Project Location

The Hollandse Kust Noord (HKN) wind farm is located 18.5km off the coast of the Netherlands near the town of Egmond aan Zee.

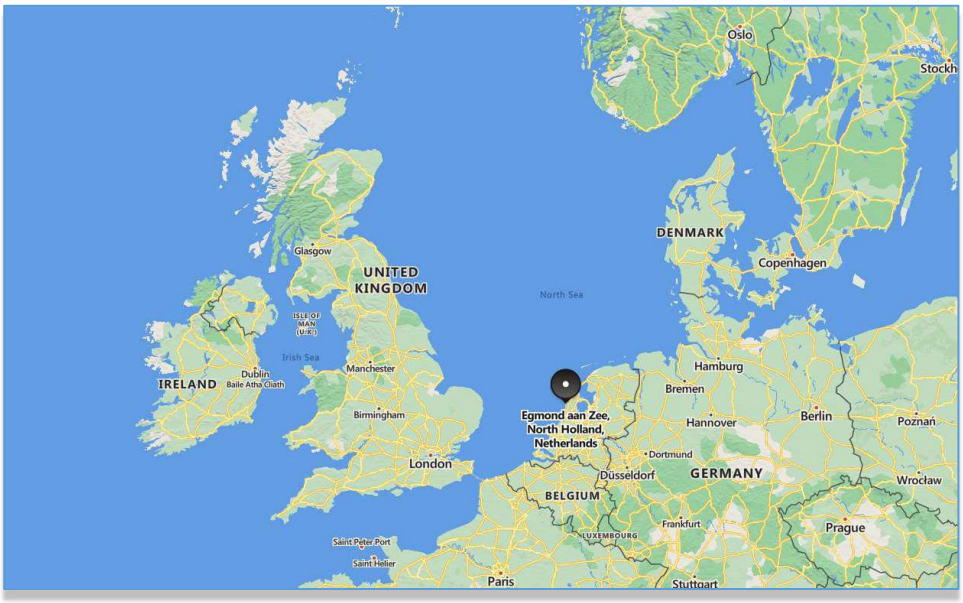


Figure 1 HOLLANDSE KUST NOORD WIND PARK Location Map



Figure 2 - Wind Park Details

The wind farm will consist of No. 69 x 11.5MW wind turbine generators each to be installed on a dedicated monopile structure. A 70th monopile located on coordinates E 590719.1, N 5841602.3 is reserved for installing the platform accommodating the BLPH. The monopile structure was designed and installed by Van Oord Offshore Wind (VooW) and therefore not part of the BLPH scope.

1.1.2 Project Concept

All components included in the BLPH will be integrated onshore on a topsides and installed in an offshore location within the boundaries of the HKN wind farm. At its simplest, the BLPH will store energy during periods of high electricity generation from renewable sources (a wind turbine generator and the floating solar PV farm) and release it during periods of low generation. In practice. It is expected that the energy stored will supplement generation from renewable sources to ensure that at least 1.0MW of power is exported to the electrical grid regardless of wind/solar availability.

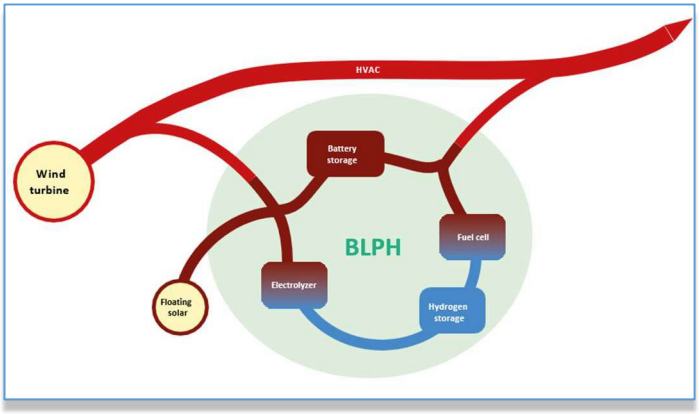


Figure 3 – BLPH Concept

Electricity in the BLPH will be stored in the form of electrons in a battery energy storage system (BESS) as well as converted into green hydrogen via water electrolysis. When the power output from the connecting wind turbine drops to below 1 MWe, the BLPH will return its stored energy to supplement the remaining power output. This will be by discharging the BESS, while stored hydrogen will be converted back into electricity using a fuel cell to extend the discharge duration.

The purpose of the BLPH s to function as a testbed for the integration of energy storage technologies with renewable generation. It is expected that equipment installed on the BLPH will operate as Normally Unmanned Installation for at least two (2) years with no or minimal maintenance and it will have its own independent control room with the ability to communicate with Crosswind's control room.

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2 DOCUMENT SCOPE

This document explains in detail the "working procedure" for surface preparation, paint application, inspection, testing and repair of Davit Crane

2.1 DEFINITIONS AND ABBREVIATIONS

COMPANY or Client (CPY):	Crosswind
CONTRACTOR (CTR):	ROSETTI MARINO S.p.A.
PROJECT:	HOLLANDSE KUST NOORD WIND PARK Project

Table 1 - Definitions and Abbreviations

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3 PAINTING PROCEDURE

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Davit Crane

PAINTING PROCEDURE
24-27012-PP-001

Rev	Date	Revision Description	Prepared	Checked	Approved
04	26/11/2024	Accepted for construction (AFC)	CZB	MPU	ATR
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02	15/10/2024	Issue for review IFR	CZB	MPU	ATR
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SUMMARY OF REVISION

Rev.	Revised chapters	Revision description	Reason for revision
00	///	///	IFR
01	Document Scope;Standard Reference; Surface preparation	Added year revision of normative; change salt concentration	IFR
02	/	Accepted for construction	AFC
03	/	Added paint System safety equipment RAL 1023	AFC
04	/	Accepted for construction	AFC

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1. Scope

This document explains in detail the “working procedure” for surface preparation, paint application, inspection, testing and repair of Davit Crane.
This document is applicable to structural steel; the commercial items such as gearboxes, motors, brake, filters, slewing ring and other minor commercial items will be purchased painted according to international recognized painting cycle C5 or CX suitable for offshore environmental.

2. Reference Documents

- 1724001010-QC-ITP-00002 Inspection test plan

3. Definitions

- CONTRACTOR: Rosetti Marino
- SUPPLIER: Remazel Engineering SpA.
- PAINT MANUFACTURER: Jotun
- PAINT APPLICATOR: a company awarded by REMAZEL

4. Standard

- ASTM D 4285_2018: Standard Test Method for Indicating Oil or Water in Compressed Air.
- ISO 4624_2023: Standard Test Method for Pull-Off.
- ISO 2808_2019: Paints and Varnishes - Determination of film thickness.
- ISO 8501-1_2007: Preparation of steel substrates before application of paints and related products - Visual assessment of surface cleanliness - Part 1: Rust grades and preparation grades of uncoated steel substrates and of steel substrates after overall removal of previous coatings.
- ISO 8501-3_2006: Preparation of steel substrates before application of paints and related products – Visual assessment of surface cleanliness – Part 3: Preparation grades of welds, edges and other areas with surface imperfections.
- ISO 8502-3_2017: Preparation of steel substrates before application of paints and related products - Test for the assessment of surface cleanliness - Part 3: Assessment of dust on steel surfaces prepared for painting (pressure sensitive tape method).
- ISO 8502-4_2017: Preparation of steel substrates before application of paint and related products - Test for the assessment of surface cleanliness - Part 4: Guidance on the estimation of the probability of condensation prior to paint application.
- ISO 8502-6_2020: Preparation of steel substrates before application of paint and related products - Test for the assessment of surface cleanliness - Part 6: Extraction of soluble contaminants for analysis - The Bresle method.
- ISO 8502-9_2020: Preparation of steel substrates before application of paint and related products - Test for the assessment of surface cleanliness - Part 9: Field method for the conduct metric determination of water-soluble salts.
- ISO 8503-1_2012: Preparation of steel substrates before application of paint and related products - Surface roughness characteristics of blast-cleaned steel substrates - Part 1: Specification and definitions for ISO surface profile comparators for the assessment of abrasive blast-cleaned surfaces.
- ISO 8504-2_2019: Preparation of steel substrates before application of paint and related products - Surface preparation methods – Part 2: Abrasive blast-cleaning.

- ISO 11124-1_2018: Preparation of steel substrates before application of paints and related products – Specifications for metallic blast-cleaning abrasives – Part 1: General introduction and classification.
- ISO 11124-3_2018: Preparation of steel substrates before application of paints and related products – Specifications for metallic blast-cleaning abrasives – Part 3: High-carbon cast steel shot and grit.
- ISO 11126-1_2018: Preparation of steel substrates before application of paints and related products – Specifications for non-metallic blast-cleaning abrasives – Part 1: General introduction and classification.
- ISO 11126-10_2017: Preparation of steel substrates before application of paints and related products - Specifications for non-metallic blast-cleaning abrasives – Part 10: Almandite garnet.
- ISO 19840_2012: Paints and varnishes - Corrosion protection of steel structures by protective paint systems - Measurement of, and acceptance criteria for, the thickness of dry films on rough surfaces.
- NACE SP0188: Discontinuity (Holiday) Testing of New Protective Coatings on Conductive Substrates.
- SSPC-SP 1: Solvent cleaning.

5. Responsabilities

5.1. VENDOR

- Quality control (Q.C.) – Quality Assurance (Q.A.).
- Make sure that all the CONTRACTOR 'S prescriptions shall be fully understood and respected.
- Perform intermediate and final checks to verify works acceptability.
- Perform (in the fabrication shop prior to release to Paint Applicator) accurate checks to assure that
    - The preparation grades of welds, edges and other areas with surface imperfections shall be according to grade P3 of ISO 8501-3 except for weld profile smoothing that shall follow grade P2.
- Collaborate with the Certified Coating Inspector for the checking and recording of all work stages.
- Handle and store the coated material, after its release from the Paint Applicator, with proper care in order to avoid mechanical damage.

5.2. Paint Manufacturer

- Supply all the paint required in unopened containers clearly marked with the following details: name of manufacturer, material identification, color reference number and batch number. Other details to be supplied shall include: date of manufacture, quantity, shelf life, safety and technical data sheet.

5.3. Paint Applicator

- Paint application and Quality Control.
- Verify the integrity of the items received by the Vendor and make sure they shall be conformed to what is requested and specified.
- Verify the integrity of all the incoming abrasive, paint, equipment, etc., rejecting material without documentation, label, batch number, expiration and manufacturing dates or proper packaging.
- Record the batch number of all materials received on suitable forms.

- Availability of suitable equipment to blast-clean and to apply the paint along with sets of spare parts.
- Availability of suitable instruments to perform the specified inspection and testing, knowledge of their use and reference standards. All instruments shall have valid calibration certificate issued by their manufacturers or by an acknowledged body.
- Guarantee tradesman level workmanship as regards surface preparation and paint application.
- Provide an environment that protects the painting / curing process and the operators from dust, wind, rain and fumes.
- Grant CLIENT, CONTRACTOR and SUPPLIER Coating Inspector free access and assistance to inspect all work performed.
- Grant CLIENT, CONTRACTOR and VENDOR Coating Inspector availability of testing and inspection instrument, properly calibrated and maintained, while conducting surveillance of the work.
- Carry out all work stages in strict accordance whit this working procedure.
- Fill in daily report detailing the work carried out in collaboration with Q.C.
- Arrange the storage of painted items in suitable areas well protected against damage.
- As regard the storage of the coating material and solvents, the Paint Manufacturer's instruction shall be followed.
- Supply the Paint Applicator one test panel, for each production batch, which shall be used to perform the Adhesion test. Minimum dimensions of the test panels are 300 x 300 x 4 mm.

6. Qualification of Paint Operators

Paint Applicator Company selected to carry out the coating works described in this Procedure may be required to comply with the provisions SSPC QP 1 for Field Coating Application and SSPC QP 3 for Shop Coating Application. Operators employed in abrasive blast cleaning and coating operations shall be qualified according to tradesman level as Blaster or Painter. Personnel performing controls, inspections and tests shall be individually certified by a recognized association or organization NACE Coating Inspector level II or NS 476 FROSIO Inspector level III.

7. Safety

Any blast-cleaning and coating phase shall be carried out and any paint, thinner, abrasive, material or equipment shall be used in accordance to all applicable local, national and international safety regulations. Product Safety Data Sheets (PSDS) shall be available for review at shops where coating is applied.
All operators shall be provided with suitable safety personal equipment. Used solvents, paint, waste materials and cleaning materials shall be handled in strict accordance with PSDS requirements and applicable local and national disposal procedures.

8. Ambient Conditions

Blast cleaning, coating application and paint curing shall not be allowed to take place:

- When the ambient and steel temperature is below 5°C and above 52°C.
- When the relative humidity is greater than 85%.
- When steel temperature is less than 3°C above dew-point temperature.

The Paint Manufacturer shall specify the maximum and minimum application and curing temperature and other relevant limitations regarding application and curing conditions for each product.

9. Unpainted Surfaces

The following surfaces shall not be blast-cleaned and painted:

- RF Flanges, unless otherwise specified.
- Machined surfaces.
- Name Plate

All these surfaces shall be properly protected with tape, rubber, plastic caps, etc. before blast-cleaning and painting.

10. Pre-Blasting Preparation

All the incoming items shall be thoroughly inspected to assure that sharp, edges, fillets and corners have been dressed to achieve a grade P3 of ISO 8501-3 except for weld profile smoothing that shall follow grade P2.
Special attention shall be given to all weld's areas for removal of weld flux, fumes, slivers, welding spatter and other foreign objects. Any surfaces defects, particularly surface laminations or scrubs, likely to be detrimental to protective coating system, shall be smoothened. Spot and discontinue welds shall not be allowed.
Surface contaminants such as oil and grease shall be solvent cleaned as per SSPC-SP 1. Soluble salt deposits, soil and any exogenous compounds shall be removed by steam cleaning and brushing in combination with detergent. The degreased surfaces shall be further washed with fresh water to remove all traces of the degreaser chemicals.

11. Surface Preparation

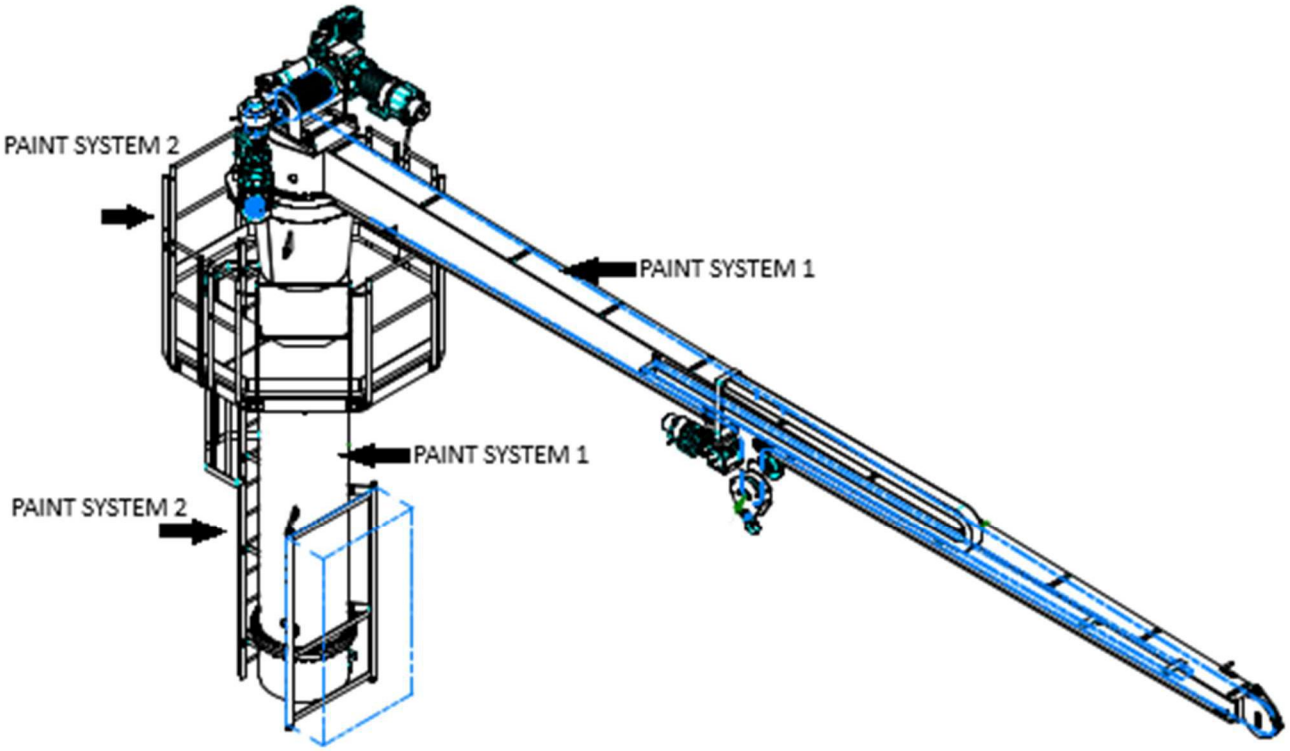
All abrasive material selected (STEEL GRIT or GARNET) shall be dry, clean and free from oil, grease and other contaminants that could be detrimental to long term coating performance.
Conductivity of abrasive shall not exceed 250 µS/cm at 20°C as per ISO 11127-6.
The compressed air used for blast-cleaning shall be free from water and oil. Adequate separators and traps shall be provided and these shall be kept emptied of water and oil. Control of the compressed air cleanliness shall be done according to Standard ASTM D 4285.

- Carbon Steel blasted surfaces, cleaned to ISO 8501-1 SA 2 1/2 shall have a roughness between 50÷85 µm and Medium G.
- Stainless Steel blasted surfaces, cleaned to SSPC-SP17 shall have a roughness between 30÷50 µm.

Blast profile measurement shall be carried out in accordance with ISO 8503-5 Replica tape method and with ISO 8503-2 Comparator Procedure.
Welding spatter, slivers, laminations and underlying mill scale removed during fabrication but still visible after blast cleaning operations shall be dressed and the edges smoothed or rendered flush.
After preparation of the surface any grit, dust, etc. shall be removed. The residual particle quantity and particle size shall not exceed dust quantity rating 2 and dust size class 2 of ISO 8502-3.
The salt concentration (chlorides) tested on the blast cleaned surfaces shall not exceed 20 mg/m² NaCl when measured per ISO 8502-6 and ISO 8502-9.
The test panels, supplied by the VENDOR for each production batch and for each PAINT SYSTEM, shall receive the same surface preparation of the items. Minimum dimensions of the test panels are 300 x 300 x 5 mm.
Final blast-cleaning shall not be done on any surface that are moist, or that may become moist, before the application of primer.

12. Paint Application

All paint furnished shall be in unopened, clearly identifiable containers. No paint shall be used whose shelf life has expired. Containers shall remain unopened until required for use.
Coating application shall be carried out after completion of blast cleaning and before any rusting occurs. The blast-cleaned surface shall be vacuum cleaned or blown free of dust and other loose contaminants.
All application data shall be in accordance with the PTDS of the Paint Manufacturer. The type of thinner used shall comply with the Manufacturer's recommendation. Airless or conventional spray pumps shall be used. Stripe-coating with brush of edges, welds, corners and all irregular surfaces shall be performed to obtain the specified film thickness and to avoid holidays.
All blast cleaned surfaces shall be painted with primed before rust bloom occurs, usually within 4 hours and depending upon the ambient conditions.
The blast-cleaned test panels shall be painted contemporaneously with the same paint system as per the items. In the period between coating and curing, the freshly applied coating shall not come into contact with handling equipment or any other items that may impact coating quality and shall be held in a covered facility protected from dust, wind and rain. Over-coating time shall be recommended by the Paint Manufacturer in the PTDS.



13. Paint Systems

PAINT SYSTEM 1- SANDBLASTED CARPENTRY-STRUCTURAL STEEL

SURFACE PREPARATION	ISO 8501-1 SA 2 1/2 Profile between 50 µm and 85 µm
1st Coat	JOTAMASTIC 90 Alu D.F.T. 150 µm
2nd Coat	JOTAMASTIC 90 D.F.T. 150 µm
3rd Coat	HARDTOP XP Color Gray RAL 7038 D.F.T. 60 µm
T.D.F.T.	360 µm

PAINT SYSTEM 2- SANDBLASTED HANDRAILS AND STAIRS

SURFACE PREPARATION	ISO 8501-1 SA 2 1/2 Profile between 50 µm and 85 µm
1st Coat	JOTAMASTIC 90 Alu D.F.T. 150 µm
2nd Coat	JOTAMASTIC 90 D.F.T. 150 µm
3rd Coat	HARDTOP XP Color Yellow RAL 1023 D.F.T. 60 µm
T.D.F.T.	360 µm

14. Inspection and Testing

Test Type	Method	Frequency	Acceptance Criteria	Corrective Action In Case Of N.C.
Blotter Test	White adsorbent paper ASTM D 4285	Before start and end of each shift.	A piece of clean white absorbent paper shall be positioned at the air-outlet. After about 1 min. of air discharge there shall be no trace of water and oil on the paper.	Any accumulated moisture and oil in the traps, separators and filters shall be emptied. The air supply shall then be checked once again until conformity is achieved.
Temperature	Thermo hygrometer ISO 8502-4	Before start and end of each shift.	Ambient and Steel Temperature min. 5°C and max. 52°C. The paint manufacturer shall specify the maximum and minimum application and curing temperature and other relevant limitations regarding application and curing conditions for each product.	Unless these parameters are met the operations shall not proceed.
Relative Humidity			85% max.	
Dew point			Steel Temperature min. 5°C, and 3°C or more above Dew Point Temperature.	

Test Type	Method	Frequency	Acceptance Criteria	Corrective Action In Case Of N.C.
Visual Examination	Visual	All surfaces.	Sharp, edges, fillets, corners and welds are properly dressed to achieve a minimum preparation grade P3 of ISO 8501-3 except for weld profile smoothing that shall follow grade P2.	Out of conformity items shall be kept aside. Vendor shall be notified.
Pre-cleaning of surfaces	Steam jet cleaner SSPC-SP 1	All surfaces.	Surface contaminants such as oil and grease shall be solvent cleaned as per SSPC-SP 1. Soluble salt deposits, soil and any exogenous compounds shall be removed by steam cleaning and brushing in combination with detergent. The degreased surfaces shall be further washed with fresh water to remove all traces of the degreaser chemicals.	If oil, grease and any exogenous compound is still visible on the surface the operations shall be repeated until conformity is achieved.
Conductivity of abrasive	ASTM D 4940	Before start of each shift.	Conductivity of abrasive soaked in reagent water shall not exceed 250 µS/cm at 20°C.	Replace the abrasive with a new lot and re-testing until acceptable.
Surface Preparation Cleanliness	Blasting booth ISO 8501-1 and SSPC-VIS	All surfaces.	For Carbon Steel surfaces the required visual standard of blast cleaning shall correspond to ISO 8501-1 SA 2 1/2 Very Thorough Blast Cleaning.	Re-blasting and retesting until acceptable.
Blasted Surface Roughness	Replica tape NACE SP0287	Once per production batch.	For Carbon steel surfaces the required surface profile shall between 50 µm and 75 µm.	Re-blasting.
Water Soluble Salts	Bresle-kit ISO 8502-6 ISO 8502-9	Once per production batch.	The salt concentration (chlorides) tested on the blast cleaned surface shall not exceed 20 mg/m² NaCl like single point	Washing with potable water and retesting until acceptable.

Test Type	Method	Frequency	Acceptance Criteria	Corrective Action In Case Of N.C.
Surface Dust Cleanliness	Transparent adhesive tape ISO 8502-3	Once per production batch.	After surface preparation any grit, dust, etc. shall be removed. The residual particle quantity and particle size shall be class 2, rating 2.	Re-cleaning and retesting until acceptable.
Wet Film Thickness	Comb type ISO 2808 Method 1A	Spot checks.	As indicate in PTDS.	Additional coat
Visual Inspection	Visual	During all phases of coating application.	The coating shall be smooth, of uniform color, free of runs, sags, visible holidays, blisters, orange peel, scratches, dust inclusions, solvent retention or any other irregularities.	Repair and retesting.
Dry Film Thickness	Electromagnetic thickness gauge ISO 19840	ISO 19840 After each coat and before application of next coat.	The arithmetic mean of all the individual DFT shall be equal to or greater than the NDFT. All individual dry film thicknesses shall be equal to or above 90% of the NDFT. Individual DFT between 80% of the NDFT and the NDFT are acceptable provided that the number of these measurements is less than 20% of the total number of individual measurements taken. Max of 150% of NDFT or as per manufacturers maximum recommended DFT	Repair, additional coats or recoating as appropriate.
Adhesion Test	Automatic centered pulling force equipment ISO 4624	One test panel for each batch production.	Performed on the coated test panels when the coating system is fully cured. Minimum acceptable adhesion value: 5 MPa.	In case of poor adhesion, the test is repeated on the coated surfaces of the items. It fails again the items shall be blast-cleaned and re-coated.

15. Coating Repairs

TOTAL DAMAGED COATING WITH EXPOSED METAL SUPPORT	DAMAGED COATING WITHOUT EXPOSED METAL SUPPORT
SURFACE PREPARATION The damaged area shall be re-cleaned as originally specified for the item and the complete coating system reapplied. The re-cleaning shall carry over on to the secure surroundings coating for not less than 30 mm all around and the edges feathered using a method approved by the Contractor.	**SURFACE PREPARATION** The coating around the damaged area shall be feathered using an approved method to ensure continuity of the patch coating. The full coating system shall then be reapplied strictly in accordance with this Painting Procedure.
COATING APPLICATION See Original Paint System	**COATING APPLICATION** See Original Paint System
The D.F.T. of each single layer and the final D.F.T. shall be as per original application.	

Areas with inadequate coating thickness shall be thoroughly cleaned and, if necessary abraded and additional compatible coats applied until they meet this specification. These additional coats shall blend in with the final coating on adjoining areas.

16. Handling and Storage

Finished painted items shall be handled and/or stored in a manner to protect the coating from damage. They shall not be dropped or impacted against other objects. Use of ropes, hooks, chains or cables are not permitted. Only rubber or nylon belts shall be allowed for lifting, lowering or suspending the items. Coated items shall be stored off the ground on sufficiently padded skids, properly leveled and spaced.
Once loaded for transport, they are arranged to avoid scratches and to prevent hitting. Non-abrasive and non-metallic supports, wooden board, pallets, mats or rubber strips shall be used.

17. Technical datasheet

Jotamastic 90

Product description

This is a two component polyamine cured epoxy mastic coating. It is a surface tolerant, abrasion resistant, high solids, high build product. This product is tintable in a wide range of colours in Jotun's Multicolor Industry (MCI) system. Specially designed for areas where optimum surface preparation is not possible or required. Provides long lasting protection in environments with high corrosivity. Can be used as primer, mid coat, finish coat or as single coat system in atmospheric and immersed environments. Suitable for properly prepared carbon steel, galvanised steel, stainless steel, aluminium, concrete and a range of aged coating surfaces. It can be applied at sub zero surface temperatures.

Typical use

General:
Primarily designed for maintenance and repair.

Marine:
Outside hulls, exterior and interior areas.

Protective:
Recommended for offshore environments, including splash zones, refineries, power plants, bridges, buildings, mining equipment and general structural steel.

Approvals and certificates

This product contributes to the Green Buildings Standard credits. Please see section Green Building Standards.

Certified in accordance with IMO Res.288(87) – PSPC Crude Oil Tanks **(Valid for Standard Grade only)**
Pre-qualified in accordance with NORSOK M-501 in selected systems
Grain, Newcastle Occupational Health

When used as part of an approved scheme, this material has the following certification:
- Low Flame Spread in accordance with EU Directive for Marine Equipment. Approved in accordance with parts 5 and 2 of Annex 1 of IMO 2010 FTP Code, or Parts 5 and 2 of Annex 1 of IMO FTPC when in compliance with IMO 2010 FTP Code Ch. 8

Consult your Jotun representative for details.

Additional certificates and approvals may be available on request.

Other variants available

Jotamastic 90 Aluminium
Jotamastic 90 GF

Refer to separate TDS for each variant.

Colours

black, white and according to Multicolor Industry tinting system (MCI)

This Technical Data Sheet supersedes those previously issued.
The Technical Data Sheet (TDS) is recommended to be read in conjunction with the Safety Data Sheet (SDS) and the Application Guide (AG) for this product. For your nearest local Jotun office, please visit our website at www.jotun.com

Product data

Property	Test/Standard	Description
STANDARD GRADE		
Solids by volume	ISO 3233	80 ± 2 %
Gloss level (GU 60 °)	ISO 2813	semi gloss (35-70)
Flash point	ISO 3679 Method 1	35 °C
Density	calculated	1.4 kg/l

Region	Regulation	Test Standard	VOC Value
US	CARB(SCM)2020 / SCAQMD rule 1113	Calculated	234 g/l
Hong Kong	Air Pollution Control (VOC) Regulation	Calculated	234 g/l
EU	European Paint Directive 2004/42/CE	Calculated	234 g/l
EU IED	Industrial Emission Directive 2010/75/EU	Calculated	234 g/l
Korea	Korea Clean Air Conservation Act	KS M ISO 11890-1	224 g/l
China	GB 30981-2020 Limit of harmful substances of industrial protective coatings	GB/T 23985-2009 8.3	243 g/l

WINTER GRADE		
Solids by volume	ISO 3233	80 ± 2 %
Flash point	ISO 3679 Method 1	36 °C
Density	calculated	1.4 kg/l

Region	Regulation	Test Standard	VOC Value
US	CARB(SCM)2020 / SCAQMD rule 1113	Calculated	213 g/l
Hong Kong	Air Pollution Control (VOC) Regulation	Calculated	213 g/l
EU	European Paint Directive 2004/42/CE	Calculated	213 g/l
EU IED	Industrial Emission Directive 2010/75/EU	Calculated	213 g/l
Korea	Korea Clean Air Conservation Act	KS M ISO 11890-1	232 g/l
China	GB 30981-2020 Limit of harmful substances of industrial protective coatings	GB/T 23985-2009 8.3	208 g/l

The provided data is typical for factory produced products, subject to slight variation depending on colour.

Gloss description: According to Jotun Performance Coatings' definition.

Small colour variations may occur when changing between the two curing agents. If exposed to weathering without topcoat, the Wintergrade (WG) version will yellow at a faster rate than the same colour in Standard grade.

The VOC values refer to grey colour.

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Film thickness per coat

Typical recommended specification range

STANDARD GRADE

Dry film thickness	100	-	300	µm
Wet film thickness	125	-	375	µm
Theoretical spreading rate	8	-	2.7	m²/l

WINTER GRADE

Dry film thickness	100	-	300	µm
Wet film thickness	125	-	375	µm
Theoretical spreading rate	8	-	2.7	m²/l

Surface preparation

Surface preparation summary table

Substrate	Surface preparation	
	Minimum	Recommended
Carbon steel	St 2 (ISO 8501-1)	Sa 2 (ISO 8501-1)
Stainless steel	The surface shall be hand or machine abraded with non-metallic abrasives or bonded fibre machine or hand abrasive pads to impart a scratch pattern to the surface.	Abrasive blast cleaning to achieve a surface profile using non-metallic abrasive media which is suitable to achieve a sharp and angular surface profile.
Aluminium	The surface shall be hand or machine abraded with non-metallic abrasives or bonded fibre machine or hand abrasive pads to impart a scratch pattern to the surface.	Abrasive blast cleaning to achieve a surface profile using non-metallic abrasive media which is suitable to achieve a sharp and angular surface profile.
Galvanised steel	The surface shall be clean, dry and appear with a rough and dull profile.	Sweep blast-cleaning using non-metallic abrasive leaving a clean, rough and even pattern.
Shop primed steel	Clean, dry and undamaged shop primer (ISO 12944-4 5.4)	Sa 2 (ISO 8501-1)
Coated surfaces	Clean, dry and undamaged compatible coating	Clean, dry and undamaged compatible coating
Concrete	Low pressure water washing to a rough, clean, dry and laitance free surface.	Minimum 4 weeks curing. Moisture content maximum 5 %. Prepare the surface by means of enclosed blast shot or diamond grinding and other appropriate means to abrade the surrounding concrete and to remove laitance.

Optimum performance, including adhesion, corrosion protection, heat resistance and chemical resistance is achieved with recommended surface preparation.

This Technical Data Sheet supersedes those previously issued.
The Technical Data Sheet (TDS) is recommended to be read in conjunction with the Safety Data Sheet (SDS) and the Application Guide (AG) for this product. For your nearest local Jotun office, please visit our website at www.jotun.com

Application

Application methods

The product can be applied by

Spray:	Use airless spray.
Brush:	Recommended for stripe coating and small areas. Care must be taken to achieve the specified dry film thickness.
Roller:	May be used for small areas. Not recommended for first primer coat. Care must be taken to achieve the specified dry film thickness.

Product mixing ratio (by volume)

STANDARD GRADE

Jotamastic 90 Comp A	3.5 part(s)
Jotamastic 90 Standard Comp B	1 part(s)

WINTER GRADE

Jotamastic 90 Comp A	3.5 part(s)
Jotamastic 90 Wintergrade Comp B	1 part(s)

Independent on substrate temperature the minimum temperature of the mixed base and curing agent is 10 °C. Lower temperature may require additional thinner to reach correct application viscosity. Additional thinner gives lower sag resistance and slower curing. If addition of thinner is required, this shall be done after mixing of the two components.

Thinner/Cleaning solvent

Thinner: Jotun Thinner No. 17

Thinning is not normally required. Consult the local representative for advice during application in extreme conditions. Do not thin more than allowed by local environmental legislation.

Guiding data for airless spray

Nozzle tip (inch/1000):	19-25
Pressure at nozzle (minimum):	150 bar/2100 psi

Drying and Curing time

Substrate temperature	-5 °C	0 °C	5 °C	10 °C	23 °C	40 °C
STANDARD GRADE						
Surface (touch) dry			20 h	12 h	4 h	1.5 h
Walk-on-dry			40 h	20 h	6 h	3 h
Dry to over coat, minimum			30 h	10 h	3 h	1.5 h
Dried/cured for service			28 d	14 d	7 d	2 d

This Technical Data Sheet supersedes those previously issued.
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WINTER GRADE

Surface (touch) dry	24 h	18 h	12 h	8 h	3.5 h
Walk-on-dry	72 h	30 h	20 h	12 h	4 h
Dry to over coat, minimum	54 h	20 h	10 h	6 h	2 h
Dried/cured for service	21 d	14 d	10 d	5 d	3 d

For maximum overcoating intervals, refer to the Application Guide (AG) for this product.

Drying and curing times are determined under controlled temperatures and relative humidity below 85 %, and at average of the DFT range for the product.

Surface (touch) dry: The state of drying when slight pressure with a finger does not leave an imprint or reveal tackiness.

Walk-on-dry: Minimum time before the coating can tolerate normal foot traffic without permanent marks, imprints or other physical damage.

Dry to over coat, minimum: The recommended shortest time before the next coat can be applied.

Dried/cured for service: Minimum time before the coating can be permanently exposed to the intended environment/medium.

Induction time and Pot life

Paint temperature	**23 °C**
STANDARD GRADE	
Pot life	2 h
WINTER GRADE	
Pot life	45 min

Heat resistance

	Temperature	
	Continuous	**Peak**
Dry, atmospheric	90 °C	-
Immersed, sea water	50 °C	60 °C
Immersed, crude oil	80 °C	90 °C

WINTER GRADE
Dry, atmospheric, continuous: 120 °C
Dry, atmospheric, Peak: -

Peak temperature duration max. 1 hour.

The temperatures listed relate to retention of protective properties. Aesthetic properties may suffer at these temperatures.

Note that the coating will be resistant to various immersion temperatures depending on the specific chemical and whether immersion is constant or intermittent. Heat resistance is influenced by the total coating system. If used as part of a system, ensure all coatings in the system have similar heat resistance.

This Technical Data Sheet supersedes those previously issued.
The Technical Data Sheet (TDS) is recommended to be read in conjunction with the Safety Data Sheet (SDS) and the Application Guide (AG) for this product. For your nearest local Jotun office, please visit our website at www.jotun.com

Product compatibility

Depending on the actual exposure of the coating system, various primers and topcoats can be used in combination with this product. Some examples are shown below. Contact Jotun for specific system recommendation.

Previous coat:	epoxy shop primer, inorganic zinc silicate shop primer, zinc epoxy, epoxy, epoxy mastic, inorganic zinc silicate
Subsequent coat:	polyurethane, polysiloxane, epoxy, acrylic, vinyl epoxy

Packaging (typical)

	Volume (litres)	Size of containers (litres)
Jotamastic 90 Comp A	3.55/15.6	5/20
Jotamastic 90 Standard Comp B	1/4.4	1/5
Jotamastic 90 Wintergrade Comp B	1/4.4	1/5

The volume stated is for factory made colours. Note that local variants in pack size and filled volumes can vary due to local regulations.

Storage

The product must be stored in accordance with national regulations. Keep the containers in a dry, shaded, cool, well-ventilated space and away from sources of heat and ignition. Containers must be kept tightly closed. Handle with care.

Shelf life at 23 °C

Jotamastic 90 Comp A	48 month(s)
Jotamastic 90 Standard Comp B	24 month(s)
Jotamastic 90 Wintergrade Comp B	24 month(s)

In some markets commercial shelf life can be dictated shorter by local legislation. The above is minimum shelf life, thereafter the paint quality is subject to re-inspection.

Green Building Standards

This product contributes to Green Building Standard credits by meeting the following specific requirements:

LEED®v4 (2013)
EQ credit: Low emitting materials
- Healthcare and schools, Exterior applied products: VOC content for Industrial Maintenance Coatings (250 g/l) (CARB(SCM)2007).
MR credit: Building product disclosure and optimization
- Material Ingredients, Option 2: Material Ingredient Optimization, International Alternative Compliance Path - REACH optimization: Fully inventoried chemical ingredients to 100 ppm and not containing substances on the REACH Authorization list – Annex XIV, the Restriction list – Annex XVII and the SVHC candidate list.
- Environmental Product Declarations. Product-specific Type III EPD (ISO 14025;21930, EN 15804).

BREEAM® International (2016)
- Mat 01: Product-specific Type III EPD (ISO 14025;21930, EN 15804).

BREEAM® International (2013)

This Technical Data Sheet supersedes those previously issued.
The Technical Data Sheet (TDS) is recommended to be read in conjunction with the Safety Data Sheet (SDS) and the Application Guide (AG) for this product. For your nearest local Jotun office, please visit our website at www.jotun.com

- Hea 02: VOC content for Binding Primers SB (750 g/l) (EU Directive 2004/42/CE).

The EPDs are available at www.epd-norge.no

Caution

This product is for professional use only. The applicators and operators shall be trained, experienced and have the capability and equipment to mix/stir and apply the coatings correctly and according to Jotun's technical documentation. Applicators and operators shall use appropriate personal protection equipment when using this product. This guideline is given based on the current knowledge of the product. Any suggested deviation to suit the site conditions shall be forwarded to the responsible Jotun representative for approval before commencing the work.

Health and safety

Please observe the precautionary notices displayed on the container. Use under well ventilated conditions. Do not inhale spray mist. Avoid skin contact. Spillage on the skin should immediately be removed with suitable cleanser, soap and water. Eyes should be well flushed with water and medical attention sought immediately.

Colour variation

When applicable, products primarily meant for use as primers or antifoulings may have slight colour variations from batch to batch. Such products and epoxy based products used as a finish coat may chalk when exposed to sunlight and weathering.

Colour and gloss retention on topcoats/finish coats may vary depending on type of colour, exposure environment such as temperature, UV intensity etc., application quality and generic type of paint. Contact your local Jotun office for further information.

Disclaimer

The information in this document is given to the best of Jotun's knowledge, based on laboratory testing and practical experience. Jotun's products are considered as semi-finished goods and as such, products are often used under conditions beyond Jotun's control. Jotun cannot guarantee anything but the quality of the product itself. Minor product variations may be implemented in order to comply with local requirements. Jotun reserves the right to change the given data without further notice.

Users should always consult Jotun for specific guidance on the general suitability of this product for their needs and specific application practices.

If there is any inconsistency between different language issues of this document, the English (United Kingdom) version will prevail.

Hardtop XP

Product description

This is a two component chemically curing aliphatic acrylic polyurethane coating. It has a glossy finish with very good gloss retention. It is a high solids product. The product has good application properties with low dry spray. To be used as topcoat in atmospheric environments.

Typical use

Marine:
Recommended for topside, deck and superstructure.

Protective:
Recommended for offshore environments, refineries, power plants, bridges and buildings. Suitable for a wide range of industrial structures. Used as a topcoat in pre-qualified NORSOK systems.

Approvals and certificates

This product contributes to the Green Buildings Standard credits. Please see section Green Building Standards.

Pre-qualified in accordance with NORSOK M-501 in selected systems
Grain, Newcastle Occupational Health
Food, Compliant with USA, FDA Title 21, Part 175.300 for dry solids

When used as part of an approved scheme, this material has the following certification:
- Low Flame Spread in accordance with EU Directive for Marine Equipment. Approved in accordance with parts 5 and 2 of Annex 1 of IMO 2010 FTP Code, or Parts 5 and 2 of Annex 1 of IMO FTPC when in compliance with IMO 2010 FTP Code Ch. 8

Consult your Jotun representative for details.

Additional certificates and approvals may be available on request.

Other variants available

Hardtop XP Alu
Hardtop XPL
Hardtop XPF (Winter grade version)

Refer to separate TDS for each variant.

Colours

according to colour card and Multicolor Industry tinting system (MCI)

Product data

Property	Test/Standard	Description
Solids by volume	ISO 3233	63 ± 2 %
Gloss level (GU 60 °)	ISO 2813	gloss (70-85)
Flash point	ISO 3679 Method 1	30 °C
Density	calculated	1.4 kg/l

This Technical Data Sheet supersedes those previously issued.
The Technical Data Sheet (TDS) is recommended to be read in conjunction with the Safety Data Sheet (SDS) and the Application Guide (AG) for this product. For your nearest local Jotun office, please visit our website at www.jotun.com

Region	Regulation	Test Standard	VOC Value
US	CARB(SCM)2020 / SCAQMD rule 1113	Calculated	320 g/l
Hong Kong	Air Pollution Control (VOC) Regulation	Calculated	320 g/l
EU	European Paint Directive 2004/42/CE	Calculated	320 g/l
EU IED	Industrial Emission Directive 2010/75/EU	Calculated	320 g/l
Korea	Korea Clean Air Conservation Act	KS M ISO 11890-1	385 g/l
China	GB 30981-2020 Limit of harmful substances of industrial protective coatings	GB/T 23985-2009 8.3	330 g/l

The provided data is typical for factory produced products, subject to slight variation depending on colour.

Gloss description: According to Jotun Performance Coatings' definition.

The VOC values refer to white colour.

Film thickness per coat

Typical recommended specification range

Dry film thickness	50	-	100	µm
Wet film thickness	80	-	160	µm
Theoretical spreading rate	12.6	-	6.3	m²/l

Bright colours may need film thickness in the high end of the recommended specification range to achieve opacity.

Special effect colours may have diverging specification range. Refer to the Application Guide (AG) for additional information or contact your nearest Jotun office.

Surface preparation

Surface preparation summary table

Substrate	Surface preparation	
	Minimum	Recommended
Coated surfaces	Clean, dry and undamaged compatible coating	Clean, dry and undamaged compatible coating

Application

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Application methods

The product can be applied by

Spray:	Use air spray or airless spray.
Brush:	Recommended for stripe coating and small areas. Care must be taken to achieve the specified dry film thickness.
Roller:	May be used. Care must be taken to achieve the specified dry film thickness.

Product mixing ratio (by volume)

Hardtop XP Comp A	10 part(s)
Hardtop XP Comp B	1 part(s)

Thinner/Cleaning solvent

Thinner: Jotun Thinner No. 10 / Jotun Thinner No. 26

Jotun Thinner No. 26 is supplied and used in USA due to legislation.

Jotun Thinner No 63 can be used for faster curing. Max addition; 5%. Please note that addition of Thinner No 63 will give reduced polife depending on ambient temperature.

Guiding data for airless spray

Nozzle tip (inch/1000):	13-19
Pressure at nozzle (minimum):	150 bar/2100 psi

Guiding data for air spray

Nozzle tip:	HVLP: 11-19 (inch/1000) / Pressure pot: 1.1-1.9 (mm)
Pressure at nozzle (minimum):	HVLP: 2.1 bar/30 psi / Pressure pot: 2.1 bar/30 psi

Drying and Curing time

Substrate temperature	5 °C	10 °C	23 °C	40 °C
Surface (touch) dry	16 h	6 h	3.5 h	2 h
Walk-on-dry	24 h	14 h	7 h	4 h
Dry to over coat, minimum	24 h	14 h	7 h	4 h
Dried/cured for service	21 d	14 d	7 d	3 d

For maximum overcoating intervals, refer to the Application Guide (AG) for this product.

Drying and curing times are determined under controlled temperatures and relative humidity below 85 %, and at average of the DFT range for the product.

Surface (touch) dry: The state of drying when slight pressure with a finger does not leave an imprint or reveal tackiness.

Walk-on-dry: Minimum time before the coating can tolerate normal foot traffic without permanent marks, imprints or other physical damage.

Dry to over coat, minimum: The recommended shortest time before the next coat can be applied.

Dried/cured for service: Minimum time before the coating can be permanently exposed to the intended environment/medium.

Induction time and Pot life

Paint temperature	23 °C	40 °C
Pot life	1.5 h	50 min

Heat resistance

	Temperature	
	Continuous	Peak
Dry, atmospheric	120 °C	140 °C

Peak temperature duration max. 1 hour.

The temperatures listed relate to retention of protective properties. Aesthetic properties may suffer at these temperatures.

Product compatibility

Depending on the actual exposure of the coating system, various primers and topcoats can be used in combination with this product. Some examples are shown below. Contact Jotun for specific system recommendation.

Previous coat: epoxy, zinc epoxy, epoxy mastic, polyurethane

Packaging (typical)

	Volume (litres)	Size of containers (litres)
Hardtop XP Comp A	4.55 / 18.2	5 / 20
Hardtop XP Comp B	0.45 / 1.8	1 / 3

The volume stated is for factory made colours. Note that local variants in pack size and filled volumes can vary due to local regulations.

Storage

The product must be stored in accordance with national regulations. Keep the containers in a dry, shaded, cool, well-ventilated space and away from sources of heat and ignition. Containers must be kept tightly closed. Handle with care.

Shelf life at 23 °C

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Hardtop XP Comp A	48 month(s)
Hardtop XP Comp B	48 month(s)

In some markets commercial shelf life can be dictated shorter by local legislation. The above is minimum shelf life, thereafter the paint quality is subject to re-inspection.

Green Building Standards

This product contributes to Green Building Standard credits by meeting the following specific requirements:

LEED®v4 (2013)
MR credit: Building product disclosure and optimization
- Material Ingredients, Option 2: Material Ingredient Optimization, International Alternative Compliance Path - REACH optimization: Fully inventoried chemical ingredients to 100 ppm and not containing substances on the REACH Authorization list – Annex XIV, the Restriction list – Annex XVII and the SVHC candidate list.
- Environmental Product Declarations. Product-specific Type III EPD (ISO 14025;21930, EN 15804).

BREEAM® International (2016)
- Mat 01: Product-specific Type III EPD (ISO 14025;21930, EN 15804).

BREEAM® International (2013)
- Hea 02: VOC content for Two-pack performance Coatings SB (500 g/l) (EU Directive 2004/42/CE).

The EPDs are available at www.epd-norge.no

Caution

This product is for professional use only. The applicators and operators shall be trained, experienced and have the capability and equipment to mix/stir and apply the coatings correctly and according to Jotun's technical documentation. Applicators and operators shall use appropriate personal protection equipment when using this product. This guideline is given based on the current knowledge of the product. Any suggested deviation to suit the site conditions shall be forwarded to the responsible Jotun representative for approval before commencing the work.

Health and safety

Please observe the precautionary notices displayed on the container. Use under well ventilated conditions. Do not inhale spray mist. Avoid skin contact. Spillage on the skin should immediately be removed with suitable cleanser, soap and water. Eyes should be well flushed with water and medical attention sought immediately.

Colour variation

When applicable, products primarily meant for use as primers or antifoulings may have slight colour variations from batch to batch. Such products and epoxy based products used as a finish coat may chalk when exposed to sunlight and weathering.

Colour and gloss retention on topcoats/finish coats may vary depending on type of colour, exposure environment such as temperature, UV intensity etc., application quality and generic type of paint. Contact your local Jotun office for further information.

Disclaimer

The information in this document is given to the best of Jotun's knowledge, based on laboratory testing and practical experience. Jotun's products are considered as semi-finished goods and as such, products are often used under conditions beyond Jotun's control. Jotun cannot guarantee anything but the quality of the product itself. Minor product variations may be implemented in order to comply with local requirements. Jotun reserves the right to change the given data without further notice.

Users should always consult Jotun for specific guidance on the general suitability of this product for their needs and specific application practices.

If there is any inconsistency between different language issues of this document, the English (United Kingdom) version will prevail.

MANUFACTURER RECORD BOOK

DAVIT CRANE Tag.no.X-99001

24-27012

RESERVED TO			
State		**Date**	**Signature**
Review without comments	☐		
Review with comments	☐		
Comments:			

Rev.	Modify desctiption	Issue	Approval	Date
01	First issue	CZB	MPU	19/09/2024

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1 Scope

The purpose of this document is to collect all information in one document for easy and quick reference.
The document is divided into main and commercial components.

Client	Hull/Project	Society
ROSETTI MARINO	X-99001	/

The supplier included the following items:

Order position	Equipment	Description	Q.ty	S/N
001	C09-0001	DAVIT CRANE	1	4366

Main Items

2 Boom

Part Number	Description	Rev	Q.ty	Assembly
C09-0001-P0004	Boom	C	1	C09-0001-A0003

MATERIAL

ID	Material	Description	Pos.	Qt.y	Heat/ID plate	Certificates 3.1	Other mechanical test
24T003	S355J2+N	Sheet 8 mm	1	2	487237	709265 5352 001	N.A.
			16	1			
			17	1			
			18	1			
24T169	S355J2+N	Sheet 15 mm	2	2	Q20592	HPL/TC/D/2010/18044	N.A.
			6	2			
			8	1			
			9	1			
			14	2			
			19	1			
20T409	S355J2+N	Sheet 50 mm	3	1	P38608	20170910-PS-003-043	N.A.
24T194	S355J2+N	Sheet 20 mm	4	1	P24134	HPL/TC/D/2010/19363	N.A.
			5	1			
24T176	S355J2+N	Sheet 12 mm	10	2	SU99873	230412-FP01KS-0011A1-0003	N.A.
21T018	S355J2+N	Sheet 10 mm	7	1	1628104	496293	N.A.
			11	2			
			13	1			
			15	1			
			20	1			
			21	1			
			22	1			
24C077	S355J2+N	Sheet 6 mm	12	1	410436	1003494977	N.A.
23C227	S355J2+N	Sheet 5 mm	24	1	730324314	730/0291248	N.A.
20T409	S355J2+N	Round Bar 80mm / Sheet 5mm	25	1	P38608	20170910-PS-003-043	N.A.
19T081	S355J2+N	Round Bar 60mm / Sheet 30mm	26	4	A1/02808469	107725	N.A.

NDE TEST

ITP	NDE type	NDE operator	Certificates N.	Date
4.06	VT Welds	Michele Pellis	274/24	14/10/2024
4.07	MT Welds	Michele Pellis	381/24	14/10/2024
1.02	UT Plates	Michele Pellis	370/24	14/10/2024

DIMENSIONAL CHECK			PAINTING CHECK		
ITP	Certificates N.	Date	ITP	Certificates N.	Date
6.01	DimAM001	18/10/2024	7.01	32/2024	22/10/2024

3 Column

Part Number	Description	Rev	Q.ty	Assembly
C09-0001-P0002	Column	E	1	C09-0001-A0006

MATERIAL

ID	Material	Description	Pos.	Qt.y	Heat/ID plate	Certificates 3.1	Other mechanical test
16F.5953.01	S355J2+N	Sheet 40 mm	1	1	441908	16624400805	N.A.
24C.609.01			2	1	2461219	16624563335	
16F.6119.01/B 16F.6119.01/A	S355J2+N	Sheet 15 mm	3	1	442151 442151	16624421397	N.A.
			4	1			
			5	1			
			8	1			
			9	3			
			10	1			
24R.366.02/A	S355J2+N	Sheet 10 mm	6	4	2377353	16624421397	N.A.
			7	2			
712277111-400071315	S355J2+N	Sheet 5 mm	11	2	122771	664290	N.A.
8748646	S355J2+N	Sheet 10 mm	12	8	565503	5394/3016	N.A.
712277111-400071315	S355J2+N	Sheet 5 mm	13	5	122771	664290	N.A.
712277111-400071315	S355J2+N	Sheet 5 mm	14	4	122771	664290	N.A.
24LT004258	S355J2+N	Sheet 30 mm	15	1	322347	240000004290	N.A.
24LT004258	S355J2+N	Sheet 30 mm	16	4	322347	240000004290	N.A.

NDE TEST

ITP	NDE type	NDE operator	Certificates N.	Date
1.02	UT plates	Michele Pellis	380/24	28/10/2024
4.06	VT Welds	Michele Pellis	287/24	28/10/2024
4.06	VT Welds	Davide Righetto	1260/24	22/10/2024
4.07	MT Welds	Michele Pellis	392/24	28/10/2024
4.07	MT Welds	Davide Righetto	786/24	22/10/2024
4.08	UT Welds	Michele Pellis	379/24	28/10/2024
4.08	UT Welds	Davide Righetto	782/24	22/10/2024

DIMENSIONAL CHECK			PAINTING CHECK		
ITP	Certificates N.	Date	ITP	Certificates N.	Date
6.01	DimAM004	31/10/2024	7.01	40/2024	11/11/2024

4 Pedestal

Part Number	Description	Rev	Q.ty	Assembly
C09-0001-P0001	Pedestal Carpenry	D	1	C09-0001-A0006

MATERIAL

ID	Material	Description	Pos.	Qt.y	Heat/ID plate	Certificates 3.1	Other mechanical test
24C.609.01	S355J2+N	Sheet 40 mm	1	1	2461219	16624563335	N.A.
24LT005170	S355J2+N	Sheet 20 mm	2	1	316829	240000005205	N.A.
8748646	S355J2+N	Sheet 10 mm	3	2	565503	5394/3016	N.A.
712277111-400071315	S355J2+N	Sheet 5 mm	4	2	122771	664290	N.A.
			6	2			
151872201	S355J2+N	Sheet 8 mm	5	1	180235	2022/002212/01	N.A.

NDE TEST

ITP	NDE type	NDE operator	Certificates N.	Date
4.06	VT Welds	Michele Pellis	272/24	14/10/2024
4.07	MT Welds	Michele Pellis	349/27	14/10/2024
4.08	UT Welds	Michele Pellis	371/24	14/10/2024
1.02	UT Plates	Michele Pellis	368/24	14/10/2024

DIMENSIONAL CHECK

ITP	Certificates N.	Date
6.01	DimAM003	18/10/2024

PAINTING CHECK

ITP	Certificates N.	Date
7.01	31/2024	22/10/2024

5 Slewing Ring

Part Number	Description	Rev	Q.ty	Assembly
V41-0979-013-COMM	Slewing Ring	1	1	C09-0001-A0003

MATERIAL

ID	Material	Description	Pos.	Qt.y	Heat/ID plate	Certificates 3.1	Other mechanical test
001/001-003	42CrMo4	Ring Ø979	1	1	145018/56A	24/006307	N.A.
001/001-006	42CrMo4	Ring Ø811	2	1	145018/56A	24/006308	N.A.

NDE TEST

ITP	NDE type	NDE operator	Certificates N.	Date
2.02	MT control	Simone Tengattini	240413-001 mt001	14/11/2024
2.03	UT control	Simone Tengattini	240413-001 us001	28/10/2024

DIMENSIONAL CHECK			PAINTING CHECK		
ITP	Certificates N.	Date	ITP	Certificates N.	Date
2.04	240413-001 d001	15/11/2024	7.01	240413-001 p001	21/11/2024

6 Trolley

Part Number	Description	Rev	Q.ty	Assembly
C09-0001-P0006	Trolley	D	1	C09-0004-A0005

MATERIAL

ID	Material	Description	Pos.	Qt.y	Heat/ID plate	Certificates 3.1	Other mechanical test
19T081	S355J2+N	Sheet 30 mm	1	1	A1/02808469	107725	N.A.
24T176	S355J2+N	Sheet 12 mm	2	4	SU99873	230412-FP01KS-0011A1-0003	N.A.
24T169	S355J2+N	Sheet 15 mm	3	1	Q20592	HPL/TC/D/2010/18044	N.A.
			4	1			
			5	2			
			6	2			
			7	2			
			8	4			

NDE TEST

ITP	NDE type	NDE operator	Certificates N.	Date
4.06	VT Welds	Michele Pellis	273/24	14/10/2024
4.07	MT Welds	Michele Pellis	380/24	14/10/2024
1.02	UT plates	Michele Pellis	369/24	14/10/2024

DIMENSIONAL CHECK

ITP	Certificates N.	Date
6.01	DimAM002	18/10/2024

PAINTING CHECK

ITP	Certificates N.	Date
7.01	32/2024	22/10/2024

7 Winch Box

Part Number	Description	Rev	Q.ty	Assembly
C09-0001-P0085	Winch Box	A	1	C09-0001-A0004

MATERIAL

ID	Material	Description	Pos.	Qt.y	Heat/ID plate	Certificates 3.1	Other mechanical test
24P092	S355J2+N	Sheet 21 mm (Pipe 279x35)	1	1	1240905	1154/4	N.A.
24P093	S355J2+N	Rod bar Ø 125 (Pipe 127x30)	2	1	1241244	1253/3	N.A.
L2403769	S355J2+N	Sheet 15 mm	3	2	NLK-2466898	2440	N.A.
L2403765	S355J2+N	Sheet 20 mm	4	1	EUS/420526	2443	UT PLATES
L2403765	S355J2+N	Sheet 20 mm	5	1	EUS/420526	2443	UT PLATES

NDE TEST

ITP	NDE type	NDE operator	Certificates N.	Date
4.06	VT Welds	Estevan Natale	24-27012-004	14/11/2024
4.07	MT Welds	Eric Marini	445/24	18/11/2024

DIMENSIONAL CHECK			PAINTING CHECK		
ITP	Certificates N.	Date	ITP	Certificates N.	Date
6.01	DimAM005	18/11/2024	7.01	49/2024	22/11/2024

8 Chassis Winch Carpentry

Part Number	Description	Rev	Q.ty	Assembly
C09-0001-P0005	Chassis Winch Carpentry	A	1	C09-0001-A0004

MATERIAL

ID	Material	Description	Pos.	Qt.y	Heat/ID plate	Certificates 3.1	Other mechanical test
LNAA780802A	S355J2+N	Sheet 45 mm	1	1	LNAA78	619669	UT PLATES
LA2403769	S355J2+N	Sheet 15 mm	2	1	NLK-2466898	2440	N.A.
			3	1			
			5	1			
			6	1			
L.S355.030.2450.GS	S355J2+N	Sheet 30 mm	7	1	SHA-2472001126	1347	UT PLATES
16F.71200.03	S355J2+N	Sheet 25 mm	4	2	340928	16624648524	UT PLATES

NDE TEST

ITP	NDE type	NDE operator	Certificates N.	Date
4.06	VT Welds	Estevan Natale	24-27012-003	14/11/2024
4.07	MT Welds	Eric Marini	443/24	18/11/2024
4.08	UT Welds	Eric Marini	445/24	18/11/2024

DIMENSIONAL CHECK

ITP	Certificates N.	Date
6.01	DimAM006	18/11/2024

PAINTING CHECK

ITP	Certificates N.	Date
7.01	49/2024	22/11/2024

11 Certification List

REMAZEL	CERTIFICATION LIST	Certificate Nr.: 1 Date: 23/09/2024

Final Customer:	Order Customer:	Object:	Description:	Quantity:	Inspection and Test Plan (ITP):	Our job:
ROSETTI MARINO	24005170	BOOM + TROLLEY	C09-0001-P0004 Rev.D & C09-0001-P0006 Rev.C		1724001010-QC-ITP-00002	24-27012

MATERIAL

Drawing	Pos.	Q.ty	Description	Material	Certificates 3.1	Manufacturer	Heat/Plate ID	Additional Mechanical Test	UT Certificates	Nesting
C09-0001-P004_REV.C	24	1	Sheet 5 mm	S355 J2+N	23C227	730/0291248	730324314			
C09-0001-P004_REV.C	12	1	Sheet 6 mm	S355 J2+N	24C077	1003494977	410436			
C09-0001-P004_REV.C	13	1	Sheet 10 mm	S355 J2+N	21T018	496293	1628104			
C09-0001-P004_REV.C	1	2	Sheet 8mm	S355 J2+N	24T003	709265 5352 001	487237			L54439
C09-0001-P004_REV.C	16	1	Sheet 8mm	S355 J2+N	24T003	709265 5352 001	487237			L54439
C09-0001-P004_REV.C	17	1	Sheet 8mm	S355 J2+N	24T003	709265 5352 001	487237			L54439
C09-0001-P004_REV.C	18	1	Sheet 8mm	S355 J2+N	24T003	709265 5352 001	487237			L54439
C09-0001-P004_REV.C	23	1	Sheet 8mm	S355 J2+N	24T003	709265 5352 001	487237			L54439
C09-0001-P004_REV.C	11	2	Sheet 10 mm	S355 J2+N	21T018	496293	1628104			
C09-0001-P004_REV.C	20	1	Sheet 10 mm	S355 J2+N	21T018	496293	1628104			
C09-0001-P004_REV.C	21	1	Sheet 10 mm	S355 J2+N	21T018	496293	1628104			
C09-0001-P004_REV.C	10	2	Sheet 12 mm	S355 J2+N	24T176	230412-FP01KS-0011A1-	SU99873			
C09-0001-P006_REV.A	2	4	Sheet 12 mm	S355 J2+N	24T176	230412-FP01KS-0011A1-	SU99873			
C09-0001-P004_REV.C	2	2	Sheet 15 mm	S355 J2+N	24T169	HPL/TC/D/2010/18044	Q20592			L54443
C09-0001-P004_REV.C	6	2	Sheet 15 mm	S355 J2+N	24T169	HPL/TC/D/2010/18044	Q20592			L54443
C09-0001-P004_REV.C	8	1	Sheet 15 mm	S355 J2+N	24T169	HPL/TC/D/2010/18044	Q20592			L54443
C09-0001-P004_REV.C	9	1	Sheet 15 mm	S355 J2+N	24T169	HPL/TC/D/2010/18044	Q20592			L54443
C09-0001-P004_REV.C	19	1	Sheet 15 mm	S355 J2+N	24T169	HPL/TC/D/2010/18044	Q20592			L54443
C09-0001-P004_REV.C	14	2	Sheet 15 mm	S355 J2+N	24T169	HPL/TC/D/2010/18044	Q20592			L54443

C09-0001-P006_REV.A	3	1	Sheet 15 mm	S355 J2+N	24T169	HPL/TC/D/2010/18044	Q20592			L54443
C09-0001-P006_REV.A	4	1	Sheet 15 mm	S355 J2+N	24T169	HPL/TC/D/2010/18044	Q20592			L54443
C09-0001-P006_REV.A	5	2	Sheet 15 mm	S355 J2+N	24T169	HPL/TC/D/2010/18044	Q20592			L54443
C09-0001-P006_REV.A	6	2	Sheet 15 mm	S355 J2+N	24T169	HPL/TC/D/2010/18044	Q20592			L54443
C09-0001-P006_REV.A	7	2	Sheet 15 mm	S355 J2+N	24T169	HPL/TC/D/2010/18044	Q20592			L54443
C09-0001-P006_REV.A	8	4	Sheet 15 mm	S355 J2+N	24T169	HPL/TC/D/2010/18044	Q20592			L54443
C09-0001-P004_REV.C	4	1	Sheet 20mm	S355 J2+N	24T194	HPL/TC/D/2010/19363	P24134			L54435
C09-0001-P004_REV.C	5	1	Sheet 20mm	S355 J2+N	24T194	HPL/TC/D/2010/19363	P24134			L54435
C09-0001-P006_REV.A	1	1	Sheet 30mm	S355 J2+N	19T081	107725	A1/02808469		SGP	
C09-0001-P004_REV.C	3	1	Sheet 50mm	S355 J2+N	20T409	20170910-PS-003-043	P38608		SGP	L54436
C09-0001-P004_REV.C	7	1	Sheet 10 mm	S355 J2+N	21T018	496293	1628104			
C09-0001-P004_REV.C	15	1	Sheet 10 mm	S355 J2+N	21T018	496293	1628104			
C09-0001-P004_REV.C	22	1	Sheet 10 mm	S355 J2+N	21T018	496293	1628104			

MAKSTIL
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Republic of North Macedonia
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A01

Customer A06: DUFERCO COMMERCIALE SPA
Customer's order no. A07: SO4201010862
Order No. / Lot No. A08 : / 5352
Manufacturer's symbol A04 ŻSK
Delivered conditions B04 NR - normalizing rolling

INSPECTION CERTIFICATE No. 709265 5352 001

A02 A03

According to EN 10204 / 2004 : 3.1
Issued in electronic form

Technical delivery conditions B02 : EN 10025-2:2019
EN 10029:2010 cl.A; cl.N
EN 10163-1-2:2004 cl.A/1

Issued : 01.09.2021

HOT ROLLED STEEL PLATES B01

Heat No. B07	Steel grade B02	Item no. A07	Pieces B08	Dimensions (mm) Thickness B09	Width B10	Length B11	Weight (kg)
487179	S355J2+N	9	2	8.00	2500	12000	3840
487180	"	9	4	8.00	2500	12000	7680
487207	"	9	2	8.00	2500	12000	3840
487237	"	9	4	8.00	2500	12000	7680

CHEMICAL COMPOSITION

Heat No.	C 10^{-2} % C71	Si 10^{-2} % C72	Mn 10^{-2} % C73	P 10^{-3} % C74	S 10^{-3} % C75	Al 10^{-3} % C76	N 10^{-3} % C77	Cr 10^{-2} % C78	Cu 10^{-2} % C79	Ni 10^{-2} % C80	Ti 10^{-3} % C81	V 10^{-3} % C82	Nb 10^{-3} % C83	Mo 10^{-3} % C84	B 10^{-4} % C85	Ca 10^{-4} % C85	CEV 10^{-2} % C93
487179	16	21	105	15	10	46	8	9	36	10	1	1	1	1			39
487180	17	20	106	17	10	36	7	16	36	10	1	1	1	1			41
487207	20	23	106	11	7	45	8	13	31	10	1	1	1	1			43
487237	17	30	110	20	4	38	7	17	37	12	1	1	1	1			42

Total : 12 23040 MANUFACTURING PROCESS: EAF C70

PRODUCT IDENTIFICATION / TENSILE TEST / IMPACT TEST / SUPPLEMENTARY REQUIREMENTS

Heat No. B07	Plate No. B07	Plate No. B07	Test No. C00	TENSILE TEST Location 2) C01	Direction 1) C02	Reh N/mm² C11	Rm N/mm² C12	A % C13	IMPACT TEST Direction 1) C02	Type C40	Individual values J 1 C42	2 C42	3 C42	Mean value J C43	At °C C03	Width of tests piece C41	SUPPLEMENTARY REQUIREMENTS Direction 1) C02		
~~487179~~	~~55612-01~~	~~55612-02~~	55612	1	T	408	541	28.9	L	ISO-V	124	128	123	125	-20	10X8.0			
~~487180~~	~~55599-02~~	~~55600-01~~	55572	1	T	428	576	28.9	L	ISO-V	89	81	85	85	-20	10X8.0			
~~"~~	~~55600-02~~	~~55601-02~~																	56
~~487207~~	~~55576-01~~	~~55576-02~~	55569	1	T	419	563	28.9	L	ISO-V	132	130	124	129	-20	10X8.0			09012024
487237	~~55602-01~~	55603-01	55602	1	T	422	573	28.9	L	ISO-V	99	92	101	97	-20	10X8.0			
"	~~55604-01~~	~~55604-02~~	24T003																

Bend test C50:

Ultra-sonic test D02 :

Visual and dimensional inspection : without objection
We hereby certify, that the delivered material complies with the terms of the order. Z01

1)Direction of the test piece : L - longitudinal; T - transverse; Z - in the thickness direction
2)Location of the test sample : 1 - top; 2 - bottom

..

Die-stamp marking :
Makstil's symbol / Grade / Heat No. / Plate No./CS mark
B06

CE Z04
0036-CPR-M-02-2006
DoP No.302-CPR-01/07/2013

Q.D. 'MAKSTIL' A.D
QM.dip.eng I.BOGESKI A05

JOINT STOCK COMPANY FOR PRODUCTION AND TRADE WITH METALLURGICAL PRODUCTS MAKSTIL QA Skopje

RZ TECHNICAL CONTROL A.D. - SKOPJE
tech.manager dipl.Eng.E.Ugrinovska Z02

Certificazione valida per materiale fornitoVi con ns. DDT nr. C4001380 del 23/09/2024 relativo a:

PZ. 2 PARTICOLARE: C09-0001-P004_REV.C SP. 8mm POS. 1
PZ. 1 PARTICOLARE: C09-0001-P004_REV.C SP. 8mm POS. 16
PZ. 1 PARTICOLARE: C09-0001-P004_REV.C SP. 8mm POS. 17
PZ. 1 PARTICOLARE: C09-0001-P004_REV.C SP. 8mm POS. 18
PZ. 1 PARTICOLARE: C09-0001-P004_REV.C SP. 8mm POS. 23
RIF. VS. ORD. 24005170 DEL 11/09/2024 - RIF. VS. COMM. 24-27012

ArcelorMittal Nippon Steel India Limited

HAZIRA - 394270, DIST.SURAT, GUJARAT, INDIA
CIN : U27100GJ1976FLC013787

MILL TEST AND INSPECTION CERTIFICATE

Test Certificate No. : HPL/TC/D/2010/18044
Material Specification : EN 10025-2 : 2019 S355 J2+N
Sales Order No. : 2110090961

Date : 25.08.2023

M AND S GLOBAL INVESTMENTS SA,
VIA NASSA 29, 6900 LUGANO,
SWITZERLAND

WE CERTIFY THAT THE PLATES HAVE BEEN MANUFACTURED, INSPECTED AND TESTED IN ACCORANCE WITH THE REQUIEREMENT OF EN 10025-2 : 2019 S355 J2+N.

Sr. No.	Plate No.	Heat No.	Size in mm T_W_L	Theoretical Weight (Mt.)	Mechanical Properties								Chemical Analysis (%)																	
					YS	UTS	%EL	Impact in Joules at '-20°C'						C#	Mn	S	P	Si	Cr	Ni	Cu	Ti	V	Nb	Mo	Al	N	Nb+V+Ti	CE ***
					MPa	MPa	GL= 5.65√S0	1	2	3	Avg.	LA/ PA	0.200	1.600	0.025	0.025	0.150-0.250	~	~	0.550	0.050	0.130	0.050	~	0.020	0.0120	0.200	0.450	
					355 Min *	470-630	20 Min **	27 J Min						Max	Max	Max	Max				Max	Max	Max	Max		Min	Max	Max	Max	
173	JV4162211D	Q20590	20_2500_12000	4.710																										
		Q20590 Total		84.780																										
174	JV4091111D	Q20592	15_2500_12000	3.533	396	525	37	176	198	138	171	LA	0.175	1.295	0.002	0.011	0.191	0.026	0.046	0.040	0.002	0.047	0.004	0.005	0.037	0.0063	0.052	0.413	
175	JV4091112D	Q20592	15_2500_12000	3.533								PA	0.171	1.300	0.001	0.011	0.190	0.026	0.049	0.037	0.003	0.049	0.004	0.007	0.035	0.0072	0.056	0.410	
176	JV4091211D	Q20592	15_2500_12000	3.533																										
177	JV4092111D	Q20592	15_2500_12000	3.533																										
178	JV4092211D	Q20592	15_2500_12000	3.533																										
179	JV4092212D	Q20592	15_2500_12000	3.533																										
180	JV4093111D	Q20592	15_2500_12000	3.533																										
181	JV4093112D	Q20592	15_2500_12000	3.533																										
182	JV4093113D	Q20592	15_2500_12000	3.533																										
183	JV4101111D	Q20592	15_2500_12000	3.533	391	542	35	192	148	198	179																			
184	JV4101112D	Q20592	15_2500_12000	3.533																										
185	JV4101113D	Q20592	15_2500_12000	3.533																										
186	JV4103111D	Q20592	15_2500_12000	3.533																										
187	JV4103112D	Q20592	15_2500_12000	3.533																										
188	JV4103211D	Q20592	15_2500_12000	3.533																										
189	JV4104111D	Q20592	15_2500_12000	3.533																										
190	JV4104211D	Q20592	15_2500_12000	3.533																										
191	JV4104212D	Q20592	15_2500_12000	3.533																										
192	JV4105111D	Q20592	15_2500_12000	3.533																										
193	JV4105211D	Q20592	15_2500_12000	3.533																										
194	JV4105212D	Q20592	15_2500_12000	3.533																										
195	JV4106111D	Q20592	15_2500_12000	3.533	431	544	32	182	162	196	180																			
196	JV4106112D	Q20592	15_2500_12000	3.533																										
197	JV4106211D	Q20592	15_2500_12000	3.533																										
198	JV4107111D	Q20592	15_2500_12000	3.533																										
199	JV4107112D	Q20592	15_2500_12000	3.533																										
200	JV4107113D	Q20592	15_2500_12000	3.533																										
201	JV4108111D	Q20592	15_2500_12000	3.533																										
202	JV4108112D	Q20592	15_2500_12000	3.533																										
203	JV4108113D	Q20592	15_2500_12000	3.533																										
204	JV4109111D	Q20592	15_2500_12000	3.533																										
205	JV4109211D	Q20592	15_2500_12000	3.533	435	525	36	130	144	160	145																			
206	JV4109212D	Q20592	15_2500_12000	3.533																										
207	JV4110111D	Q20592	15_2500_12000	3.533																										
208	JV4110112D	Q20592	15_2500_12000	3.533																										
209	JV4110211D	Q20592	15_2500_12000	3.533																										

24T169

COPIA CONFORME ALL'ORIGINALE
IL PRESENTE CERTIFICATO VALE PER
LA QUANTITA' DEL NS. DDT 946 DEL 05/04/2024
SETAL S.P.A.

HS Code: 72085110
Place of Melting: INDIA, Facility: AM/NS INDIA
Place of Hot-rolling: INDIA, Facility: AM/NS INDIA

Authorised Signatory (Quality Assurance)
ArcelorMittal Nippon Steel India Limited
AMNSIL/QAC-PMP/05/F
www.amns.in

AM/NS INDIA

ArcelorMittal Nippon Steel India Limited

HAZIRA - 394270, DIST.SURAT, GUJARAT, INDIA
CIN : U27100GJ1976FLC013787

MILL TEST AND INSPECTION CERTIFICATE

CE 0045 ArcelorMittal Nippon Steel India Limited 06 0045-CPR-0978

Test Certificate No. : HPL/TC/D/2010/18044
Material Specification : EN 10025-2 : 2019 S355 J2+N
Sales Order No. : 2110090961

Date : 25.08.2023

M AND S GLOBAL INVESTMENTS SA,
VIA NASSA 29, 6900 LUGANO,
SWITZERLAND

WE CERTIFY THAT THE PLATES HAVE BEEN MANUFACTURED, INSPECTED AND TESTED IN ACCORANCE WITH THE REQUIEREMENT OF EN 10025-2 : 2019 S355 J2+N.

Sr. No.	Plate No.	Heat No.	Size in mm T_W_L	Theoretical Weight (Mt.)	Mechanical Properties								Chemical Analysis (%)																	
					YS	UTS	%EL	Impact in Joules at '-20°C'																						
					MPa	MPa	GL= 5.65√S0	1	2	3	Avg.	LA/ PA	C#	Mn	S	P	Si	Cr	Ni	Cu	Ti	V	Nb	Mo	Al	N	Nb+V+Ti	CE ***
					355 Min *	470-630	20 Min **	27 J Min					0.200	1.600	0.025	0.025	0.150-0.250	~	~	0.550	0.050	0.130	0.050	~	0.020	0.0120	0.200	0.450		
													Max	Max	Max	Max				Max	Max	Max	Max		Min	Max	Max	Max		
312	JV4175212D	R19261	20_2500_12000	4.710																										
313	JV4176111D	R19261	20_2500_12000	4.710																										
314	JV4176112D	R19261	20_2500_12000	4.710																										
315	JV4176211D	R19261	20_2500_12000	4.710																										
316	JV4190111D	R19261	20_2500_12000	4.710																										
317	JV4190211D	R19261	20_2500_12000	4.710																										
318	JV4190311D	R19261	20_2500_12000	4.710																										
319	JV4191111D	R19261	20_2500_12000	4.710																										
320	JV4191211D	R19261	20_2500_12000	4.710	436	545	33	196	174	176	182																			
321	JV4191212D	R19261	20_2500_12000	4.710																										
322	JV4316111D	R19261	20_2500_12000	4.710																										
323	JV4316211D	R19261	20_2500_12000	4.710																										
324	JV4317111D	R19261	20_2500_12000	4.710																										
325	JV4317211D	R19261	20_2500_12000	4.710																										
326	JV4317311D	R19261	20_2500_12000	4.710																										
327	JV4318111D	R19261	20_2500_12000	4.710																										
328	JV4318211D	R19261	20_2500_12000	4.710	401	553	31	180	160	160	167																			
329	JV4318212D	R19261	20_2500_12000	4.710																										
		R19261 Total		122.460																										
330	JV4111111D	R19262	15_2500_12000	3.533	429	534	37	180	132	146	153	LA	0.172	1.289	0.003	0.011	0.196	0.020	0.014	0.010	0.002	0.045	0.004	0.002	0.036	0.0060	0.051	0.402		
331	JV4111112D	R19262	15_2500_12000	3.533								PA	0.169	1.293	0.002	0.013	0.193	0.018	0.016	0.011	0.004	0.047	0.005	0.005	0.034	0.0069	0.056	0.400		
332	JV4111113D	R19262	15_2500_12000	3.533																										
333	JV4112111D	R19262	15_2500_12000	3.533																										
334	JV4112112D	R19262	15_2500_12000	3.533																										
335	JV4112211D	R19262	15_2500_12000	3.533																										
336	JV4113111D	R19262	15_2500_12000	3.533																										
337	JV4113211D	R19262	15_2500_12000	3.533																										
338	JV4113212D	R19262	15_2500_12000	3.533	403	539	36	142	186	182	170																			
339	JV4114111D	R19262	15_2500_12000	3.533																										
340	JV4114112D	R19262	15_2500_12000	3.533																										
341	JV4114113D	R19262	15_2500_12000	3.533																										
342	JV4115111D	R19262	15_2500_12000	3.533																										
343	JV4115112D	R19262	15_2500_12000	3.533																										
344	JV4115113D	R19262	15_2500_12000	3.533																										
345	JV4116111D	R19262	15_2500_12000	3.533																										
346	JV4116112D	R19262	15_2500_12000	3.533																										
347	JV4116113D	R19262	15_2500_12000	3.533																										
348	JV4117111D	R19262	15_2500_12000	3.533																										

COPIA CONFORME ALL'ORIGINALE

IL PRESENTE CERTIFICATO VALE PER

LA QUANTITA' DEL NS. DDT 946 DEL 05/04/2024

Authorised Signatory (Quality Assurance)
ArcelorMittal Nippon Steel India Limited
AMNSIL/QAC-PMP/05/F
www.amns.in

HS Code: 7 2 0 8 5 1 9 0

SETAL S.P.A.

Place of Melting & Casting: INDIA, Facility: AM/NS INDIA
Place of Hot-rolling: INDIA, Facility: AM/NS INDIA

ArcelorMittal Nippon Steel India Limited

HAZIRA - 394270, DIST.SURAT, GUJARAT, INDIA
CIN : U27100GJ1976FLC013787

MILL TEST AND INSPECTION CERTIFICATE

CE 0045 ArcelorMittal Nippon Steel India Limited DB 0045-CPR-0975

Test Certificate No. : HPL/TC/D/2010/18044
Material Specification : EN 10025-2 : 2019 S355 J2+N
Sales Order No. : 2110090961

Date : 25.08.2023

M AND S GLOBAL INVESTMENTS SA,
VIA NASSA 29, 6900 LUGANO,
SWITZERLAND

WE CERTIFY THAT THE PLATES HAVE BEEN MANUFACTURED, INSPECTED AND TESTED IN ACCORANCE WITH THE REQUIEREMENT OF EN 10025-2 : 2019 S355 J2+N.

Sr. No.	Plate No.	Heat No.	Size in mm T_W_L	Theoretical Weight (Mt.)	Mechanical Properties								Chemical Analysis (%)																
					YS	UTS	%EL	Impact in Joules at '-20°C'						C#	Mn	S	P	Si	Cr	Ni	Cu	Ti	V	Nb	Mo	Al	N	Nb+V+Ti	CE ***
					MPa	MPa	GL= 5.65√S0	1	2	3	Avg.	LA/ PA	0.200	1.600	0.025	0.025	0.150-0.250	~	~	0.550	0.050	0.130	0.050	~	0.020	0.0120	0.200	0.450
					355 Min *	470-630	20 Min **	27 J Min					Max	Max	Max	Max				Max	Max	Max	Max		Min	Max	Max	Max
		S21512 Total		76.539																									
416	JV4479000G	S21537	50_2500_12000	11.775	410	528	34	152	152	138	147	LA	0.180	1.373	0.002	0.015	0.219	0.027	0.025	0.023	0.003	0.055	0.004	0.006	0.034	0.0072	0.062	0.430
417	JV4480000G	S21537	50_2500_12000	11.775								PA	0.178	1.374	0.001	0.014	0.216	0.026	0.024	0.023	0.002	0.056	0.006	0.008	0.032	0.0081	0.064	0.428
418	JV4481000G	S21537	50_2500_12000	11.775																									
419	JV4482000G	S21537	50_2500_12000	11.775	403	521	35	172	136	152	153																		
420	JV4483000G	S21537	50_2500_12000	11.775																									
421	JV4484000G	S21537	50_2500_12000	11.775																									
422	JV4485000G	S21537	50_2500_12000	11.775	418	553	37	168	152	164	161																		
423	JV4486000G	S21537	50_2500_12000	11.775																									
		S21537 Total		94.200																									
		Grand Total		2322.277																									

Note: (1) Test Certificate conforms to EN 10204:2004 Type 3.1
(2) Material conforms to standard rolling & weight tolerance.
(3) Supply condition : Plates in Normalizing rolled and trimmed edge condition.
(4) Process Route : Hot Metal/ HBI - EAF/Conarc - LF (Fully Killed steel) - VD- CCM - RHF - Plate Rolling (Normalizing Rolling).
(5) Orientation of Tensile test Specimen is Transverse and Impact test specimen is Longitudinal to the rolling direction.
(6) Tensile specimen size : 10 mm dia round specimen for thickness >20mm & full thickness flat specimen for thickness ≤20mm. Impact specimen size : 10x10x55mm for thickness ≥11mm & 7.5x10x55mm for thickness 8mm to <11mm.
(7) * Requirement of YS is 355 MPa min for thickness ≤16mm, 345 MPa min for thickness >16mm to ≤40mm, 335 MPa min for >40 to ≤63mm thicknes & 325 MPa min for >63 to ≤80mm thickness
** Requirement of %EL is 20min for thickness >3mm to ≤40mm, 19min for thickness >40mm to ≤63mm & 18min for thickness >63mm to ≤80mm.
*** Requirement of CE is 0.450 max for thickness ≤30mm & 0.470 max for thickness >30mm.
# Requirement of %C is 0.200 max for thickness ≤40mm & 0.220 max for thickness >40mm.
(8) Surface condition as per EN 10163-2 : 2004 Class B Sub class 3. Reconditioning / Repair of plates by welding on steel not performed.
(9) Ultrasonic Test found satisfactory as per EN10160_CLASS_S1E1.
(10) Stencilling marking details : Manufacturer Name, Plate No, Heat No, Size, Specification, UT code, CE Marking. Low stress steel die stamping details: Plate No, Heat No, Specification.
(11) Tolerance on Thickness as per EN 10029 Class A. Flatness as per EN 10029 Class N Type L Table 4:2010 & Camber as per EN 10029:2010 (0.2% max of actual length of the plate).
(12) Durability : No performance determined
(13) Regulated Substance : No performance determined
(14) Intended uses : Hot rolled steel plates for Building Construction or Civil Engineering.

Legend: LA: Ladle Analysis(%), PA: Product Analysis(%), T-Thickness, W-Width, L-Length, CE: C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15.
HBI - Hot Briquetted Iron, EAF- Electric Arc Furnace, LF- Ladle Furnace, VD- Vacuum Degassing, CCM- Continuous Casting Mill, RHF- Reheating Furnace.

COPIA CONFORME ALL'ORIGINALE
IL PRESENTE CERTIFICATO VALE PER
LA QUANTITA' DEL NS. DDT 946 DEL 05/04/2024
SETAL S.P.A.

HS Code: 7 2 0 8 5 1 1 0
Place of Melting & Casting: INDIA, Facility: AM/NS INDIA
Place of Hot-rolling: INDIA, Facility: AM/NS INDIA

Authorised Signatory (Quality Assurance)
ArcelorMittal Nippon Steel India Limited
AMNSIL/QAC-PMP/05/F
www.amns.in

Certificazione valida per materiale fornitoVi con ns. DDT nr. C4001380 del 23/09/2024 relativo a:
PZ. 2 PARTICOLARE: C09-0001-P004_REV.C SP. 15mm POS. 2
PZ. 2 PARTICOLARE: C09-0001-P004_REV.C SP. 15mm POS. 6
PZ. 1 PARTICOLARE: C09-0001-P004_REV.C SP. 15mm POS. 8
PZ. 1 PARTICOLARE: C09-0001-P004_REV.C SP. 15mm POS. 9
PZ. 1 PARTICOLARE: C09-0001-P004_REV.C SP. 15mm POS. 19
PZ. 2 PARTICOLARE: C09-0001-P004_REV.C SP. 15mm POS. 14
PZ. 1 PARTICOLARE: C09-0001-P006_REV.A SP. 15mm POS. 3
PZ. 1 PARTICOLARE: C09-0001-P006_REV.A SP. 15mm POS. 4
PZ. 2 PARTICOLARE: C09-0001-P006_REV.A SP. 15mm POS. 5
PZ. 2 PARTICOLARE: C09-0001-P006_REV.A SP. 15mm POS. 6
PZ. 2 PARTICOLARE: C09-0001-P006_REV.A SP. 15mm POS. 7
PZ. 4 PARTICOLARE: C09-0001-P006_REV.A SP. 15mm POS. 8
RIF. VS. ORD. 2400177 DEL 11/09/2024 - RIF. VS. COMM. 24-27012

AM/NS INDIA

DECLARATION OF PERFORMANCE

No: PM/CE/2016/02

Unique identification code of the product-type:
Plate S355J2 / 1.0577

1. Type, batch or serial number or any other element allowing identification of the construction product as required under Article 11(4):

   Plate S355J2 / 1.0577 according to EN 10025-2

2. Intended use or uses of the construction product, in accordance with the applicable harmonized technical specification, as foreseen by the manufacturer:

   Welded, bolted and riveted structures

3. Name, registered trade name or registered trade mark and contact address of the manufacturer as required pursuant Article 11(5):

   ArcelorMittal Nippon Steel India Limited
   Address: 27th KM, Surat-Hazira Road, Hazira, Surat, India - 394270

4. Name and contact address of the authorised representative whose mandate covers the tasks specified in Article 12(2):

   Not applicable

5. System or systems of assessment and verification of constancy of performance of the construction product as set out in Annex V:

   System 2+

6. In case of the declaration of performance concerning a construction product covered by a harmonised standard:

7. Notified body TUV NORD System GmbH & Co KG, Germany performed the initial inspection of the manufacturing plant and of factory production control and the continuous surveillance, assessment and evaluation of factory production control under system 2÷ and issued the certificate of conformity of the factory production control with no 0045-CPR-0978.

AM/NS INDIA

8. Declared performance:

Essential characteristic			Performance		Harmonised techn. specification
Tolerances on dimensions / shape	Thickness		EN 10029		EN 10025-1:2004
	Flatness		EN 10029		
Yield strength	Nominal thickness (mm)		Values		
	>	≤	min (MPa)		
		16	355		
	16	40	345		
	40	63	335		
	63	80	325		
	80	100	315		
	100	150	295		
Tensile strength	Nominal thickness (mm)		Values		
	>	≤	min (MPa)	max (MPa)	
		100	470	630	
	100	400	450	600	
Elongation	Nominal thickness (mm)		Values		
	>	≤	min (%)		
		40	20		
	40	63	19		
	63	150	18		
	150	400	17		
Impact strength	Nominal thickness (mm)		Values		
	>	≤	min (J)		
		400	27 at -20°C		
Weldability	Nominal thickness (mm)		Values		
	>	≤	max (CEV, %)		
		40	0,43		
	40	100	0,45		
Durability (chemical composition)	Nominal thickness (mm)		Values		
	>	≤		min (%)	max (%)
		30	C		0,20
			Si		0,55
			Mn		1,60
			P		0,025
			S		0,025
			Cu		0,55
	30	400	C		0,22
			Si		0,55
			Mn		1,60
			P		0,025
			S		0,025
			Cu		0,55

9. The performance of the product identified in points 1 and 2 is in conformity with the declared performance in point 8.

This declaration of performance is issued under the sole responsibility of the manufacturer identified in point 3.
Signed for and on behalf of the manufacturer by:

Sumanta Dasgupta

(Quality Assurance)

Hazira-Surat, Date: 19.07.2023

PM/CE/2016/02

DUFERCO COMMERCIALE S.p.A.
COPIA CONFORME ALL'ORIGINALE

검 사 증 명 서
MILL TEST CERTIFICATE

HYUNDAI STEEL
0038/07
당진제철소 : 충남 당진시 송악읍 북부산업로 1480
1480 Bukbusanup-Ro, Songak-Eup, Dangjin-Si, Chungnam, Korea

주문번호 Order No. : E170700075
품 명 Commodity : Hot Rolled Steel Plate
제품규격 Specification : EN 10025-2 S355J2+N
고객사 Customer : DUFERCO S.A.
주문자 Contractor : DUFERCO S.A.
증명서 번호 Certificate No. : 20170910-PS-003-043
발행일자 Date of Issue : 2017-09-28

제품치수 Dimension	수량 Quantity	중량 Weight (Kg)	제강번호 Heat No.	제품번호 Product No.	Position	인장시험 Tensile Test YP (N/㎟)	TS	EL (%)	YP-EL (%)	RA (%)	YR (%)	YP Mtd	충격시험 Impact Test V Notch -20.0℃ Energy (Joule)	SF (%)	LE (㎜)	Division	C	Si	Mn	P	S	Cr	Ni	Cu	Mo	Nb	Ti	V	CEQ
																	4	3	3	4	4	2	2	3	2	3	3	3	3
50 x 2000 x 6000	1	4,710	P38608	FA86078702	T	409.9	566.7	29				U	1: 198			L	1,630	195	1,347	138	27	3	13	130	0	44	2	19	415
									20T409				2: 212			C	1,598	200	1,376	141	22	3	12	132	0	45	2	20	416
													3: 188																
													A: 199																
50 x 2000 x 6000	1	4,710	P39453	FA86631101	T	404.8	522.1	27				U	1: 299			L	1,089	177	1,492	109	36	3	9	82	0	31	15	2	375
													2: 286			C	1,084	181	1,493	114	35	2	8	83	0	30	16	1	372
													3: 296																
													A: 294																
50 x 2000 x 6000	1	4,710	P39453	FA86631102	T	404.8	522.1	27				U	1: 299			L	1,089	177	1,492	109	36	3	9	82	0	31	15	2	375
													2: 286			C	1,084	181	1,493	114	35	2	8	83	0	30	16	1	372
													3: 296																
													A: 294																
50 x 2000 x 6000	1	4,710	P39453	FA86631103	T	404.8	522.1	27				U	1: 299			L	1,089	177	1,492	109	36	3	9	82	0	31	15	2	375
													2: 286			C	1,084	181	1,493	114	35	2	8	83	0	30	16	1	372
													3: 296																
													A: 294																

단위 Unit 2 : x 100 3 : x 1,000 4 : x 10,000 5 : x 100,000

NOTE
* Position – T:Top, M:Middle, B:Bottom
* Tensile test – Direction:Transverse, Gauge length:5.65√A。(Round), YP Mtd : 2 (0.2% off-set),5 (0.5% underload), U (Upper yield point), L (Lower yield point)
* Impact test – Direction:Longitudinal, Size:10mmX10mm, SF:Shear fracture, LE:Lateral Expansion
* Division – C:Check analysis, L:Ladle analysis

* THIS CERTIFICATE IS ISSUED ACCORDING TO EN 10204 3.1 AD2000W0(W1)
This Mill Test Certificate is issued in accordance with EN 10204 Type 3.1

상기의 제품은 검사의 결과 주문요구사항과 지정된 규격에 합격한 것을 증명합니다.
WE HEREBY CERTIFY THAT THE MATERIAL HEREIN HAS BEEN MADE AND TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF ORDER AND SPECIFICATION

Signature S. B. Park
Chief Of Quality Assurance Team

* 본 검사증명서는 원본인 전자문서(전자서명 정보 포함)로부터 출력된 사본입니다. 전자문서의 내용은 현대제철 고객포탈에서 확인하실 수 있습니다.(http://sm.hyundai-steel.com/cs/cm/login.jsp)
* This Mill Test Certificate is a copy that has been printed from original electronic document(with digital signing).
You are able to check an original electronic document at hyundaisteel's customer portal.(http://sm.hyundai-steel.com/cs/cm/login.jsp) * QRcode scanner App : 'QReal'
* [사용상 주의사항] 본 검사증명서에 명기된 규격 외 사용시 제품손상 및 안전상 문제가 발생할 수 있습니다.
* [Caution for Use] Damage on products and safety problems may arise if used other than to the spec stated in this Mill Test Certification.

DUFERCO COMMERCIALE S.p.A.
COPIA CONFORME ALL'ORIGINALE

검 사 증 명 서
MILL TEST CERTIFICATE

HYUNDAI STEEL
0038/07 당진제철소 : 충남 당진시 송악읍 북부산업로 1480
1480 Bulbusanup-Ro, Songak-Eup, Dangjin-Si, Chungnam, Korea

주문번호 Order No. : E170700075
품 명 Commodity : Hot Rolled Steel Plate
제품규격 Specification : EN 10025-2 S355J2+N
고객사 Customer : DUFERCO S.A.
주문자 Contractor : DUFERCO S.A.
증명서 번호 Certificate No. : 20170910-PS-003-044
발행일자 Date of Issue : 2017-09-28

제품치수 Dimension	수량 Quantity	중량 Weight (Kg)	제강번호 Heat No.	제품번호 Product No.	Position	인장시험 Tensile Test YP (N/mm²)	TS	EL (%)	YP-EL (%)	RA (%)	YR (%)	YP Mtd	충격시험 Impact Test V Notch -20.0 'C Energy (Joule)	SF (%)	LE (mm)	Division	C	Si	Mn	P	S	Cr	Ni	Cu	Mo	Nb	Ti	V	CEQ
																	4	3	3	4	4	2	2	3	2	3	3	3	3
50 x 2000 x 6000	1	4,710	P39449	FA86631201	T	397.6	513.0	27				U	1: 313			L	1,165	183	1,469	112	36	2	8	95	1	29	13	1	379
													2: 308			C	1,194	179	1,438	98	30	3	9	98	0	28	13	1	378
													3: 293																
													A: 305																
50 x 2000 x 6000	1	4,710	P39449	FA86631202	T	397.6	513.0	27				U	1: 313			L	1,165	183	1,469	112	36	2	8	95	1	29	13	1	379
													2: 308			C	1,194	179	1,438	98	30	3	9	98	0	28	13	1	378
													3: 293																
													A: 305																

*** Sub Total(030) *** 6 28,260(Kg)

*** Condition of supply : Controlled Rolling (Normalzing Rolling).

Certificazione valida per materiale fornitoVi con ns. DDT nr. C4001381 del 23/09/2024 relativo a:

PZ. 1 PARTICOLARE: C09-0001-P004_REV.C SP. 50mm POS. 25
RIF. VS. ORD. 24005228 DEL 11/09/2024
RIF. VS. COMM. 24-27012

NOTE
- Position - T:Top, M:Middle, B:Bottom
- Tensile test - Direction:Transverse, Gauge length:5.65√A, (Round), YP Mtd : 2 (0.2% off-set),5 (0.5% underload), U (Upper yield point), L (Lower yield point)
- Impact test - Direction:Longitudinal, Size:10mmX10mm, SF:Shear fracture, LE:Lateral Expansion
- Division - C:Check analysis, L:Ladle analysis

- THIS CERTIFICATE IS ISSUED ACCORDING TO EN 10204 3.1 AD2000W0(W1)
This Mill Test Certificate is issued in accordance with EN 10204 Type 3.1

상기의 제품은 검사의 결과 주문요구사항과 지정된 규격에 합격한 것을증명합니다.
WE HEREBY CERTIFY THAT THE MATERIAL HEREIN HAS BEEN MADE AND TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF ORDER AND SPECIFICATION

Signature S. B. Park
Chief Of Quality Assurance Team

* 본 검사증명서는 원본인 전자문서(전자서명 정보 포함)로부터 출력된 사본입니다. 전자문서의 내용은 현대제철 고객포탈에서 확인하실 수 있습니다.(http://sm.hyundai-steel.com/cs/cm/login.jsp)
* This Mill Test Certificate is a copy that has been printed from original electronic document(with digital signing).
You are able to check an original electronic document at hyundaisteel's customer portal(http://sm.hyundai-steel.com/cs/cm/login.jsp) * QRcode scanner App : 'QReal'
* [사용상 주의사항] 본 검사증명서에 명기된 규격 외 사용시 제품손상 및 안전상 문제가 발생할 수 있습니다.
* [Caution for Use] Damage on products and safety problems may arise if used other than to the spec stated in this Mill Test Certification.

원디렉/출판해외영림/2017-09-26 09:21 * 로 문서는 현대제철 정보자산입니다. 무단 전재배포만을할 수 없습니다.

HYUNDAI STEEL

Declaration of Performance
(according to regulation EU No 305/2011)

DoP No. S355J2+N – 20170405 – PI – 001
SO No. 1101096066

Plate S355J2+N / 1.0577 according EN 10025-2

To be used for building constructions or civil engineering

HYUNDAI STEEL COMPANY
Dangjin Works
1480, Bukbusanupro,
Songak-eup, Dangjin-si,
Chungcheongnam-do, KOREA
Tel: +82 (41) 680 - 1681
Website : www.hyundai-steel.com

CE Marking Notified Body
Lloyds Register Verification Limited
71 Fenchurch Street, London, EC3M 4BS
Tel :+44 (0)207 423 2428
Email : ecdirectives@lr.org
Website : www.lr.org

System of assessment and verification of constancy of performance of the product
System 2+

Notified factory production control certification body No. 0038 performed the initial inspection of the manufacturing plant and of factory production control and the continuous surveillance, assessment, and evaluation of factory production control and issued the certificate of conformity of the factory production control

S. B. Park

S. B. Park – Manager, Quality Assurance team
HYUNDAI STEEL COMPANY

5TH, APR. 2017
Date

Essential characteristic	Performance				Harmonised technical specification
Tolerances on dimensions and shape	Dimensions Flatness		EN 10029 EN 10029		EN10025-1 2004
Yield strength (transverse)	Nominal thickness (mm)		Values Min (MPa)		
	>	<=			
	-	16	355		
	16	40	345		
	40	63	335		
	63	80	325		
	80	100	315		
	100	150	295		
Tensile strength (transverse)	Nominal thickness (mm)		Values (MPa)		
	>	<=	Min	Max	
	-	3	510	680	
	3	100	470	630	
	100	150	450	600	
Elongation (transverse)	Nominal thickness (mm)		Values min (%, 5.65√So)		
	>	<=			
	3	40	20		
	40	63	19		
	63	100	18		
	100	150	18		
Impact strength (longitudinal)	J0		27J at - 20°C		
Weldability CEV	Nominal thickness (mm)		Values max (%)		
	>	<=			
	-	30	0,45		
	30	40	0,47		
	40	150	0,47		
Durability	Nominal thickness (mm)		Values max (%)		
	-	40	C:0,20 Si: 0,55 Mn: 1,60 P: 0,025 S: 0,025 Cu: 0,55		
	40	-	C:0,22 Si: 0,55 Mn: 1,60 P: 0,025 S: 0,025 Cu: 0,55		

CE

0038

HYUNDAI STEEL COMPANY
Dangjin Works
1480, Bukbusanupro,
Songak-eup, Dangjin-si,
Chungcheongnam-do, KOREA

07

Hot Rolled Steel Plate S355J2+N

EN 10025-1 – 2004

Hot Rolled Steel Plate S355J2+N / 1.0577

To be used for building constructions or civil engineering

Tolerances on dimensions : Plate EN10029
Elongation :
Tensile Strength :
Yield Strength : EN10025-2
Impact Strength :
Weldability :
Durability :

Dangerous Substances : No Performance Determined

HYUNDAI STEEL COMPANY

ArcelorMittal Nippon Steel India Limited

HAZIRA - 394270, DIST.SURAT, GUJARAT, INDIA
CIN : U27100GJ1976FLC013787

MILL TEST AND INSPECTION CERTIFICATE

Test Certificate No. : HPL/TC/D/2010/19363
Material Specification : EN 10025-2 : 2019 S355 J2+N & AD2000 Merkblatt W1
Sales Order No. : 2110094902

Date : 27.01.2024

SEAWAY SRL,
VIA TRIESTE 90-A, RAVENNA, ITALY

WE CERTIFY THAT THE PLATES HAVE BEEN MANUFACTURED, INSPECTED AND TESTED IN ACCORANCE WITH THE REQUIEREMENT OF EN 10025-2 : 2019 S355 J2+N.

Sr. No.	Plate No.	Heat No.	Size in mm T_W_L	Theoretical Weight (Mt.)	Mechanical Properties								Chemical Analysis (%)																
					YS	UTS	%EL	Bend	Impact in Joules at '-20°C'					C***	Mn	S	P	Si	Cr	Ni	Cu	Ti	V	Nb	Mo	Al	N	Nb+V+Ti	CE
					MPa	MPa	GL= 5.65√S0	M.R.= 2.0T	1	2	3	Avg.	LA/ PA	0.200	1.600	0.025	0.025	0.150-0.250	-	-	0.550	0.050	0.130	0.050	-	0.020	-	0.200	0.430
					355 Min *	470-630	20 Min **	180°	27 J Min					Max	Max	Max	Max				Max	Max	Max	Max		Min		Max	Max
1	PN1554111D	P24105	20_2500_12000	4.710	401	566	29	OK	184	136	178	166	LA	0.171	1.296	0.001	0.011	0.205	0.016	0.005	0.005	0.003	0.049	0.002	0.000	0.033	0.0069	0.054	0.400
2	PN1554112D	P24105	20_2500_12000	4.710									PA	0.166	1.299	0.001	0.012	0.203	0.017	0.007	0.002	0.002	0.051	0.001	0.000	0.032	0.0082	0.054	0.397
3	PN1554113D	P24105	20_2500_12000	4.710																									
		P24105 Total		14.130																									
4	PN2143111D	P24133	20_2500_12000	4.710	406	547	30	OK	180	160	154	165	LA	0.170	1.284	0.002	0.010	0.199	0.016	0.005	0.005	0.003	0.046	0.003	0.000	0.032	0.0067	0.052	0.397
5	PN2143112D	P24133	20_2500_12000	4.710									PA	0.167	1.288	0.001	0.010	0.196	0.017	0.006	0.007	0.003	0.047	0.005	0.000	0.030	0.0080	0.055	0.395
6	PN2143211D	P24133	20_2500_12000	4.710																									
7	PN2144211D	P24133	20_2500_12000	4.710																									
8	PN2622111D	P24133	25_2500_12000	5.888	415	544	29	OK	168	188	144	167																	
9	PN2622112D	P24133	25_2500_12000	5.888																									
10	PN2623111D	P24133	25_2500_12000	5.888																									
11	PN2623112D	P24133	25_2500_12000	5.888																									
		P24133 Total		42.392																									
12	PN2147111D	P24134	20_2500_12000	4.710	424	552	30	OK	168	136	172	159	LA	0.174	1.293	0.002	0.010	0.193	0.015	0.005	0.006	0.003	0.050	0.003	0.000	0.030	0.0061	0.056	0.404
13	PN2147112D	P24134	20_2500_12000	4.710									PA	0.171	1.297	0.001	0.010	0.191	0.013	0.008	0.003	0.003	0.050	0.003	0.000	0.026	0.0071	0.056	0.401
14	PN2147211D	P24134	20_2500_12000	4.710																									
15	PN2148111D	P24134	20_2500_12000	4.710																									
16	PN2148112D	P24134	20_2500_12000	4.710																									
17	PN2148211D	P24134	20_2500_12000	4.710																									
18	PN2624111D	P24134	25_2500_12000	5.888	391	538	35	OK	168	146	136	150																	
19	PN2624112D	P24134	25_2500_12000	5.888																									
20	PN2625111D	P24134	25_2500_12000	5.888																									
21	PN2625112D	P24134	25_2500_12000	5.888																									
		P24134 Total		51.812																									
22	PN1891111D	Q22868	15_2000_12000	2.826	449	584	27	OK	164	170	136	157	LA	0.178	1.290	0.001	0.013	0.194	0.019	0.005	0.007	0.003	0.047	0.002	0.000	0.035	0.0067	0.052	0.406
23	PN1891112D	Q22868	15_2000_12000	2.826									PA	0.174	1.294	0.001	0.016	0.196	0.018	0.004	0.004	0.005	0.048	0.004	0.000	0.032	0.0076	0.057	0.403
24	PN1891113D	Q22868	15_2000_12000	2.826																									
25	PN1892111D	Q22868	15_2000_12000	2.826																									
26	PN1892112D	Q22868	15_2000_12000	2.826																									
27	PN1892113D	Q22868	15_2000_12000	2.826																									
28	PN1893212D	Q22868	15_2000_12000	2.826																									
29	PN1894111D	Q22868	15_2000_12000	2.826																									
30	PN1894112D	Q22868	15_2000_12000	2.826																									
31	PN1894113D	Q22868	15_2000_12000	2.826																									
32	PN1898111D	Q22868	15_2000_12000	2.826	428	541	32	OK	186	188	190	188																	
33	PN1898112D	Q22868	15_2000_12000	2.826																									
34	PN1898113D	Q22868	15_2000_12000	2.826																									
35	PN1924111D	Q22868	15_2000_12000	2.826																									
36	PN1924112D	Q22868	15_2000_12000	2.826																									
37	PN1924113D	Q22868	15_2000_12000	2.826																									

24T194

HS Code: 72085110
Place of Melting & Casting: INDIA, Facility: AM/NS INDIA

AM/NS-5

Authorised Signatory (Quality Assurance)
ArcelorMittal Nippon Steel India Limited
AMNSIL/QAC-PMP/05/F

AM/NS INDIA

ArcelorMittal Nippon Steel India Limited

HAZIRA - 394270, DIST.SURAT, GUJARAT, INDIA
CIN : U27100GJ1976FLC013787

MILL TEST AND INSPECTION CERTIFICATE

CE 0045 ArcelorMittal Nippon Steel India Limited CE 0045-CPR-0570

Test Certificate No. : HPL/TC/D/2010/19363 Date : 27.01.2024
Material Specification : EN 10025-2 : 2019 S355 J2+N & AD2000 Merkblatt W1
Sales Order No. : 2110094902

SEAWAY SRL,
VIA TRIESTE 90-A, RAVENNA, ITALY

WE CERTIFY THAT THE PLATES HAVE BEEN MANUFACTURED, INSPECTED AND TESTED IN ACCORANCE WITH THE REQUIEREMENT OF EN 10025-2 : 2019 S355 J2+N.

Sr. No.	Plate No.	Heat No.	Size in mm T_W_L	Theoretical Weight (Mt.)	Mechanical Properties									Chemical Analysis (%)															
					YS	UTS	%EL	Bend	Impact in Joules at '-20°C'						C***	Mn	S	P	Si	Cr	Ni	Cu	Ti	V	Nb	Mo	Al	N	Nb+V+Ti	CE
					MPa	MPa	GL= 5.65√S0	M.R.= 2.0T	1	2	3	Avg.	LA/ PA	0.200	1.600	0.025	0.025	0.150-0.250	-	-	0.550	0.050	0.130	0.050	-	0.020	-	0.200	0.430
					355 Min *	470-630	20 Min **	180°	27 J Min					Max	Max	Max	Max				Max	Max	Max	Max		Min		Max	Max
189	PN2918111D	S23880	20_2000_12000	3.768	418	562	30	OK	148	152	162	154																	
190	PN2918112D	S23880	20_2000_12000	3.768																									
191	PN2918113D	S23880	20_2000_12000	3.768																									
		S23880 Total		135.648																									
192	PN2919111D	S23881	20_2000_12000	3.768									LA	0.170	1.280	0.002	0.011	0.196	0.016	0.005	0.005	0.003	0.045	0.003	0.000	0.028	0.0073	0.051	0.396
193	PN2919211D	S23881	20_2000_12000	3.768									PA	0.166	1.281	0.001	0.012	0.193	0.013	0.004	0.002	0.002	0.044	0.005	0.000	0.026	0.0083	0.051	0.393
194	PN2919311D	S23881	20_2000_12000	3.768																									
195	PN2920111D	S23881	20_2000_12000	3.768	413	551	30	OK	166	172	132	157																	
196	PN2920112D	S23881	20_2000_12000	3.768																									
197	PN2920113D	S23881	20_2000_12000	3.768																									
198	PN2921111D	S23881	20_2000_12000	3.768																									
199	PN2921211D	S23881	20_2000_12000	3.768																									
200	PN2921311D	S23881	20_2000_12000	3.768																									
201	PN2922111D	S23881	20_2000_12000	3.768																									
202	PN2922112D	S23881	20_2000_12000	3.768																									
203	PN2922113D	S23881	20_2000_12000	3.768																									
204	PN2322111D	S23881	25_3000_12000	7.065	420	571	28	OK	150	158	136	148																	
205	PN2322112D	S23881	25_3000_12000	7.065																									
		S23881 Total		59.346																									
		Grand Total		799.766																									

Note: (1) Test Certificate conforms to EN 10204:2004 Type 3.1
(2) Material conforms to standard rolling & weight tolerance.
(3) Supply condition : Plates in Normalizing rolled and trimmed edge condition.
(4) Process Route : Hot Metal/ HBI - EAF/Conarc - LF (Fully Killed steel) - VD- CCM - RHF - Plate Rolling (Normalizing Rolling).
(5) Orientation of Tensile, Bend test Specimen is Transverse and Impact test specimen is Longitudinal to the rolling direction.
(6) Tensile specimen size : 10 mm dia round specimen for thickness >20mm & full thickness flat specimen for thickness ≤20mm. Impact specimen size : 10x10x55mm for thickness ≥11mm & 7.5x10x55mm for thickness 8mm to <11mm.
(7) * Requirement of YS is 355 MPa min for thickness ≤16mm, 345 MPa min for thickness >16mm to ≤40mm, 335 MPa min for >40 to ≤63mm thicknes & 325 MPa min for >63 to ≤80mm thickness
** Requirement of %EL is 20min for thickness >3mm to ≤40mm, 19min for thickness >40mm to ≤63mm & 18min for thickness >63mm to ≤80mm.
*** Requirement of %C is 0.200 max for thickness ≤40mm & 0.220 max for thickness >40mm.
(8) Surface condition as per EN 10163-2 : 2004 Class B Sub class 3. Reconditioning / Repair of plates by welding on steel not performed.
(9) Ultrasonic Test found satisfactory as per EN_10160_CLASS_S1E1.
(10) Stencilling marking details : Manufacturer Name, Plate No, Heat No, Size, Specification, UT code, CE Marking, AD 2000 W1. Low stress steel die stamping details: Plate No, Heat No, Specification.
(11) Tolerance on Thickness as per EN 10029 Class A. Flatness as per EN 10029 Class N Type L Table 4:2010 & Camber as per EN 10029:2010 (0.2% max of actual length of the plate).
(12) The declaration of performance (DOP) No: DOP NO: PM/CE/2016/02.
Legend: LA: Ladle Analysis(%), PA: Product Analysis(%), T-Thickness, W-Width, L-Length, CE: C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15.
HBI - Hot Briquetted Iron, EAF- Electric Arc Furnace, LF- Ladle Furnace, VD- Vacuum Degassing, CCM- Continuous Casting Mill, RHF- Reheating Furnace.

1550
07052024

Certificazione valida per materiale fornitoVi con ns. DDT nr. C4001380 del 23/09/2024 relativo a:

PZ. 1 PARTICOLARE: C09-0001-P004_REV.C SP. 20mm POS. 4
PZ. 1 PARTICOLARE: C09-0001-P004_REV.C SP. 20mm POS. 5
RIF. VS. ORD. 24005170 DEL 11/09/2024
RIF. VS. COMM. 24-27012

HS Code: 72085110
Place of Melting & Casting: INDIA, Facility: AM/NS INDIA
Place of Hot-rolling: INDIA, Facility: AM/NS INDIA

AM/NS-5

Authorised Signatory (Quality Assurance)
ArcelorMittal Nippon Steel India Limited
AMNSIL/QAC-PMP/05/F

AM/NS INDIA

DECLARATION OF PERFORMANCE

No: PM/CE/2016/02

Unique identification code of the product-type:
Plate S355J2 / 1.0577

1. Type, batch or serial number or any other element allowing identification of the construction product as required under Article 11(4):

   Plate S355J2 / 1.0577 according to EN 10025-2

2. Intended use or uses of the construction product, in accordance with the applicable harmonized technical specification, as foreseen by the manufacturer:

   Welded, bolted and riveted structures

3. Name, registered trade name or registered trade mark and contact address of the manufacturer as required pursuant Article 11(5):

   ArcelorMittal Nippon Steel India Limited
   Address: 27th KM, Surat-Hazira Road, Hazira, Surat, India - 394270

4. Name and contact address of the authorised representative whose mandate covers the tasks specified in Article 12(2):

   Not applicable

5. System or systems of assessment and verification of constancy of performance of the construction product as set out in Annex V:

   System 2+

6. In case of the declaration of performance concerning a construction product covered by a harmonised standard:

   Notified body TUV NORD System GmbH & Co KG, Germany performed the initial inspection of the manufacturing plant and of factory production control and the continuous surveillance, assessment and evaluation of factory production control under system 2+ and issued the certificate of conformity of the factory production control with no 0045-CPR-0978.

AM/NS INDIA

7. Declared performance:

Essential characteristic			Performance			Harmonised techn. specification
Tolerances on dimensions / shape	Thickness		EN 10029			EN 10025-1:2004
	Flatness		EN 10029			
Yield strength	Nominal thickness (mm) >	≤	Values min (MPa)			
		16	355			
	16	40	345			
	40	63	335			
	63	80	325			
	80	100	315			
	100	150	295			
Tensile strength	Nominal thickness (mm) >	≤	Values min (MPa)	max (MPa)		
		100	470	630		
	100	400	450	600		
Elongation	Nominal thickness (mm) >	≤	Values min (%)			
		40	20			
	40	63	19			
	63	150	18			
	150	400	17			
Impact strength	Nominal thickness (mm) >	≤	Values min (J)			
		400	27 at -20°C			
Weldability	Nominal thickness (mm) >	≤	Values max (CEV, %)			
		30	0,45			
	30	150	0,47			
Durability (chemical composition)	Nominal thickness (mm) >	≤	Values	min (%)	max (%)	
		30	C		0,20	
			Si		0,55	
			Mn		1,60	
			P		0,025	
			S		0,025	
			Cu		0,55	
	30	400	C		0,22	
			Si		0,55	
			Mn		1,60	
			P		0,025	
			S		0,025	
			Cu		0,55	

8. The performance of the product identified in points 1 and 2 is in conformity with the declared performance in point 7.

This declaration of performance is issued under the sole responsibility of the manufacturer identified in point 3.
Signed for and on behalf of the manufacturer by:

ARCELORMITTAL NIPPON STEEL INDIA LTD. * HAZIRA * AM/NS INDIA

Authorised Signatory

(Quality Assurance)

Hazira-Surat, Date: 27.01.2024

PM/CE/2016/02

posco

Mill Test Certificate

Certificate No. : 230412-FP01KS-0011A1-0003
Date of Issue : Apr., 17, 2023

Order No. : 01S6041044
PO No. : 2302-23021 (23021)
Supplier :
Commodity : PLATE
Customer :
Spec & Type : EN10025-2 S355J2+NR

Size	Product No.	Quantity	Weight (kg)	Heat No.	Position	Tensile Test YP (MPa)	Tensile Test TS (MPa)	Tensile Test EL (%)	Impact Test V Notch -20 °C Energy (Joule)	Division	Chemical Composition C (%)	Si (%)	Mn (%)	P (%)	S (%)	Cr (%)	Ni (%)	B (ppm)	Cu (%)	Mo (%)	N (ppm)	Nb (%)	Ti (%)	V (%)
12x2500x12000	PP35062501-2504	4	11,304	SU99872	T	444	562	25	1: 157 2: 120 3: 136 A: 138	L P	0.1493 0.1457	0.203 0.193	1.517 1.528	0.0084 0.0071	0.0028 0.0028	0.020 0.039	0.020 0.017	2 1	0.019 0.020	0.005 0.004	36 33	0.024 0.024	0.0129 0.0124	0.001 0.002
12x2500x12000	PP35062201-2204	4	11,304	SU99872	T	450	564	27	1: 256 2: 216 3: 270 A: 247	L P	0.1493 0.1457	0.203 0.193	1.517 1.528	0.0084 0.0071	0.0028 0.0028	0.020 0.039	0.020 0.017	2 1	0.019 0.020	0.005 0.004	36 33	0.024 0.024	0.0129 0.0124	0.001 0.002
~~12x2500x12000~~	~~PP35099301-9304~~	~~4~~	~~11,304~~	~~SU99873~~	T	445	564	29	1: 117 2: 178 3: 127 A: 141	L P	0.1480 0.1490	0.199 0.195	1.530 1.536	0.0067 0.0074	0.0024 0.0031	0.042 0.037	0.020 0.014	1 1	0.020 0.020	0.004 0.004	38 35	0.026 0.024	0.0129 0.0122	0.002 0.002
12x2500x12000	PP35099401-9404 24T176	4 1	11,304	SU99873	T	445	564	29	1: 117 2: 178 3: 127 A: 141	L P	0.1480 0.1490	0.199 0.195	1.530 1.536	0.0067 0.0074	0.0024 0.0031	0.042 0.037	0.020 0.014	1 1	0.020 0.020	0.004 0.004	38 35	0.026 0.024	0.0129 0.0122	0.002 0.002
~~12x2500x12000~~	~~PP35099501-9504~~	~~4~~	~~11,304~~	~~SU99873~~	T	445	564	29	1: 117 2: 178 3: 127 A: 141	L P	0.1480 0.1490	0.199 0.195	1.530 1.536	0.0067 0.0074	0.0024 0.0031	0.042 0.037	0.020 0.014	1 1	0.020 0.020	0.004 0.004	38 35	0.026 0.024	0.0129 0.0122	0.002 0.002
~~12x2500x12000~~	~~PP35099601-9604~~	~~4~~	~~11,304~~	~~SU99873~~	T	449	572	30	1: 178 2: 77 3: 204 A: 153	L P	0.1480 0.1490	0.199 0.195	1.530 1.536	0.0067 0.0074	0.0024 0.0031	0.042 0.037	0.020 0.014	1 1	0.020 0.020	0.004 0.004	38 35	0.026 0.024	0.0129 0.0122	0.002 0.002

CE EN10025-2 S355J2
2814

* Position - T : Top, M : Middle, B : Bottom
* Tensile Test. Direction : Transversal, Gauge Length : 5.65 $\sqrt{A_o}$ (Rectangular), YP Method : Upper Point
* Impact Test. Direction : Surface Longitudinal, Full-Size : 10 mmX10 mm
* Division - L : Ladle Analysis, P : Products Analysis
* Supply Condition : As-Rolled unless otherwise Heat Treated.

This material has been fully killed and made by basic oxygen process. This material is fine grained steel.
This material has been made by vacuum degassing process.
No repair welding was performed to the products. Test Certificate is issued according to ISO 10474/EN 10204 3.1.
We hereby certify that the material herein has been made in accordance with the order and above specification.

Legal sanction can be imposed on forging. Improper use of product can cause safety issues.

Surveyor To :

Park, Junyoung

posco

Mill Test Certificate

Certificate No. : 230412-FP01KS-0011A1-0003
Date of Issue : Apr., 17, 2023

Order No. : 01S6041044
PO No. : 2302-23021 (23021)
Supplier :
Commodity : PLATE
Customer :
Spec & Type : EN10025-2 S355J2+NR

Product No.	Division	Sol-Al (%)	CEQ (%)
PP35062501-2504	L	0.032	0.41
	P	0.031	
PP35062201-2204	L	0.032	0.41
	P	0.031	
PP35099301-9304	L	0.030	0.42
	P	0.033	
PP35099401-9404	L	0.030	0.42
	P	0.033	
PP35099501-9504	L	0.030	0.42
	P	0.033	
PP35099001-9004	L	0.030	0.42
	P	0.033	

Certificazione valida per materiale fornitoVi con ns. DDT nr. C4001380 del 23/09/2024 relativo a:

PZ. 2 PARTICOLARE: C09-0001-P004_REV.C SP. 12mm POS. 10
PZ. 4 PARTICOLARE: C09-0001-P006_REV.A SP. 12mm POS. 2
RIF. VS. ORD. 24005170 DEL 11/09/2024
RIF. VS. COMM. 24-27012

CE EN10025-2 S355J2
2814

This material has been fully killed and made by basic oxygen process. This material is fine grained steel.
This material has been made by vacuum degassing process.
No repair welding was performed to the products. Test Certificate is issued according to ISO 10474/EN 10204 3.1.
We hereby certify that the material herein has been made in accordance with the order and above specification.

Legal sanction can be imposed on forging. Improper use of product can cause safety issues.

Surveyor To :

Park, Junyoung

posco

CE marking information

Certificate No. : 230412-FP01KS-0011A1-0003
Date of Issue : Apr., 17, 2023

Order No. : 01S6041044
PO No. : 2302-23021 (23021)
Supplier :
Commodity : PLATE
Customer :
Spec & Type : EN10025-2 S355J2+NR

Product No.	CE 2814	POSCO Co., Ltd - Gwangyang Works 20-26, Pokposarang-gil, Gwangyang-si, Jeollanam-do, 57807, Korea 12 2814/CPR/0038/CPR/M U M/1210003/1
PP35099301-9304 PP35099401-9404 PP35099501-9504 PP35099001-9004 PP35099101-9104 PP35099201-9204 PP35061701-1704	**EN 10025-1:2004** **Types S355J2** To be used in construction structural steels Tolerances on dimensions and shape :EN 10029	**Elongation :** **Tensile strength :** **Yield strength :** : **EN10025-2** **Impact strength :** **Weldability :** **Durability :** Dangerous Substances : No Performance Determind

This material has been fully killed and made by basic oxygen process. This material is fine grained steel.
This material has been made by vacuum degassing process.
No repair welding was performed to the products. Test Certificate is issued according to ISO 10474/EN 10204 3.1.
We hereby certify that the material herein has been made in accordance with the order and above specification.

Legal sanction can be imposed on forging. Improper use of product can cause safety issues.

Surveyor To :

Park, Junyoung

posco

Declaration of Performance

Issued in accordance with the
CONSTRUCTION PRODUCTS REGULATIONS
(EU Regulation No. 305/2011)

EU DoP No. GY-S355J2-220805-001

Types S355J2 according EN 10025-2
To be used in construction structural steels

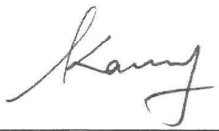
POSCO Co., Ltd. - Gwangyang works
20-26, Pokposarang-gil,
Gwangyang-si, Jeollanam-do, Korea
Tel : +82 (0)61 790 0114
Webside : www.posco.com

CE Marking Notified Body
Lloyd's Register Verification B.V.
K.P. Van der Mandelelaan 41 A Rotterdam
Country : Netherlands
Tel :+31 (0)10 4145088
Email : rotterdam@lr.org
Website : www.lr.org

system of assessment and verification of constancy of performance of the construction product as set out EN10025-1:2004
System 2+

Certificate No.
2814/CPR/0038/CPR/MUM/1210003/1

Lloyd's Register Verification B.V.(2814) performed initial inspection of the manufacturing plant and of factory. Production control and the continuous surveillance assessment and evaluation of factory production control under system 2+ and issued the certificate of conformity of the factory production control.



C.H. Kang / Head,
Quality Planning Group,
POSCO

05th August 2022
Date

Essential characteristics	Perfomance	Harmonised technical specification
Tolerances on dimensions and shape	Acc. to EN10029	EN10025-1 : 2004
Minimum yield strength (MPa)	Threshold value in EN10025-2 for S355J2	
Tensile strength (MPa)		
Minimum percentage elongation after fracture (%)		
Impact strength (longitudinal)		
Weldability Maximum CEV (Ladle analysis)		
Durability		

A02

CERTIFICATO DI CONTROLLO 3.1 / INSPECTION CERTIFICATE 3.1 - EN 10204:2004

A04/A05

METINVEST
METINVEST TRAMETAL SPA

A01

Società per azioni con socio unico soggetta a direzione e coordinamento di Metinvest B.V
Registered office: Via XII Ottobre, 3 - 16121 Genova, Italy
Phone +39 010 5762911 - Fax +39 010 5762990
Works: Via E. Fermi, 44 - 33058 San Giorgio di Nogaro UD, Italy
Phone +39 0431 629989 - Fax +39 0431 629985
Cap. Soc. Euro 300.120.000,00 i.v.
C.F., P.IVA e Iscr. Reg. Imp. GE 05956630965 - REA 437720/GE
http://trametal.metinvestholding.com

(A) PROCESSO DI ELABORAZIONE / STEELMAKING PROCESS: E = ELECTRIC ; BO = BASIC OXYGEN
(B) STATO DI FORNITURA / DELIVERY CONDITION: AR = GREZZO DI LAMINAZIONE / AS ROLLED ;
N* = LAMINAZIONE A TEMPERATURA CONTROLLATA / NORMALIZING ROLLING ;
N = NORMALIZZATO / NORMALIZED at 910°C, 1,5 min/mm ; ARIA CALMA / STILL AIR;
R = RICOTTO / ANNEALED;
N+R = NORMALIZZATO + RINVENUTO / NORMALIZED + TEMPERED
(C) TRATTAMENTO TERMICO DEL CAMPIONE / HEAT TREATMENT OF SAMPLE:
N = 910°C, 1,5 min/mm ; ARIA CALMA / STILL AIR
R = 650°C, 1,5 min/mm ; ARIA CALMA / STILL AIR
(D) Ceq_1 = C + Mn/6 ; Ceq_2 = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15 ;
Pcm = C + Si/30 + (Mn + Cu + Cr)/20 + NI/60 + Mo/15 + V/10 + B*5
(1) POSIZIONE / LOCATION: 1 = TESTA / TOP ; 2 = PIEDE / BOTTOM
(2) POSIZIONE / LOCATION: C = CUORE / 1/2 THICKNESS ; P = PELLE / SURFACE ; D = 1/4 SPESSORE / THICKNESS
(3) DIREZIONE / DIRECTION: L = LONGITUDINALE / LONGITUDINAL ; T = TRASVERSALE / TRANSVERSE
(4) FORMA DEL PROVINO / SHAPE OF TEST PIECE: P = PRISMATICO / PRISMATIC ; C = CILINDRICO / CYLINDRICAL
(5) ESITO PROVA DI PIEGA / RESULT: OK = COMPLYING ; NO = NOT COMPLYING

A06 Cliente / Customer

DUFERCO COMMERCIALE SPA

Via di Sottoripa 7/13
16124 Genova 16124 IT
GE ITALIA

A03 N° Certificato / Certificate no.	Z02 Data / Date
496293	10/06/2020
A08 N° Ordine Trametal / Works order	A07 N° Ordine cliente / Customer's order
32001784	mail 21.05.20
DDT	del / date
BOL 32009739	09/06/2020
Pratica / File no.	
del / date	

B06 Marcatura di prodotto / Marking of the product

LAMIERA/ORDINE/N° INFORNAMENTO/DIMENSIONI/QUALITÀ/MARCHIO DEL PRODUTTORE
PLATE/ORDER/INTERNAL N°/DIMENSIONS/STEEL GRADE/MANUFACTURER'S MARK

B01/B02/B03

Prodotto / Product	Lamiere / Hot rolled plates
Qualità / Steel grade	S355J2+N
Normativa / Specification	EN10025-2:2019

DUFERCO COMMERCIALE S.p.A.
COPIA CONFORME ALL'ORIGINALE

B07 ITEM	B07 LAMIERA PLATE	B07 N° INFORN. INTERNAL NUMBER	B09/B11 DIMENSIONI [mm] DIMENSIONS	B12 MASSA TEORICA [t] THEORICAL WEIGHT	B07 LOTTO BATCH NO.	C70 PROCESSO ELAB. (A) STEELMAKING PROCESS	B04 STATO FORNITURA LAMIERA (B) DELIVERY CONDITION	C00 CAMPIONE SAMPLE	B05 TRATT. CAMPIONE (C) HEAT TREATMENT	C00 CAMPIONE PWHT SAMPLE	B05 PWHT BEGINNING TEMPERATURE °C	B05 PWHT TEMPERATURA INIZIO °C	B05 PWHT HEATING RATE VELOCITA' RISCALDO C/h	B05 PWHT TEMPERATURE TREATMENT TEMPERATURA TRATTAMENTO °C	B05 PWHT HOLDING TIME PERMANENZA Min	B05 PWHT COOLING RATE VELOCITA' RAFFREDDAMENTO °C/h	B05 PWHT END TEMPERATURE TEMPERATURA FINE °C	B05 PWHT N° CICLI / CYCLES	C00 CAMPIONE Q+T SAMPLE	B05 Q+T TEMPERATURE TEMPERATURA (Q) °C	B05 Q+T HOLDING TIME PERMANENZA (Q) Min	B05 Q+T COOLING RAFFREDDAMENTO	B05 Q+T TEMPERATURE TEMPERATURA (T) °C	B05 Q+T HOLDING TIME PERMANENZA (T) Min	B05 Q+T COOLING RAFFREDDAMENTO
~~2~~	~~1TAR250705A~~	~~1628129~~	~~8.00X2450X12000~~	~~1,85~~	~~648115~~	~~BO~~	~~N*~~	~~[ZF059]~~																	
~~2~~	~~1TAR250705B~~	~~1628129~~	~~8.00X2450X12000~~	~~1,85~~	~~648115~~	~~BO~~	~~N*~~	~~[ZF059]~~																	
~~2~~	~~1TAR250706A~~	~~1628100~~	~~8.00X2450X12000~~	~~1,85~~	~~648115~~	~~BO~~	~~N*~~	~~[ZF059]~~																	
~~2~~	~~1TAR250706B~~	~~1628100~~	~~8.00X2450X12000~~	~~1,85~~	~~648115~~	~~BO~~	~~N*~~	~~[ZF059]~~																	
2	1TAR280907B	1628148	8.00X2450X12000	1,85	651202	BO	N*	ZG247																	
~~4~~	~~1TAR160102A~~	~~1628076~~	~~10.00X2450X12000~~	~~2,31~~	~~651195~~	~~BO~~	~~N*~~	~~[ZG243]~~																	
~~4~~	~~1TAR160102B~~	~~1628076~~	~~10.00X2450X12000~~	~~2,31~~	~~651195~~	~~BO~~	~~N*~~	~~[ZG243]~~																	
4	1TAR160104A	1628104	10.00X2450X12000	2,31	651195	BO	N*	[ZG243]		21T018															
~~4~~	~~1TAR160104B~~	~~1628104~~	~~10.00X2450X12000~~	~~2,31~~	~~651195~~	~~BO~~	~~N*~~	~~[ZG243]~~																	
~~4~~	~~1TAR160105A~~	~~1628092~~	~~10.00X2450X12000~~	~~2,31~~	~~651195~~	~~BO~~	~~N*~~	~~[ZG243]~~																	
~~4~~	~~1TAR160105B~~	~~1628092~~	~~10.00X2450X12000~~	~~2,31~~	~~651195~~	~~BO~~	~~N*~~	~~[ZG243]~~																	
~~4~~	~~1TAR160203A~~	~~1628071~~	~~10.00X2450X12000~~	~~2,31~~	~~651195~~	~~BO~~	~~N*~~	~~[ZG243]~~																	
~~4~~	~~1TAR160204A~~	~~1628075~~	~~10.00X2450X12000~~	~~2,31~~	~~651195~~	~~BO~~	~~N*~~	~~[ZG243]~~																	
~~4~~	~~1TAR160204B~~	~~1628075~~	~~10.00X2450X12000~~	~~2,31~~	~~651195~~	~~BO~~	~~N*~~	~~[ZG243]~~																	

C71/C92 COMPOSIZIONE CHIMICA DI COLATA / HEAT CHEMICAL ANALYSIS

B07	C71	C72	C73	C74	C75	C76	C77	C78	C79	C80	C81	C82	C83	C84	C85	C86	C87	C88	C89	C90	C91
COLATA HEAT	C %	Mn %	Si %	P %	S %	Cu %	Ni %	Cr %	Mo %	Al %	V %	Nb %	Ti %	Sn %	Ca %	N %	B %	H %	Ceq1 % (D)	Ceq2 % (D)	Pcm % (D)
S355J2+N Min 0.00 - 30.00																					
S355J2+N Max 0.00 - 30.00	0,20	1,60	0,55	0,025	0,025	0,550														0,45	
1TAR16	0,15	1,39	0,20	0,015	0,003	0,030	0,030	0,040	0,010	0,032	<0.005	<0.010	<0.005	<0.005	0,0000	0,0080	<0.0005	0,0001	0,38	0,40	0,23
1TAR25	0,15	1,40	0,19	0,013	0,003	0,030	0,020	0,030	<0.005	0,032	<0.005	<0.010	<0.005	<0.005	0,0000	0,0060	<0.0005	0,0002	0,38	0,39	0,23
1TAR28	0,16	1,39	0,19	0,011	0,002	0,020	0,020	0,030	0,010	0,035	<0.005	<0.010	<0.005	<0.005	0,0000	0,0060	<0.0005	0,0002	0,39	0,40	0,24

			PROVA DI TRAZIONE TENSILE TEST								PROVA DI RESILIENZA IMPACT TEST - CHARPY V-NOTCH TEST						PROVA DI PIEGA BEND TEST				PROVA DI DUREZZA HARDNESS TEST				PROVA DI STRIZIONE Z% TEST	
C00		C01	C01	C02	C03	C11	C12		C13	C14	C10	C41	C02	C03	C01	C42	C43	C02	C51	C52	C50	C01	C30	C31	C32	C53	C54
CAMPIONE SAMPLE	SPESSORE LAMIERA PLATE THICKNESS	POSIZIONE (1) LOCATION	POSIZIONE (2) LOCATION	DIREZIONE (3) ORIENTATION	TEMPERATURA [°C] TEST TEMPERATURE	ReH [Mpa] YIELD STRENGTH	Rm [Mpa] TENSILE STRENGTH	ReH/Rm	A% ELONGATION	Rp 0.2 [Mpa] PROOF/YIELD STRENGTH	FORMA PROVINO (4) SHAPE OF TEST PIECE	LARGHEZZA [mm] WIDTH	DIREZIONE (3) ORIENTATION	TEMPERATURA [°C] TEST TEMPERATURE	POSIZIONE (2) LOCATION	SINGOLI VALORI [J] INDIVIDUAL VALUES	MEDIA [J] MEAN VALUE	DIREZIONE (3) ORIENTATION	MANDRINO [mm] MANDREL	ANGOLO [°] ANGLE	ESITO (5) RESULT	POSIZIONE (2) LOCATION	METODO TEST METHOD	SINGOLI VALORI INDIVIDUAL VALUES	MEDIA MEAN VALUE	Z% SINGOLI VALORI Z% INDIVIDUAL VALUES	Z% VALORE MEDIO Z% MEAN VALUE
S355J2+N Min 0.00 - 16.00					20	355	470		22,0																		
S355J2+N Max 0.00 - 16.00					20		630																				
S355J2+N Min 6.00 - 999.00													L	-20			27										
ZF059	8,00	2	P	T	20	383	515	0,74	33,1		P	7,50	L	-20	P	119 115 103	112										
ZG243	10,00	2	P	T	20	385	513	0,75	27,2		P	7,50	L	-20	P	105 142 128	125										
ZG247	8,00	2	P	T	20	392	513	0,76	30,7		P	7,50	L	-20	P	218 210 203	210										

C10

UNI EN ISO 6892-1:2016 / UNI EN ISO 148-1:2016

Z01

ITEM		TOLLERANZA DI SPESSORE TOLERANCE ON THICKNESS	TOLLERANZE DI LARGHEZZA TOLERANCE ON WIDTH	TOLLERANZE DI LUNGHEZZA TOLERANCE ON LENGTH	CONDIZIONI SUPERFICIALI SURFACE FINISH	PLANARITÀ FLATNESS
2		EN 10029 CL.A	-0+100 MM	-0+200 MM	EN 10163/2 CL A1	EN 10029 CL. N
4		EN 10029 CL.A	-0+100 MM	-0+200 MM	EN 10163/2 CL A1	EN 10029 CL. N

CERTIFICHIAMO che le lamiere elencate sono conformi alla prescrizione dell'ordine, che i controlli della marcatura, dell'aspetto superficiale e dimensionale hanno dato esito positivo.
WE CERTIFY that the above mentioned plates are consistent with the order prescriptions: marking, inspection and measurement without objection.
DICHIARIAMO CHE LE LAMIERE SONO STATE CONTROLLATE IN ACCORDO ALLA NORMATIVA VIGENTE E CHE LE RADIAZIONI IONIZZANTI NON ECCEDONO IL VALORE DEL FONDO NATURALE.
WE DECLARE THAT THE PLATES WERE CONTROLLED ACCORDING TO STANDARD AND RADIATION DO NOT EXCEED THE NATURAL RADIATION.

Z06

Z07	Z03 ENTE COLLAUDO / INSPECTION BODY	Z02
	TIMBRO DELL'ISPETTORE STAMP OF THE INSPECTION REPRESENTATIVE	METINVEST TRAMETAL S.p.A. F. Andrian CQ Manager

Certificazione valida per materiale fornitoVi con ns. DDT nr. C4001380 del 23/09/2024 relativo a:

PZ. 2 PARTICOLARE: C09-0001-P004_REV.C SP. 10mm POS. 11
PZ. 1 PARTICOLARE: C09-0001-P004_REV.C SP. 10mm POS. 20
PZ. 1 PARTICOLARE: C09-0001-P004_REV.C SP. 10mm POS. 21
PZ. 1 PARTICOLARE: C09-0001-P004_REV.C SP. 10mm POS. 7
(SV. 815,5 x 450 x 10)
PZ. 1 PARTICOLARE: C09-0001-P004_REV.C SP. 10mm POS. 15
(SV. 179 x 450 x 10)
PZ. 1 PARTICOLARE: C09-0001-P004_REV.C SP. 10mm POS. 22
(SV. 815,5 x 450 x 10)
RIF. VS. ORD. 24005170 DEL 11/09/2024
RIF. VS. COMM. 24-27012

METINVEST
METINVEST TRAMETAL SPA

Metinvest Trametal spa
Head Office:
Via XII Ottobre, 3 - 6° piano
16121 Genova - Italy
Tel. +39 010 5762911
Fax +39 010 5762990
trametal@trametal.it

DICHIARAZIONE DI PRESTAZIONE (Reg. UE N. 305/2011)

N.S355-2

Il sottoscritto Viktor Dembytskyy, rappresentante il produttore:
METINVEST TRAMETAL SpA
Via XII Ottobre, 3 – 16121 Genova
nello stabilimento produttivo di:
Via E. Fermi, 44 – 33058 San Giorgio di Nogaro (UD)
Dichiara qui di seguito che i prodotti:
Prodotti piani laminati a caldo in acciaio secondo EN10025-1:2004.

DECLARATION OF PERFORMANCE (Reg . UE N. 305/2011)

N.S355-2

I, the undersigned Viktor Dembytskyy, representing the manufacturer:
METINVEST TRAMETAL SpA
Via XII Ottobre, 3 – 16121 Genova
the production site:
Via E. Fermi, 44 – 33058 San Giorgio di Nogaro (UD)
Hereby declares that the products:
Hot-rolled flat products of steel according to EN10025-1: 2004.

Qualità / Steel grade	Normativa / Specification
S355J2NZ15	EN10025-2:2019
S355JR+AR	EN10025-2:2019
S355JR+N	EN10025-2:2019
S355J0+AR	EN10025-2:2019
S355J0+N	EN10025-2:2019
S355J2+N	EN10025-2:2019
S355K2+N	EN10025-2:2019
S355J2NZ25	EN10025-2:2019
S355J2NZ35	EN10025-2:2019
S355K2NZ15	EN10025-2:2019
S355K2NZ25	EN10025-2:2019
S355K2NZ35	EN10025-2:2019
S355J0C+N	EN10025-2:2019
S355J2C+N	EN10025-2:2019
S355K2C+N	EN10025-2:2019

Tipo prodotto / Product type	Qualità / Steel grade	Codice identificativo univoco prodotto/ Unique product identifier code	Numero interno/ Internal number	Specifica tecnica armonizzata / Harmonized techical specification
Lamiera/ Plate	S355J2+N	1TAR250705A	1628129	EN10025-1:2004
Lamiera/ Plate	S355J2+N	1TAR250705B	1628129	EN10025-1:2004
Lamiera/ Plate	S355J2+N	1TAR250706A	1628100	EN10025-1:2004
Lamiera/ Plate	S355J2+N	1TAR250706B	1628100	EN10025-1:2004
Lamiera/ Plate	S355J2+N	1TAR280907B	1628148	EN10025-1:2004
Lamiera/ Plate	S355J2+N	1TAR160102A	1628076	EN10025-1:2004
Lamiera/ Plate	S355J2+N	1TAR160102B	1628076	EN10025-1:2004
Lamiera/ Plate	S355J2+N	1TAR160104A	1628104	EN10025-1:2004
Lamiera/ Plate	S355J2+N	1TAR160104B	1628104	EN10025-1:2004
Lamiera/ Plate	S355J2+N	1TAR160105A	1628092	EN10025-1:2004
Lamiera/ Plate	S355J2+N	1TAR160105B	1628092	EN10025-1:2004
Lamiera/ Plate	S355J2+N	1TAR160203A	1628071	EN10025-1:2004
Lamiera/ Plate	S355J2+N	1TAR160204A	1628075	EN10025-1:2004
Lamiera/ Plate	S355J2+N	1TAR160204B	1628075	EN10025-1:2004

Che i prodotti specificati nel presente documento sono destinati ad essere utilizzati nelle strutture saldate, bullonate e chiodate.

The products specified in this document are intended to be used in welded structures, bolted and riveted.

Che i prodotti specificati nel presente documento presentano le seguenti caratteristiche essenziali e prestazioni:

The products specified in this document have the following essential features and performance:

Caratteristiche Essenziali / Essential features	**Prestazione / Performance**	**Norma Armonizzata / Harmonized specification**
Tolleranze dimensionali e forma /Tollerance on dimensions and shape	Conforme / Compliance	EN10025-1:2004
Allungamento /Elongation	Conforme / Compliance	EN10025-1:2004
Resistenza a Trazione/Tensile Strength	Conforme / Compliance	EN10025-1:2004
Carico Unitario snervamento/Yield Strength	Conforme / Compliance	EN10025-1:2004
Resilienza/Impact	Conforme / Compliance	EN10025-1:2004
Saldabilità/Weldability	Conforme / Compliance	EN10025-1:2004
Durabilità/Durability	NPD	
Sostanza Regolamentata/Regulated substance	NPD	

Si dichiara inoltre che l'organismo notificato, TUV SUD - Italia [N. 0948] ha effettuato:
- ispezione iniziale dello stabilimento e del controllo della produzione in fabbrica
- sorveglianza, valutazione e verifica continua del controllo della produzione in fabbrica

secondo il sistema di valutazione e verifica della costanza della prestazione 2+ ed ha rilasciato il certificato di controllo della produzione in fabbrica numero 0948-CPR-0157 Rev.02

It also states that the notified body, TUV SUD - Italia [N. 0948], carried out:
- Initial inspection of factory and of factory production control
- Monitoring, evaluation and continuous assessment of factory production control

according to the system of assessment and verification of constancy of performance 2 + and released the certificate of factory production control number 0948-CPR-0157 Rev.02.

CE

Lamiere conformi ai requisiti della marcatura CE. Certificato di conformità CE n° 0948-CPR-0157 Rev.02 emesso da TUV SUD - Italia in data 13/12/2019. Plates in compliance with CE marking requirements. Certificate of conformity N° 0948-CPR-0157 Rev.02 from TUV SUD - Italia on 13/12/2019.

Si rilascia la presente dichiarazione di prestazione sotto la responsabilità esclusiva del fabbricante

This declaration of performance is made under the sole responsibility of the manufacturer

San Giorgio di Nogaro,

10/06/2020

Viktor Dembytskyy

Managing Director
Metinvest Trametal spa
Metinvest Group

Metinvest Trametal SpA • Società per azioni con socio unico soggetta a direzione e coordinamento di Metinvest B.V.
Registered office: Via XII Ottobre, 3 • 16121 Genova, Italy • Phone +39 010 5762911 • Fax +39 010 5762990
Works: Via E. Fermi, 44 • 33058 San Giorgio di Nogaro UD, Italy • Phone +39 0431 629989 • Fax +39 0431 629985
Cap. Soc. Euro 300.120.000,00 i.v. • C.F., P.IVA e Iscr. Reg. Imp. GE 05956630965 • REA 437720/GE
http://trametal.metinvestholding.com

A01 Nr rejestrowy BDO : 000012617
ArcelorMittal Poland S.A. Oddział w Krakowie
ul. Tadeusza Sendzimira 1 31-752 Kraków
Z02.1 Kraków, 21.02.2024

A02
ŚWIADECTWO ODBIORU 3.1 / INSPECTION CERTIFICATE 3.1 ABNAHMEPRÜFZEUGNIS 3.1 EN 10204

A03
Nr:
1003494977

ArcelorMittal

A06.1 Zamawiający: Purchaser: Besteller:	A06.1 ARCELORMITTAL COMMERCIAL ITALY SRL 20139 MILANO, VIALE BRENTA 27/29 , Włochy / Italy / Italien
A06.3 Odbiorca dokumentu kontroli: Recipient of a certificate: Empfänger eines Zertifikates:	A06.3 SIDERURGICA ASTICO SPA 36030 FARA VICENTINO, VIA ASTICO 44 Włochy / Italy / Italien

A07 Nr zamówienia klienta/No of purchase order/No der Bestellung: **230209**	A08.3 LEVERAGE: **GH40SID001**	
A08.1 Nr zlecenia/Manuf. Order No/Auftrag No: **11078927**	A08.2 Nr kontraktu/Contract No/Vertrag No: **PL/277839653/23-11078927**	
A10 Dowód dostawy/Delivery Note/Lieferschein Nr: **64208850**	A11 Nr środka transportu/Number of transport/Transportmittel-Nr: **WGM35915/KRA300PF**	

B01, B04, B09-B11, B16

Blacha gorącowalcowana w kręgach grub.: 6,00 szer.: 2000,00 gat.stali: S355J2+N gładka czarna niewytrawiona zabezp.pow.: bez zabezpieczenia opakowanie: H04 Stan dostawy: walcowanie normalizujące +N Dokładność wykonania grubości - normalna (-0,360/+0,360)
Hot-rolled coils thickness: 6,00 width: 2000,00 steel grade: S355J2+N plain black not pickled surf.prot.: no protection packaging: H04 Delivery condition: normalizing rolling +N Tolerances on thickness - normal (-0,360/+0,360)

B02	Norma przedmiotowa / According / Nach	Norma klasyfikacyjna / Classification standards / Materialnorm	Norma wymiarowa / Tolerance standards / Massnorm	Gatunek / Steel grade / Marke	Kod wyrobu / Product code / Produkt-Code
	EN 10025-1:2004	**EN 10025-2:2019**	**EN 10051:2010**	**S355J2+N**	**HRCL**

Specyfikacja Wyrobu - Product Specification - Produktdatenblatt : **S355J2+N-CAT_A EN10025-2:2019**

C70 Proces wytwarzania stali Steelmaking process Stahlherstellungsverfahren

Stal wytwarzana w procesie konwertorowym tlenowym Steel produced in BOF process Stahl hergestellt im Sauerstoffaufblasverfahren

24C077

B07.1 Nr partii badanej - QM Batch No - WK Los Nr	B07.2 Numer partii - Batch No - Los Nr	B0.8 Ilość sztuk - Number of pieces - Stückzahl	B13 Tonaż- Weight - Gewicht
040011056340	**H009666**	**1**	**23,100 t**

C71-C92 Skład chemiczny - Chemical composition
C93 = CEV Chemische Zusammensetzung

B07.3 Wytop - Heat - Schmelze: **410436**

C[%]	Mn[%]	Si[%]	P[%]	S[%]	Cu[%]	Cr[%]	Ni[%]	Al[%]	Al_{sol}[%]	V[%]	Mo[%]	Nb[%]	Co[%]
0,15	1,40	0,020	0,010	0,004	0,03	0,02	0,014	0,047		0,0020	0,006	0,0140	0,005

Ti[%]	As[%]	N_2[%]	Ca[%]	Pb[%]	Sn[%]	Sb[%]	O[%]	H_2[%]	Zn[%]	W[%]	B[%]	Zr[%]	C_{EV}[%]
0,0006		0,0040	0,0032	0,0033	0,0020	0,0010			0,0015	0,0010	0,0003	0,0013	0,39

Właściwości mechaniczne - Mechanical properties - Mechanische Eigenschaften

B07.1 Nr partii badanej QM Batch No WK Los Nr	C02.1 Własności mechaniczne - kierunek Mechanical properties - direction mechanische Eigenschaften - Richtung	C03 Temperatura_badania Test temperature Prüftemperatur	C11.1 Typ Re Re type Re Typ	C11.2 Re Re Re [MPa]	C12 Rm Rm Rm [MPa]	C13.1 A A A	C13.2 A[%] A[%] A[%]	C44 Temperatura testu udarności Impact test - temperature Schlagfestigkeit - Temperatur [°C]
040011056340	T	23	ReH	496	554	A5	27,7	-20

B07.1 Nr partii badanej QM Batch No	C41 Szerok. próbki width of probe	C02.2 Udarność - kierunek Impact test - direction	C40 Udarność - typ Impact test - type	C42.1 Praca łamania KVpróba 1 Work of fracture KVtest 1	C42.2 Praca łamania KVpróba 2 Work of fracture KVtest 2	C42.3 Praca łamania KVpróba 3 Work of fracture KVtest 3	C43 Praca łamania KVpróba średnia Work of fracture KVaverage	

Wystawił: BKGD01

ORYGINAŁ/ORIGINAL 21.02.2024 11:00:40

SIDASTICO Spa - Copia conforme all'originale - Valido per pz. 10 6,00x2000x6030 coils/lamiera n. H009666 colata n. 410436 DDT n. 2374 del 12/03/2024 vs.ord. C4000108 del 01/03/2024

A01 Nr rejestrowy BDO : 000012617
ArcelorMittal Poland S.A. Oddział w Krakowie
ul. Tadeusza Sendzimira 1 31-752 Kraków
Z02.1 Kraków, 21.02.2024

A02
ŚWIADECTWO ODBIORU 3.1 / INSPECTION CERTIFICATE 3.1 ABNAHMEPRÜFZEUGNIS 3.1 EN 10204

A03
Nr: 1003494977

ArcelorMittal

WK Los Nr	Probebreite	Kerbschlagversuch - richtung	Schlagfestigkeit - Typ	SchlagfestigkeitArb. 1 [J]	SchlagfestigkeitArb. 2 [J]	SchlagfestigkeitArb. 3 [J]	test SchlagfestigkeitArb. Mittelwert [J]	
040011056340	5,0	L	KV2	80,0	76,0	78,0	78,00	

T - Poprzeczny/ Transverse/Transversalen; L- Wzdłużny / Longitudinal/ Längslaufend; 1 - Po walcowaniu normalizującym / After normalizing rolling/Nach normalisierendes Walzen; 2 - Po normalizacji / After normalization /Nach Normalisierung; db - dobre / good / gut; P - Pozytywny/ Positive/ Positiv

Badany materiał nie wykazał radioaktywności. Pomiar został wykonany przy użyciu systemu GENIE 2000, produkcja Canberra-Packard.
The tested material did not show any signs of radioactivity. The measurement was performed with the application of GENIE 2000 system, manufactured by Canberra-Packard.
In dem untersuchten Material wurde keine Radioaktivität gefunden. Die Messung wurde mit dem GENIE-2000-System gemacht, Hersteller: Canberra-Packard.

Wyrób budowlany oznakowany znakiem CE zgodnie z rozporządzeniem nr 305/2011 Parlamentu Europejskiego i Rady UE..
Construction product CE marked in accordance with Regulation No 305/2011 of the European Parliament and of the Council of the EU
Ein Bauprodukt, das mit dem CE-Zeichen gemäß Verordnung 305/2011 des Europäischen Parlaments und des EU-Rates versehen ist.

D01 Powierzchnia i wymiary - Sprawdzono zgodność z zamówieniem
Surface and dimension - tested according to purchase order
Oberfläche und Masse - Geprüft entprechend der Bestellung

Z01 Na podstawie przeprowadzonych badań uznano, że wykonany wyrób jest zgodny z warunkami zamówienia.
On the basis of the tests it has been recognized that the product conforms with the order requirements.
Nach der durchgeführten Prüfungen wurde festgestellt, das des Erzeugnis den Anfrderungen der Bestellung entspricht.

A05 Zarządzanie Jakością Wyroby Płaskie
Quality Management Flat Products
Qualitätsmanagement Flachprodukte
Z02.2

Z.04 CE 0035 0035-CPR-A150

Z.14 UKCA 0120

Zarządzanie jakością
Wyroby Płaskie
Kierownik
Jakub Zalejski

ArcelorMittal

Certificazione valida per materiale fornitoVi con ns. DDT nr. C4001380 del 23/09/2024 relativo a:

PZ. 1 PARTICOLARE: C09-0001-P004_REV.C SP. 6mm POS. 12
PZ. 1 PARTICOLARE: C09-0001-P004_REV.C SP. 6mm POS. 13
RIF. VS. ORD. 24005170 DEL 11/09/2024
RIF. VS. COMM. 24-27012

Wystawił: BKGD01

DECLARATION OF PERFORMANCE

No.HR00017|CPR2013-07-01|KR|V010

1. Unique identification code of the product-type:

1.0577

2. Intended use or uses of the construction product, in accordance with the applicable harmonised technical specification, as foreseen by the manufacturer:
to be used as cut to length plates in metal structures or in composite metal and concrete structures

3. Name, registered trade name or registered trade mark and contact address of the manufacturer as required pursuant to Article 11(5):

ArcelorMittal Poland SA
Unit in Kraków
ul. T. Sendzimira 1
31-752 Kraków
Tel: +48 784 319 928
Fax:
e-mail: dominika.macha1@arcelormittal.com

4. Where applicable, name and contact address of the authorised representative whose mandate covers the tasks specified in Article 12(2): Non applicable

5. System or systems of assessment and verification of constancy of performance of the construction product as set out in Annex V:

System 2+

6a. In case of the declaration of performance concerning a construction product covered by a harmonised standard:

EN 10025-1: 2004

Notified factory production control certification body No. 0035 (TÜV Rheinland Industrie Service GmbH) performed the initial inspection of the manufacturing plant and of factory production control and the continuous surveillance, assessment and evaluation of factory production control and issued the certificate of conformity of the factory production control.

6b. In case of the declaration of performance concerning a construction product for which a European Technical Assessment has been issued: Non applicable

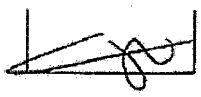
7. Declared performance

Essential characteristic	Performance				Harmonised technical specification
Tolerances on dimensions and shape	Thickness		EN 10051/EN 10363		EN 10025-1: 2004
	Flatness on cut to length plate		EN 10051/EN 10363		
Yield Strength	Nominal thickness (mm)		Values		
	>	≤	R_{eH} min (MPa)		
		16	355		
	16	30	345		
Tensile Strength	Nominal thickness (mm)		Values		
	>	≤	R_m min (MPa)	max (MPa)	
		3	510	680	
	3	30	470	630	
Elongation	Nominal thickness (mm)		Values		
	>	≤	min (%)	Samples	
		2	14	A80 (%)	
	2	2.5	15	A80 (%)	
	2.5	3	16	A80 (%)	
	3	30	20	A 5.65√So (%)	
Impact Strength	Nominal thickness (mm)		Values		
	>	≤	KV2Lmin (J)		
		30	27 at -20°C		
Weldability CEV	Nominal thickness (mm)		Values		
	>	≤	%		
		30	≤ 0.45		
	30	100	≤ 0.47		
Durability	Nominal thickness (mm)		Values		
	>	≤	%		
		40	C : ≤ 0.20 Si : ≤ 0.55 Mn : ≤ 1.60 P : ≤ 0.025 S : ≤ 0.025	Cu : ≤ 0.55	
	40	100	C : ≤ 0.22 Si : ≤ 0.55 Mn : ≤ 1.60 P : ≤ 0.025 S : ≤ 0.025	Cu : ≤ 0.55	

8. Appropriate Technical Documentation and/or Specific Technical Documentation: Non applicable

The performance of the product identified above is in conformity with the set of declared performance/s. This declaration of performance is issued, in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer identified above.
Signed for and on behalf of the manufacturer by:

Frederic Valingot
Kraków , 2022-02-28



INSPECTION CERTIFICATE — NF EN 10204-3.1/DIN 50049-3.1.B/ISO 10474

A02 — N° 730/0291248 — Page 1 / FIN — A09/A03

ArcelorMittal
ARCELORMITTAL MEDITERRANEE Site de FOS
13776 FOS SUR MER CEDEX - FRANCE
T:+33(0)44247-3314 F:+33(0)44247-3231
E: un.scu(a)arcelormittal.com

Sigle du producteur / Mill's identification: **FOS**

T Re=355 MINI MPA Rm=470 -630 MPA A%(5,65)=20 MINI — (5) — B03

CDC: Conforme cahier charges / According specifications
BL : Brut de laminage / As rolled
LN : Laminage normalisant / Normalization rolling
A : Revenu / Tempering
TE : Trempé à l'eau / Water quenching
LTC : Laminé temp. contrôlée / Control rolling
TH : Laminage thermomécanique / Thermo-mechanical forming
N : Normalisé / Normalizing
D : Détensionné / Stress relieving
G : Adouci par recuit / Soft annealing
(1)

Organisme et/ou service de contrôle / Inspection organism	Client et/ou destinataire / Customer and/or consignee	N° Commande Courtier/Client / Customer's Order Nbr	N° Commande Usine / Mill's Order Nbr	Nuances et spécifications techniques / Grade and technical specifications	Etat de livraison / Delivery condition
RECEPTION USINE — A05	EUR-ACCIAI S.P.A. VIALE DELLE INDUSTRIE 1 I-20865 USMATE VELATE ITALIE — A06	244 — A07	GH30EUR002 000012 — A08	S355J2+N-CAT_A EN10025-2:2019 HOT ROLLED COIL, AS ROLLED — B01 B02	LTC : LN — (1) B04

Traitement de référence / Treatment of test samples: BL — (1) B05

Identification du produit / Product identification		Poste / Item	Nombre de pièces / Number of pieces	Dimensions / Sizes (mm)			Masse / Weight	Empla.	Traction / Tensile requirements											Empla	Résilience / Impact testing								
Repère pièce / Plate number	Coulée / Heat			Epaisseur / Thickness	Largeur / Width	Longueur / Length	(kg) (7)	Loc. (2)	S (3)	Pos Z(4)	Type	Réf Ref (5)	Temp.	ReEH	Rm	A%					Loc (2)	Réf Ref	Type	S (3)	Temp.	Pos. Z(4)	Valeurs individuelles / Individual values		Moyenne / Average
B07	B07	A07	B08	B09	B10	B11	B13	C01	C02	C062	C10		C03	C11	C12	C13	<-C14-C29		C60-C69->		C01		C40	C02	C08	C62	<- - - -C42- - - ->		C43
~~1916062~~	~~730324314~~	~~001~~	~~1~~	~~5,000~~	~~2000,00~~		~~24136~~	1	T	P	PRISM	BL	20	500	609	24,4													
1936068	730324314	001	1	5,000	2000,00		24056																						
~~1936071~~	~~730324314~~	~~001~~	~~1~~	~~5,000~~	~~2000,00~~		~~24076~~																						

23C227

CLIENTE ... DUPLO ...
N° DDT NR. 4310 ... DEL 04/9/23 ...
FOTOCOPIA CONFORME ORIGINALE
EUR-ACCIAI SpA
UFF. COMMERCIALE

AC:C =0,20 MAXI MN=1,60 MAXI P =0,025 MAXI S =0,025 MAXI SI=0,03 MAXI AL=0,02 -0,29 CU=0,39 MAXI NI=0,42 MAXI CR=0,29 MAXI NB=0,06 MAXI V =0,10 MAXI
TI=0,05 MAXI B =,0007 MAXI MO=0,11 MAXI CO=0,29 MAXI CEQ02=C+MN/6+(CU+NI)/15+(CR+MO+V)/5 =0,47 MAXI CBN02=SI+2,5P =0,090 MAXI

Meth. (6) of steel making	Repère Pièce / Plate number	N° Coulée / Heat number	* Analyse sur produit / Check analysis																								
			C%	Mn%	P%	S%	Si%	AL%	B %	CR%	CU%	MO%	NB%	NI%	TI%	V %					CEQ02	CBN02				%	
C70/93 O/YCC	B07	B07 730324314	C71 0,18	C72 1,50	C73 0,017	C74 0,004	C75 0,02	C76 0,03	C77 0,0001	C78 0,08	C79 0,01	C80 0,00	C81 0,01	C82 0,02	C83 0,01	C84 0,00	C85	C86	C87	C88	C89 0,45	C90 0,059	C91	C92	C96	C97	

Emplacement/Location (2): 1 Tête / Head; 2 Pied / Bottom; 3 1/2 longueur / Length; X:Divers / Mix — C01

(3) Sens/Direction: L:Long / Longitudinal; T:Travers / Transverse; Z:Travers court / Through thick — C02

(4) Position: C:Coeur / Core sample; P:Peau / Rolled surface; D:1/3 Epais. / Thickness; Q:1/4 Epais. / Thickness; F:1/5 Epais. / Thickness; K:Divers / Mix — C62

(6)Mode élab.Meth.Coulée: T: Thomas M: Martin E: Electrique / Electric O/Y: Oxy.pur / Basic oxyg. CC: Coulée Continue / Continuous casting — C70/93

(7) Masse et nb pieces a titre indicatif. Mass and quantity of pieces as a rough guide

We hereby certify that the above cited shipment was produced according to the technical specifications of the contract and that, with inspection and tests completed, it meets those specifications as well as all norms and standards referred to in the contract.

Contrôle de marquage, d'aspect et de dimensions : satisfaisants
Inspection of markings, surface, sizes : satisfactory. — D01

Date 04/09/23
Agent / Receiving Agent
F. SIXDENIERS — Z02

247

ARCELORMITTAL MEDITERRANEE
13776 FOS SUR MER CEDEX

ArcelorMittal

Documento di controllo basato su un controllo specifico
Inspection document based on specific control
EN 10204

UK CA CE

Organismo di controllo Inspection Organisme Dipartimento Qualità Quality department	Cliente Customers EUR-ACCIAI S.P.A.	Nr Ordine Cliente Customer's order Nr	Nr Ordine Stabilimento Mill's order Nr GH30EUR002	Specifica Tecnica Technical specification S355J2+N EN 10025-2:2019

Identificazione Prodotto Product identification	Organismo di Certificazione / Notified body / CE	Numero del certificato / Certificat number	Anno / Year
	0333	HR00017_CPR2013-07-01_IT_V012	13
		http://dop.arcelormittal.net/pdf/HR00017_CPR2013-07-01_IT_V012_IT_IT.pdf	
	Organismo di Certificazione / Approved body / UKCA	Numero del certificato / Certificat number	Anno / Year
	8510	HR00017_UKCA_IT_V002	13
		http://dop.arcelormittal.net/pdf/HR00017_UKCA_IT_V002_EN_IT.pdf	

Riferimento pezzo Part Number	Colata Heat	Riga Item	EN 10025-1 Prodotti in acciao per costruzione laminati a caldo Utilizzi previsti: Utilizzo previsto per strutture saldate, bullonate e rivettate	EN 10025-1 Hot rolled structural steel products. Intended uses : Intended to be used in welded, bolted and riveted structures
1916062	730324314	000012	Tolleranze sulle dimensioni e forma: prodotto secondo EN 10051	Tolerances on dimensions and shape: Conform to EN 10051
1936071	730324314	000012		
1936068	730324314	000012		
			Allungamento Resistenza a trazione Limite di snervamento Resilienza Saldabilita Durata nel tempo — Acciaio — Espresso cosi indicato nel DoP	Elongation Tensile strength Yield strength Impact strength Weldability Durability — Steel — Expressed as indicated in the DoP

Certificazione valida per materiale fornitoVi con ns. DDT nr. C4001380 del 23/09/2024 relativo a:

PZ. 1 PARTICOLARE: C09-0001-P004_REV.C SP. 5mm POS. 26
RIF. VS. ORD. 24005170 DEL 11/09/2024
RIF. VS. COMM. 24-27012

CERTIFICATO DI CONTROLLO 3.1 / INSPECTION CERTIFICATE 3.1 - EN 10204:2004

METINVEST
FERRIERA VALSIDER SPA

A01 Società per azioni con socio unico soggetta a direzione e coordinamento di Metinvest B.V
Via Antonio Salieri, 36 · 37050 Vallese di Oppeano VR, Italy
Phone +39 045 7133311 · Fax +39 39 045 7133394
Cap. Soc. Euro 22.700.937,00 i.v. · P.IVA 03067420236
C.F. e Reg. Imp. n. 13120560159 · REA 306151/VR
http://valsider.metinvestholding.com

(A) PROCESSO DI ELABORAZIONE / STEELMAKING PROCESS: E = ELECTRIC ; BO = BASI
(B) STATO DI FORNITURA / DELIVERY CONDITION: AR = GREZZO DI LAMINAZIONE / AS
N* = LAMINAZIONE A TEMPERATURA CONTROLLATA / NORMALIZING ROLLING ;
N = NORMALIZZATO / NORMALIZED at 910°C, 1,5 min/mm ; ARIA CALMA / STILL AIR;
R = RICOTTO / ANNEALED;
N+R = NORMALIZZATO + RINVENUTO / NORMALIZED + ANNEALED ;
M = LAMINAZIONE TERMOMECCANICA / Thermomechanical rolling
(C) TRATTAMENTO TERMICO DEL CAMPIONE / HEAT TREATMENT OF SAMPLE:
N = 910°C, 1,5 min/mm ; ARIA CALMA / STILL AIR
R = 650°C, 1,5 min/mm ; ARIA CALMA / STILL AIR
(D) Ceq_1 = C + Mn/6 ; Ceq_2 = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15 ;
Pcm = C + Si/30 + (Mn + Cu + Cr)/20 + NI/60 + Mo/15 + V/10 + B*5
(1) POSIZIONE / LOCATION: 1 = TESTA / TOP ; 2 = PIEDE / BOTTOM
(2) POSIZIONE / LOCATION: C = CUORE / 1/2 THICKNESS ; P = PELLE / SURFACE ; D = 1/4 SPESSORE / THICKNESS
(3) DIREZIONE / DIRECTION: L = LONGITUDINALE / LONGITUDINAL ; T = TRASVERSALE / TRANSVERSE
(4) FORMA DEL PROVINO / SHAPE OF TEST PIECE: P = PRISMATICO / PRISMATIC ; C = CILINDRICO / CYLINDRICAL
(5) ESITO PROVA DI PIEGA / RESULT: OK = COMPLYING ; NO = NOT COMPLYING

MANNI SIPRE
STEEL ENGINEERING
UFFICIO CERTIFICATI - COPIA INFORMATICA CONFORME ORIGINALE
NS. CONFERMA: 0000006104
RIF. ORDINE: AGG.ORD. B9000100 DE
DDT: 0000101575
PLACCA/COLATA: 201840072A

A03 N° Certificato / Certificate no.: 107725
Z02 Data / Date: 22/01/2019
A08 N° Ordine / Works order: 95185698
A07 N° Ordine cliente / Customer's order: AM1S000795
DDT: BOL 1900858
del / date: 21/01/2019
Pratica / File no.:
del / date:

A06 Cliente / Customer

Manni Sipre S.P.A.
Via Righi 7
37135 VERONA
Italy

B06 Marcatura di prodotto / Marking of the product
PRODOTTO/ORDINE/N° INFORNAMENTO/DIMENSIONI/QUALITÀ/MARCHIO DEL PRODUTTORE
PRODUCT/ORDER/INTERNAL N°/DIMENSIONS/STEEL GRADE/MANUFACTURER'S MARK

B01/B02/B03

Prodotto / Product	Lamiere / Hot rolled plates
Qualità / Steel grade	S355J2+N
Normativa / Specification	EN 10025-2:2004

B07 ITEM	B07 IDENTIFICATIVO PRODOTTO PRODUCT ID	B16 COLATA HEAT	B09/B11 DIMENSIONI [mm] DIMENSIONS	B12 PESO TEORICO [t] THEORICAL WEIGHT	B07 LOTTO BATCH NO.	C70 PROCESSO ELAB. (A) STEELMAKING PROCESS	B04 STATO FORNITURA (B) DELIVERY CONDITION	C00 CAMPIONE SAMPLE	B05 TRATT. CAMPIONE (C) HEAT TREATMENT	C00 CAMPIONE PWHT SAMPLE	B05 PWHT TEMPERATURA INIZIO °C BEGINNING TEMPERATURE	VELOCITA' RISCALDO C/h HEATING RATE	TEMPERATURA TRATTAMENTO °C TEMPERATURE TREATMENT	PERMANENZA Min HOLDING TIME	VELOCITA' RAFFREDDAMENTO °C/h COOLING RATE	TEMPERATURA FINE °C END TEMPERATURE	N° CICLI / CYCLES	C00 CAMPIONE Q+T SAMPLE	B05 Q+T TEMPERATURA (Q) °C TEMPERATURE	PERMANENZA (Q) Min HOLDING TIME	RAFFREDDAMENTO COOLING	TEMPERATURA (T) °C TEMPERATURE	PERMANENZA (T) Min HOLDING TIME	RAFFREDDAMENTO COOLING
1	2018/39053A	A1/02808469	30.00X2450X12000	6,92	49946	BO	N*	[ZD580]																	
1	2018/39187A	A1/02808611	30.00X2450X12000	6,92	49944	BO	N*	[ZD583]																	
1	2018/39692A	A1/02810281	30.00X2450X12000	6,92	50047	BO	N*	[ZD635]																	
1	2018/40072A	A1/02808469	30.00X2450X12000	6,92	49176	BO	N*	[ZD033]		19T081															

C71/C92 COMPOSIZIONE CHIMICA DI COLATA / HEAT CHEMICAL ANALYSIS

B07 COLATA HEAT	C71 C %	C72 Mn %	C73 Si %	C74 P %	C75 S %	C76 Cu %	C77 Ni %	C78 Cr %	C79 Mo %	C80 Al %	C81 V %	C82 Nb %	C83 Ti %	C84 Sn %	C85 Ca %	C86 N %	C87 B %	C88 H %	C89 Ceq1 % (D)	C90 Ceq2 % (D)	C91 Pcm % (D)
S355J2+N Min																					
S355J2+N Max	0,20	1,60	0,55	0,025	0,025	0,550															
A1/02808469	0,16	1,48	0,22	0,010	0,003	0,060	0,040	0,040	0,01	0,033	0,005	0,023	0,005			0,0060	0,0005	0,0003	0,41	0,42	0,25
A1/02808611	0,17	1,53	0,30	0,011	0,002	0,040	0,020	0,040	0,01	0,038	0,005	0,022	0,005			0,0070	0,0005	0,0002	0,43	0,44	0,26
A1/02810281	0,17	1,46	0,27	0,014	0,002	0,040	0,020	0,030	0,01	0,035	0,005	0,023	0,005			0,0070	0,0005	0,0002	0,41	0,43	0,26

C00 CAMPIONE SAMPLE		C01 POSIZIONE (1) LOCATION	PROVA DI TRAZIONE TENSILE TEST: C01 POSIZIONE (2) LOCATION	C02 DIREZIONE (3) ORIENTATION	C03 TEMPERATURA [°C] TEST TEMPERATURE	C11 ReH [Mpa] YIELD STRENGTH	C12 Rm [Mpa] TENSILE STRENGTH	C13 ReH/Rm	C14 A% ELONGATION	C10 Rp 0,2 [Mpa] PROOF STRENGTH	SHAPE OF TEST PIECE	PROVA DI RESILIENZA IMPACT TEST - CHARPY V-NOTCH TEST: C41 FORMA PROVINO (4) LARGHEZZA [mm] WIDTH	C02 DIREZIONE (3) ORIENTATION	C03 TEMPERATURA [°C] TEST TEMPERATURE	C01 POSIZIONE (2) LOCATION	C42 INDIVIDUAL VALUES [J]	C43 MEDIA [J] MEAN VALUE SINGOLI VALORI	PROVA DI PIEGA BEND TEST: C02 DIREZIONE (3) ORIENTATION	C51 MANDRINO [mm] MANDREL	C52 ANGOLO [°] ANGLE	C50 ESITO (5) RESULT	PROVA DI DUREZZA HARDNESS TEST: C01 POSIZIONE (2) LOCATION	C30 METODO TEST METHOD	C31 SINGOLI VALORI INDIVIDUAL VALUES	C32 MEDIA MEAN VALUE	PROVA DI STRIZIONE Z% TEST: C53 Z% INDIVIDUAL VALUES	C54 Z% SINGOLI VALORI Z% MEAN VALUE	Z% VALORE MEDIO
	PRODOTTO PRODUCT THICKNESS	SPESSORE																											
S355J2+N Min 16.10 - 40.00													L	-20		27	0												
S355J2+N Min 16.10 - 40.00					20	345	470		20																				
S355J2+N Max 16.10 - 40.00					20	630	630																						

			PROVA DI TRAZIONE TENSILE TEST									PROVA DI RESILIENZA IMPACT TEST - CHARPY V-NOTCH TEST						PROVA DI PIEGA BEND TEST				PROVA DI DUREZZA HARDNESS TEST				PROVA DI STRIZIONE Z% TEST	
C00		C01	C01	C02	C03	C11	C12		C13	C14	C10	C41	C02	C03	C01	C42	C43	C02	C51	C52	C50	C01	C30	C31	C32	C53	C54
CAMPIONE SAMPLE	SPESSORE PRODOTTO PRODUCT THICKNESS	POSIZIONE (1) LOCATION	POSIZIONE (2) LOCATION	DIREZIONE (3) ORIENTATION	TEMPERATURA [°C] TEST TEMPERATURE	ReH [Mpa] YIELD STRENGTH	Rm [Mpa] TENSILE STRENGTH	ReH/Rm	A% ELONGATION	Rp 0,2 [Mpa] PROOF STRENGTH	FORMA PROVINO (4) SHAPE OF TEST PIECE	LARGHEZZA [mm] WIDTH	DIREZIONE (3) ORIENTATION	TEMPERATURA [°C] TEST TEMPERATURE	POSIZIONE (2) LOCATION	[J] INDIVIDUAL VALUES	MEDIA [J] SINGOLI VALORI MEAN VALUE	DIREZIONE (3) ORIENTATION	MANDREL MANDRINO [mm]	ANGOLO [°] ANGLE	ESITO (5) RESULT	POSIZIONE (2) LOCATION	METODO TEST METHOD	SINGOLI VALORI INDIVIDUAL VALUES	MEDIA MEAN VALUE	Z% INDIVIDUAL VALUES	Z% VALORE MEDIO Z% MEAN VALUE
ZD033	30,00	2	P	T	20	435	571	0,76	37		P	10,00	L	-20	P	175 176 166	173										
ZD580	30,00	2	P	T	20	416	570	0,73	34		P	10,00	L	-20	P	182 154 159	165										
ZD583	30,00	2	P	T	20	408	556	0,73	27		P	10,00	L	-20	P	156 173 169	166										
ZD635	30,00	2	P	T	20	418	544	0,77	78		P	10,00	L	-20	P	179 153 166	166										

C10

UNI EN ISO 6892-1:2009/ UNI EN ISO 148-1:2011

Z01

ITEM		TOLLERANZA DI SPESSORE TOLERANCE ON THICKNESS	TOLLERANZE DI LARGHEZZA TOLERANCE ON WIDTH	TOLLERANZE DI LUNGHEZZA TOLERANCE ON LENGTH	CONDIZIONI SUPERFICIALI SURFACE FINISH	PLANARITÀ FLATNESS
1		EN 10029:2010 CL.A	-0+100 MM	-0+200 MM	EN 10163/2:2004 CL A1	EN 10029:2010 CL. N

CERTIFICHIAMO che i prodotti elencati sono conformi alla prescrizione dell'ordine, che i controlli della marcatura, dell'aspetto superficiale e dimensionale hanno dato esito positivo.
WE CERTIFY that the above mentioned products are consistent with the order prescriptions: marking, inspection and measurement without objection.
DICHIARIAMO CHE I PRODOTTI SONO STATI CONTROLLATI IN ACCORDO ALLA NORMATIVA VIGENTE E CHE LE RADIAZIONI IONIZZANTI NON ECCEDONO IL VALORE DEL FONDO NATURALE.
WE DECLARE THAT THE PRODUCTS WERE CONTROLLED ACCORDING TO STANDARD AND RADIATION DO NOT EXCEED THE NATURAL RADIATION.

Z06

Z07	Z03 ENTE COLLAUDO / INSPECTION BODY	Z02
	TIMBRO DELL'ISPETTORE STAMP OF THE INSPECTION REPRESENTATIVE	Valsider CONTROLLO QUALITÀ

Z04	
CE 0948	**Prodotti conformi ai requisiti della marcatura CE. Certificato di conformità CE n° 0948-CPR-0015 emesso da TÜV Italia srl .** **Products in compliance with CE marking requirements. Certificate of conformity N° 0948-CPR-0015 from TÜV Italia srl.**

CERTIFICAZIONE DI SISTEMA QUALITÀ DNV·GL ISO 9001

AZIENDA CON SISTEMA DI GESTIONE QUALITÀ CERTIFICATO DA DNV GL = ISO 9001 =

Certificazione valida per materiale fornitoVi con ns. DDT nr. C4001380 del 23/09/2024 relativo a:

PZ. 1 PARTICOLARE: C09-0001-P006_REV.A SP. 30mm
POS. 1
RIF. VS. ORD. 24005170 DEL 11/09/2024
RIF. VS. COMM. 24-27012

METINVEST
FERRIERA VALSIDER SPA

Ferrirera Valsider SPA
Via Antonio Salieri, 36
37050 Vallese di Oppeano VR, Italy
Phone +39 045 7133311
Fax +39 39 045 7133394
http://valsider.metinvestholding.com

DICHIARAZIONE DI PRESTAZIONE (Reg. UE N. 305/2011)

N.S355-2

Il sottoscritto Viktor Dembytskyy, rappresentante il produttore:
Ferriera Valsider spa
Via Antonio Salieri , 36 - 37050 - vallese di Oppeano (VR)
nello stabilimento produttivo di:
Via Antonio Salieri , 36 - 37050 - vallese di Oppeano (VR)
Dichiara qui di seguito che i prodotti:
Prodotti piani laminati a caldo in acciaio secondo EN10025-1:2004.

DECLARATION OF PERFORMANCE (Reg . UE N. 305/2011)

N.S355-2

I, the undersigned, Viktor Dembytskyy, ,representing the manufacturer:
Ferriera Valsider spa
Via Antonio Salieri , 36 - 37050 - vallese di Oppeano (VR)
the production site:
Via Antonio Salieri , 36 - 37050 - vallese di Oppeano (VR)
Hereby declares that the products: Hot-rolled flat products of steel according to EN10025-1: 2004.
Hot-rolled flat products of steel according to EN10025-1: 2004.

Qualità / Steel grade	Normativa / Specification
S355J2C+N+Z25	EN 10025-2:2004
S355JR+AR	EN 10025-2:2004
S355JR+N	EN 10025-2:2004
S355K2+AR	EN 10025-2:2004
S355K2+N	EN 10025-2:2004
S355K2+N+Z15	EN 10025-2:2004
S355K2+N+Z25	EN 10025-2:2004
S355K2+N+Z35	EN 10025-2:2004
S355K2C+N	EN 10025-2:2004
S355J0+AR	EN 10025-2:2004
S355J0+AR+Z25	EN 10025-2:2004
S355J0+N	EN 10025-2:2004
S355J0+N+Z35	EN 10025-2:2004
S355J0C+AR	EN 10025-2:2004
S355J0C+N	EN 10025-2:2004
S355J2+AR	EN 10025-2:2004
S355J2+N	EN 10025-2:2004
S355J2+N+Z15	EN 10025-2:2004
S355J2+N+Z25	EN 10025-2:2004
S355J2+N+Z35	EN 10025-2:2004
S355J2C+N	EN 10025-2:2004

Tipo prodotto / Product type	Qualità / Steel grade	Codice identificativo univoco prodotto/ Unique product identifier code	Numero interno/ Internal number	Specifica tecnica armonizzata / Harmonized techical specification
Lamiera/Plate	S355J2+N	2018/39053A	1839053	EN10025-1:2004
Lamiera/Plate	S355J2+N	2018/39187A	1839187	EN10025-1:2004
Lamiera/Plate	S355J2+N	2018/39692A	1839692	EN10025-1:2004
Lamiera/Plate	S355J2+N	2018/40072A	1840072	EN10025-1:2004

Che i prodotti specificati nel presente documento sono destinati ad essere utilizzati nelle strutture saldate, bullonate e chiodate.

Che i prodotti specificati nel presente documento presentano le seguenti caratteristiche essenziali e prestazioni:

The products specified in this document are intended to be used in metal structures or mixed metal and concrete structures.

The products specified in this document have the following essential features and performance:

Caratteristiche Essenziali / Essential features	Prestazione / Performance	Norma Armonizzata / Harmonized specification
Tolleranze dimensionali e forma /Tollerance on dimensions and shape	Conforme / Compliance	EN10025-1:2004
Allungamento /Elongation	Conforme / Compliance	EN10025-1:2004
Resistenza a Trazione/Tensile Strength	Conforme / Compliance	EN10025-1:2004
Carico Unitario snervamento/Yield Strength	Conforme / Compliance	EN10025-1:2004
Resilienza/Impact	Conforme / Compliance	EN10025-1:2004
Saldabilità/Weldability	Conforme / Compliance	EN10025-1:2004
Durabilità/Durability	NPD	
Sostanza Regolamentata/Regulated substance	NPD	

Si dichiara inoltre che l'organismo notificato, TÜV Italia [N. 0948] ha effettuato:
- ispezione iniziale dello stabilimento e del controllo della produzione in fabbrica
- sorveglianza, valutazione e verifica continua del controllo della produzione in fabbrica

secondo il sistema di valutazione e verifica della costanza della prestazione 2+ ed ha rilasciato il certificato di controllo della produzione in fabbrica numero 0948-CPR-0015

It also states that the notified body, TÜV Italia [N. 0948], carried out:
- Initial inspection of factory and of factory production control
- Monitoring, evaluation and continuous assessment of factory production control

according to the system of assessment and verification of constancy of performance 2 + and released the certificate of factory production control number 0948-CPR-0015

CE 0948

Lamiere conformi ai requisiti della marcatura CE. Certificato di conformità CE n° 0948-CPR-0015 emesso da TÜV Italia srl . Plates in compliance with CE marking requirements. Certificate of conformity N° 0948-CPR-0015 from TÜV Italia srl.

Si rilascia la presente dichiarazione di prestazione sotto la responsabilità esclusiva del fabbricante

This declaration of performance is made under the sole responsibility of the manufacturer

Vallese di Oppeano,

22/01/2019

Viktor Dembytskyy

Managing Director
Ferriera Valsider s.p.a.
Metinvest Group

REMAZEL

CERTIFICATION LIST

Certificate Nr.: 001/2024
Date:

Final Customer:	Order Customer:	Object:	Description:	Quantity:	Inspection and Test Plan (ITP):	Our job:
ROSETTI MARINO	24005073 SIDERTAGLIO	C09-0001-P0001+P0002	PEDESTAL+COLUMN			

MATERIAL

Drawing	Pos.	Q.ty	Description	Material	Certificates 3.1	Manufacturer	Heat/Plate ID	Additional Mechanical Test	UT Certificates	Nesting
C09-0001-P0001	1	1	SHEET METAL 40mm	S355J2+N	16624563335	MARCEGAGLIA P&B	2461219/24C .609.01		920	
C09-0001-P0001	2	1	SHEET METAL 20mm	S355J2+N	240000005205	FABBRICA ITALIANA LAMIERE	316829/24LT 005170	240898	267	
C09-0001-P0001	3	2	SHEET METAL 10mm	S355J2+N	5394/3016	GABRIELLI	565503/8748 646	240899		
C09-0001-P0001	4	2	SHEET METAL 5mm	S355J2+N	664290	ACCIAIERIA ARVEDI	122771/7122 77111-400071315	240900		
C09-0001-P0001	5	1	SHEET METAL	S355J2+N	2022/002212/01	ACCIAIERIA D'ITALIA	180235-151872201			
C09-0001-P0001	6	2	SHEET METAL 5mm	S355J2+N	664290	ACCIAIERIA ARVEDI	122771/7122 77111-400071315	240899		
C09-0001-P0002	1	1	sheet metal 40mm	S355J2+N	16624400805	MARCEGAGLIA P&B	441908/16F. 5953.01	240902	673	
C09-0001-P0002	2	1	SHEET METAL 40mm	S355J2+N	16624563335	MARCEGAGLIA P&B	2461219/24C .609.01	240896	920	
C09-0001-P0002	3A	1	SHEET METAL 15mm	S355J2+N	16624421397	MARCEGAGLIA P&B	442151/16F. 6119.01/B	240905		
C09-0001-P0002	3B	1	SHEET METAL 15mm	S355J2+N	16624421397	MARCEGAGLIA P&B	442151/16F. 6119.01/A	240906		
C09-0001-P0002	4	1	SHEET METAL 15mm	S355J2+N	16624421397	MARCEGAGLIA P&B	442151/16F. 6119.01/B	240908		
C09-0001-P0002	6	4	SHEET METAL 10mm	S355J2+N	16624421397	MARCEGAGLIA P&B	2377353/24R .366.02/A	240909		
C09-0001-P0002	7	2	SHEET METAL 10mm	S355J2+N	16624421397	MARCEGAGLIA P&B	2377353/24R .366.02/A	240910		
C09-0001-P0002	8	1	SHEET METAL 15mm	S355J2+N	16624421397	MARCEGAGLIA P&B	442151/16F. 6119.01/A	240911		
C09-0001-P0002	9	3	SHEET METAL 15mm	S355J2+N	16624421397	MARCEGAGLIA P&B	442151/16F. 6119.01/A	240912		
C09-0001-P0002	10	1	SHEET METAL 15mm	S355J2+N	16624421397	MARCEGAGLIA P&B	442151/16F. 6119.01/A	240913		
C09-0001-P0002	11	2	SHEET METAL 5mm	S355J2+N	664290	ACCIAIERIA ARVEDI	122771/7122 77111-400071315	240914		
C09-0001-P0002	12	8	METAL PROFILE 10mm	S355J2+N	5394/3016	GABRIELLI	565503/8748 646	240915		
C09-0001-P0002	13	5	METAL PROFILE 5mm	S355J2+N	664290	ACCIAIERIA ARVEDI	122771/7122 77111-400071315	240916		
C09-0001-P0002	14	4	METAL PROFILE 5mm	S355J2+N	664290	ACCIAIERIA ARVEDI	122771/7122 77111-400071315	240917		
C09-0001-P0002	15	1	METAL PROFILE 30mm x D8	S355J2+N	240000004290	FABBRICA ITALIANA LAMIERE	322347/24LT 004258	240918	239	
C09-0001-P0002	16	4	METAL PROFILE 30mm x D8	S355J2+N	240000004290	FABBRICA ITALIANA LAMIERE	322347/24LT 004258	240919	239	

MARCEGAGLIA PALINI E BERTOLI

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www.marcegaglia.com

Marcegaglia Palini e Bertoli S.P.A.
via E.Fermi, 28 33058 San Giorgio di Nogaro, Udine - Italy
tel +39 0431623111

Type/Tipo 3.1 CERTIFICATO DI COLLAUDO EN10204

questo documento è stato generato automaticamente ed è valido senza firma

Number/Numero 16624400805 Creato il 11/06/2024

Product: Hot Rolled Heavy Plates
NormaCollaudoLamieraTreno: EN10025-2:2019
Steel grade:: S355J2+N

Customer/Cliente
SIDERTAGLIO LAMIERE S.R.L.
VIA DELL'AGRICOLTURA 8 D
36040 MELEDO DI SAREGO IT

Code: 0000028513

Del. Address/Destinatario Merci
SIDERTAGLIO LAMIERE S.R.L.
VIA DELL'AGRICOLTURA 8 D
36040 MELEDO DI SAREGO IT

Delivery/N° Consegna 8920564442
Of/Del 11/06/2024
Delivery note nr/N° doc. di trasp. 1066007562

Quality Control/Controllo Qualità
Q.M.D./RESP. M.Rizzatti
Plant/Stab. Palini e Bertoli

Pages/Pagine 1/3

Material/Codice Materiale
LTS

Description/Descrizione
70,00 X 2450,00 X 8000,00 S355J2+N

Surface Quality: EN10163-2 CL A1
Flatness: rif EN 10029 cl. N
Thickness tolerance: EN10029 CLASSE B

Delivery Condition: NORMALIZING ROLLING
Steel Making Process: BO= Basic oxigen

Order Nr/ordine **1191769614/106**
Materiale Cliente

Client Order/Ordine cliente **ORD. 2L 00181 DEL 28/5**
Date/data cliente **28/05/2024**

Item	Batch/N° Partita	ID Palini	Heat/Colata	Quantity/Q.tà KG	Quantity/Q.tà PZ
1	24PZ003850	24C.369.02	2452508	10976	1 ***25977***
2	24PZ003851	24C.368.02	2452502	10976	1 ***25978***
3	24PZ003852	24C.368.01	2452502	10976	1 ***25979***

Remarks/Note:
LAMIERE SABBIATE in acc. ISO 8501:2012 SA 2 ½.
CE Marking Certificate N.0474-CPR-0033 last issued 14/09/2020 Rev.05. Hot rolled products of structural steels in compliance with Regulation n°305/2011/EU dated 09/03/2011. DOP available on https://www.quality.marcegaglia.com.
UKCA Marking Certificate N.1244-CPR-1051 last issued 01/01/2023. Hot rolled products of structural steels in compliance with the Construction Products Regulation 2011 (retained EU law EUR 305/2011). DOP available on https://www.quality.marcegaglia.com.

Batch/N° Partita	C (%)	Mn (%)	Si (%)	S (%)	P (%)	Cr (%)	Ni (%)	Cu (%)	Al (%)	Mo (%)	Nb (%)	V (%)	Ti (%)	N (%)	H (%)	B (%)	Ceq (%)
			0.1						0.02								
	0.22	1.6	0.55	0.025	0.025	0.29	0.42	0.55	0.3	0.11	0.06	0.1	0.05				0.47
24PZ003850	.157	1.443	.176	.0030	.0100	.017	.009	.013	.044	.0010	.027	.001	.0010	.0030	.00050	.0001	.40
24PZ003851	.168	1.462	.183	.0020	.0110	.021	.008	.012	.044	.0010	.029	.001	.0020	.0040	.00050	.0001	.42
24PZ003852	.168	1.462	.183	.0020	.0110	.021	.008	.012	.044	.0010	.029	.001	.0020	.0040	.00050	.0001	.42

Batch/N° Partita	Forma	(1)	(2)	(3)	Tst [°C]	Rm [N/mmq]	ReH [N/mmq]	A% (%)	(1)	(2)	(3)	(4)	T [°C]	Kv1 [J]	Kv2 [J]	Kv3 [J]	Kv[a] [J]	TESTN
					20	470	325	18					-20				27	
					20	630												
24PZ003850	C	1	1/4	T	20	557	398	35.7	1	P	L	10.0	-20	148	146	151	148	24-P07983R
24PZ003851	C	1	1/4	T	20	534	374	30.1	1	P	L	10.0	-20	53	187	161	133	24-P08736R
24PZ003852	C	1	1/4	T	20	534	374	30.1	1	P	L	10.0	-20	53	187	161	133	24-P08736R

SIDERTAGLIO LAMIERE S.r.l.
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Fax Amm. 0444 823364
Uff. Tec. 0444 823201
C. F. e Part. IVA 02510610245

Controllo ad ultrasuoni

Apparecchiatura	Numero di serie	Condizioni di superficie	Accoppiante	Mod. operativie	Taratura
Gilardoni RDG2000	050858001	As Rolled	Acqua	Secondo le specifiche	Secondo le specifiche

Item	Norma di riferimento	Classe accettabilità	Esito	Indicazioni	Reticolo	Bordi	Sonda	Frequenza	Angolo

Firma
II Liv. EN/ISO 9712
Q.M.D. M.Rizzatti

MARCEGAGLIA Palini e Bertoli S.p.A. QUALITY CONTROL Rizzatti Marco

(1)Posizione:1=Testa;2=Piede.(2)Posizione:1/2=1/2 spessore;P=Pelle;1/4=1/4 spessore.(3)Direzione:L=Longitudinale;T=Trasversale;(4)Spessore provino

DescrizioneMarchi

UKCA 1244 22 MARCEGAGLIA PALINI E BERTOLI v. Enrico Fermi, 28 33058 - S. Giorgio Nogaro Udine - Italy EN 10025-1 EN 10025-2

CE 0474 06 MARCEGAGLIA PALINI E BERTOLI v. Enrico Fermi, 28 33058 - S. Giorgio Nogaro Udine - Italy EN 10025-1 EN 10025-2

- Material Free of radioactive contamination
- Dimensional check and visual examination of the surface condition: without objection
- We Declare that the above mentioned plates are in compliance with the order prescription
- We hereby declare that the above mentioned material have been rolled in Italy, thus of European Community origin

MARCEGAGLIA PALINI E BERTOLI

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Marcegaglia Palini e Bertoli S.P.A.
via E.Fermi, 28 33058 San Giorgio di Nogaro, Udine - Italy
tel +39 0431623111

Type/Tipo 3.1 CERTIFICATO DI COLLAUDO EN10204

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Number/Numero 16624400805 Creato il 11/06/2024

Product: Hot Rolled Heavy Plates
NormaCollaudoLamieraTreno: EN10025-2:2019
Steel grade:: S355J2+N

Customer/Cliente
SIDERTAGLIO LAMIERE S.R.L.
VIA DELL'AGRICOLTURA 8 D
36040 MELEDO DI SAREGO IT

Code: 0000028513

Del. Address/Destinatario Merci
SIDERTAGLIO LAMIERE S.R.L.
VIA DELL'AGRICOLTURA 8 D
36040 MELEDO DI SAREGO IT

Delivery/N° Consegna 8920564442
Of/Del 11/06/2024
Delivery note nr/N° doc. di trasp. 1066007562

Quality Control/Controllo Qualità
Q.M.D./RESP. M.Rizzatti
Plant/Stab. Palini e Bertoli

Material/Codice Materiale
LTS

Description/Descrizione
85,00 X 2450,00 X 6000,00 S355J2+N

Surface Quality: EN10163-2 CL A1
Flatness: rif EN 10029 cl. N
Thickness tolerance: EN10029 CLASSE B

Delivery Condition: NORMALIZING ROLLING
Steel Making Process: BO= Basic oxigen

Order Nr/ordine **1191769614/111**
Materiale Cliente

Client Order/Ordine cliente **ORD. 2L 00181 DEL 28/5**
Date/data cliente **28/05/2024**

Item	Batch/N° Partita	ID Palini	Heat/Colata	Quantity/Q.tà KG	Quantity/Q.tà PZ
1	24PZ003849	24C.329.03	2452476	9996	1 ***25976***

Remarks/Note:
LAMIERE SABBIATE in acc. ISO 8501:2012 SA 2 ½.
CE Marking Certificate N.0474-CPR-0033 last issued 14/09/2020 Rev.05. Hot rolled products of structural steels in compliance with Regulation n°305/2011/EU dated 09/03/2011. DOP available on https://www.quality.marcegaglia.com.
UKCA Marking Certificate N.1244-CPR-1051 last issued 01/01/2023. Hot rolled products of structural steels in compliance with the Construction Products Regulation 2011 (retained EU law EUR 305/2011). DOP available on https://www.quality.marcegaglia.com.

Batch/N° Partita	C (%)	Mn (%)	Si (%)	S (%)	P (%)	Cr (%)	Ni (%)	Cu (%)	Al (%)	Mo (%)	Nb (%)	V (%)	Ti (%)	N (%)	H (%)	B (%)	Ceq (%)
			0.1						0.02								
	0.22	1.6	0.55	0.025	0.025	0.29	0.42	0.55	0.3	0.11	0.06	0.1	0.05				0.47
24PZ003849	.156	1.418	.165	.0040	.0100	.017	.007	.009	.042	.0010	.027	.001	.0010	.0040	.00050	.0001	.40

Batch/N° Partita	Forma	(1)	(2)	(3)	Tst [°C]	Rm [N/mmq]	ReH [N/mmq]	A% (%)	(1)	(2)	(3)	(4)	T [°C]	Kv1 [J]	Kv2 [J]	Kv3 [J]	Kv[a] [J]	TESTN
					20	470	315	18					-20				27	
					20	630												
24PZ003849	C	1	1/4	T	20	528	352	28.7	1	P	L	10.0	-20	58	157	105	106	24-P09494R

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Via dell'Agricoltura, 8/D
36040 MELEDO DI SAREGO (VI)
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Fax Amm. 0444 823364
Uff. Tec. 0444 823201
C. F. e Part. IVA 02510610245

Controllo ad ultrasuoni

Apparecchiatura	Numero di serie	Condizioni di superficie	Accoppiante	Mod. operativie	Taratura
Gilardoni RDG2000	050858001	As Rolled	Acqua	Secondo le specifiche	Secondo le specifiche

Item	Norma di riferimento	Classe accettabilità	Esito	Indicazioni	Reticolo	Bordi	Sonda	Frequenza	Angolo

Firma
II Liv. EN/ISO 9712
Q.M.D. M.Rizzatti

MARCEGAGLIA Palini e Bertoli S.p.A. QUALITY CONTROL Rizzatti Marco

(1)Posizione:1=Testa;2=Piede.(2)Posizione:1/2=1/2 spessore;P=Pelle;1/4=1/4 spessore.(3)Direzione:L=Longitudinale;T=Trasversale;(4)Spessore provino

DescrizioneMarchi

UKCA 1244 22 MARCEGAGLIA PALINI E BERTOLI v. Enrico Fermi, 28 33058 - S. Giorgio Nogaro Udine - Italy EN 10025-1 EN 10025-2

CE 0474 06 MARCEGAGLIA PALINI E BERTOLI v. Enrico Fermi, 28 33058 - S. Giorgio Nogaro Udine - Italy EN 10025-1 EN 10025-2

- Material Free of radioactive contamination
- Dimensional check and visual examination of the surface condition: without objection
- We Declare that the above mentioned plates are in compliance with the order prescription
- We hereby declare that the above mentioned material have been rolled in Italy, thus of European Community origin

MARCEGAGLIA PALINI E BERTOLI

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Marcegaglia Palini e Bertoli S.P.A.
via E.Fermi, 28 33058 San Giorgio di Nogaro, Udine - Italy
tel +39 0431623111

Type/Tipo 3.1 CERTIFICATO DI COLLAUDO EN10204

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Number/Numero 16624400805 Creato il 11/06/2024

Product: Hot Rolled Heavy Plates
NormaCollaudoLamieraTreno: EN10025-2:2019
Steel grade:: S355J2+N

Customer/Cliente
SIDERTAGLIO LAMIERE S.R.L.
VIA DELL'AGRICOLTURA 8 D
36040 MELEDO DI SAREGO IT

Code: 0000028513

Del. Address/Destinatario Merci
SIDERTAGLIO LAMIERE S.R.L.
VIA DELL'AGRICOLTURA 8 D
36040 MELEDO DI SAREGO IT

Delivery/N° Consegna 8920564442
Of/Del 11/06/2024
Delivery note nr/N° doc. di trasp. 1066007562

Quality Control/Controllo Qualità
Q.M.D./RESP. M.Rizzatti
Plant/Stab. Palini e Bertoli

Pages/Pagine 3/3

Material/Codice Materiale
LTS

Description/Descrizione
40,00 X 2450,00 X 12000,00 S355J2+N

Surface Quality: EN10163-2 CL A1
Flatness: rif EN 10029 cl. N
Thickness tolerance: EN10029 CLASSE B

Delivery Condition: NORMALIZING ROLLING
Steel Making Process: BO= Basic oxigen

Order Nr/ordine **1191769614/80**
Materiale Cliente

Client Order/Ordine cliente **ORD. 2L 00181 DEL 28/5**
Date/data cliente **28/05/2024**

Item	Batch/N° Partita	ID Palini	Heat/Colata	Quantity/Q.tà KG	Quantity/Q.tà PZZ
1	24PZ003817	16F.5952.01	338222	9408	1 ***25980***
2	24PZ003818	16F.5988.01	336612	9408	1 ***25981***
3	24PZ003819	16F.5953.01	441908	9408	1 ***25982***

Remarks/Note:
LAMIERE SABBIATE in acc. ISO 8501:2012 SA 2 ½.
CE Marking Certificate N.0474-CPR-0033 last issued 14/09/2020 Rev.05. Hot rolled products of structural steels in compliance with Regulation n°305/2011/EU dated 09/03/2011. DOP available on https://www.quality.marcegaglia.com.
UKCA Marking Certificate N.1244-CPR-1051 last issued 01/01/2023. Hot rolled products of structural steels in compliance with the Construction Products Regulation 2011 (retained EU law EUR 305/2011). DOP available on https://www.quality.marcegaglia.com.

Batch/N° Partita	C (%)	Mn (%)	Si (%)	S (%)	P (%)	Cr (%)	Ni (%)	Cu (%)	Al (%)	Mo (%)	Nb (%)	V (%)	Ti (%)	N (%)	H (%)	B (%)	Ceq (%)
			0.1						0.02								
	0.22	1.6	0.55	0.025	0.025	0.29	0.42	0.55	0.3	0.11	0.06	0.1	0.05				0.47
24PZ003817	.150	1.450	.220	.0060	.0120	.010	.010	.010	.024	.0000	.030	.001	.0040	.0030	.00000	.0002	.40
24PZ003818	.150	1.480	.220	.0050	.0180	.020	.010	.010	.043	.0000	.030	.001	.0010	.0030	.00000	.0002	.40
24PZ003819	.160	1.470	.220	.0040	.0140	.010	.010	.010	.037	.0000	.030	.001	.0040	.0030	.00000	.0002	.41

Batch/N° Partita	Forma	(1)	(2)	(3)	Tst [°C]	Rm [N/mmq]	ReH [N/mmq]	A% (%)	(1)	(2)	(3)	(4)	T [°C]	Kv1 [J]	Kv2 [J]	Kv3 [J]	Kv[a] [J]	TESTN
					20	470	345	20					-20				27	
					20	630												
24PZ003817	C	1	1/4	T	20	548	422	31.1	1	P	L	10.0	-20	178	175	194	182	24-P09453R
24PZ003818	C	1	1/4	T	20	568	427	31.0	1	P	L	10.0	-20	171	183	176	176	24-P07590R
24PZ003819	C	1	1/4	T	20	541	408	30.0	1	P	L	10.0	-20	137	149	139	141	24-P09455R

SIDERTAGLIO LAMIERE S.r.l.
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Fax Amm. 0444 823364
Uff. Tec. 0444 823201
C. F. e Part. IVA 02510610245

Controllo ad ultrasuoni

Apparecchiatura	Numero di serie	Condizioni di superficie	Accoppiante	Mod. operativie	Taratura
Gilardoni RDG2000	050858001	As Rolled	Acqua	Secondo le specifiche	Secondo le specifiche

Item	Norma di riferimento	Classe accettabilità	Esito	Indicazioni	Reticolo	Bordi	Sonda	Frequenza	Angolo

Firma
II Liv. EN/ISO 9712
Q.M.D. M.Rizzatti

MARCEGAGLIA Palini e Bertoli S.p.A. QUALITY CONTROL Rizzatti Marco

(1)Posizione:1=Testa;2=Piede.(2)Posizione:1/2=1/2 spessore;P=Pelle;1/4=1/4 spessore.(3)Direzione:L=Longitudinale;T=Trasversale;(4)Spessore provino

DescrizioneMarchi

UKCA 1244 22 MARCEGAGLIA PALINI E BERTOLI v. Enrico Fermi, 28 33058 - S. Giorgio Nogaro Udine - Italy EN 10025-1 EN 10025-2

CE 0474 06 MARCEGAGLIA PALINI E BERTOLI v. Enrico Fermi, 28 33058 - S. Giorgio Nogaro Udine - Italy EN 10025-1 EN 10025-2

- Material Free of radioactive contamination
- Dimensional check and visual examination of the surface condition: without objection
- We Declare that the above mentioned plates are in compliance with the order prescription
- We hereby declare that the above mentioned material have been rolled in Italy, thus of European Community origin

CERTIFICATO DI CONTROLLO ULTRASONORO
ULTRASONIC INSPECTION CERTIFICATE

Controlli effettuati su lamiera ante-taglio
Checks carried out on pre-cutting Steel Plate

Documento Nr / Document No
673

11/06/2024

Cliente / Customer	Vs Ordine / Order
SIDERTAGLIO LAMIERE S.R.L.	

Dimensioni / Dimension	Cod. Interno / Code
12130X2470	**25982**
Colata / Heat No	Cert. Nr. / Cert. No
441908	

Spessore / Thik
40

Materiale / Material	Oggetto / Object
S355J2+N	**Steel plate**
Stadio di Lavorazione / Working step	Particolare / Detail
As conditions of supply	
Posizione di controllo / Scanning position	Condizioni Superficiali / Surface condition
100x100	**As rolled**

Specifica di rif. / Specification Ref.	Classe accettabilità / Acceptance criterie
EN 10160	**S2E3**
Apparecchio Tipo / Instrument model	Mezzo accoppiamento /
GILARDONI RDG 450	**Water**
Blocco Campione / Reference Block	Perdite di trasferimento / Transfre lossee
V1	

Taratura sensibilità d'esame / Sensibility range test
Flat bottomed holes Ø 5 mm

TRASDUTTORI search units	ONDE waves	TIPO type	FREQUENZA	SEZIONE (mm) size (mm)	ANGOLO angle	DIAMETRO diameter	FABBRICANTE manufacturer
	LONGIT	**D25/4**	**4MHz**			**Ø25**	**IMG**

IDENTIFICAZIONE identification	AREA / TRATTO Area/section	TIPO DISCONT. discontinuity	AMPIEZZA amplitude	LUNGHEZZA length	PROFONDITA' depth	NOTE remark	RISULTATO examination result

Risultato dell'esame	X	**Satisfactory / Conforme**
Examination result		**Unsatisfactory / NON Conforme**

Emesso da
Esaminatore

SIDERTAGLIO LAMIERE s.r.l.
Alessandro Callegari
UNI EN ISO 9712:2012 level II
Cert. Nr. DTC-END-A00562-14

Ispettore Cliente / Ente terzo	Controllo qualità

Sidertaglio Lamiere srl

Taglio plasma
Ossitaglio
fino a 500mm

TAGLIO E COMMERCIO DI LAMIERE
Via dell'Agricoltura 8/D - 36040 Meledo di Sarego (VI) - Tel. 0444 823059
Fax Amm. 0444 823364 - Uff. Tec. 0444 823201 - Email: info@sidertaglio.com - Web: www.sidertaglio.com
Reg. Imp. VI 33000/1996 - R.E.A. 236444 - Cod. Fisc. e P.IVA 02510610245

MARCEGAGLIA
PALINI E BERTOLI

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46040 Via Bresciani, 16-Gazzolo degli Ippoliti Mantova-Italy
Tel. +39 - 0376 686 1 Fax. +39 - 0376 655 600
www.marcegaglia.com

Marcegaglia Palini e Bertoli S.p.A.
Via E.Fermi, 28 33058 San Giorgio di Nogaro, Udine - Italy
tel+39 0431623111

Type/Tipo 3.1 CERTIFICATO DI COLLAUDO EN10204 | questo documento è stato generato automaticamente ed è valido senza firma | Number/Numero 16624563335 | Creato il 05/09/2024

Product: Hot Rolled Heavy Plates
NormaCollaudoLamieraTreno: EN10025-2:2019
Steel grade:: S355J2+N

Customer/Cliente	Code: 0000028587	Del. Address/Destinatario Merci	Delivery/N° Consegna 8920635882 Of/Del 05/09/2024 Delivery note nr/N° doc. di trasp. 1066010892	Quality Control/Controllo Qualità Q.M.D./RESP. M.Rizzatti Plant/Stab. Palini e Bertoli	Pages/Pagine 3/3

Material/Codice Materiale	Surface Quality: -	Delivery Condition: NORMALIZING ROLLING	Order Nr/ordine	Client Order/Ordine cliente
LTS	Flatness: rif EN 10029 cl. N	Steel Making Process: BO= Basic oxigen	1191787387/50	24*410
Description/Descrizione	Thickness tolerance: EN10029 CLASSE B		Materiale Cliente	Client Date/data cliente
26200 40,00 X 3000,00 X 10000,00 S355J2+N				12/07/2024

Item	Batch/N° Partita	ID Palini	Heat/Colata	Quantity/Q.tà KG	Quantity/Q.tà PZZ
1	24KX018811	24C.609.01	2461219	9600	1

Remarks/Note:
CE Marking Certificate N.0474-CPR-0033 last issued 14/09/2020 Rev.05. Hot rolled products of structural steels in compliance with Regulation n°305/2011/EU dated 09/03/2011. DOP available on https://www.quality.marcegaglia.com.
UKCA Marking Certificate N.1244-CPR-1051 last issued 01/01/2023. Hot rolled products of structural steels in compliance with the Construction Products Regulation 2011 (retained EU law EUR 305/2011). DOP available on https://www.quality.marcegaglia.com.

Batch/N° Partita	C (%)	Mn (%)	Si (%)	S (%)	P (%)	Cr (%)	Ni (%)	Cu (%)	Al (%)	Mo (%)	Nb (%)	V (%)	Ti (%)	N (%)	H (%)	B (%)	Ceq (%)
			0.1						0.02								
	0.22	1.6	0.55	0.025	0.025	0.29	0.42	0.55	0.3	0.11	0.06	0.1	0.05				0.47
24KX018811	.156	1.447	.184	.0030	.0090	.032	.017	.021	.043	.0030	.028	.001	.0020	.0060	.00040	.0002	.41

COPIA CONFORME ALL'ORIGINALE

IL PRESENTE CERTIFICATO VALE PER

LA QUANTITA' DEL NS. DDT

Batch/N° Partita	Forma	(1)	(2)	(3)	Tst [°C]	Rm [N/mmq]	ReH [N/mmq]	A% (%)	(1)	(2)	(3)	(4)	T [°C]	Kv1 [J]	Kv2 [J]	Kv3 [J]	Kv* [J]	TESTN
					20	470	345	20					-20				27	
					20	630												
24KX018811	C	1	1/4	T	20	535	428	32.9	1	P	L	10.0	-20	203	223	180	202	24-P14270R

Controllo ad ultrasuoni

Apparecchiatura	Numero di serie	Condizioni di superficie	Accoppiante	Mod. operativie	Taratura
Gilardoni RDG2000	050858001	As Rolled	Acqua	Secondo le specifiche	Secondo le specifiche

Firma
II Liv. EN/ISO 9712
Q.M.D. M.Rizzatti

MARCEGAGLIA Palini e Bertoli S.p.A. QUALITY CONTROL Rizzatti Marco

Item	Norma di riferimento	Classe accettabilità	Esito	Indicazioni	Reticolo	Bordi	Sonda	Frequenza	Angolo

(1)Posizione:1-Testa;2-Piede,(2)Posizione:1/2-1/2 spessore;P-Pelle;1/4-1/4 spessore,(3)Direzione:L-Longitudinale;T-Trasversale;(4)Spessore provino

DescrizioneMarchi

UKCA 1244 22 MARCEGAGLIA PALINI E BERTOLI v. Enrico Fermi, 28 33058 - S. Giorgio Nogaro Udine - Italy EN 10025-1 EN 10025-2

CE 0474 06 MARCEGAGLIA PALINI E BERTOLI v. Enrico Fermi, 28 33058 - S. Giorgio Nogaro Udine - Italy EN 10025-1 EN 10025-2

- Material Free of radioactive contamination
- Dimensional check and visual examination of the surface condition: without objection
- We Declare that the above mentioned plates are in compliance with the order prescription
- We hereby declare that the above mentioned material have been rolled in Italy, thus of European Community origin

DICHIARAZIONE DI PRESTAZIONE N°1.0577

1. Codice di identificazione unico del prodotto-tipo: **1.0577**
2. Numero di tipo: **S355J2**
3. Uso previsto del prodotto da costruzione, conformemente a **EN 10025-1:2004**
   PRODOTTI LAMINATI A CALDO DI ACCIAIO PER IMPIEGHI STRUTTURALI DA UTILIZZARSI NELLE STRUTTURE METALLICHE O IN COMPOSITI METALLICI E STRUTTURE IN CALCESTRUZZO
4. Nome e indirizzo del fabbricante:

MARCEGAGLIA PALINI E BERTOLI S.P.A.
Sede legale - **Via Bresciani, 16 – 46040 Gazoldo degli Ippoliti (MN)**
nello stabilimento di
Via E. Fermi, 28 – 33058 San Giorgio di Nogaro (UD)

6. Sistema di valutazione e verifica della costanza della prestazione del prodotto da costruzione: **2+**
7. L'organismo notificato:

RINA Services S.p.A.
N° 0474

Ha rilasciato il certificato di conformità del controllo della produzione in fabbrica fondandosi sui seguenti elementi:
i. Ispezione iniziale della fabbrica e del controllo della produzione in fabbrica;
ii. Esegue la sorveglianza continua, la valutazione e l'approvazione del controllo della produzione in fabbrica.

8. Nel caso di una dichiarazione di prestazione relativa ad un prodotto da costruzione per il quale è stata rilasciata una valutazione tecnica europea: **N.A.**
9. Prestazione dichiarata:

Caratteristiche essenziali	Punti relativi ai requisiti della presente (o altra) norma europea	Prestazione	Specifica armonizzata
Tolleranza sulle dimensioni e tolleranze di forma	7.7.1	EN10029-2010	EN 10025-2:2019
Allungamento	7.3.1	CONFORME TABELLA 1	
Resistenza alla trazione	7.3.1		
Carico unitario di snervamento	7.3.1		
Resilienza	7.3.1+7.3.2		
Analisi chimica	7.2.1	CONFORME TABELLA 2	
Saldabilità (composizione chimica)	7.2+7.4.1	NPD	
Durabilità (composizione chimica)	7.2+7.4.3	NPD	

10. La prestazione del prodotto di cui ai punti 1 e 2 è conforme alla prestazione dichiarata di cui al punto 9.
Si rilascia la presente dichiarazione di prestazione sotto la responsabilità esclusiva del fabbricante di cui al punto 4.

In nome e per conto della MARCEGAGLIA PALINI E BERTOLI S.P.A.
San Giorgio di Nogaro, 10 marzo 2021

MARCEGAGLIA Palini e Bertoli S.p.A. Via E. Fermi, 28 33058 S. Giorgio di Nogaro, Ud - Italy P.I. 03217150983

➢ TABELLA 1- CARATTERISTICHE IN ACCORDO ALLA EN 10025-2:2019

CARATTERISTICHE MECCANICHE A TEMPERATURA AMBIENTE - prospetto 6														
In conformità alla		Carico unitario minimo di snervamento ReH in N/mm²									Resistenza a trazione Rm in N/mm²			
		Spessore nominale mm									Spessore nominale			
EN 10027-1	EN10027-2	≤16	>16 ≤40	>40 ≤63	>63 ≤80	>80 ≤100	>100 ≤150	>150 ≤200	>200 ≤250	>250 ≤400	≥3 ≤100	>100 ≤150	>150 ≤250	>250 ≤400
S355J2	1.0577	355	345	335	325	315	295	285	275	265	470÷630	450÷600	450÷600	450÷600

CARATTERISTICHE MECCANICHE A TEMPERATURA AMBIENTE – prospetto 6								
In conformità alla		Posizione dei provini	Allungamento percentuale minimo dopo rottura A%					
			$L_0=5,65*\sqrt{S_0}$					
EN 10027-1	EN10027-2		≥3≤40	>40≤63	>63≤100	>100≤150	>150≤250	>250≤400
S355J2	1.0577	l	22	21	20	18	17	17
		t	20	19	18	18	17	17

Caratteristiche meccaniche – Resilienza KV_2 longitudinale per prodotti piani e lunghi – prospetto 8					
In conformità alla		TEMPERATURE	Energia minima (J) – Spessore nominale in mm		
EN 10027-1	EN10027-2	°C	≤150	>150≤250	>250≤400
S355J2	1.0577	-20	27	27	27

➢ TABELLA 2 – CARATTERISTICHE IN ACCORDO ALLA EN 10025-2:2019

COMPOSIZIONE CHIMICA ALL'ANALISI DI COLATA - prospetto 1												
In conformità alla		Metodo di deossidazione	C in % max per spessori nominali di prodotto in mm			Si	Mn	P	S	N	Cu	altro
EN 10027-1	EN10027-2		≤16	>16≤30	>30	max.	max.	max.	max.	max.	max.	max
S355J2	1.0577	FF	0,20	0,20	0,22	0,55	1,60	0,025	0,025	-	0,55	-

Valore massimo del CEV basato sull'analisi di colata - prospetto 5							
In conformità alla		Metodo di deossidazione	Valore massimo CEV in % per spessori nominali di prodotto in mm				
EN 10027-1	EN10027-2		≤30	>30≤40	>40≤150	>150≤250	>250≤400
S355J2	1.0577	FF	0,45	0,47	0,47	0,49	0,49

CERTIFICATO DI CONTROLLO ULTRASONORO
ULTRASONIC INSPECTION CERTIFICATE

Controlli effettuati su lamiera ante-taglio
Checks carried out on pre-cutting Steel Plate

Documento Nr / Document No
920

25/09/2024

Cliente / Customer	Vs Ordine / Order
SIDERTAGLIO LAMIERE S.R.L.	

Dimensioni / Dimension	Cod. Interno / Code
4010X3020	**26200**
Colata / Heat No	Cert. Nr. / Cert. No
2461219	
Spessore / Thik	
40	

Materiale / Material	Oggetto / Object
S355J2+N	**Steel plate**
Stadio di Lavorazione / Working step	Particolare / Detail
As conditions of supply	
Posizione di controllo / Scanning position	Condizioni Superficiali / Surface condition
100x100	**As rolled**

Specifica di rif. / Specification Ref.	Classe accettabilità / Acceptance criterie
EN 10160	**S2E3**
Apparecchio Tipo / Instrument model	Mezzo accoppiamento /
GILARDONI RDG 450	**Water**
Blocco Campione / Reference Block	Perdite di trasferimento / Transfre lossee
V1	

Taratura sensibilità d'esame / Sensibility range test

Flat bottomed holes Ø 5 mm

TRASDUTTORI search units	**ONDE** waves	**TIPO** type	**FREQUENZA**	**SEZIONE (mm)** size (mm)	**ANGOLO** angle	**DIAMETRO** diameter	**FABBRICANTE** manufacturer
	LONGIT	**D25/4**	**4MHz**			**Ø25**	**IMG**

IDENTIFICAZIONE identification	**AREA / TRATTO** Area/section	**TIPO DISCONT.** discontinuity	**AMPIEZZA** amplitude	**LUNGHEZZA** length	**PROFONDITA'** depth	**NOTE** remark	**RISULTATO** examination result

Risultato dell'esame	X	**Satisfactory / Conforme**
Examination result		**Unsatisfactory / NON Conforme**

Emesso da
Esaminatore

SIDERTAGLIO LAMIERE s.r.l.
Alessandro Callegari
UNI EN ISO 9712:2012 level II
Cert. Nr. DTC-END-A00562-14

Ispettore Cliente / Ente terzo	Controllo qualità

Sidertaglio Lamiere srl

Taglio plasma
Ossitaglio
fino a 500mm

TAGLIO E COMMERCIO DI LAMIERE
Via dell'Agricoltura 8/D - 36040 Meledo di Sarego (VI) - Tel. 0444 823059
Fax Amm. 0444 823364 - Uff. Tec. 0444 823201 - Email: info@sidertaglio.com - Web: www.sidertaglio.com
Reg. Imp. VI 33000/1996 - R.E.A. 236444 - Cod. Fisc. e P.IVA 02510610245

MARCEGAGLIA
PALINI E BERTOLI

Marcegaglia
46040 Via Bresciani, 16-Gazoldo degli Ippoliti Mantova-Italy
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www.marcegaglia.com

Marcegaglia Palini e Bertoli S.P.A.
via E.Fermi, 28 33058 San Giorgio di Nogaro, Udine - Italy
tel +39 0431623111

Type/Tipo 3.1 CERTIFICATO DI COLLAUDO EN10204

questo documento è stato generato automaticamente ed è valido senza firma

Number/Numero 16624421397 Creato il 19/06/2024

Product: Hot Rolled Heavy Plates
NormaCollaudoLamieraTreno: EN10025-2:2019
Steel grade:: S355J2+N

Customer/Cliente
SIDERTAGLIO LAMIERE S.R.L.
VIA DELL'AGRICOLTURA 8 D
36040 MELEDO DI SAREGO IT

Code: 0000028513

Del. Address/Destinatario Merci
SIDERTAGLIO LAMIERE S.R.L.
VIA DELL'AGRICOLTURA 8 D
36040 MELEDO DI SAREGO IT

Delivery/N° Consegna 8920573384
Of/Del 19/06/2024
Delivery note nr/N° doc. di trasp. 1066007973

Quality Control/Controllo Qualità
Q.M.D./RESP. M.Rizzatti
Plant/Stab. Palini e Bertoli

Pages/Pagine 1/7

Material/Codice Materiale
LTS

Description/Descrizione
10,00 X 2450,00 X 12000,00 S355J2+N

Surface Quality: EN10163-2 CL A1
Flatness: rif EN 10029 cl. N
Thickness tolerance: EN10029 CLASSE B

Delivery Condition: NORMALIZING ROLLING
Steel Making Process: BO= Basic oxigen

Order Nr/ordine **1191769614/15**
Materiale Cliente

Client Order/Ordine cliente **ORD. 2L 00181 DEL 28/5**
Date/data cliente **28/05/2024**

Item	Batch/N° Partita	ID Palini	Heat/Colata	Quantity/Q.tà KG	Quantity/Q.tà PZZ
1	24PZ003973	24R.366.03/A	2377353	2352	1 ***26090***
2	24PZ003970	24R.366.02/B	2377353	2352	1 ***26089***
3	24PZ003971	24R.366.02/A	2377353	2352	1 ***26088***
4	24PZ003972	24R.366.03/B	2377353	2352	1 ***26091***

Remarks/Note:
LAMIERE SABBIATE in acc. ISO 8501:2012 SA 2 ½.
CE Marking Certificate N.0474-CPR-0033 last issued 14/09/2020 Rev.05. Hot rolled products of structural steels in compliance with Regulation n°305/2011/EU dated 09/03/2011. DOP available on https://www.quality.marcegaglia.com.
UKCA Marking Certificate N.1244-CPR-1051 last issued 01/01/2023. Hot rolled products of structural steels in compliance with the Construction Products Regulation 2011 (retained EU law EUR 305/2011). DOP available on https://www.quality.marcegaglia.com.

Batch/N° Partita	C (%)	Mn (%)	Si (%)	S (%)	P (%)	Cr (%)	Ni (%)	Cu (%)	Al (%)	Mo (%)	Nb (%)	V (%)	Ti (%)	N (%)	H (%)	B (%)	Ceq (%)
	0.2	1.6	0.55	0.025	0.025	0.29	0.42	0.55	0.02 0.3	0.11	0.06	0.1	0.05				0.45
24PZ003973	.144	1.350	.174	.0070	.0100	.027	.018	.027	.045	.0010	.000	.001	.0000	.0040	.00000	.0000	.38
24PZ003970	.144	1.350	.174	.0070	.0100	.027	.018	.027	.045	.0010	.000	.001	.0000	.0040	.00000	.0000	.38
24PZ003971	.144	1.350	.174	.0070	.0100	.027	.018	.027	.045	.0010	.000	.001	.0000	.0040	.00000	.0000	.38
24PZ003972	.144	1.350	.174	.0070	.0100	.027	.018	.027	.045	.0010	.000	.001	.0000	.0040	.00000	.0000	.38

Batch/N° Partita	Forma	(1)	(2)	(3)	Tst [°C]	Rm [N/mmq]	ReH [N/mmq]	A% (%)	(1)	(2)	(3)	(4)	T [°C]	Kv1 [J]	Kv2 [J]	Kv3 [J]	Kv^a [J]	TESTN
					20 20	470 630	355	20					-20					
24PZ003973	P	1	P	T	20	496	406	28.8	1	P	L	7.5	-20	132	151	125	136	24-P08088R
24PZ003970	P	1	P	T	20	496	406	28.8	1	P	L	7.5	-20	132	151	125	136	24-P08088R
24PZ003971	P	1	P	T	20	496	406	28.8	1	P	L	7.5	-20	132	151	125	136	24-P08088R
24PZ003972	P	1	P	T	20	496	406	28.8	1	P	L	7.5	-20	132	151	125	136	24-P08088R

SIDERTAGLIO LAMIERE srl
Via dell'Agricoltura, 8/D
36040 MELEDO DI SAREGO (VI)
Tel. 0444 823059
Fax Amm. 0444 823364
Uff. Tec. 0444 823201
C. F. e Part. IVA 02510610245

Controllo ad ultrasuoni

Apparecchiatura	Numero di serie	Condizioni di superficie	Accoppiante	Mod. operativie	Taratura
Gilardoni RDG2000	050858001	As Rolled	Acqua	Secondo le specifiche	Secondo le specifiche

Item	Norma di riferimento	Classe accettabilità	Esito	Indicazioni	Reticolo	Bordi	Sonda	Frequenza	Angolo

Firma
II Liv. EN/ISO 9712
Q.M.D. M.Rizzatti

MARCEGAGLIA
Palini e Bertoli S.p.A.
QUALITY CONTROL
Rizzatti Marco

(1)Posizione:1=Testa;2=Piede.(2)Posizione:1/2=1/2 spessore;P=Pelle;1/4=1/4 spessore.(3)Direzione:L=Longitudinale;T=Trasversale;(4)Spessore provino

DescrizioneMarchi

UKCA 1244 22 MARCEGAGLIA PALINI E BERTOLI v. Enrico Fermi, 28 33058 - S. Giorgio Nogaro Udine - Italy EN 10025-1 EN 10025-2

CE 0474 06 MARCEGAGLIA PALINI E BERTOLI v. Enrico Fermi, 28 33058 - S. Giorgio Nogaro Udine - Italy EN 10025-1 EN 10025-2

- Material Free of radioactive contamination
- Dimensional check and visual examination of the surface condition: without objection
- We Declare that the above mentioned plates are in compliance with the order prescription
- We hereby declare that the above mentioned material have been rolled in Italy, thus of European Community origin

MARCEGAGLIA PALINI E BERTOLI

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46040 Via Bresciani, 16-Gazoldo degli Ippoliti Mantova-Italy
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www.marcegaglia.com

Marcegaglia Palini e Bertoli S.P.A.
via E.Fermi, 28 33058 San Giorgio di Nogaro, Udine - Italy
tel +39 0431623111

Type/Tipo 3.1 CERTIFICATO DI COLLAUDO EN10204

questo documento è stato generato automaticamente ed è valido senza firma

Number/Numero 16624421397 Creato il 19/06/2024

Product: Hot Rolled Heavy Plates
NormaCollaudoLamieraTreno: EN10025-2:2019
Steel grade:: S355J2+N

Customer/Cliente
SIDERTAGLIO LAMIERE S.R.L.
VIA DELL'AGRICOLTURA 8 D
36040 MELEDO DI SAREGO IT

Code: 0000028513

Del. Address/Destinatario Merci
SIDERTAGLIO LAMIERE S.R.L.
VIA DELL'AGRICOLTURA 8 D
36040 MELEDO DI SAREGO IT

Delivery/N° Consegna 8920573384
Of/Del 19/06/2024
Delivery note nr/N° doc. di trasp. 1066007973

Quality Control/Controllo Qualità
Q.M.D./RESP. M.Rizzatti
Plant/Stab. Palini e Bertoli

Pages/Pagine 2/7

Material/Codice Materiale
LTS

Description/Descrizione
10,00 X 2450,00 X 12000,00 S355J2+N

Surface Quality: EN10163-2 CL A1
Flatness: rif EN 10029 cl. N
Thickness tolerance: EN10029 CLASSE B

Delivery Condition: NORMALIZING ROLLING
Steel Making Process: BO= Basic oxigen

Order Nr/ordine **1191769614/15**
Materiale Cliente

Client Order/Ordine cliente **ORD. 2L 00181 DEL 28/5**
Date/data cliente **28/05/2024**

Item	Batch/N° Partita	ID Palini	Heat/Colata	Quantity/Q.tà KG	Quantity/Q.tà PZ
1	24PZ003977	24R.365.02/B	2377353	2352	1 *26076*
2	24PZ003974	24R.366.04/B	2377353	2352	1 *26075*
3	24PZ003975	24R.366.04/A	2377353	2352	1 *26074*
4	24PZ003976	24R.365.02/A	2377353	2352	1 *26077*

Remarks/Note:
LAMIERE SABBIATE in acc. ISO 8501:2012 SA 2 ½.
CE Marking Certificate N.0474-CPR-0033 last issued 14/09/2020 Rev.05. Hot rolled products of structural steels in compliance with Regulation n°305/2011/EU dated 09/03/2011. DOP available on https://www.quality.marcegaglia.com.
UKCA Marking Certificate N.1244-CPR-1051 last issued 01/01/2023. Hot rolled products of structural steels in compliance with the Construction Products Regulation 2011 (retained EU law EUR 305/2011). DOP available on https://www.quality.marcegaglia.com.

Batch/N° Partita	C (%)	Mn (%)	Si (%)	S (%)	P (%)	Cr (%)	Ni (%)	Cu (%)	Al (%)	Mo (%)	Nb (%)	V (%)	Ti (%)	N (%)	H (%)	B (%)	Ceq (%)
	0.2	1.6	0.55	0.025	0.025	0.29	0.42	0.55	0.02 0.3	0.11	0.06	0.1	0.05				0.45
24PZ003977	.144	1.350	.174	.0070	.0100	.027	.018	.027	.045	.0010	.000	.001	.0000	.0040	.00000	.0000	.38
24PZ003974	.144	1.350	.174	.0070	.0100	.027	.018	.027	.045	.0010	.000	.001	.0000	.0040	.00000	.0000	.38
24PZ003975	.144	1.350	.174	.0070	.0100	.027	.018	.027	.045	.0010	.000	.001	.0000	.0040	.00000	.0000	.38
24PZ003976	.144	1.350	.174	.0070	.0100	.027	.018	.027	.045	.0010	.000	.001	.0000	.0040	.00000	.0000	.38

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C. F. e Part. IVA 02510610245

Batch/N° Partita	Forma	(1)	(2)	(3)	Tst [°C]	Rm [N/mmq]	ReH [N/mmq]	A% (%)	(1)	(2)	(3)	(4)	T [°C]	Kv1 [J]	Kv2 [J]	Kv3 [J]	Kv^a [J]	TESTN
					20 20	470 630	355	20					-20					
24PZ003977	P	1	P	T	20	496	406	28.8	1	P	L	7.5	-20	132	151	125	136	24-P08088R
24PZ003974	P	1	P	T	20	496	406	28.8	1	P	L	7.5	-20	132	151	125	136	24-P08088R
24PZ003975	P	1	P	T	20	496	406	28.8	1	P	L	7.5	-20	132	151	125	136	24-P08088R
24PZ003976	P	1	P	T	20	496	406	28.8	1	P	L	7.5	-20	132	151	125	136	24-P08088R

Controllo ad ultrasuoni

Apparecchiatura	Numero di serie	Condizioni di superficie	Accoppiante	Mod. operativie	Taratura
Gilardoni RDG2000	050858001	As Rolled	Acqua	Secondo le specifiche	Secondo le specifiche

Item	Norma di riferimento	Classe accettabilità	Esito	Indicazioni	Reticolo	Bordi	Sonda	Frequenza	Angolo

Firma
II Liv. EN/ISO 9712
Q.M.D. M.Rizzatti

MARCEGAGLIA Palini e Bertoli S.p.A. QUALITY CONTROL Rizzatti Marco

(1)Posizione:1=Testa;2=Piede.(2)Posizione:1/2=1/2 spessore;P=Pelle;1/4=1/4 spessore.(3)Direzione:L=Longitudinale;T=Trasversale;(4)Spessore provino

DescrizioneMarchi

UKCA 1244 22 MARCEGAGLIA PALINI E BERTOLI v. Enrico Fermi, 28 33058 - S. Giorgio Nogaro Udine - Italy EN 10025-1 EN 10025-2

CE 0474 06 MARCEGAGLIA PALINI E BERTOLI v. Enrico Fermi, 28 33058 - S. Giorgio Nogaro Udine - Italy EN 10025-1 EN 10025-2

- Material Free of radioactive contamination
- Dimensional check and visual examination of the surface condition: without objection
- We Declare that the above mentioned plates are in compliance with the order prescription
- We hereby declare that the above mentioned material have been rolled in Italy, thus of European Community origin

MARCEGAGLIA PALINI E BERTOLI

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Marcegaglia Palini e Bertoli S.P.A.
via E.Fermi, 28 33058 San Giorgio di Nogaro, Udine - Italy
tel +39 0431623111

Type/Tipo 3.1 CERTIFICATO DI COLLAUDO EN10204

questo documento è stato generato automaticamente ed è valido senza firma

Number/Numero 16624421397 Creato il 19/06/2024

Product: Hot Rolled Heavy Plates
NormaCollaudoLamieraTreno: EN10025-2:2019
Steel grade:: S355J2+N

Customer/Cliente
SIDERTAGLIO LAMIERE S.R.L.
VIA DELL'AGRICOLTURA 8 D
36040 MELEDO DI SAREGO IT

Code: 0000028513

Del. Address/Destinatario Merci
SIDERTAGLIO LAMIERE S.R.L.
VIA DELL'AGRICOLTURA 8 D
36040 MELEDO DI SAREGO IT

Delivery/N° Consegna 8920573384
Of/Del 19/06/2024
Delivery note nr/N° doc. di trasp. 1066007973

Quality Control/Controllo Qualità
Q.M.D./RESP. M.Rizzatti
Plant/Stab. Palini e Bertoli

Pages/Pagine 3/7

Material/Codice Materiale
LTS

Description/Descrizione
10,00 X 2450,00 X 12000,00 S355J2+N

Surface Quality: EN10163-2 CL A1
Flatness: rif EN 10029 cl. N
Thickness tolerance: EN10029 CLASSE B

Delivery Condition: NORMALIZING ROLLING
Steel Making Process: BO= Basic oxigen

Order Nr/ordine **1191769614/15**
Materiale Cliente

Client Order/Ordine cliente **ORD. 2L 00181 DEL 28/5**
Date/data cliente **28/05/2024**

Item	Batch/N° Partita	ID Palini	Heat/Colata	Quantity/Q.tà KG	Quantity/Q.tà PZZ
1	24PZ003981	24R.365.03/A	2377353	2352	1 26080
2	24PZ003978	24R.365.01/A	2377353	2352	1 26079
3	24PZ003979	24R.365.01/B	2377353	2352	1 26078
4	24PZ003980	24R.365.03/B	2377353	2352	1 26081

Remarks/Note:
LAMIERE SABBIATE in acc. ISO 8501:2012 SA 2 ½.
CE Marking Certificate N.0474-CPR-0033 last issued 14/09/2020 Rev.05. Hot rolled products of structural steels in compliance with Regulation n°305/2011/EU dated 09/03/2011. DOP available on https://www.quality.marcegaglia.com.
UKCA Marking Certificate N.1244-CPR-1051 last issued 01/01/2023. Hot rolled products of structural steels in compliance with the Construction Products Regulation 2011 (retained EU law EUR 305/2011). DOP available on https://www.quality.marcegaglia.com.

Batch/N° Partita	C (%)	Mn (%)	Si (%)	S (%)	P (%)	Cr (%)	Ni (%)	Cu (%)	Al (%)	Mo (%)	Nb (%)	V (%)	Ti (%)	N (%)	H (%)	B (%)	Ceq (%)
	0.2	1.6	0.55	0.025	0.025	0.29	0.42	0.55	0.02 0.3	0.11	0.06	0.1	0.05				0.45
24PZ003981	.144	1.350	.174	.0070	.0100	.027	.018	.027	.045	.0010	.000	.001	.0000	.0040	.00000	.0000	.38
24PZ003978	.144	1.350	.174	.0070	.0100	.027	.018	.027	.045	.0010	.000	.001	.0000	.0040	.00000	.0000	.38
24PZ003979	.144	1.350	.174	.0070	.0100	.027	.018	.027	.045	.0010	.000	.001	.0000	.0040	.00000	.0000	.38
24PZ003980	.144	1.350	.174	.0070	.0100	.027	.018	.027	.045	.0010	.000	.001	.0000	.0040	.00000	.0000	.38

SIDERTAGLIO LAMIERE S.r.L.
Via dell'Agricoltura, 8/D
36040 MELEDO DI SAREGO (VI)
Tel. 0444 823059
Fax Amm. 0444 823364
Uff. Tec. 0444 823201
C. F. e Part. IVA 02510610245

Batch/N° Partita	Forma	(1)	(2)	(3)	Tst [°C]	Rm [N/mmq]	ReH [N/mmq]	A% (%)	(1)	(2)	(3)	(4)	T [°C]	Kv1 [J]	Kv2 [J]	Kv3 [J]	Kv[a] [J]	TESTN
					20 20	470 630	355	20					-20					
24PZ003981	P	1	P	T	20	496	406	28.8	1	P	L	7.5	-20	132	151	125	136	24-P08088R
24PZ003978	P	1	P	T	20	496	406	28.8	1	P	L	7.5	-20	132	151	125	136	24-P08088R
24PZ003979	P	1	P	T	20	496	406	28.8	1	P	L	7.5	-20	132	151	125	136	24-P08088R
24PZ003980	P	1	P	T	20	496	406	28.8	1	P	L	7.5	-20	132	151	125	136	24-P08088R

Controllo ad ultrasuoni

Apparecchiatura	Numero di serie	Condizioni di superficie	Accoppiante	Mod. operativie	Taratura
Gilardoni RDG2000	050858001	As Rolled	Acqua	Secondo le specifiche	Secondo le specifiche

Item	Norma di riferimento	Classe accettabilità	Esito	Indicazioni	Reticolo	Bordi	Sonda	Frequenza	Angolo

Firma
II Liv. EN/ISO 9712
Q.M.D. M.Rizzatti

MARCEGAGLIA Palini e Bertoli S.p.A. QUALITY CONTROL Rizzatti Marco

(1)Posizione:1=Testa;2=Piede.(2)Posizione:1/2=1/2 spessore;P=Pelle;1/4=1/4 spessore.(3)Direzione:L=Longitudinale;T=Trasversale;(4)Spessore provino

DescrizioneMarchi

UKCA 1244 22 MARCEGAGLIA PALINI E BERTOLI v. Enrico Fermi, 28 33058 - S. Giorgio Nogaro Udine - Italy EN 10025-1 EN 10025-2

CE 0474 06 MARCEGAGLIA PALINI E BERTOLI v. Enrico Fermi, 28 33058 - S. Giorgio Nogaro Udine - Italy EN 10025-1 EN 10025-2

- Material Free of radioactive contamination
- Dimensional check and visual examination of the surface condition: without objection
- We Declare that the above mentioned plates are in compliance with the order prescription
- We hereby declare that the above mentioned material have been rolled in Italy, thus of European Community origin

MARCEGAGLIA
PALINI E BERTOLI

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tel +39 0431623111

Type/Tipo 3.1 CERTIFICATO DI COLLAUDO EN10204

questo documento è stato generato automaticamente ed è valido senza firma

Number/Numero 16624421397 Creato il 19/06/2024

Product: Hot Rolled Heavy Plates
NormaCollaudoLamieraTreno: EN10025-2:2019
Steel grade:: S355J2+N

Customer/Cliente
SIDERTAGLIO LAMIERE S.R.L.
VIA DELL'AGRICOLTURA 8 D
36040 MELEDO DI SAREGO IT

Code: 0000028513

Del. Address/Destinatario Merci
SIDERTAGLIO LAMIERE S.R.L.
VIA DELL'AGRICOLTURA 8 D
36040 MELEDO DI SAREGO IT

Delivery/N° Consegna 8920573384
Of/Del 19/06/2024
Delivery note nr/N° doc. di trasp. 1066007973

Quality Control/Controllo Qualità
Q.M.D./RESP. M.Rizzatti
Plant/Stab. Palini e Bertoli

Pages/Pagine 4/7

Material/Codice Materiale
LTS

Description/Descrizione
15,00 X 2450,00 X 12000,00 S355J2+N

Surface Quality: EN10163-2 CL A1
Flatness: rif EN 10029 cl. N
Thickness tolerance: EN10029 CLASSE B

Delivery Condition: NORMALIZING ROLLING
Steel Making Process: BO= Basic oxigen

Order Nr/ordine **1191769614/30**
Materiale Cliente

Client Order/Ordine cliente **ORD. 2L 00181 DEL 28/5**
Date/data cliente **28/05/2024**

Item	Batch/N° Partita	ID Palini	Heat/Colata	Quantity/Q.tà KG	Quantity/Q.tà PZ
1	24PZ003791	16F.6121.03/A	142878	3528	1 *26084*
2	24PZ003788	16F.6122.03/B	442511	3528	1 *26083*
3	24PZ003789	16F.6122.03/A	442511	3528	1 *26082*
4	24PZ003790	16F.6121.03/B	142878	3528	1 *26085*

Remarks/Note:
LAMIERE SABBIATE in acc. ISO 8501:2012 SA 2 ½.
CE Marking Certificate N.0474-CPR-0033 last issued 14/09/2020 Rev.05. Hot rolled products of structural steels in compliance with Regulation n°305/2011/EU dated 09/03/2011. DOP available on https://www.quality.marcegaglia.com.
UKCA Marking Certificate N.1244-CPR-1051 last issued 01/01/2023. Hot rolled products of structural steels in compliance with the Construction Products Regulation 2011 (retained EU law EUR 305/2011). DOP available on https://www.quality.marcegaglia.com.

Batch/N° Partita	C (%)	Mn (%)	Si (%)	S (%)	P (%)	Cr (%)	Ni (%)	Cu (%)	Al (%)	Mo (%)	Nb (%)	V (%)	Ti (%)	N (%)	H (%)	B (%)	Ceq (%)
	0.2	1.6	0.55	0.025	0.025	0.29	0.42	0.55	0.02 0.3	0.11	0.06	0.1	0.05				0.45
24PZ003791	.150	1.470	.240	.0050	.0180	.010	.010	.010	.036	.0000	.030	.001	.0030	.0020	.00000	.0002	.40
24PZ003788	.150	1.480	.250	.0050	.0150	.010	.010	.010	.043	.0000	.032	.001	.0020	.0040	.00000	.0001	.40
24PZ003789	.150	1.480	.250	.0050	.0150	.010	.010	.010	.043	.0000	.032	.001	.0020	.0040	.00000	.0001	.40
24PZ003790	.150	1.470	.240	.0050	.0180	.010	.010	.010	.036	.0000	.030	.001	.0030	.0020	.00000	.0002	.40

Batch/N° Partita	Forma	(1)	(2)	(3)	Tst [°C]	Rm [N/mmq]	ReH [N/mmq]	A% (%)	(1)	(2)	(3)	(4)	T [°C]	Kv1 [J]	Kv2 [J]	Kv3 [J]	Kv^a [J]	TESTN
					20 20	470 630	355	20					-20					
24PZ003791	P	1	P	T	20	566	454	29.5	1	P	L	10.0	-20	209	178	201	196	24-P09867R
24PZ003788	P	1	P	T	20	585	457	24.5	1	P	L	10.0	-20	180	66	152	132	24-P09095R
24PZ003789	P	1	P	T	20	585	457	24.5	1	P	L	10.0	-20	180	66	152	132	24-P09095R
24PZ003790	P	1	P	T	20	566	454	29.5	1	P	L	10.0	-20	209	178	201	196	24-P09867R

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C. F. e Part. IVA 02510610245

Controllo ad ultrasuoni

Apparecchiatura	Numero di serie	Condizioni di superficie	Accoppiante	Mod. operativie	Taratura
Gilardoni RDG2000	050858001	As Rolled	Acqua	Secondo le specifiche	Secondo le specifiche

Item	Norma di riferimento	Classe accettabilità	Esito	Indicazioni	Reticolo	Bordi	Sonda	Frequenza	Angolo

Firma
II Liv. EN/ISO 9712
Q.M.D. M.Rizzatti

MARCEGAGLIA
Palini e Bertoli S.p.A.
QUALITY CONTROL
Rizzatti Marco

(1)Posizione:1=Testa;2=Piede.(2)Posizione:1/2=1/2 spessore;P=Pelle;1/4=1/4 spessore.(3)Direzione:L=Longitudinale;T=Trasversale;(4)Spessore provino

DescrizioneMarchi

UKCA 1244 22 MARCEGAGLIA PALINI E BERTOLI v. Enrico Fermi, 28 33058 - S. Giorgio Nogaro Udine - Italy EN 10025-1 EN 10025-2

CE 0474 06 MARCEGAGLIA PALINI E BERTOLI v. Enrico Fermi, 28 33058 - S. Giorgio Nogaro Udine - Italy EN 10025-1 EN 10025-2

- Material Free of radioactive contamination
- Dimensional check and visual examination of the surface condition: without objection
- We Declare that the above mentioned plates are in compliance with the order prescription
- We hereby declare that the above mentioned material have been rolled in Italy, thus of European Community origin

MARCEGAGLIA PALINI E BERTOLI

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tel +39 0431623111

Type/Tipo 3.1 CERTIFICATO DI COLLAUDO EN10204

questo documento è stato generato automaticamente ed è valido senza firma

Number/Numero 16624421397 Creato il 19/06/2024

Product: Hot Rolled Heavy Plates
NormaCollaudoLamieraTreno: EN10025-2:2019
Steel grade:: S355J2+N

Customer/Cliente
SIDERTAGLIO LAMIERE S.R.L.
VIA DELL'AGRICOLTURA 8 D
36040 MELEDO DI SAREGO IT

Code: 0000028513

Del. Address/Destinatario Merci
SIDERTAGLIO LAMIERE S.R.L.
VIA DELL'AGRICOLTURA 8 D
36040 MELEDO DI SAREGO IT

Delivery/N° Consegna 8920573384
Of/Del 19/06/2024
Delivery note nr/N° doc. di trasp. 1066007973

Quality Control/Controllo Qualità
Q.M.D./RESP. M.Rizzatti
Plant/Stab. Palini e Bertoli

Pages/Pagine 5/7

Material/Codice Materiale
LTS

Description/Descrizione
15,00 X 2450,00 X 12000,00 S355J2+N

Surface Quality: EN10163-2 CL A1
Flatness: rif EN 10029 cl. N
Thickness tolerance: EN10029 CLASSE B

Delivery Condition: NORMALIZING ROLLING
Steel Making Process: BO= Basic oxigen

Order Nr/ordine **1191769614/30**
Materiale Cliente

Client Order/Ordine cliente **ORD. 2L 00181 DEL 28/5**
Date/data cliente **28/05/2024**

Item	Batch/N° Partita	ID Palini	Heat/Colata	Quantity/Q.tà KG	Quantity/Q.tà PZZ
1	24PZ003792	16F.6119.01/B	442151	3528	1 ***26087***
2	24PZ003793	16F.6119.01/A	442151	3528	1 ***26086***

Remarks/Note:
LAMIERE SABBIATE in acc. ISO 8501:2012 SA 2 ½.
CE Marking Certificate N.0474-CPR-0033 last issued 14/09/2020 Rev.05. Hot rolled products of structural steels in compliance with Regulation n°305/2011/EU dated 09/03/2011. DOP available on https://www.quality.marcegaglia.com.
UKCA Marking Certificate N.1244-CPR-1051 last issued 01/01/2023. Hot rolled products of structural steels in compliance with the Construction Products Regulation 2011 (retained EU law EUR 305/2011). DOP available on https://www.quality.marcegaglia.com.

Batch/N° Partita	C (%)	Mn (%)	Si (%)	S (%)	P (%)	Cr (%)	Ni (%)	Cu (%)	Al (%)	Mo (%)	Nb (%)	V (%)	Ti (%)	N (%)	H (%)	B (%)	Ceq (%)
	0.2	1.6	0.55	0.025	0.025	0.29	0.42	0.55	0.02 0.3	0.11	0.06	0.1	0.05				0.45
24PZ003792	.150	1.490	.220	.0060	.0140	.020	.010	.020	.032	.0000	.028	.001	.0040	.0020	.00000	.0001	.40
24PZ003793	.150	1.490	.220	.0060	.0140	.020	.010	.020	.032	.0000	.028	.001	.0040	.0020	.00000	.0001	.40

SIDERTAGLIO LAMIERE Srl
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Fax Amm. 0444 823364
Uff. Tec. 0444 823201
C. F. e Part. IVA 02510610245

Batch/N° Partita	Forma	(1)	(2)	(3)	Tst [°C]	Rm [N/mmq]	ReH [N/mmq]	A% (%)	(1)	(2)	(3)	(4)	T [°C]	Kv1 [J]	Kv2 [J]	Kv3 [J]	Kv^a [J]	TESTN
					20 20	470 630	355	20					-20					
24PZ003792	P	1	P	T	20	550	440	24.4	1	P	L	10.0	-20	85	203	140	142	24-P10251R
24PZ003793	P	1	P	T	20	550	440	24.4	1	P	L	10.0	-20	85	203	140	142	24-P10251R

Controllo ad ultrasuoni

Apparecchiatura	Numero di serie	Condizioni di superficie	Accoppiante	Mod. operativie	Taratura
Gilardoni RDG2000	050858001	As Rolled	Acqua	Secondo le specifiche	Secondo le specifiche

Item	Norma di riferimento	Classe accettabilità	Esito	Indicazioni	Reticolo	Bordi	Sonda	Frequenza	Angolo

Firma
II Liv. EN/ISO 9712
Q.M.D. M.Rizzatti

MARCEGAGLIA Palini e Bertoli S.p.A. QUALITY CONTROL Rizzatti Marco

(1)Posizione:1=Testa;2=Piede.(2)Posizione:1/2=1/2 spessore;P=Pelle;1/4=1/4 spessore.(3)Direzione:L=Longitudinale;T=Trasversale;(4)Spessore provino

DescrizioneMarchi

UKCA 1244 22 MARCEGAGLIA PALINI E BERTOLI v. Enrico Fermi, 28 33058 - S. Giorgio Nogaro Udine - Italy EN 10025-1 EN 10025-2

CE 0474 06 MARCEGAGLIA PALINI E BERTOLI v. Enrico Fermi, 28 33058 - S. Giorgio Nogaro Udine - Italy EN 10025-1 EN 10025-2

- Material Free of radioactive contamination
- Dimensional check and visual examination of the surface condition: without objection
- We Declare that the above mentioned plates are in compliance with the order prescription
- We hereby declare that the above mentioned material have been rolled in Italy, thus of European Community origin

MARCEGAGLIA PALINI E BERTOLI

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www.marcegaglia.com

Marcegaglia Palini e Bertoli S.P.A.
via E.Fermi, 28 33058 San Giorgio di Nogaro, Udine - Italy
tel +39 0431623111

Type/Tipo 3.1 CERTIFICATO DI COLLAUDO EN10204

questo documento è stato generato automaticamente ed è valido senza firma

Number/Numero 16624421397 Creato il 19/06/2024

Product: Hot Rolled Heavy Plates
NormaCollaudoLamieraTreno: EN10025-2:2019
Steel grade:: S355J2+N

Customer/Cliente
SIDERTAGLIO LAMIERE S.R.L.
VIA DELL'AGRICOLTURA 8 D
36040 MELEDO DI SAREGO IT

Code: 0000028513

Del. Address/Destinatario Merci
SIDERTAGLIO LAMIERE S.R.L.
VIA DELL'AGRICOLTURA 8 D
36040 MELEDO DI SAREGO IT

Delivery/N° Consegna 8920573384
Of/Del 19/06/2024
Delivery note nr/N° doc. di trasp. 1066007973

Quality Control/Controllo Qualità
Q.M.D./RESP. M.Rizzatti
Plant/Stab. Palini e Bertoli

Pages/Pagine 6/7

Material/Codice Materiale
LTS

Description/Descrizione
50,00 X 2000,00 X 12000,00 S355J2+N

Surface Quality: EN10163-2 CL A1
Flatness: rif EN 10029 cl. N
Thickness tolerance: EN10029 CLASSE B

Delivery Condition: NORMALIZING ROLLING
Steel Making Process: BO= Basic oxigen

Order Nr/ordine **1191769614/102**
Materiale Cliente

Client Order/Ordine cliente **ORD. 2L 00181 DEL 28/5**
Date/data cliente **28/05/2024**

Item	Batch/N° Partita	ID Palini	Heat/Colata	Quantity/Q.tà KG	Quantity/Q.tà PZ
1	24PZ003967	24J.1800.03	2459624	9600	1 *26073*
2	24PZ003968	28W.28.04	23207033	9600	1 *26072*

Remarks/Note:
LAMIERE SABBIATE in acc. ISO 8501:2012 SA 2 ½.
CE Marking Certificate N.0474-CPR-0033 last issued 14/09/2020 Rev.05. Hot rolled products of structural steels in compliance with Regulation n°305/2011/EU dated 09/03/2011. DOP available on https://www.quality.marcegaglia.com.
UKCA Marking Certificate N.1244-CPR-1051 last issued 01/01/2023. Hot rolled products of structural steels in compliance with the Construction Products Regulation 2011 (retained EU law EUR 305/2011). DOP available on https://www.quality.marcegaglia.com.

Batch/N° Partita	C (%)	Mn (%)	Si (%)	S (%)	P (%)	Cr (%)	Ni (%)	Cu (%)	Al (%)	Mo (%)	Nb (%)	V (%)	Ti (%)	N (%)	H (%)	B (%)	Ceq (%)
			0.1						0.02								
	0.22	1.6	0.55	0.025	0.025	0.29	0.42	0.55	0.3	0.11	0.06	0.1	0.05				0.47
24PZ003967	.161	1.464	.168	.0040	.0130	.037	.022	.031	.054	.0020	.030	.001	.0020	.0040	.00020	.0002	.42
24PZ003968	.157	1.490	.230	.0030	.0130	.033	.019	.030	.031	.0030	.031	.003	.0120	.0040	.00210	.0003	.42

SIDERTAGLIO LAMIERE srl
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Tel. 0444 823059
Fax Amm. 0444 823364
Uff. Tec. 0444 823201
C. F. e Part. IVA 02510610245

Batch/N° Partita	Forma	(1)	(2)	(3)	Tst [°C]	Rm [N/mmq]	ReH [N/mmq]	A% (%)	(1)	(2)	(3)	(4)	T [°C]	Kv1 [J]	Kv2 [J]	Kv3 [J]	Kv^a [J]	TESTN
					20	470	335	19					-20				27	
					20	630												
24PZ003967	C	1	1/4	T	20	560	425	31.5	1	P	L	10.0	-20	220	208	203	210	24-P11004S
24PZ003968	C	1	1/4	T	20	534	401	34.5	1	P	L	10.0	-20	215	243	227	228	24-P10853R

Controllo ad ultrasuoni

Apparecchiatura	Numero di serie	Condizioni di superficie	Accoppiante	Mod. operativie	Taratura
Gilardoni RDG2000	050858001	As Rolled	Acqua	Secondo le specifiche	Secondo le specifiche

Item	Norma di riferimento	Classe accettabilità	Esito	Indicazioni	Reticolo	Bordi	Sonda	Frequenza	Angolo

Firma
II Liv. EN/ISO 9712
Q.M.D. M.Rizzatti

MARCEGAGLIA Palini e Bertoli S.p.A. QUALITY CONTROL Rizzatti Marco

(1)Posizione:1=Testa;2=Piede.(2)Posizione:1/2=1/2 spessore;P=Pelle;1/4=1/4 spessore.(3)Direzione:L=Longitudinale;T=Trasversale;(4)Spessore provino

DescrizioneMarchi

UKCA 1244 22 MARCEGAGLIA PALINI E BERTOLI v. Enrico Fermi, 28 33058 - S. Giorgio Nogaro Udine - Italy EN 10025-1 EN 10025-2

CE 0474 06 MARCEGAGLIA PALINI E BERTOLI v. Enrico Fermi, 28 33058 - S. Giorgio Nogaro Udine - Italy EN 10025-1 EN 10025-2

- Material Free of radioactive contamination
- Dimensional check and visual examination of the surface condition: without objection
- We Declare that the above mentioned plates are in compliance with the order prescription
- We hereby declare that the above mentioned material have been rolled in Italy, thus of European Community origin

MARCEGAGLIA PALINI E BERTOLI

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www.marcegaglia.com

Marcegaglia Palini e Bertoli S.P.A.
via E.Fermi, 28 33058 San Giorgio di Nogaro, Udine - Italy
tel +39 0431623111

Type/Tipo 3.1 CERTIFICATO DI COLLAUDO EN10204

questo documento è stato generato automaticamente ed è valido senza firma

Number/Numero 16624421397 Creato il 19/06/2024

Product: Hot Rolled Heavy Plates
NormaCollaudoLamieraTreno: EN10025-2:2019
Steel grade:: S355J2+N

Customer/Cliente
SIDERTAGLIO LAMIERE S.R.L.
VIA DELL'AGRICOLTURA 8 D
36040 MELEDO DI SAREGO IT

Code: 0000028513

Del. Address/Destinatario Merci
SIDERTAGLIO LAMIERE S.R.L.
VIA DELL'AGRICOLTURA 8 D
36040 MELEDO DI SAREGO IT

Delivery/N° Consegna 8920573384
Of/Del 19/06/2024
Delivery note nr/N° doc. di trasp. 1066007973

Quality Control/Controllo Qualità
Q.M.D./RESP. M.Rizzatti
Plant/Stab. Palini e Bertoli

Pages/Pagine 7/7

Material/Codice Materiale
LTS

Description/Descrizione
40,00 X 2000,00 X 12000,00 S355J2+N

Surface Quality: EN10163-2 CL A1
Flatness: rif EN 10029 cl. N
Thickness tolerance: EN10029 CLASSE B

Delivery Condition: NORMALIZING ROLLING
Steel Making Process: BO= Basic oxigen

Order Nr/ordine **1191769614/81**
Materiale Cliente

Client Order/Ordine cliente **ORD. 2L 00181 DEL 28/5**
Date/data cliente **28/05/2024**

Item	Batch/N° Partita	ID Palini	Heat/Colata	Quantity/Q.tà KG	Quantity/Q.tà PZZ
1	24PZ003988	24C.328.03	2452518	7680	1 26071

Remarks/Note:
LAMIERE SABBIATE in acc. ISO 8501:2012 SA 2 ½.
CE Marking Certificate N.0474-CPR-0033 last issued 14/09/2020 Rev.05. Hot rolled products of structural steels in compliance with Regulation n°305/2011/EU dated 09/03/2011. DOP available on https://www.quality.marcegaglia.com.
UKCA Marking Certificate N.1244-CPR-1051 last issued 01/01/2023. Hot rolled products of structural steels in compliance with the Construction Products Regulation 2011 (retained EU law EUR 305/2011). DOP available on https://www.quality.marcegaglia.com.

Batch/N° Partita	C (%)	Mn (%)	Si (%)	S (%)	P (%)	Cr (%)	Ni (%)	Cu (%)	Al (%)	Mo (%)	Nb (%)	V (%)	Ti (%)	N (%)	H (%)	B (%)	Ceq (%)
			0.1						0.02								
	0.22	1.6	0.55	0.025	0.025	0.29	0.42	0.55	0.3	0.11	0.06	0.1	0.05				0.47
24PZ003988	.165	1.504	.202	.0020	.0080	.022	.008	.009	.042	.0010	.028	.001	.0020	.0040	.00050	.0001	.42

Batch/N° Partita	Forma	(1)	(2)	(3)	Tst [°C]	Rm [N/mmq]	ReH [N/mmq]	A% (%)	(1)	(2)	(3)	(4)	T [°C]	Kv1 [J]	Kv2 [J]	Kv3 [J]	Kv[a] [J]	TESTN
					20	470	345	20					-20				27	
					20	630												
24PZ003988	C	1	1/4	T	20	596	450	28.5	1	P	L	10.0	-20	180	183	179	180	24-P07988R

SIDERTAGLIO LAMIERE srl
Via dell'Agricoltura, 8/D
36040 MELEDO DI SAREGO (VI)
Tel. 0444 823059
Fax Amm. 0444 823364
Uff. Tec. 0444 823201
C. F. e Part. IVA 02510610245

Controllo ad ultrasuoni

Apparecchiatura	Numero di serie	Condizioni di superficie	Accoppiante	Mod. operativie	Taratura
Gilardoni RDG2000	050858001	As Rolled	Acqua	Secondo le specifiche	Secondo le specifiche

Item	Norma di riferimento	Classe accettabilità	Esito	Indicazioni	Reticolo	Bordi	Sonda	Frequenza	Angolo

Firma
II Liv. EN/ISO 9712
Q.M.D. M.Rizzatti

MARCEGAGLIA Palini e Bertoli S.p.A. QUALITY CONTROL Rizzatti Marco

(1)Posizione:1=Testa;2=Piede.(2)Posizione:1/2=1/2 spessore;P=Pelle;1/4=1/4 spessore.(3)Direzione:L=Longitudinale;T=Trasversale;(4)Spessore provino

DescrizioneMarchi

UKCA 1244 22 MARCEGAGLIA PALINI E BERTOLI v. Enrico Fermi, 28 33058 - S. Giorgio Nogaro Udine - Italy EN 10025-1 EN 10025-2

CE 0474 06 MARCEGAGLIA PALINI E BERTOLI v. Enrico Fermi, 28 33058 - S. Giorgio Nogaro Udine - Italy EN 10025-1 EN 10025-2

- Material Free of radioactive contamination
- Dimensional check and visual examination of the surface condition: without objection
- We Declare that the above mentioned plates are in compliance with the order prescription
- We hereby declare that the above mentioned material have been rolled in Italy, thus of European Community origin

MARCEGAGLIA PALINI E BERTOLI

Marcegaglia
46040 Via Bresciani, 16-Gazoldo degli Ippoliti Mantova-Italy
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Marcegaglia Palini e Bertoli S.P.A.
via E.Fermi, 28 33058 San Giorgio di Nogaro, Udine - Italy
tel +39 0431623111

Type/Tipo 3.1 CERTIFICATO DI COLLAUDO EN10204

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Number/Numero 16624421397 Creato il 19/06/2024

Product: Hot Rolled Heavy Plates
NormaCollaudoLamieraTreno: EN10025-2:2019
Steel grade:: S355J2+N

Customer/Cliente
SIDERTAGLIO LAMIERE S.R.L.
VIA DELL'AGRICOLTURA 8 D
36040 MELEDO DI SAREGO IT

Code: 0000028513

Del. Address/Destinatario Merci
SIDERTAGLIO LAMIERE S.R.L.
VIA DELL'AGRICOLTURA 8 D
36040 MELEDO DI SAREGO IT

Delivery/N° Consegna 8920573384
Of/Del 19/06/2024
Delivery note nr/N° doc. di trasp. 1066007973

Quality Control/Controllo Qualità
Q.M.D./RESP. M.Rizzatti
Plant/Stab. Palini e Bertoli

Pages/Pagine 1/7

Material/Codice Materiale
LTS

Description/Descrizione
10,00 X 2450,00 X 12000,00 S355J2+N

Surface Quality: EN10163-2 CL A1
Flatness: rif EN 10029 cl. N
Thickness tolerance: EN10029 CLASSE B

Delivery Condition: NORMALIZING ROLLING
Steel Making Process: BO= Basic oxigen

Order Nr/ordine **1191769614/15**
Materiale Cliente

Client Order/Ordine cliente **ORD. 2L 00181 DEL 28/5**
Date/data cliente **28/05/2024**

Item	Batch/N° Partita	ID Palini	Heat/Colata	Quantity/Q.tà KG	Quantity/Q.tà PZZ
1	24PZ003973	24R.366.03/A	2377353	2352	1 ***26090***
2	24PZ003970	24R.366.02/B	2377353	2352	1 ***26089***
3	24PZ003971	24R.366.02/A	2377353	2352	1 ***26088***
4	24PZ003972	24R.366.03/B	2377353	2352	1 ***26091***

Remarks/Note:
LAMIERE SABBIATE in acc. ISO 8501:2012 SA 2 ½.
CE Marking Certificate N.0474-CPR-0033 last issued 14/09/2020 Rev.05. Hot rolled products of structural steels in compliance with Regulation n°305/2011/EU dated 09/03/2011. DOP available on https://www.quality.marcegaglia.com.
UKCA Marking Certificate N.1244-CPR-1051 last issued 01/01/2023. Hot rolled products of structural steels in compliance with the Construction Products Regulation 2011 (retained EU law EUR 305/2011). DOP available on https://www.quality.marcegaglia.com.

Batch/N° Partita	C (%)	Mn (%)	Si (%)	S (%)	P (%)	Cr (%)	Ni (%)	Cu (%)	Al (%)	Mo (%)	Nb (%)	V (%)	Ti (%)	N (%)	H (%)	B (%)	Ceq (%)
	0.2	1.6	0.55	0.025	0.025	0.29	0.42	0.55	0.02 0.3	0.11	0.06	0.1	0.05				0.45
24PZ003973	.144	1.350	.174	.0070	.0100	.027	.018	.027	.045	.0010	.000	.001	.0000	.0040	.00000	.0000	.38
24PZ003970	.144	1.350	.174	.0070	.0100	.027	.018	.027	.045	.0010	.000	.001	.0000	.0040	.00000	.0000	.38
24PZ003971	.144	1.350	.174	.0070	.0100	.027	.018	.027	.045	.0010	.000	.001	.0000	.0040	.00000	.0000	.38
24PZ003972	.144	1.350	.174	.0070	.0100	.027	.018	.027	.045	.0010	.000	.001	.0000	.0040	.00000	.0000	.38

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C. F. e Part. IVA 02510610245

Batch/N° Partita	Forma	(1)	(2)	(3)	Tst [°C]	Rm [N/mmq]	ReH [N/mmq]	A% (%)	(1)	(2)	(3)	(4)	T [°C]	Kv1 [J]	Kv2 [J]	Kv3 [J]	Kv^a [J]	TESTN
					20 20	470 630	355	20					-20					
24PZ003973	P	1	P	T	20	496	406	28.8	1	P	L	7.5	-20	132	151	125	136	24-P08088R
24PZ003970	P	1	P	T	20	496	406	28.8	1	P	L	7.5	-20	132	151	125	136	24-P08088R
24PZ003971	P	1	P	T	20	496	406	28.8	1	P	L	7.5	-20	132	151	125	136	24-P08088R
24PZ003972	P	1	P	T	20	496	406	28.8	1	P	L	7.5	-20	132	151	125	136	24-P08088R

Controllo ad ultrasuoni

Apparecchiatura	Numero di serie	Condizioni di superficie	Accoppiante	Mod. operativie	Taratura
Gilardoni RDG2000	050858001	As Rolled	Acqua	Secondo le specifiche	Secondo le specifiche

Item	Norma di riferimento	Classe accettabilità	Esito	Indicazioni	Reticolo	Bordi	Sonda	Frequenza	Angolo

Firma
II Liv. EN/ISO 9712
Q.M.D. M.Rizzatti

MARCEGAGLIA Palini e Bertoli S.p.A. QUALITY CONTROL Rizzatti Marco

(1)Posizione:1=Testa;2=Piede.(2)Posizione:1/2=1/2 spessore;P=Pelle;1/4=1/4 spessore.(3)Direzione:L=Longitudinale;T=Trasversale;(4)Spessore provino

DescrizioneMarchi

UKCA 1244 22 MARCEGAGLIA PALINI E BERTOLI v. Enrico Fermi, 28 33058 - S. Giorgio Nogaro Udine - Italy EN 10025-1 EN 10025-2

CE 0474 06 MARCEGAGLIA PALINI E BERTOLI v. Enrico Fermi, 28 33058 - S. Giorgio Nogaro Udine - Italy EN 10025-1 EN 10025-2

- Material Free of radioactive contamination
- Dimensional check and visual examination of the surface condition: without objection
- We Declare that the above mentioned plates are in compliance with the order prescription
- We hereby declare that the above mentioned material have been rolled in Italy, thus of European Community origin

MARCEGAGLIA PALINI E BERTOLI

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www.marcegaglia.com

Marcegaglia Palini e Bertoli S.P.A.
via E.Fermi, 28 33058 San Giorgio di Nogaro, Udine - Italy
tel +39 0431623111

Type/Tipo 3.1 CERTIFICATO DI COLLAUDO EN10204

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Number/Numero 16624421397 Creato il 19/06/2024

Product: Hot Rolled Heavy Plates
NormaCollaudoLamieraTreno: EN10025-2:2019
Steel grade:: S355J2+N

Customer/Cliente
SIDERTAGLIO LAMIERE S.R.L.
VIA DELL'AGRICOLTURA 8 D
36040 MELEDO DI SAREGO IT

Code: 0000028513

Del. Address/Destinatario Merci
SIDERTAGLIO LAMIERE S.R.L.
VIA DELL'AGRICOLTURA 8 D
36040 MELEDO DI SAREGO IT

Delivery/N° Consegna 8920573384
Of/Del 19/06/2024
Delivery note nr/N° doc. di trasp. 1066007973

Quality Control/Controllo Qualità
Q.M.D./RESP. M.Rizzatti
Plant/Stab. Palini e Bertoli

Material/Codice Materiale
LTS

Description/Descrizione
10,00 X 2450,00 X 12000,00 S355J2+N

Surface Quality: EN10163-2 CL A1
Flatness: rif EN 10029 cl. N
Thickness tolerance: EN10029 CLASSE B

Delivery Condition: NORMALIZING ROLLING
Steel Making Process: BO= Basic oxigen

Order Nr/ordine **1191769614/15**
Materiale Cliente

Client Order/Ordine cliente **ORD. 2L 00181 DEL 28/5**
Client Date/data cliente **28/05/2024**

Item	Batch/N° Partita	ID Palini	Heat/Colata	Quantity/Q.tà KG	Quantity/Q.tà PZZ
1	24PZ003977	24R.365.02/B	2377353	2352	1 *26076*
2	24PZ003974	24R.366.04/B	2377353	2352	1 *26075*
3	24PZ003975	24R.366.04/A	2377353	2352	1 *26074*
4	24PZ003976	24R.365.02/A	2377353	2352	1 *26077*

Remarks/Note:
LAMIERE SABBIATE in acc. ISO 8501:2012 SA 2 ½.
CE Marking Certificate N.0474-CPR-0033 last issued 14/09/2020 Rev.05. Hot rolled products of structural steels in compliance with Regulation n°305/2011/EU dated 09/03/2011. DOP available on https://www.quality.marcegaglia.com.
UKCA Marking Certificate N.1244-CPR-1051 last issued 01/01/2023. Hot rolled products of structural steels in compliance with the Construction Products Regulation 2011 (retained EU law EUR 305/2011). DOP available on https://www.quality.marcegaglia.com.

Batch/N° Partita	C (%)	Mn (%)	Si (%)	S (%)	P (%)	Cr (%)	Ni (%)	Cu (%)	Al (%)	Mo (%)	Nb (%)	V (%)	Ti (%)	N (%)	H (%)	B (%)	Ceq (%)
	0.2	1.6	0.55	0.025	0.025	0.29	0.42	0.55	0.02 0.3	0.11	0.06	0.1	0.05				0.45
24PZ003977	.144	1.350	.174	.0070	.0100	.027	.018	.027	.045	.0010	.000	.001	.0000	.0040	.00000	.0000	.38
24PZ003974	.144	1.350	.174	.0070	.0100	.027	.018	.027	.045	.0010	.000	.001	.0000	.0040	.00000	.0000	.38
24PZ003975	.144	1.350	.174	.0070	.0100	.027	.018	.027	.045	.0010	.000	.001	.0000	.0040	.00000	.0000	.38
24PZ003976	.144	1.350	.174	.0070	.0100	.027	.018	.027	.045	.0010	.000	.001	.0000	.0040	.00000	.0000	.38

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Uff. Tec. 0444 823201
C. F. e Part. IVA 02510610245

Batch/N° Partita	Forma	(1)	(2)	(3)	Tst [°C]	Rm [N/mmq]	ReH [N/mmq]	A% (%)	(1)	(2)	(3)	(4)	T [°C]	Kv1 [J]	Kv2 [J]	Kv3 [J]	Kv^a [J]	TESTN
					20 20	470 630	355	20					-20					
24PZ003977	P	1	P	T	20	496	406	28.8	1	P	L	7.5	-20	132	151	125	136	24-P08088R
24PZ003974	P	1	P	T	20	496	406	28.8	1	P	L	7.5	-20	132	151	125	136	24-P08088R
24PZ003975	P	1	P	T	20	496	406	28.8	1	P	L	7.5	-20	132	151	125	136	24-P08088R
24PZ003976	P	1	P	T	20	496	406	28.8	1	P	L	7.5	-20	132	151	125	136	24-P08088R

Controllo ad ultrasuoni

Apparecchiatura	Numero di serie	Condizioni di superficie	Accoppiante	Mod. operativie	Taratura
Gilardoni RDG2000	050858001	As Rolled	Acqua	Secondo le specifiche	Secondo le specifiche

Item	Norma di riferimento	Classe accettabilità	Esito	Indicazioni	Reticolo	Bordi	Sonda	Frequenza	Angolo

Firma
II Liv. EN/ISO 9712
Q.M.D. M.Rizzatti

MARCEGAGLIA Palini e Bertoli S.p.A. QUALITY CONTROL Rizzatti Marco

(1)Posizione:1=Testa;2=Piede.(2)Posizione:1/2=1/2 spessore;P=Pelle;1/4=1/4 spessore.(3)Direzione:L=Longitudinale;T=Trasversale;(4)Spessore provino

DescrizioneMarchi

UKCA 1244 22 MARCEGAGLIA PALINI E BERTOLI v. Enrico Fermi, 28 33058 - S. Giorgio Nogaro Udine - Italy EN 10025-1 EN 10025-2

CE 0474 06 MARCEGAGLIA PALINI E BERTOLI v. Enrico Fermi, 28 33058 - S. Giorgio Nogaro Udine - Italy EN 10025-1 EN 10025-2

- Material Free of radioactive contamination
- Dimensional check and visual examination of the surface condition: without objection
- We Declare that the above mentioned plates are in compliance with the order prescription
- We hereby declare that the above mentioned material have been rolled in Italy, thus of European Community origin

MARCEGAGLIA PALINI E BERTOLI

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Marcegaglia Palini e Bertoli S.P.A.
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tel +39 0431623111

Type/Tipo 3.1 CERTIFICATO DI COLLAUDO EN10204

questo documento è stato generato automaticamente ed è valido senza firma

Number/Numero 16624421397 Creato il 19/06/2024

Product: Hot Rolled Heavy Plates
NormaCollaudoLamieraTreno: EN10025-2:2019
Steel grade:: S355J2+N

Customer/Cliente
SIDERTAGLIO LAMIERE S.R.L.
VIA DELL'AGRICOLTURA 8 D
36040 MELEDO DI SAREGO IT

Code: 0000028513

Del. Address/Destinatario Merci
SIDERTAGLIO LAMIERE S.R.L.
VIA DELL'AGRICOLTURA 8 D
36040 MELEDO DI SAREGO IT

Delivery/N° Consegna 8920573384
Of/Del 19/06/2024
Delivery note nr/N° doc. di trasp. 1066007973

Quality Control/Controllo Qualità
Q.M.D./RESP. M.Rizzatti
Plant/Stab. Palini e Bertoli

Material/Codice Materiale
LTS

Description/Descrizione
10,00 X 2450,00 X 12000,00 S355J2+N

Surface Quality: EN10163-2 CL A1
Flatness: rif EN 10029 cl. N
Thickness tolerance: EN10029 CLASSE B

Delivery Condition: NORMALIZING ROLLING
Steel Making Process: BO= Basic oxigen

Order Nr/ordine **1191769614/15**
Materiale Cliente

Client Order/Ordine cliente **ORD. 2L 00181 DEL 28/5**
Date/data cliente **28/05/2024**

Item	Batch/N° Partita	ID Palini	Heat/Colata	Quantity/Q.tà KG	Quantity/Q.tà PZ
1	24PZ003981	24R.365.03/A	2377353	2352	1 **26080**
2	24PZ003978	24R.365.01/A	2377353	2352	1 **26079**
3	24PZ003979	24R.365.01/B	2377353	2352	1 **26078**
4	24PZ003980	24R.365.03/B	2377353	2352	1 **26081**

Remarks/Note:
LAMIERE SABBIATE in acc. ISO 8501:2012 SA 2 ½.
CE Marking Certificate N.0474-CPR-0033 last issued 14/09/2020 Rev.05. Hot rolled products of structural steels in compliance with Regulation n°305/2011/EU dated 09/03/2011. DOP available on https://www.quality.marcegaglia.com.
UKCA Marking Certificate N.1244-CPR-1051 last issued 01/01/2023. Hot rolled products of structural steels in compliance with the Construction Products Regulation 2011 (retained EU law EUR 305/2011). DOP available on https://www.quality.marcegaglia.com.

Batch/N° Partita	C (%)	Mn (%)	Si (%)	S (%)	P (%)	Cr (%)	Ni (%)	Cu (%)	Al (%)	Mo (%)	Nb (%)	V (%)	Ti (%)	N (%)	H (%)	B (%)	Ceq (%)
	0.2	1.6	0.55	0.025	0.025	0.29	0.42	0.55	0.02 0.3	0.11	0.06	0.1	0.05				0.45
24PZ003981	.144	1.350	.174	.0070	.0100	.027	.018	.027	.045	.0010	.000	.001	.0000	.0040	.00000	.0000	.38
24PZ003978	.144	1.350	.174	.0070	.0100	.027	.018	.027	.045	.0010	.000	.001	.0000	.0040	.00000	.0000	.38
24PZ003979	.144	1.350	.174	.0070	.0100	.027	.018	.027	.045	.0010	.000	.001	.0000	.0040	.00000	.0000	.38
24PZ003980	.144	1.350	.174	.0070	.0100	.027	.018	.027	.045	.0010	.000	.001	.0000	.0040	.00000	.0000	.38

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C. F. e Part. IVA 02510610245

Batch/N° Partita	Forma	(1)	(2)	(3)	Tst [°C]	Rm [N/mmq]	ReH [N/mmq]	A% (%)	(1)	(2)	(3)	(4)	T [°C]	Kv1 [J]	Kv2 [J]	Kv3 [J]	Kv^a [J]	TESTN
					20 20	470 630	355	20					-20					
24PZ003981	P	1	P	T	20	496	406	28.8	1	P	L	7.5	-20	132	151	125	136	24-P08088R
24PZ003978	P	1	P	T	20	496	406	28.8	1	P	L	7.5	-20	132	151	125	136	24-P08088R
24PZ003979	P	1	P	T	20	496	406	28.8	1	P	L	7.5	-20	132	151	125	136	24-P08088R
24PZ003980	P	1	P	T	20	496	406	28.8	1	P	L	7.5	-20	132	151	125	136	24-P08088R

Controllo ad ultrasuoni

Apparecchiatura	Numero di serie	Condizioni di superficie	Accoppiante	Mod. operativie	Taratura
Gilardoni RDG2000	050858001	As Rolled	Acqua	Secondo le specifiche	Secondo le specifiche

Item	Norma di riferimento	Classe accettabilità	Esito	Indicazioni	Reticolo	Bordi	Sonda	Frequenza	Angolo

Firma
II Liv. EN/ISO 9712
Q.M.D. M.Rizzatti

MARCEGAGLIA Palini e Bertoli S.p.A. QUALITY CONTROL Rizzatti Marco

(1)Posizione:1=Testa;2=Piede.(2)Posizione:1/2=1/2 spessore;P=Pelle;1/4=1/4 spessore.(3)Direzione:L=Longitudinale;T=Trasversale;(4)Spessore provino

DescrizioneMarchi

UKCA 1244 22 MARCEGAGLIA PALINI E BERTOLI v. Enrico Fermi, 28 33058 - S. Giorgio Nogaro Udine - Italy EN 10025-1 EN 10025-2

CE 0474 06 MARCEGAGLIA PALINI E BERTOLI v. Enrico Fermi, 28 33058 - S. Giorgio Nogaro Udine - Italy EN 10025-1 EN 10025-2

- Material Free of radioactive contamination
- Dimensional check and visual examination of the surface condition: without objection
- We Declare that the above mentioned plates are in compliance with the order prescription
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MARCEGAGLIA PALINI E BERTOLI

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Marcegaglia Palini e Bertoli S.P.A.
via E.Fermi, 28 33058 San Giorgio di Nogaro, Udine - Italy
tel +39 0431623111

Type/Tipo 3.1 CERTIFICATO DI COLLAUDO EN10204

questo documento è stato generato automaticamente ed è valido senza firma

Number/Numero 16624421397 Creato il 19/06/2024

Product: Hot Rolled Heavy Plates
NormaCollaudoLamieraTreno: EN10025-2:2019
Steel grade:: S355J2+N

Customer/Cliente
SIDERTAGLIO LAMIERE S.R.L.
VIA DELL'AGRICOLTURA 8 D
36040 MELEDO DI SAREGO IT

Code: 0000028513

Del. Address/Destinatario Merci
SIDERTAGLIO LAMIERE S.R.L.
VIA DELL'AGRICOLTURA 8 D
36040 MELEDO DI SAREGO IT

Delivery/N° Consegna 8920573384
Of/Del 19/06/2024
Delivery note nr/N° doc. di trasp. 1066007973

Quality Control/Controllo Qualità
Q.M.D./RESP. M.Rizzatti
Plant/Stab. Palini e Bertoli

Pages/Pagine 4/7

Material/Codice Materiale
LTS

Description/Descrizione
15,00 X 2450,00 X 12000,00 S355J2+N

Surface Quality: EN10163-2 CL A1
Flatness: rif EN 10029 cl. N
Thickness tolerance: EN10029 CLASSE B

Delivery Condition: NORMALIZING ROLLING
Steel Making Process: BO= Basic oxigen

Order Nr/ordine **1191769614/30**
Materiale Cliente

Client Order/Ordine cliente **ORD. 2L 00181 DEL 28/5**
Date/data cliente **28/05/2024**

Item	Batch/N° Partita	ID Palini	Heat/Colata	Quantity/Q.tà KG	Quantity/Q.tà PZZ
1	24PZ003791	16F.6121.03/A	142878	3528	1 *26084*
2	24PZ003788	16F.6122.03/B	442511	3528	1 *26083*
3	24PZ003789	16F.6122.03/A	442511	3528	1 *26082*
4	24PZ003790	16F.6121.03/B	142878	3528	1 *26085*

Remarks/Note:
LAMIERE SABBIATE in acc. ISO 8501:2012 SA 2 ½.
CE Marking Certificate N.0474-CPR-0033 last issued 14/09/2020 Rev.05. Hot rolled products of structural steels in compliance with Regulation n°305/2011/EU dated 09/03/2011. DOP available on https://www.quality.marcegaglia.com.
UKCA Marking Certificate N.1244-CPR-1051 last issued 01/01/2023. Hot rolled products of structural steels in compliance with the Construction Products Regulation 2011 (retained EU law EUR 305/2011). DOP available on https://www.quality.marcegaglia.com.

Batch/N° Partita	C (%)	Mn (%)	Si (%)	S (%)	P (%)	Cr (%)	Ni (%)	Cu (%)	Al (%)	Mo (%)	Nb (%)	V (%)	Ti (%)	N (%)	H (%)	B (%)	Ceq (%)
	0.2	1.6	0.55	0.025	0.025	0.29	0.42	0.55	0.02 0.3	0.11	0.06	0.1	0.05				0.45
24PZ003791	.150	1.470	.240	.0050	.0180	.010	.010	.010	.036	.0000	.030	.001	.0030	.0020	.00000	.0002	.40
24PZ003788	.150	1.480	.250	.0050	.0150	.010	.010	.010	.043	.0000	.032	.001	.0020	.0040	.00000	.0001	.40
24PZ003789	.150	1.480	.250	.0050	.0150	.010	.010	.010	.043	.0000	.032	.001	.0020	.0040	.00000	.0001	.40
24PZ003790	.150	1.470	.240	.0050	.0180	.010	.010	.010	.036	.0000	.030	.001	.0030	.0020	.00000	.0002	.40

Batch/N° Partita	Forma	(1)	(2)	(3)	Tst [°C]	Rm [N/mmq]	ReH [N/mmq]	A% (%)	(1)	(2)	(3)	(4)	T [°C]	Kv1 [J]	Kv2 [J]	Kv3 [J]	Kv^a [J]	TESTN
					20 20	470 630	355	20					-20					
24PZ003791	P	1	P	T	20	566	454	29.5	1	P	L	10.0	-20	209	178	201	196	24-P09867R
24PZ003788	P	1	P	T	20	585	457	24.5	1	P	L	10.0	-20	180	66	152	132	24-P09095R
24PZ003789	P	1	P	T	20	585	457	24.5	1	P	L	10.0	-20	180	66	152	132	24-P09095R
24PZ003790	P	1	P	T	20	566	454	29.5	1	P	L	10.0	-20	209	178	201	196	24-P09867R

SIDERTAGLIO LAMIERE srl
Via dell'Agricoltura, 8/D
36040 MELEDO DI SAREGO (VI)
Tel. 0444 823059
Fax Amm. 0444 823364
Uff. Tec. 0444 823201
C. F. e Part. IVA 02510610245

Controllo ad ultrasuoni

Apparecchiatura	Numero di serie	Condizioni di superficie	Accoppiante	Mod. operativie	Taratura
Gilardoni RDG2000	050858001	As Rolled	Acqua	Secondo le specifiche	Secondo le specifiche

Item	Norma di riferimento	Classe accettabilità	Esito	Indicazioni	Reticolo	Bordi	Sonda	Frequenza	Angolo

Firma
II Liv. EN/ISO 9712
Q.M.D. M.Rizzatti

MARCEGAGLIA Palini e Bertoli S.p.A. QUALITY CONTROL Rizzatti Marco

(1)Posizione:1=Testa;2=Piede.(2)Posizione:1/2=1/2 spessore;P=Pelle;1/4=1/4 spessore.(3)Direzione:L=Longitudinale;T=Trasversale;(4)Spessore provino

DescrizioneMarchi

UKCA 1244 22 MARCEGAGLIA PALINI E BERTOLI v. Enrico Fermi, 28 33058 - S. Giorgio Nogaro Udine - Italy EN 10025-1 EN 10025-2

CE 0474 06 MARCEGAGLIA PALINI E BERTOLI v. Enrico Fermi, 28 33058 - S. Giorgio Nogaro Udine - Italy EN 10025-1 EN 10025-2

- Material Free of radioactive contamination
- Dimensional check and visual examination of the surface condition: without objection
- We Declare that the above mentioned plates are in compliance with the order prescription
- We hereby declare that the above mentioned material have been rolled in Italy, thus of European Community origin

MARCEGAGLIA
PALINI E BERTOLI

Marcegaglia
46040 Via Bresciani, 16-Gazoldo degli Ippoliti Mantova-Italy
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www.marcegaglia.com

Marcegaglia Palini e Bertoli S.P.A.
via E.Fermi, 28 33058 San Giorgio di Nogaro, Udine - Italy
tel +39 0431623111

Type/Tipo 3.1 CERTIFICATO DI COLLAUDO EN10204

questo documento è stato generato automaticamente ed è valido senza firma

Number/Numero 16624421397 Creato il 19/06/2024

Product: Hot Rolled Heavy Plates
NormaCollaudoLamieraTreno: EN10025-2:2019
Steel grade:: S355J2+N

Customer/Cliente
SIDERTAGLIO LAMIERE S.R.L.
VIA DELL'AGRICOLTURA 8 D
36040 MELEDO DI SAREGO IT

Code: 0000028513

Del. Address/Destinatario Merci
SIDERTAGLIO LAMIERE S.R.L.
VIA DELL'AGRICOLTURA 8 D
36040 MELEDO DI SAREGO IT

Delivery/N° Consegna 8920573384
Of/Del 19/06/2024
Delivery note nr/N° doc. di trasp. 1066007973

Quality Control/Controllo Qualità
Q.M.D./RESP. M.Rizzatti
Plant/Stab. Palini e Bertoli

Material/Codice Materiale
LTS

Description/Descrizione
15,00 X 2450,00 X 12000,00 S355J2+N

Surface Quality: EN10163-2 CL A1
Flatness: rif EN 10029 cl. N
Thickness tolerance: EN10029 CLASSE B

Delivery Condition: NORMALIZING ROLLING
Steel Making Process: BO= Basic oxigen

Order Nr/ordine **1191769614/30**
Materiale Cliente

Client Order/Ordine cliente **ORD. 2L 00181 DEL 28/5**
Date/data cliente **28/05/2024**

Item	Batch/N° Partita	ID Palini	Heat/Colata	Quantity/Q.tà KG	Quantity/Q.tà PZ
1	24PZ003792	16F.6119.01/B	442151	3528	1 26087
2	24PZ003793	16F.6119.01/A	442151	3528	1 26086

Remarks/Note:
LAMIERE SABBIATE in acc. ISO 8501:2012 SA 2 ½.
CE Marking Certificate N.0474-CPR-0033 last issued 14/09/2020 Rev.05. Hot rolled products of structural steels in compliance with Regulation n°305/2011/EU dated 09/03/2011. DOP available on https://www.quality.marcegaglia.com.
UKCA Marking Certificate N.1244-CPR-1051 last issued 01/01/2023. Hot rolled products of structural steels in compliance with the Construction Products Regulation 2011 (retained EU law EUR 305/2011). DOP available on https://www.quality.marcegaglia.com.

Batch/N° Partita	C (%)	Mn (%)	Si (%)	S (%)	P (%)	Cr (%)	Ni (%)	Cu (%)	Al (%)	Mo (%)	Nb (%)	V (%)	Ti (%)	N (%)	H (%)	B (%)	Ceq (%)
	0.2	1.6	0.55	0.025	0.025	0.29	0.42	0.55	0.02 0.3	0.11	0.06	0.1	0.05				0.45
24PZ003792	.150	1.490	.220	.0060	.0140	.020	.010	.020	.032	.0000	.028	.001	.0040	.0020	.00000	.0001	.40
24PZ003793	.150	1.490	.220	.0060	.0140	.020	.010	.020	.032	.0000	.028	.001	.0040	.0020	.00000	.0001	.40

Batch/N° Partita	Forma	(1)	(2)	(3)	Tst [°C]	Rm [N/mmq]	ReH [N/mmq]	A% (%)	(1)	(2)	(3)	(4)	T [°C]	Kv1 [J]	Kv2 [J]	Kv3 [J]	Kv^a [J]	TESTN
					20 20	470 630	355	20					-20					
24PZ003792	P	1	P	T	20	550	440	24.4	1	P	L	10.0	-20	85	203	140	142	24-P10251R
24PZ003793	P	1	P	T	20	550	440	24.4	1	P	L	10.0	-20	85	203	140	142	24-P10251R

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Uff. Tec. 0444 823201
C. F. e Part. IVA 02510610245

Controllo ad ultrasuoni

Apparecchiatura	Numero di serie	Condizioni di superficie	Accoppiante	Mod. operativie	Taratura
Gilardoni RDG2000	050858001	As Rolled	Acqua	Secondo le specifiche	Secondo le specifiche

Item	Norma di riferimento	Classe accettabilità	Esito	Indicazioni	Reticolo	Bordi	Sonda	Frequenza	Angolo

Firma
II Liv. EN/ISO 9712
Q.M.D. M.Rizzatti

MARCEGAGLIA
Palini e Bertoli S.p.A.
QUALITY CONTROL
Rizzatti Marco

(1)Posizione:1=Testa;2=Piede.(2)Posizione:1/2=1/2 spessore;P=Pelle;1/4=1/4 spessore.(3)Direzione:L=Longitudinale;T=Trasversale;(4)Spessore provino

DescrizioneMarchi

UKCA 1244 22 MARCEGAGLIA PALINI E BERTOLI v. Enrico Fermi, 28 33058 - S. Giorgio Nogaro Udine - Italy EN 10025-1 EN 10025-2

CE 0474 06 MARCEGAGLIA PALINI E BERTOLI v. Enrico Fermi, 28 33058 - S. Giorgio Nogaro Udine - Italy EN 10025-1 EN 10025-2

- Material Free of radioactive contamination
- Dimensional check and visual examination of the surface condition: without objection
- We Declare that the above mentioned plates are in compliance with the order prescription
- We hereby declare that the above mentioned material have been rolled in Italy, thus of European Community origin

MARCEGAGLIA
PALINI E BERTOLI

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Marcegaglia Palini e Bertoli S.P.A.
via E.Fermi, 28 33058 San Giorgio di Nogaro, Udine - Italy
tel +39 0431623111

Type/Tipo 3.1 CERTIFICATO DI COLLAUDO EN10204

questo documento è stato generato automaticamente ed è valido senza firma

Number/Numero 16624421397 Creato il 19/06/2024

Product: Hot Rolled Heavy Plates
NormaCollaudoLamieraTreno: EN10025-2:2019
Steel grade:: S355J2+N

Customer/Cliente
SIDERTAGLIO LAMIERE S.R.L.
VIA DELL'AGRICOLTURA 8 D
36040 MELEDO DI SAREGO IT

Code: 0000028513

Del. Address/Destinatario Merci
SIDERTAGLIO LAMIERE S.R.L.
VIA DELL'AGRICOLTURA 8 D
36040 MELEDO DI SAREGO IT

Delivery/N° Consegna 8920573384
Of/Del 19/06/2024
Delivery note nr/N° doc. di trasp. 1066007973

Quality Control/Controllo Qualità
Q.M.D./RESP. M.Rizzatti
Plant/Stab. Palini e Bertoli

Pages/Pagine 6/7

Material/Codice Materiale
LTS

Description/Descrizione
50,00 X 2000,00 X 12000,00 S355J2+N

Surface Quality: EN10163-2 CL A1
Flatness: rif EN 10029 cl. N
Thickness tolerance: EN10029 CLASSE B

Delivery Condition: NORMALIZING ROLLING
Steel Making Process: BO= Basic oxigen

Order Nr/ordine **1191769614/102**
Materiale Cliente

Client Order/Ordine cliente **ORD. 2L 00181 DEL 28/5**
Date/data cliente **28/05/2024**

Item	Batch/N° Partita	ID Palini	Heat/Colata	Quantity/Q.tà KG	Quantity/Q.tà PZZ
1	24PZ003967	24J.1800.03	2459624	9600	1 *26073*
2	24PZ003968	28W.28.04	23207033	9600	1 *26072*

Remarks/Note:
LAMIERE SABBIATE in acc. ISO 8501:2012 SA 2 ½.
CE Marking Certificate N.0474-CPR-0033 last issued 14/09/2020 Rev.05. Hot rolled products of structural steels in compliance with Regulation n°305/2011/EU dated 09/03/2011. DOP available on https://www.quality.marcegaglia.com.
UKCA Marking Certificate N.1244-CPR-1051 last issued 01/01/2023. Hot rolled products of structural steels in compliance with the Construction Products Regulation 2011 (retained EU law EUR 305/2011). DOP available on https://www.quality.marcegaglia.com.

Batch/N° Partita	C (%)	Mn (%)	Si (%)	S (%)	P (%)	Cr (%)	Ni (%)	Cu (%)	Al (%)	Mo (%)	Nb (%)	V (%)	Ti (%)	N (%)	H (%)	B (%)	Ceq (%)
			0.1						0.02								
	0.22	1.6	0.55	0.025	0.025	0.29	0.42	0.55	0.3	0.11	0.06	0.1	0.05				0.47
24PZ003967	.161	1.464	.168	.0040	.0130	.037	.022	.031	.054	.0020	.030	.001	.0020	.0040	.00020	.0002	.42
24PZ003968	.157	1.490	.230	.0030	.0130	.033	.019	.030	.031	.0030	.031	.003	.0120	.0040	.00210	.0003	.42

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Tel. 0444 823059
Fax Amm. 0444 823364
Uff. Tec. 0444 823201
C. F. e Part. IVA 02510610245

Batch/N° Partita	Forma	(1)	(2)	(3)	Tst [°C]	Rm [N/mmq]	ReH [N/mmq]	A% (%)	(1)	(2)	(3)	(4)	T [°C]	Kv1 [J]	Kv2 [J]	Kv3 [J]	Kv^a [J]	TESTN
					20	470	335	19					-20				27	
					20	630												
24PZ003967	C	1	1/4	T	20	560	425	31.5	1	P	L	10.0	-20	220	208	203	210	24-P11004S
24PZ003968	C	1	1/4	T	20	534	401	34.5	1	P	L	10.0	-20	215	243	227	228	24-P10853R

Controllo ad ultrasuoni

Apparecchiatura	Numero di serie	Condizioni di superficie	Accoppiante	Mod. operativie	Taratura
Gilardoni RDG2000	050858001	As Rolled	Acqua	Secondo le specifiche	Secondo le specifiche

Item	Norma di riferimento	Classe accettabilità	Esito	Indicazioni	Reticolo	Bordi	Sonda	Frequenza	Angolo

Firma
II Liv. EN/ISO 9712
Q.M.D. M.Rizzatti

MARCEGAGLIA
Palini e Bertoli S.p.A.
QUALITY CONTROL
Rizzatti Marco

(1)Posizione:1=Testa;2=Piede.(2)Posizione:1/2=1/2 spessore;P=Pelle;1/4=1/4 spessore.(3)Direzione:L=Longitudinale;T=Trasversale;(4)Spessore provino

DescrizioneMarchi

UKCA 1244 22 MARCEGAGLIA PALINI E BERTOLI v. Enrico Fermi, 28 33058 - S. Giorgio Nogaro Udine - Italy EN 10025-1 EN 10025-2

CE 0474 06 MARCEGAGLIA PALINI E BERTOLI v. Enrico Fermi, 28 33058 - S. Giorgio Nogaro Udine - Italy EN 10025-1 EN 10025-2

- Material Free of radioactive contamination
- Dimensional check and visual examination of the surface condition: without objection
- We Declare that the above mentioned plates are in compliance with the order prescription
- We hereby declare that the above mentioned material have been rolled in Italy, thus of European Community origin

MARCEGAGLIA PALINI E BERTOLI

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www.marcegaglia.com

Marcegaglia Palini e Bertoli S.P.A.
via E.Fermi, 28 33058 San Giorgio di Nogaro, Udine - Italy
tel +39 0431623111

Type/Tipo 3.1 CERTIFICATO DI COLLAUDO EN10204

questo documento è stato generato automaticamente ed è valido senza firma

Number/Numero 16624421397 Creato il 19/06/2024

Product: Hot Rolled Heavy Plates
NormaCollaudoLamieraTreno: EN10025-2:2019
Steel grade:: S355J2+N

Customer/Cliente
SIDERTAGLIO LAMIERE S.R.L.
VIA DELL'AGRICOLTURA 8 D
36040 MELEDO DI SAREGO IT

Code: 0000028513

Del. Address/Destinatario Merci
SIDERTAGLIO LAMIERE S.R.L.
VIA DELL'AGRICOLTURA 8 D
36040 MELEDO DI SAREGO IT

Delivery/N° Consegna 8920573384
Of/Del 19/06/2024
Delivery note nr/N° doc. di trasp. 1066007973

Quality Control/Controllo Qualità
Q.M.D./RESP. M.Rizzatti
Plant/Stab. Palini e Bertoli

Pages/Pagine 7/7

Material/Codice Materiale
LTS

Description/Descrizione
40,00 X 2000,00 X 12000,00 S355J2+N

Surface Quality: EN10163-2 CL A1
Flatness: rif EN 10029 cl. N
Thickness tolerance: EN10029 CLASSE B

Delivery Condition: NORMALIZING ROLLING
Steel Making Process: BO= Basic oxigen

Order Nr/ordine **1191769614/81**
Materiale Cliente

Client Order/Ordine cliente **ORD. 2L 00181 DEL 28/5**
Date/data cliente **28/05/2024**

Item	Batch/N° Partita	ID Palini	Heat/Colata	Quantity/Q.tà KG	Quantity/Q.tà PZZ
1	24PZ003988	24C.328.03	2452518	7680	1 ~~26071~~

Remarks/Note:
LAMIERE SABBIATE in acc. ISO 8501:2012 SA 2 ½.
CE Marking Certificate N.0474-CPR-0033 last issued 14/09/2020 Rev.05. Hot rolled products of structural steels in compliance with Regulation n°305/2011/EU dated 09/03/2011. DOP available on https://www.quality.marcegaglia.com.
UKCA Marking Certificate N.1244-CPR-1051 last issued 01/01/2023. Hot rolled products of structural steels in compliance with the Construction Products Regulation 2011 (retained EU law EUR 305/2011). DOP available on https://www.quality.marcegaglia.com.

Batch/N° Partita	C (%)	Mn (%)	Si (%)	S (%)	P (%)	Cr (%)	Ni (%)	Cu (%)	Al (%)	Mo (%)	Nb (%)	V (%)	Ti (%)	N (%)	H (%)	B (%)	Ceq (%)
			0.1						0.02								
	0.22	1.6	0.55	0.025	0.025	0.29	0.42	0.55	0.3	0.11	0.06	0.1	0.05				0.47
24PZ003988	.165	1.504	.202	.0020	.0080	.022	.008	.009	.042	.0010	.028	.001	.0020	.0040	.00050	.0001	.42

Batch/N° Partita	Forma	(1)	(2)	(3)	Tst [°C]	Rm [N/mmq]	ReH [N/mmq]	A% (%)	(1)	(2)	(3)	(4)	T [°C]	Kv1 [J]	Kv2 [J]	Kv3 [J]	Kv[a] [J]	TESTN
					20	470	345	20					-20				27	
					20	630												
24PZ003988	C	1	1/4	T	20	596	450	28.5	1	P	L	10.0	-20	180	183	179	180	24-P07988R

SIDERTAGLIO LAMIERE srl
Via dell'Agricoltura, 8/D
36040 MELEDO DI SAREGO (VI)
Tel. 0444 823059
Fax Amm. 0444 823364
Uff. Tec. 0444 823201
C. F. e Part. IVA 02510610245

Controllo ad ultrasuoni

Apparecchiatura	Numero di serie	Condizioni di superficie	Accoppiante	Mod. operativie	Taratura
Gilardoni RDG2000	050858001	As Rolled	Acqua	Secondo le specifiche	Secondo le specifiche

Item	Norma di riferimento	Classe accettabilità	Esito	Indicazioni	Reticolo	Bordi	Sonda	Frequenza	Angolo

Firma
II Liv. EN/ISO 9712
Q.M.D. M.Rizzatti

MARCEGAGLIA Palini e Bertoli S.p.A. QUALITY CONTROL Rizzatti Marco

(1)Posizione:1=Testa;2=Piede.(2)Posizione:1/2=1/2 spessore;P=Pelle;1/4=1/4 spessore.(3)Direzione:L=Longitudinale;T=Trasversale;(4)Spessore provino

DescrizioneMarchi

UKCA 1244 22 MARCEGAGLIA PALINI E BERTOLI v. Enrico Fermi, 28 33058 - S. Giorgio Nogaro Udine - Italy EN 10025-1 EN 10025-2

CE 0474 06 MARCEGAGLIA PALINI E BERTOLI v. Enrico Fermi, 28 33058 - S. Giorgio Nogaro Udine - Italy EN 10025-1 EN 10025-2

- Material Free of radioactive contamination
- Dimensional check and visual examination of the surface condition: without objection
- We Declare that the above mentioned plates are in compliance with the order prescription
- We hereby declare that the above mentioned material have been rolled in Italy, thus of European Community origin

A01 Produttore

AcciaieriaArvedi

Acciaieria Arvedi S.p.A.
Sede legale:
Viale Forlanini, 23
20134 Milano

Sede amministrativa e Stabilimenti:
Via Acquaviva, 18
26100 Cremona - Italia
Tel.+39 0372 4781

Via Di Servola, 1
34145 Trieste - Italia

Cap.Soc. € 112.900.000
interamente versato
Società soggetta all'attività di direzione e coordinamento di
Finarvedi SpA
Società con Socio Unico

Part.IVA IT 11852670154
Cod.fisc. 00910070192
Reg.Imp.MI 00910070192
REA MI 1497770

A07 Vostro Ordine **462**
A08 Nostra conferma **0311148841/200**
B01 **Bandelle NERO 1500x5,00x3000,00 S355J2+N**
Consegna/DDT **325708984 / 20 / 34041615**
B09 Spessore **5,00 mm**
B10 Larghezza **1.500,0 mm**
B11 Lunghezza **3.000,0 mm**
B02 Qualità **S355J2+N**
B04 Stato fornitura **UNI EN 10025-2-2019**

A06 Committente

GABRIELLI S.P.A.
magazzino di Galliera Veneta
VIA L. DA VINCI 25
GALLIERA VENETA
35015 PD

A02 **Certificato di collaudo**
nr. 0000664290 3.1 EN10204
Z02 Data **13.05.2021 EN10168**

B16		C71	C72	C73	C74	C75	C76	C77	C78	C79	C80	C81	C82	C83	C84	C85	C86	C87	C88	C89	C90	C91	C92
IDENTIFIC.COLATA		C%	Mn%	Si%	P%	S%	Cr%	Ni%	Mo%	Cu%	Sn%	Al%	Ti%	Nb%	V%	B%	N%	Nb% + Ti% + V%	Ti% +Nb%	Cr% +Mo%	Cu% + Cr% + Ni%	Si% + P%	CEV
	min	0,10										0,020											
	max	0,20	1,60	0,03	0,024	25,000	0,29	0,42	0,11	0,55													0,46
122771		0,19	1,23	0,02	0,007	0,002	0,05	0,05	0,01	0,14	0,01	0,031											0,42

B07	B16	B12	C00	C13	C11	C12	C50
IDENTIFICAZIONE PRODOTTO	IDENTIFIC. COLATA	MASSA TEORICA KG		A5%	Rp02	Rm	Piega
				%	MPa	MPa	
			min	20	355	470	
			max			630	
712277111-400071315	122771	1.629		24	456	585	OK

IL PRESENTE CERTIFICATO E' COPIA CONFORME ALL'ORIGINALE RELATIVO AL NS DDT
N. 21004851 DEL 18/6/21
CLIENTE COMINOX SRL
GABRIELLI S.p.A. UNIP.
DIVISIONE LUNGHI

C00 Saggio id analisi di controllo
C30 Prova di durezza - Tipo prova
Z07 Nelle prove di trazione usate solo provette prismatiche

D01 Controllo marcatura, aspetto superficiale e dimensioni: Soddisfacente
Z01 Certifichiamo che il prodotto fornito è conforme ai requisiti
C02 Senso di prelievo: T Trasversale

Z05 Certificazioni del sistema di gestione
Azienda con sistema di gestione certificato da IGQ secondo ISO 9001 e IATF 16949

Prodotti di acciaio laminati a caldo per impieghi strutturali
Settore di utilizzo: Costruzioni o ingegneria civile

Tolleranze dimensionali e di forma:	UNI EN 10051
Allungamento	
Carico di rottura	
Carico di snervamento	Acciaio: S355J2+N EN 10025
Energia di resilienza	
Saldabilità	
Durata:	Nessuna prestazione determinata
Sostanze regolamentate:	Nessuna prestazione determinata

Z04 Marcatura CE
CE
1608
14
Cert.n.1608 CPR P054

B06 Marcatura

Z02 Validazione
NOME
T.FERABOLI

Z03 Timbro ente isp.

ACCIAIERIA ARVEDI * ASSICURAZIONE QUALITA'

A05 REDATTORE DOCUMENTO
CONTROLLO QUALITA' ACCIAIERIA ARVEDI
MOD-QUA-16 Rev.0 del 20/09/2016

DICHIARAZIONE DI PRESTAZIONE CE [n°. 0000664290] EC DECLARATION OF PERFORMANCE [n°. 0000664290]	CE 1608 14 Cert.n.1608 CPR P054

1.Codice di identificazione del prodotto tipo: **rotoli e nastri laminati a caldo per impieghi strutturali, secondo le norme UNI EN 10 10025-2 e UNI EN 10025-5**

Identification code of product type: **hot rolled coils and strips of structural steels according to standard UNI EN 10025-2 and UNI EN 10025-5**

Dimensioni: **spessore da 1,2 a 12,0 mm; larghezza da 100 a 1600 mm**
Dimensions: **thickness 1,2 - 12,0 mm; width 100 - 1600 mm**

2. Numero di tipo, lotto, serie o elemento di identificazione del prodotto da costruzione ai sensi dell articolo 11, paragrafo 4:
Type, batch or serial number or any element allowing identification of construction product as required under article 11(4):

In accordo con no.lotto e numero colata indicato sul certificato di collaudo
In agreement with lot number and heat number indicated on the test certificate

Partita	Colata
400071315	122771

3.Uso o usi previsti dal prodotto da costruzione, conformemente alla relativa specifica armonizzata, come previsto dal fabbricante:
Intended use or uses of the construction product in accordance with the applicable harmonised technical specification, as foreseen by manufacturer:

Acciaio laminato a caldo per usi strutturali - Hot rolling steel for structural uses

4. Nome, denominazione commerciale registrata o marchio registrato e indirizzo del fabbricante ai sensi dell' articolo 11, paragrafo 5:
Name, registered trade name or registered trademark and contract address of manufacturer as required pursuant Article 11(5):

Acciaieria Arvedi S.p.A - via Acquaviva,18 - 26100 Cremona (ITALIA)

5. Se opportuno, nome e indirizzo del mandatario il cui mandato copre i compiti cui all' articolo12, paragrafo 5:
Name and contact address of the authorised representative whose mandate covers the tasks specified in article12(5):

Non applicabile - Not applicable

6. Sistema o sistemi di valutazione e verifica della costanza di prestazione del prodotto da costruzione di cui all'allegato V alla EU 305-2011:
System pr systems of assessment and verification of constancy of performance of the construction product as set in EU-regulation 305-2011 annex V:

System 2+

7. Dichiarazione di prestazione relativa al prodotto da costruzione cherientra nell'ambito della norma armonizzata:
Declaration of performance concerning construction product covered by a harmonised standard:

Ente di certificazione: **I.G.Q. Via Giosuè Carducci 125/A - 20099 Sesto San Giovanni MI (ITALY)**
Certification Body

Numero del certificato FPC: **1608 CPR P054**
Number of FPC certificate

DICHIARAZIONE DI PRESTAZIONE CE [n°. 0000664290] EC DECLARATION OF PERFORMANCE [n°. 0000664290]	CE 1608 14 Cert.n.1608 CPR P054

Ispezione iniziale dello stabilimento. Determinazione del prodotto tipo in base a prove di tipo (compreso campionamento). Sorveglianza, valulazione e verifica continua del controllo della produzione di fabbrica secondo l'allegato ZA della EN 10025-2005.
Performed the initial inspection of the manufacturing plant and factory production control and the continuous surveillance, assessment and evaluation of factory production control and issued the certificate of conformity of the factory production control in accordance with annexZA of EN 10025-2005.

8. Caso di dichiarazione di prestazione relativa a un prodotto da costruzione per il quale è stata rilasciata una valutazione tecnica europea:
Declaration of performance concerning construction product covered by European technical evaluation:

Non applicabile - Not applicable

9. Prestazione dichiarata:
Declared performance:

Caratteristiche essenziali Essential characteristics	Prestazioni Performance	Specifica tecnica armonizzata Harmonised technical specification
Tolleranze Dimensionali	EN 10051-2010	EN 10025-1:2005
Allungamento	EN 10025-2:2019; 10025-5:2019 p. 7.3.1	
Carico di Snervamento e Rottura	EN 10025-2:2019; 10025-5:2019 p. 7.3.1	
Resilienza	EN 10025-2:2019; 10025-5:2019 p. 7.3.2	
Saldabilità	EN 10025-2:2019; 10025-5:2019 p. 7.2.3 + 7.4.1	
Durabilità	EN 10025-2:2019; 10025-5:2019 p. 7.2.1 + 7.4.3	

10. La prestazione del prodotto di cui ai punti 1 e 2 è conform e alla prestazione dichiarata di cui al punto 9:
The performance of the product identified in point 1 and is in conformity with the declared performance in point 9:

Si rilascia la presente dichiarazione sotto la responsabilità esclusiva del fabbricante di cui al punto 4.
This declaration is issued under the sole responsability of manifactured identified in point 4.

A nome e per conto Acciaieria Arvedi S.p.A :
Signed for and on behalf of Acciaieria Arvedi S.p.A

Cremona, 14.05.2021

Fabio Baldrighi (Sales Director)

MOD-QUA-16 Rev.1 del 28/12/2020

gabrielli
steel service centre

Gabrielli S.p.A. - Società Unipersonale
Sede Legale e amministrativa : Via Mazzini, 58 - 35013 Cittadella (PD) Italy - C.P.n. 52/B - Tel.:**+39.049.9414611** - Fax +39.049.9414664 - e-mail: info.gab@gabrielli.it - **www.gabrielli.it**
C.F. - P.IVA IT 00362740284 - Reg. Imprese PD 00362740284 - R.E.A. PD 120850 - M. PD005320 - Cap. Soc. Euro 20.000.000,00 I. V. Direzione e coordinamento SO.FI.D.A. S.p.A.
Azienda con sistema di gestione qualità certificato da DNV **= ISO 9001 =** *(Spianatura e taglio di lamiere in fogli e nastri ricavati da coils laminati a caldo.*
Commercio e lavorazione di lamiere grosse laminate da treno quarto. Commercio di prodotti siderurgici e pre-lavorazione di profili strutturali (taglio e foratura di travi)

A02 TIPO DI CERTIFICATO : FERRIERA 3.1 EN10204-04 DOCUMENT TYPE : MILL 3.1 EN10204-04
A03 CERTIFICATO N°/DOCUMENT N°: 5394/ 3016

Z02 Data: 04/02/21
Pag. : 1

A07 ORDINE CLIENTE/CUSTOMER ORDER : 552 GALLIERA del 1/02/21 A08 ORDINE INTERNO/INTERNAL ORDER:2102628 del 1/02/21

A06 GABRIELLI SPA UNIPERSONALE
VIA MAZZINI, 58
35013 CITTADELLA PD
ITALIA

LISTA DI RINTRACCIABILITA"
PACKING LIST

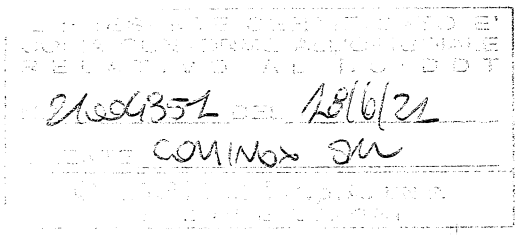
Destinatario: GABRIELLI SPA DIV.GALLIERA UNIPERSON
VIA LEONARDO DA VINCI, 25 - Z.I.
35015 GALLIERA VENETA PD

Riga Descrizione / Pos. Description N°Coil Interno N°InternalCoil B07	N°Rif. Originale N° Original Coil B07	N° Colata N° Casting B07	N. Serie (S) Label N° B06	Quantità Prodotta Quantity Produced B08	Spess. Thick. B09	Largh. Width B10	Lungh. Length B11	Articolo Cliente Customer Item	N° DDT Dispatch	Riga Pos.	Data Date
1-D LAM. CALDO S355J2 EN 10025-2/2004 SPIAN.											
2017021	565503	731100	8748646	7 Fg	10,00 x	1500,00 x	3000,00		3016	1	4/02/21
2017021	565503	731100	8748647	7 Fg	10,00 x	1500,00 x	3000,00		3016	1	4/02/21

Z01 I risultati delle prove condotte presso il nostro laboratorio rientrano nei limiti stabiliti dalle norme di prodotto. Si assicura pertanto la conformità del materiale fornito alle prescrizioni del Vs. ordine.
The results of the tests carried out in our laboratory fall within the limits set by the product standards. Compliance of the supplied material with the provisions of y guaranteed.
Le Dichiarazioni di Prestazione sono disponibili nel ns. sito web all'indirizzo https://www.gabrielli.it/dop in conformità al REG. DEL. (UE) N.157/2014 (30/10/2013)
The Declarations of Performance are available in our website (https://www.gabrielli.it/dop) in accordance with REG. DEL. (UE) N. 157/2014 (30/10/2013)

Documento composto da 1 pagine / Document included by 1 page

GABRIELLI SPA UNIPERSONALE
Controllo Qualità



Divisione Coils
35013 **Cittadella** (PD) Italy -Via Mazzini, 58
Tel.:**+39.049.9414781**
Comparto Bassarena: Via Bassarena, 8/C
e-mail: info.dco@gabrielli.it

Divisione Lamiere Grosse
35013 **Cittadella** (PD) Italy
Via dell'Industria, 38 - Z.I.
Tel.:**+39.049.9415511**
e-mail: info.dlg@gabrielli.it

Divisione Lunghi
35015 **Galliera Veneta** (PD) Italy - Via Leonardo da Vinci, 25 - Tel. **+39.049.5968844**
31040 **Covolo di Pederobba** (TV) Italy - Via Guizza, 25 - Tel. **+39.0423.680411**
36040 **Grumolo delle Abbadesse** (VI) Italy - Via Nazionale, 82 - Tel. **+39.0444.580680**
e-mail: info.dpl@gabrielli.it

GRUPPO gabrielli
STEEL SERVICE NETWORK

A01
voestalpine
Stahl GmbH

A02
Abnahmeprüfzeugnis
3.1 - EN 10204

Z02 Datum 18-12-2020

voestalpine-Straße 3
4020 Linz, Austria
www.voestalpine.com/stahl

A03 Bescheinigungs-Nr.:	W1624485	A08 Auftrags-Nr.:	2301474	A07 BestDat.:	14-09-2020	Versanddatum: 20-12-2020 6E

A06 Besteller
GABRIELLI S.P.A.
Via Giuseppe Mazzini, N. 58
I-35013 CITTADELLA, PD

B01 Fabrikat: WARMGEW. STAHLBAND
B02 Werkstoff: S355J2+N
B03 Norm: EN 10025-2:2004

A07 BestNr.: 20005615

Zusätzliche Anforderungen: AL-BERUHIGT-KL.1VERZINKUNGSFAEHIG

A06 Empfänger
GABRIELLI S.P.A.
Via Giuseppe Mazzini, N. 58
I-35013 CITTADELLA, PD

Sachnummer: 6

Z01 - Besichtigung und Maßprüfung: keine Beanstandung. Wir bestätigen, dass die oben bezeichnete Lieferung den Bestellvorschriften (Normvorschriften) entspricht.
Z01 - Kennzeichnung: Erschmelzungsart (wenn spezifiziert), Markenbezeichnung, Schmelzennummer, Band/Blechnummer.

Umfang der Lieferung

B07 Schmelze	B06 Blech-Nr	Dimensionen Pos	B09 Dicke mm	B10 Breite mm	B11 Länge mm	B08 Stück	B12 Brutto kg	B13 Netto kg	B14 Liefs-Nr 11 44
731100	565503	60	9,99	1500,0		1	29.690	29.690	47559
	Summen					1	29.690	29.690	

C70 - Erschmelzungsverfahren: LD

Chemische Zusammensetzung (Schmelzanalyse)

B07 Schmelze	C %	Si %	Mn %	P %	S %	Al %	Cu %	N %
731100	.174	.015	1.460	.008	.0062	.053	.010	.0035

Ergebnisse der Prüfungen

Versuch B07 Schmelze	Zugvers. C02 Lage	L0	C11 Reh MPA	C12 Rm MPA	C13 A %	KerbschT C02 Lage	C40 Pf	C03 Prüftemperatur °C	C42 EW J	C42 EW J	C42 EW J
731100	Q	A5	412	562	23.4	L	CV 10 x t	-20	153	163	147

GABRIELLI S.p.A. UNIP.
DIVISIONE COILS
COPIA CONFORME ALL'ORIGINALE

A04
Herstellerzeichen
voestalpine

A01,A05;Z02
Abnahmebeauftragte(r) des Herstellers
Qualitaetslenkung Warmband Karl

voestalpine
ONE STEP AHEAD.

CE

0769

voestalpine Stahl GmbH, voestalpine-Straße 3, 4020 Linz, Austria

20

EN 10025-2:2004 S355J2+N

EN 10025-2:2004 S355J2+N
Leistungserklärung abrufbar unter www.voestalpine.com/stahl/Die-Steel-Division/Downloadcenter
Zur Verwendung bestimmt in Metallbauwerken oder in Metall-/Betonbundbauwerken

Formtoleranzen Grenzabmaße	EN 10051
Bruchdehnung	EN 10025-2:2004
Zugfestigkeit	
Streckgrenze	
Schweißeignung	
Beständigkeit	
Gefährliche Substanzen	keine festgestellt

GABRIELLI S.p.A. UNIP.
DIVISIONE COILS
COPIA CONFORME ALL'ORIGINALE

A04
Herstellerzeichen
voestalpine

A01,A05;Z02
Abnahmebeauftragte(r) des Herstellers
Qualitaetslenkung Warmband Karl

voestalpine
ONE STEP AHEAD.

Fabbrica Italiana Lamiere srl

Sede legale/head office
Via Sant'Agnese 12
20123 Milano
Stabilimento/Rolling mill
Via natale Gallino, 63
16164 Genova Pontedecimo

Tipo certificato/Type certificate 3.1 EN 10204
Numero certificato/Number 240000004290
Data/Date 11/03/2024

Cliente/Customer

Destinatario merce/Destination

Ordine/Order 2024.1.158.2
Data ordine/Date order 29/02/2024
Nota/Note

Firma/Signature

Timbro/Stamp

25705

ARTICOLO LAMIERA S355J2+N 30x2450x12000 mm S355J2+N UNI EN 10025-2 kg 6931 LC

Partita/piastra/Plate	Colata/Heat	C [%]	Mn [%]	Si [%]	S [%]	P [%]	Cr [%]	Ni [%]	Cu [%]	Al [%]	MO [%]	Nb [%]	V [%]	Ti [%]	N [%]	Ceq [%]	HB	Verso	ReH [N/mm²]	Rm [N/mm²]	A% [%]	Verso	T [°C]	Kv_1 [J]	Kv_2 [J]	Kv_3 [J]	Kv_a [J]	Saggio	Data
		0,20	1,60		0,025	0,025			0,55							0,45			345	470 630	20			27	27	27	27		
24LT004258 N10P074	322347	0,18	1,35	0,22	0,006	0,011	0,02	0,01	0,01	0,030	0,002	0,001	0,005	0,002	0,005	0,41		T	363	520	31,5	KVL	-20	146	133	147	142		

SIDERTAGLIO LAMIERE srl
Via dell'Agricoltura, 8/D
36040 MELEDO DI SAREGO (VI)
Tel. 0444 823059
Fax Amm. 0444 823364
Uff. Tec. 0444 823201
C. F. e Part. IVA 02510610245

Toll. Spess/Toll. thick EN10029 Cl B
Toll. Largh./toll. Width -0 +100
Toll. lLung/toll. Length -0 +200
Toll. Plan/toll plan. EN10029 N
Cond superf/cond. superf. EN 10163 B2
Stato di fornitura LC: laminazione controllata
Supply status Normalizing rolling

Stato di fornitura AR: in as rolled condition
Supply status AR in as rolled condition

NOTA:
Lamiere elencate sono conformi alla prescrizione all'ordine, e i controlli di marcatura, aspetto superficiale e dimensionale hanno dato esito positivo. Prodotto esente da radiazioni
The above mentioned are consistent with the order prescriptions: marking, inspection and measurement without objection. Product free from all types of radioactive materials
Le lamiere sono state controllate in accordo alla normativa vigente / We declare that the plates were controlled according to standard

FABBRICA ITALIANA LAMIERE SRL
Via natale Gallino, 63
16164 Genova Pontedecimo

EN 10025 - 1
EN 10025 - 2

17
0474 - CPR - 1673

CE

CERTIFICATO DI CONTROLLO ULTRASONORO
ULTRASONIC INSPECTION CERTIFICATE

Controlli effettuati su lamiera ante-taglio
Checks carried out on pre-cutting Steel Plate

Cliente / Customer	Vs Ordine / Order
SIDERTAGLIO LAMIERE S.R.L.	

Documento Nr / Document No
239
22/03/2024

Dimensioni / Dimension	Cod. Interno / Code
12200X2490	**25705**
Colata / Heat No	Cert. Nr. / Cert. No
322347	

Spessore / Thik
30

Materiale / Material	Oggetto / Object
S355J2+N	**Steel plate**
Stadio di Lavorazione / Working step	Particolare / Detail
As conditions of supply	
Posizione di controllo / Scanning position	Condizioni Superficiali / Surface condition
100x100	**As rolled**

Specifica di rif. / Specification Ref.	Classe accettabilità / Acceptance criterie
EN 10160	**S2E3**
Apparecchio Tipo / Instrument model	Mezzo accoppiamento /
GILARDONI RDG 450	**Water**
Blocco Campione / Reference Block	Perdite di trasferimento / Transfre lossee
V1	

Taratura sensibilità d'esame / Sensibility range test
Flat bottomed holes Ø 5 mm

TRASDUTTORI search units	ONDE waves	TIPO type	FREQUENZA	SEZIONE (mm) size (mm)	ANGOLO angle	DIAMETRO diameter	FABBRICANTE manufacturer
	LONGIT	**D25/4**	**4MHz**			**Ø25**	**IMG**

IDENTIFICAZIONE identification	AREA / TRATTO Area/section	TIPO DISCONT. discontinuity	AMPIEZZA amplitude	LUNGHEZZA length	PROFONDITA' depth	NOTE remark	RISULTATO examination result

Risultato dell'esame	X	**Satisfactory / Conforme**
Examination result		**Unsatisfactory / NON Conforme**

Emesso da
Esaminatore

SIDERTAGLIO LAMIERE s.r.l.
Alessandro Callegari
UNI EN ISO 9712:2012 level II
Cert. Nr. DTC-END-A00562-14

Ispettore Cliente / Ente terzo	Controllo qualità

Sidertaglio Lamiere srl

TAGLIO E COMMERCIO DI LAMIERE
Via dell'Agricoltura 8/D - 36040 Meledo di Sarego (VI) - Tel. 0444 823059
Fax Amm. 0444 823364 - Uff. Tec. 0444 823201 - Email: info@sidertaglio.com - Web: www.sidertaglio.com
Reg. Imp. VI 33000/1996 - R.E.A. 236444 - Cod. Fisc. e P.IVA 02510610245

Taglio plasma
Ossitaglio
fino a 500mm

REMAZEL

CERTIFICATION LIST

Certificate Nr.: 001/2024
Date:

Final Customer:	Order Customer:	Object:	Description:	Quantity:	Inspection and Test Plan (ITP):	Our job:
ROSETTI MARINO	24005073 SIDERTAGLIO	C09-0001-P0001+P0002	PEDESTAL+COLUMN			

MATERIAL

Drawing	Pos.	Q.ty	Description	Material	Certificates 3.1	Manufacturer	Heat/Plate ID	Additional Mechanical Test	UT Certificates	Nesting
C09-0001-P0001	1	1	SHEET METAL 40mm	S355J2+N	16624563335	MARCEGAGLIA P&B	2461219/24C .609.01		920	
C09-0001-P0001	2	1	SHEET METAL 20mm	S355J2+N	240000005205	FABBRICA ITALIANA LAMIERE	316829/24LT 005170	240898	267	
C09-0001-P0001	3	2	SHEET METAL 10mm	S355J2+N	5394/3016	GABRIELLI	565503/8748 646	240899		
C09-0001-P0001	4	2	SHEET METAL 5mm	S355J2+N	664290	ACCIAIERIA ARVEDI	122771/7122 77111-400071315	240900		
C09-0001-P0001	5	1	SHEET METAL	S355J2+N	2022/002212/01	ACCIAIERIA D'ITALIA	180235-151872201			
C09-0001-P0001	6	2	SHEET METAL 5mm	S355J2+N	664290	ACCIAIERIA ARVEDI	122771/7122 77111-400071315	240899		
C09-0001-P0002	1	1	sheet metal 40mm	S355J2+N	16624400805	MARCEGAGLIA P&B	441908/16F. 5953.01	240902	673	
C09-0001-P0002	2	1	SHEET METAL 40mm	S355J2+N	16624563335	MARCEGAGLIA P&B	2461219/24C .609.01	240896	920	
C09-0001-P0002	3A	1	SHEET METAL 15mm	S355J2+N	16624421397	MARCEGAGLIA P&B	442151/16F. 6119.01/B	240905		
C09-0001-P0002	3B	1	SHEET METAL 15mm	S355J2+N	16624421397	MARCEGAGLIA P&B	442151/16F. 6119.01/A	240906		
C09-0001-P0002	4	1	SHEET METAL 15mm	S355J2+N	16624421397	MARCEGAGLIA P&B	442151/16F. 6119.01/B	240908		
C09-0001-P0002	6	4	SHEET METAL 10mm	S355J2+N	16624421397	MARCEGAGLIA P&B	2377353/24R .366.02/A	240909		
C09-0001-P0002	7	2	SHEET METAL 10mm	S355J2+N	16624421397	MARCEGAGLIA P&B	2377353/24R .366.02/A	240910		
C09-0001-P0002	8	1	SHEET METAL 15mm	S355J2+N	16624421397	MARCEGAGLIA P&B	442151/16F. 6119.01/A	240911		
C09-0001-P0002	9	3	SHEET METAL 15mm	S355J2+N	16624421397	MARCEGAGLIA P&B	442151/16F. 6119.01/A	240912		
C09-0001-P0002	10	1	SHEET METAL 15mm	S355J2+N	16624421397	MARCEGAGLIA P&B	442151/16F. 6119.01/A	240913		
C09-0001-P0002	11	2	SHEET METAL 5mm	S355J2+N	664290	ACCIAIERIA ARVEDI	122771/7122 77111-400071315	240914		
C09-0001-P0002	12	8	METAL PROFILE 10mm	S355J2+N	5394/3016	GABRIELLI	565503/8748 646	240915		
C09-0001-P0002	13	5	METAL PROFILE 5mm	S355J2+N	664290	ACCIAIERIA ARVEDI	122771/7122 77111-400071315	240916		
C09-0001-P0002	14	4	METAL PROFILE 5mm	S355J2+N	664290	ACCIAIERIA ARVEDI	122771/7122 77111-400071315	240917		
C09-0001-P0002	15	1	METAL PROFILE 30mm x D8	S355J2+N	240000004290	FABBRICA ITALIANA LAMIERE	322347/24LT 004258	240918	239	
C09-0001-P0002	16	4	METAL PROFILE 30mm x D8	S355J2+N	240000004290	FABBRICA ITALIANA LAMIERE	322347/24LT 004258	240919	239	

MARCEGAGLIA
PALINI E BERTOLI

Marcegaglia
46040 Via Bresciani, 16-Gazzolo degli Ippoliti Mantova-Italy
Tel. +39 - 0376 686 1 Fax. +39 - 0376 655 600
www.marcegaglia.com

Marcegaglia Palini e Bertoli S.P.A.
Via E.Fermi, 28 33058 San Giorgio di Nogaro, Udine - Italy
tel+39 0431623111

Type/Tipo 3.1 CERTIFICATO DI COLLAUDO EN10204 | questo documento è stato generato automaticamente ed è valido senza firma | Number/Numero 16624563335 | Creato il 05/09/2024

Product: Hot Rolled Heavy Plates
NormaCollaudoLamieraTreno: EN10025-2:2019
Steel grade:: S355J2+N

Customer/Cliente	Code: 0000028587	Del. Address/Destinatario Merci	Delivery/N° Consegna 8920635882 Of/Del 05/09/2024 Delivery note nr/N° doc. di trasp. 1066010892	Quality Control/Controllo Qualità Q.M.D./RESP. M.Rizzatti Plant/Stab. Palini e Bertoli	Pages/Pagine 3/3

Material/Codice Materiale	Surface Quality: -	Delivery Condition: NORMALIZING ROLLING	Order Nr/ordine	Client Order/Ordine cliente
LTS	Flatness: rif EN 10029 cl. N	Steel Making Process: BO= Basic oxigen	1191787387/50	24*410
Description/Descrizione	Thickness tolerance: EN10029 CLASSE B		Materiale Cliente	Client Date/data cliente
26200 40,00 X 3000,00 X 10000,00 S355J2+N				12/07/2024

Item	Batch/N° Partita	ID Palini	Heat/Colata	Quantity/Q.tà KG	Quantity/Q.tà PZZ
1	24KX018811	24C.609.01	2461219	9600	1

Remarks/Note:
CE Marking Certificate N.0474-CPR-0033 last issued 14/09/2020 Rev.05. Hot rolled products of structural steels in compliance with Regulation n°305/2011/EU dated 09/03/2011. DOP available on https://www.quality.marcegaglia.com.
UKCA Marking Certificate N.1244-CPR-1051 last issued 01/01/2023. Hot rolled products of structural steels in compliance with the Construction Products Regulation 2011 (retained EU law EUR 305/2011). DOP available on https://www.quality.marcegaglia.com.

Batch/N° Partita	C (%)	Mn (%)	Si (%)	S (%)	P (%)	Cr (%)	Ni (%)	Cu (%)	Al (%)	Mo (%)	Nb (%)	V (%)	Ti (%)	N (%)	H (%)	B (%)	Ceq (%)
			0.1						0.02								
	0.22	1.6	0.55	0.025	0.025	0.29	0.42	0.55	0.3	0.11	0.06	0.1	0.05				0.47
24KX018811	.156	1.447	.184	.0030	.0090	.032	.017	.021	.043	.0030	.028	.001	.0020	.0060	.00040	.0002	.41

COPIA CONFORME ALL'ORIGINALE

IL PRESENTE CERTIFICATO VALE PER

LA QUANTITA' DEL NS. DDT

Batch/N° Partita	Forma	(1)	(2)	(3)	Tst [°C]	Rm [N/mmq]	ReH [N/mmq]	A% (%)	(1)	(2)	(3)	(4)	T [°C]	Kv1 [J]	Kv2 [J]	Kv3 [J]	Kv* [J]	TESTN
					20	470	345	20					-20				27	
					20	630												
24KX018811	C	1	1/4	T	20	535	428	32.9	1	P	L	10.0	-20	203	223	180	202	24-P14270R

Controllo ad ultrasuoni

Apparecchiatura	Numero di serie	Condizioni di superficie	Accoppiante	Mod. operativie	Taratura
Gilardoni RDG2000	050858001	As Rolled	Acqua	Secondo le specifiche	Secondo le specifiche

Firma
II Liv. EN/ISO 9712
Q.M.D. M.Rizzatti

MARCEGAGLIA Palini e Bertoli S.p.A. QUALITY CONTROL Rizzatti Marco

Item	Norma di riferimento	Classe accettabilità	Esito	Indicazioni	Reticolo	Bordi	Sonda	Frequenza	Angolo

(1)Posizione:1-Testa;2-Piede,(2)Posizione:1/2-1/2 spessore;P-Pelle;1/4-1/4 spessore,(3)Direzione:L-Longitudinale;T-Trasversale;(4)Spessore provino

DescrizioneMarchi

UKCA 1244 22 MARCEGAGLIA PALINI E BERTOLI v. Enrico Fermi, 28 33058 - S. Giorgio Nogaro Udine - Italy EN 10025-1 EN 10025-2

CE 0474 06 MARCEGAGLIA PALINI E BERTOLI v. Enrico Fermi, 28 33058 - S. Giorgio Nogaro Udine - Italy EN 10025-1 EN 10025-2

- Material Free of radioactive contamination
- Dimensional check and visual examination of the surface condition: without objection
- We Declare that the above mentioned plates are in compliance with the order prescription
- We hereby declare that the above mentioned material have been rolled in Italy, thus of European Community origin

DICHIARAZIONE DI PRESTAZIONE N°1.0577

1. Codice di identificazione unico del prodotto-tipo: **1.0577**
2. Numero di tipo: **S355J2**
3. Uso previsto del prodotto da costruzione, conformemente a **EN 10025-1:2004**
   PRODOTTI LAMINATI A CALDO DI ACCIAIO PER IMPIEGHI STRUTTURALI DA UTILIZZARSI NELLE STRUTTURE METALLICHE O IN COMPOSITI METALLICI E STRUTTURE IN CALCESTRUZZO
4. Nome e indirizzo del fabbricante:

MARCEGAGLIA PALINI E BERTOLI S.P.A.
Sede legale - **Via Bresciani, 16 – 46040 Gazoldo degli Ippoliti (MN)**
nello stabilimento di
Via E. Fermi, 28 – 33058 San Giorgio di Nogaro (UD)

6. Sistema di valutazione e verifica della costanza della prestazione del prodotto da costruzione: **2+**
7. L'organismo notificato:

RINA Services S.p.A.
N° 0474

Ha rilasciato il certificato di conformità del controllo della produzione in fabbrica fondandosi sui seguenti elementi:
i. Ispezione iniziale della fabbrica e del controllo della produzione in fabbrica;
ii. Esegue la sorveglianza continua, la valutazione e l'approvazione del controllo della produzione in fabbrica.

8. Nel caso di una dichiarazione di prestazione relativa ad un prodotto da costruzione per il quale è stata rilasciata una valutazione tecnica europea: **N.A.**
9. Prestazione dichiarata:

Caratteristiche essenziali	Punti relativi ai requisiti della presente (o altra) norma europea	Prestazione	Specifica armonizzata
Tolleranza sulle dimensioni e tolleranze di forma	7.7.1	EN10029-2010	EN 10025-2:2019
Allungamento	7.3.1	CONFORME TABELLA 1	
Resistenza alla trazione	7.3.1		
Carico unitario di snervamento	7.3.1		
Resilienza	7.3.1+7.3.2		
Analisi chimica	7.2.1	CONFORME TABELLA 2	
Saldabilità (composizione chimica)	7.2+7.4.1	NPD	
Durabilità (composizione chimica)	7.2+7.4.3	NPD	

10. La prestazione del prodotto di cui ai punti 1 e 2 è conforme alla prestazione dichiarata di cui al punto 9.
Si rilascia la presente dichiarazione di prestazione sotto la responsabilità esclusiva del fabbricante di cui al punto 4.

In nome e per conto della MARCEGAGLIA PALINI E BERTOLI S.P.A.
San Giorgio di Nogaro, 10 marzo 2021

MARCEGAGLIA Palini e Bertoli S.p.A. Via E. Fermi, 28 33058 S. Giorgio di Nogaro, Ud - Italy P.I. 03217150983

➢ TABELLA 1- CARATTERISTICHE IN ACCORDO ALLA EN 10025-2:2019

CARATTERISTICHE MECCANICHE A TEMPERATURA AMBIENTE - prospetto 6														
In conformità alla		CARICO UNITARIO MINIMO DI SNERVAMENTO ReH IN N/MM²									RESISTENZA A TRAZIONE Rm IN N/MM²			
		Spessore nominale mm									Spessore nominale			
EN 10027-1	EN10027-2	≤16	>16 ≤40	>40 ≤63	>63 ≤80	>80 ≤100	>100 ≤150	>150 ≤200	>200 ≤250	>250 ≤400	≥3 ≤100	>100 ≤150	>150 ≤250	>250 ≤400
S355J2	1.0577	355	345	335	325	315	295	285	275	265	470÷630	450÷600	450÷600	450÷600

CARATTERISTICHE MECCANICHE A TEMPERATURA AMBIENTE – prospetto 6								
In conformità alla		Posizione dei provini	ALLUNGAMENTO PERCENTUALE MINIMO DOPO ROTTURA A%					
			$L_0=5,65*\sqrt{S_0}$					
EN 10027-1	EN10027-2		≥3≤40	>40≤63	>63≤100	>100≤150	>150≤250	>250≤400
S355J2	1.0577	l	22	21	20	18	17	17
		t	20	19	18	18	17	17

Caratteristiche meccaniche – Resilienza KV_2 longitudinale per prodotti piani e lunghi – prospetto 8					
In conformità alla		TEMPERATURE	Energia minima (J) – Spessore nominale in mm		
EN 10027-1	EN10027-2	°C	≤150	>150≤250	>250≤400
S355J2	1.0577	-20	27	27	27

➢ TABELLA 2 – CARATTERISTICHE IN ACCORDO ALLA EN 10025-2:2019

COMPOSIZIONE CHIMICA ALL'ANALISI DI COLATA - prospetto 1												
In conformità alla		Metodo di deossidazione	C in % max per spessori nominali di prodotto in mm			Si	Mn	P	S	N	Cu	altro
EN 10027-1	EN10027-2		≤16	>16≤30	>30	max.	max.	max.	max.	max.	max.	max
S355J2	1.0577	FF	0,20	0,20	0,22	0,55	1,60	0,025	0,025	-	0,55	-

Valore massimo del CEV basato sull'analisi di colata - prospetto 5							
In conformità alla		Metodo di deossidazione	Valore massimo CEV in % per spessori nominali di prodotto in mm				
EN 10027-1	EN10027-2		≤30	>30≤40	>40≤150	>150≤250	>250≤400
S355J2	1.0577	FF	0,45	0,47	0,47	0,49	0,49

CERTIFICATO DI CONTROLLO ULTRASONORO
ULTRASONIC INSPECTION CERTIFICATE

Controlli effettuati su lamiera ante-taglio
Checks carried out on pre-cutting Steel Plate

Cliente / Customer	Vs Ordine / Order
SIDERTAGLIO LAMIERE S.R.L.	

Documento Nr / Document No
920
25/09/2024

Dimensioni / Dimension	Cod. Interno / Code
4010X3020	**26200**
Colata / Heat No	Cert. Nr. / Cert. No
2461219	
Spessore / Thik	
40	

Materiale / Material	Oggetto / Object
S355J2+N	**Steel plate**
Stadio di Lavorazione / Working step	Particolare / Detail
As conditions of supply	
Posizione di controllo / Scanning position	Condizioni Superficiali / Surface condition
100x100	**As rolled**

Specifica di rif. / Specification Ref.	Classe accettabilità / Acceptance criterie
EN 10160	**S2E3**
Apparecchio Tipo / Instrument model	Mezzo accoppiamento /
GILARDONI RDG 450	**Water**
Blocco Campione / Reference Block	Perdite di trasferimento / Transfre lossee
V1	

Taratura sensibilità d'esame / Sensibility range test

Flat bottomed holes Ø 5 mm

TRASDUTTORI search units	**ONDE** waves	**TIPO** type	**FREQUENZA**	**SEZIONE (mm)** size (mm)	**ANGOLO** angle	**DIAMETRO** diameter	**FABBRICANTE** manufacturer
	LONGIT	**D25/4**	**4MHz**			**Ø25**	**IMG**

IDENTIFICAZIONE identification	**AREA / TRATTO** Area/section	**TIPO DISCONT.** discontinuity	**AMPIEZZA** amplitude	**LUNGHEZZA** length	**PROFONDITA'** depth	**NOTE** remark	**RISULTATO** examination result

Risultato dell'esame	X	**Satisfactory / Conforme**
Examination result		**Unsatisfactory / NON Conforme**

Emesso da
Esaminatore

SIDERTAGLIO LAMIERE s.r.l.
Alessandro Callegari
UNI EN ISO 9712:2012 level II
Cert. Nr. DTC-END-A00562-14

Ispettore Cliente / Ente terzo	Controllo qualità

Sidertaglio Lamiere srl

Taglio plasma
Ossitaglio
fino a 500mm

TAGLIO E COMMERCIO DI LAMIERE
Via dell'Agricoltura 8/D - 36040 Meledo di Sarego (VI) - Tel. 0444 823059
Fax Amm. 0444 823364 - Uff. Tec. 0444 823201 - Email: info@sidertaglio.com - Web: www.sidertaglio.com
Reg. Imp. VI 33000/1996 - R.E.A. 236444 - Cod. Fisc. e P.IVA 02510610245

Fabbrica Italiana Lamiere srl

Sede legale/head office
Via Sant'Agnese 12
20123 Milano
Stabilimento/Rolling mill
Via natale Gallino, 63
16164 Genova Pontedecimo

Tipo certificato/Type certificate 3.1 EN 10204
Numero certificato/Number 240000005205
Data/Date 21/03/2024

Cliente/Customer

Destinatario merce/Destination

Ordine/Order 2024.1.196.2
Data ordine/Date order 12/03/2024
Nota/Note

Firma/Signature
Timbro/Stamp

25729

ARTICOLO LAMIERA S355J2+N 20x2450x12000 mm S355J2+N UNI EN 10025-2 kg 4621 LC

Partita/piastra/Plate	Colata/Heat	C [%]	Mn [%]	Si [%]	S [%]	P [%]	Cr [%]	Ni [%]	Cu [%]	Al [%]	MO [%]	Nb [%]	V [%]	Ti [%]	N [%]	Ceq [%]	HB	Verso	ReH [N/mm²]	Rm [N/mm²]	A% [%]	Verso	T [°C]	Kv_1 [J]	Kv_2 [J]	Kv_3 [J]	Kv_4 [J]	Saggio	Data
																			345	470	20			27	27	27	27		
		0,20	1,60		0,025	0,025			0,55							0,45				630									
24LT005170 N11P382	316829	0,17	1,35	0,24	0,005	0,015	0,03	0,01	0,01	0,025	0,002	0,001	0,004	0,002	0,005	0,40		T	370	519	28,4	KVL	-20	137	153	122	137		

SIDERTAGLIO LAMIERE srl
Via dell'Agricoltura, 8/D
36040 MELEDO DI SAREGO (VI)
Tel. 0444 823059
Fax Amm. 0444 823364
Uff. Tec. 0444 823201
C. F. e Part. IVA 02510610245

Toll. Spess/Toll. thick EN10029 Cl B
Toll. Largh./toll. Width -0 +100
Toll. lLung/toll. Length -0 +200
Toll. Plan/toll plan. EN10029 N
Cond superf/cond. superf. EN 10163 B2
Stato di fornitura LC: laminazione controllata
Supply status Normalizing rolling

Stato di fornitura AR: in as rolled condition
Supply status AR In as rolled condition

NOTA:
Lamiere elencate sono conformi alla prescrizione all'ordine, e i controlli di marcatura, aspetto superficiale e dimensionale hanno dato esito positivo. Prodotto esente da radiazioni
The above mentioned are consistent with the order prescriptions: marking, inspection and measurement without objection. Product free from all types of radioactive materials
Le lamiere sono state controllate in accordo alla normativa vigente / We declare that the plates were controlled according to standard

FABBRICA ITALIANA LAMIERE SRL
Via natale Gallino, 63
16164 Genova Pontedecimo

EN 10025 - 1
EN 10025 - 2

17
0474 - CPR - 1673

CE

gabrielli
steel service centre

Gabrielli S.p.A. - Società Unipersonale
Sede Legale e amministrativa : Via Mazzini, 58 - 35013 Cittadella (PD) Italy - C.P.n. 52/B - Tel.:**+39.049.9414611** - Fax +39.049.9414664 - e-mail: info.gab@gabrielli.it - **www.gabrielli.it**
C.F. - P.IVA IT 00362740284 - Reg. Imprese PD 00362740284 - R.E.A. PD 120850 - M. PD005320 - Cap. Soc. Euro 20.000.000,00 I. V. Direzione e coordinamento SO.FI.D.A. S.p.A.
Azienda con sistema di gestione qualità certificato da DNV **= ISO 9001 =** *(Spianatura e taglio di lamiere in fogli e nastri ricavati da coils laminati a caldo.*
Commercio e lavorazione di lamiere grosse laminate da treno quarto. Commercio di prodotti siderurgici e pre-lavorazione di profili strutturali (taglio e foratura di travi)

A02 TIPO DI CERTIFICATO : FERRIERA 3.1 EN10204-04 DOCUMENT TYPE : MILL 3.1 EN10204-04 Z02 Data: 04/02/21
A03 CERTIFICATO N°/DOCUMENT N°: 5394/ 3016 Pag. : 1

A07 ORDINE CLIENTE/CUSTOMER ORDER : 552 GALLIERA del 1/02/21 A08 ORDINE INTERNO/INTERNAL ORDER:2102628 del 1/02/21

A06 GABRIELLI SPA UNIPERSONALE
VIA MAZZINI, 58
35013 CITTADELLA PD
ITALIA

LISTA DI RINTRACCIABILITA"
PACKING LIST

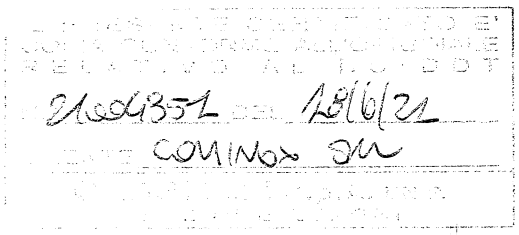
Destinatario: GABRIELLI SPA DIV.GALLIERA UNIPERSON
VIA LEONARDO DA VINCI, 25 - Z.I.
35015 GALLIERA VENETA PD

Riga Descrizione / Pos. Description N°Coil Interno N°InternalCoil B07	N°Rif. Originale N° Original Coil B07	N° Colata N° Casting B07	N. Serie (S) Label N° B06	Quantità Prodotta Quantity Produced B08	Spess. Thick. B09	Largh. Width B10	Lungh. Length B11	Articolo Cliente Customer Item	N° DDT Dispatch	Riga Pos.	Data Date
1-D LAM. CALDO S355J2 EN 10025-2/2004 SPIAN.											
2017021	565503	731100	8748646	7 Fg	10,00 x	1500,00 x	3000,00		3016	1	4/02/21
2017021	565503	731100	8748647	7 Fg	10,00 x	1500,00 x	3000,00		3016	1	4/02/21

Z01 I risultati delle prove condotte presso il nostro laboratorio rientrano nei limiti stabiliti dalle norme di prodotto. Si assicura pertanto la conformità del materiale fornito alle prescrizioni del Vs. ordine.
The results of the tests carried out in our laboratory fall within the limits set by the product standards. Compliance of the supplied material with the provisions of y guaranteed.
Le Dichiarazioni di Prestazione sono disponibili nel ns. sito web all'indirizzo https://www.gabrielli.it/dop in conformità al REG. DEL. (UE) N.157/2014 (30/10/2013)
The Declarations of Performance are available in our website (https://www.gabrielli.it/dop) in accordance with REG. DEL. (UE) N. 157/2014 (30/10/2013)

Documento composto da 1 pagine / Document included by 1 page

GABRIELLI SPA UNIPERSONALE
Controllo Qualità



Divisione Coils
35013 **Cittadella** (PD) Italy -Via Mazzini, 58
Tel.:**+39.049.9414781**
Comparto Bassarena: Via Bassarena, 8/C
e-mail: info.dco@gabrielli.it

Divisione Lamiere Grosse
35013 **Cittadella** (PD) Italy
Via dell'Industria, 38 - Z.I.
Tel.:**+39.049.9415511**
e-mail: info.dlg@gabrielli.it

Divisione Lunghi
35015 **Galliera Veneta** (PD) Italy - Via Leonardo da Vinci, 25 - Tel. **+39.049.5968844**
31040 **Covolo di Pederobba** (TV) Italy - Via Guizza, 25 - Tel. **+39.0423.680411**
36040 **Grumolo delle Abbadesse** (VI) Italy - Via Nazionale, 82 - Tel. **+39.0444.580680**
e-mail: info.dpl@gabrielli.it

GRUPPO gabrielli
STEEL SERVICE NETWORK

A01
voestalpine
Stahl GmbH

A02
Abnahmeprüfzeugnis
3.1 - EN 10204

Seite 1 von 2
Z02 Datum 18-12-2020

voestalpine-Straße 3
4020 Linz, Austria
www.voestalpine.com/stahl

A03 Bescheinigungs-Nr.:	W1624485	A08 Auftrags-Nr.:	2301474	A07 BestDat.:	14-09-2020	Versanddatum:	20-12-2020 6E

A06 Besteller
GABRIELLI S.P.A.
Via Giuseppe Mazzini, N. 58
I-35013 CITTADELLA, PD

B01 Fabrikat: WARMGEW. STAHLBAND
B02 Werkstoff: S355J2+N
B03 Norm: EN 10025-2:2004

A07 BestNr.: 20005615

Zusätzliche Anforderungen: AL-BERUHIGT-KL.1VERZINKUNGSFAEHIG

A06 Empfänger
GABRIELLI S.P.A.
Via Giuseppe Mazzini, N. 58
I-35013 CITTADELLA, PD

Sachnummer: 6

Z01 - Besichtigung und Maßprüfung: keine Beanstandung. Wir bestätigen, dass die oben bezeichnete Lieferung den Bestellvorschriften (Normvorschriften) entspricht.
Z01 - Kennzeichnung: Erschmelzungsart (wenn spezifiziert), Markenbezeichnung, Schmelzennummer, Band/Blechnummer.

Umfang der Lieferung

B07 Schmelze	B06 Blech-Nr	Dimensionen Pos	B09 Dicke mm	B10 Breite mm	B11 Länge mm	B08 Stück	B12 Brutto kg	B13 Netto kg	B14 Liefs-Nr 11 44
731100	565503	60	9,99	1500,0		1	29.690	29.690	47559
	Summen					1	29.690	29.690	

C70 - Erschmelzungsverfahren: LD

Chemische Zusammensetzung (Schmelzanalyse)

B07 Schmelze	C %	Si %	Mn %	P %	S %	Al %	Cu %	N %
731100	.174	.015	1.460	.008	.0062	.053	.010	.0035

Ergebnisse der Prüfungen

Versuch B07 Schmelze	Zugvers. C02 Lage	L0	C11 Reh MPA	C12 Rm MPA	C13 A %	KerbschT C02 Lage	C40 Pf	C03 Prüftemperatur °C	C42 EW J	C42 EW J	C42 EW J
731100	Q	A5	412	562	23.4	L	CV 10 x t	-20	153	163	147

GABRIELLI S.p.A. UNIP.
DIVISIONE COILS
COPIA CONFORME ALL'ORIGINALE

A04
Herstellerzeichen
voestalpine

A01,A05;Z02
Abnahmebeauftragte(r) des Herstellers
Qualitaetslenkung Warmband Karl

voestalpine
ONE STEP AHEAD.

CE

0769

voestalpine Stahl GmbH, voestalpine-Straße 3, 4020 Linz, Austria

20

EN 10025-2:2004 S355J2+N

EN 10025-2:2004 S355J2+N
Leistungserklärung abrufbar unter www.voestalpine.com/stahl/Die-Steel-Division/Downloadcenter
Zur Verwendung bestimmt in Metallbauwerken oder in Metall-/Betonbundbauwerken

Formtoleranzen Grenzabmaße	EN 10051
Bruchdehnung	EN 10025-2:2004
Zugfestigkeit	
Streckgrenze	
Schweißeignung	
Beständigkeit	
Gefährliche Substanzen	keine festgestellt

GABRIELLI S.p.A. UNIP.
DIVISIONE COILS
COPIA CONFORME ALL'ORIGINALE

A04
Herstellerzeichen
voestalpine

A01,A05;Z02
Abnahmebeauftragte(r) des Herstellers
Qualitaetslenkung Warmband Karl

voestalpine
ONE STEP AHEAD.

A01 Produttore

AcciaieriaArvedi

Acciaieria Arvedi S.p.A.
Sede legale:
Viale Forlanini, 23
20134 Milano

Sede amministrativa e Stabilimenti:
Via Acquaviva, 18
26100 Cremona - Italia
Tel.+39 0372 4781

Via Di Servola, 1
34145 Trieste - Italia

Cap.Soc. € 112.900.000
interamente versato
Società soggetta all'attività di direzione e coordinamento di
Finarvedi SpA
Società con Socio Unico

Part.IVA IT 11852670154
Cod.fisc. 00910070192
Reg.Imp.MI 00910070192
REA MI 1497770

A07 Vostro Ordine **462**

A08 Nostra conferma **0311148841/200**

B01 **Bandelle NERO 1500x5,00x3000,00 S355J2+N**

Consegna/DDT **325708984 / 20 / 34041615**

B09 Spessore **5,00 mm**

B10 Larghezza **1.500,0 mm**

B11 Lunghezza **3.000,0 mm**

B02 Qualità **S355J2+N**

B04 Stato fornitura **UNI EN 10025-2-2019**

A06 Committente

GABRIELLI S.P.A.
magazzino di Galliera Veneta
VIA L. DA VINCI 25
GALLIERA VENETA
35015 PD

A02 **Certificato di collaudo**
nr. 0000664290 3.1 EN10204
Z02 Data **13.05.2021 EN10168**

B16		C71	C72	C73	C74	C75	C76	C77	C78	C79	C80	C81	C82	C83	C84	C85	C86	C87	C88	C89	C90	C91	C92
IDENTIFIC.COLATA		C%	Mn%	Si%	P%	S%	Cr%	Ni%	Mo%	Cu%	Sn%	Al%	Ti%	Nb%	V%	B%	N%	Nb% + Ti% + V%	Ti% +Nb%	Cr% +Mo%	Cu% + Cr% + Ni%	Si% + P%	CEV
	min	0,10										0,020											
	max	0,20	1,60	0,03	0,024	25,000	0,29	0,42	0,11	0,55													0,46
122771		0,19	1,23	0,02	0,007	0,002	0,05	0,05	0,01	0,14	0,01	0,031											0,42

B07	B16	B12	C00	C13	C11	C12	C50
IDENTIFICAZIONE PRODOTTO	IDENTIFIC. COLATA	MASSA TEORICA KG		A5%	Rp02	Rm	Piega
				%	MPa	MPa	
			min	20	355	470	
			max			630	
712277111-400071315	122771	1.629		24	456	585	OK

IL PRESENTE CERTIFICATO E' COPIA CONFORME ALL'ORIGINALE RELATIVO AL NS DDT
N. 21004851 DEL 18/6/21
CLIENTE COMINOX SRL
GABRIELLI S.p.A. UNIP.
DIVISIONE LUNGHI

C00 Saggio id analisi di controllo

D01 Controllo marcatura, aspetto superficiale e dimensioni: Soddisfacente

C30 Prova di durezza - Tipo prova

Z01 Certifichiamo che il prodotto fornito è conforme ai requisiti

C02 Senso di prelievo: T Trasversale

Z07 Nelle prove di trazione usate solo provette prismatiche

Z05 Certificazioni del sistema di gestione
Azienda con sistema di gestione certificato da IGQ secondo ISO 9001 e IATF 16949

Prodotti di acciaio laminati a caldo per impieghi strutturali
Settore di utilizzo: Costruzioni o ingegneria civile

Tolleranze dimensionali e di forma:	UNI EN 10051
Allungamento	Acciaio: S355J2+N EN 10025
Carico di rottura	
Carico di snervamento	
Energia di resilienza	
Saldabilità	
Durata:	Nessuna prestazione determinata
Sostanze regolamentate:	Nessuna prestazione determinata

Z04 Marcatura CE

CE
1608
14
Cert.n.1608 CPR P054

B06 Marcatura

Z02 Validazione

NOME
T.FERABOLI

Z03 Timbro ente isp.

ACCIAIERIA ARVEDI * ASSICURAZIONE QUALITA'

A05 REDATTORE DOCUMENTO
CONTROLLO QUALITA' ACCIAIERIA ARVEDI
MOD-QUA-16 Rev.0 del 20/09/2016

DICHIARAZIONE DI PRESTAZIONE CE [n°. 0000664290] EC DECLARATION OF PERFORMANCE [n°. 0000664290]	CE 1608 14 Cert.n.1608 CPR P054

1.Codice di identificazione del prodotto tipo: **rotoli e nastri laminati a caldo per impieghi strutturali, secondo le norme UNI EN 10 10025-2 e UNI EN 10025-5**

Identification code of product type: **hot rolled coils and strips of structural steels according to standard UNI EN 10025-2 and UNI EN 10025-5**

Dimensioni: **spessore da 1,2 a 12,0 mm; larghezza da 100 a 1600 mm**
Dimensions: **thickness 1,2 - 12,0 mm; width 100 - 1600 mm**

2. Numero di tipo, lotto, serie o elemento di identificazione del prodotto da costruzione ai sensi dell articolo 11, paragrafo 4:
Type, batch or serial number or any element allowing identification of construction product as required under article 11(4):

In accordo con no.lotto e numero colata indicato sul certificato di collaudo
In agreement with lot number and heat number indicated on the test certificate

Partita	Colata
400071315	122771

3.Uso o usi previsti dal prodotto da costruzione, conformemente alla relativa specifica armonizzata, come previsto dal fabbricante:
Intended use or uses of the construction product in accordance with the applicable harmonised technical specification, as foreseen by manufacturer:

Acciaio laminato a caldo per usi strutturali - Hot rolling steel for structural uses

4. Nome, denominazione commerciale registrata o marchio registrato e indirizzo del fabbricante ai sensi dell' articolo 11, paragrafo 5:
Name, registered trade name or registered trademark and contract address of manufacturer as required pursuant Article 11(5):

Acciaieria Arvedi S.p.A - via Acquaviva,18 - 26100 Cremona (ITALIA)

5. Se opportuno, nome e indirizzo del mandatario il cui mandato copre i compiti cui all' articolo12, paragrafo 5:
Name and contact address of the authorised representative whose mandate covers the tasks specified in article12(5):

Non applicabile - Not applicable

6. Sistema o sistemi di valutazione e verifica della costanza di prestazione del prodotto da costruzione di cui all'allegato V alla EU 305-2011:
System pr systems of assessment and verification of constancy of performance of the construction product as set in EU-regulation 305-2011 annex V:

System 2+

7. Dichiarazione di prestazione relativa al prodotto da costruzione cherientra nell'ambito della norma armonizzata:
Declaration of performance concerning construction product covered by a harmonised standard:

Ente di certificazione: **I.G.Q. Via Giosuè Carducci 125/A - 20099 Sesto San Giovanni MI (ITALY)**
Certification Body

Numero del certificato FPC: **1608 CPR P054**
Number of FPC certificate

DICHIARAZIONE DI PRESTAZIONE CE [n°. 0000664290] EC DECLARATION OF PERFORMANCE [n°. 0000664290]	CE 1608 14 Cert.n.1608 CPR P054

Ispezione iniziale dello stabilimento. Determinazione del prodotto tipo in base a prove di tipo (compreso campionamento). Sorveglianza, valulazione e verifica continua del controllo della produzione di fabbrica secondo l'allegato ZA della EN 10025-2005.
Performed the initial inspection of the manufacturing plant and factory production control and the continuous surveillance, assessment and evaluation of factory production control and issued the certificate of conformity of the factory production control in accordance with annexZA of EN 10025-2005.

8. Caso di dichiarazione di prestazione relativa a un prodotto da costruzione per il quale è stata rilasciata una valutazione tecnica europea:
Declaration of performance concerning construction product covered by European technical evaluation:

Non applicabile - Not applicable

9. Prestazione dichiarata:
Declared performance:

Caratteristiche essenziali Essential characteristics	Prestazioni Performance	Specifica tecnica armonizzata Harmonised technical specification
Tolleranze Dimensionali	EN 10051-2010	EN 10025-1:2005
Allungamento	EN 10025-2:2019; 10025-5:2019 p. 7.3.1	
Carico di Snervamento e Rottura	EN 10025-2:2019; 10025-5:2019 p. 7.3.1	
Resilienza	EN 10025-2:2019; 10025-5:2019 p. 7.3.2	
Saldabilità	EN 10025-2:2019; 10025-5:2019 p. 7.2.3 + 7.4.1	
Durabilità	EN 10025-2:2019; 10025-5:2019 p. 7.2.1 + 7.4.3	

10. La prestazione del prodotto di cui ai punti 1 e 2 è conform e alla prestazione dichiarata di cui al punto 9:
The performance of the product identified in point 1 and is in conformity with the declared performance in point 9:

Si rilascia la presente dichiarazione sotto la responsabilità esclusiva del fabbricante di cui al punto 4.
This declaration is issued under the sole responsability of manifactured identified in point 4.

A nome e per conto Acciaieria Arvedi S.p.A :
Signed for and on behalf of Acciaieria Arvedi S.p.A

Cremona, 14.05.2021

Fabio Baldrighi (Sales Director)

MOD-QUA-16 Rev.1 del 28/12/2020

A01 Stabilimento produttore:
Manufacture's works :
Acciaierie d'Italia S.p.A.

Acciaierie d'Italia

SEDE LEGALE : Viale Certosa, 239 - 20151 Milano ITALIA
Stabilimento di TARANTO
Via Appia SS7, km 648 - 74123 TARANTO ITALIA

A02 Tipo di documento Type of document
CERTIFICATO DI CONTROLLO
INSPECTION CERTIFICATE
EN 10204 TIPO 3.1

A03 N° Documento Doc.Nr. 2022/002212/01
Z02.1 Data Date 27/01/2022
A04

A07 Ordinazione Committente Customer's Order nr
E-MAIL 19/07/2021

A05 Redattore del documento Originator of the document
CONTROLLO QUALITÀ INTERNO

A08 N°Conferma Order 16413406 0031
A09 Art.Cliente Customer ref.

A12 Nave Vessel
A13Codice Code
A14 Data Date 26/01/2022

A06.1 Committente Customer
DUFERCO COMMERCIALE SPA
VIA DI SOTTORIPA 7/13
16124 GENOVA GE

A06.2 Destinatario Materiale Consignee
DUFERCO C/O CARTURAN
VIA EUROPA 19/A
35015 GALLIERA VENETA PD

A06.3 Destinatario del documento Consignee of the document
DUFERCO C/O CARTURAN
VIA EUROPA 19/A
35015 GALLIERA VENETA PD

A10 Informazioni commerciali supplementari Supplementary commercial information

B01 Prodotto Product : LAMIERE DA TRENO
B02 Qualità Steel quality : EN 10025-2
EN 10025-2 S355J2+N .
B03 Esigenze supplementari Supplementary requirements : NESSUNA PRESCRIZIONE
B04 Stato di fornitura Delivery condition : LAMINAZIONE DI NORMALIZZAZIONE
B05 Trattamento termico dei saggi Heat treatment of samples : .

B06 Marcatura Marking

DIMENSIONI NOM. NOM. DIMENSIONS :
Unità Units MM
B09 Spessore Thickness 8,0000
B10 Larghezza Width 2000,0000
B11 Lunghezza Length 12000,0000
B12 Massa teor. Theor.Mass 1507 Kg
B16 N° Colata Heat nr. 180235

25109
25110
25111
25112
25113
25114

MATERIALE SPEDITO DELIVERED MATERIAL

B07 N°Lam.	B13 Massa	B07 N°Lam.	B13 Massa	B07 N°Lam.	B13 Massa	B07 N°Lam.	B13 Massa	B07 N°Lam.	B13 Massa
151159101	1577	151159201	1571	151872101	1566	151872201	1559	151872301	1558
151873101	1579	151873201	1562						

B08 Totale numero pezzi Total pieces: 000007 **B14 Totale massa Total mass: 0010972 Kg.**

COMPOSIZIONE CHIMICA E PROCESSO DI FABBRICAZIONE ACCIAIO CHEMICAL COMPOSITION AND STEELMAKING PROCESS

C70 Processo di fabbricazione acciaio : Y(Basic Oxygen) C94 Metodo di colaggio :Colata Continua Continuous Casting

C00 Ident. Saggio	C01 Posiz. Prelievo	C71 C %	C72 Si %	C73 Mn %	C74 P %	C75 S %	C76 Al %	C77 Nb %	C78 V %	C79 Mo %	C80 Ni %	C81 Cr %	C82 Cu %
	Colata	0,150	0,206	1,072	0,013	0,0110	0,033	0,001	0,004	0,001	0,002	0,016	0,009

C00 Ident. Saggio	C01 Posiz. Prelievo	C83 Ti %	C84 N ppm	C85 B ppm	C86 Ca ppm	C87 Sn %	C88 H ppm	C89 V1	C90 V2	C91 V3	C92 V4	C93 CEQ % IIW
	Colata	0,013	60					5,566				0,333

VINCOLI ANALISI CHIMICA ADDITIONAL REQUIREMENTS	Colata Ladle Min	Colata Ladle Max	Prodotto Product Min	Prodotto Product Max
V1 = Al tot / N	2,000			

PROVA DI TRAZIONE TENSILE TEST

C00 Ident. saggio	C01 PP	C02 Dir	C03 Temp°C	B05 T.Term.	C10 Prov	C24 W/Ø mm	C23 : L0 [xSQR(S0)]	C09 Unità	C11 REH	C12 RM	C13 All.%	C14 RE/RM	C15 Strizione (%) Z1	Z2	Z3	Media
151161	C	T	+ 20		P	20,00	5,65	MPa	488	563	24,80					

PROVA DI RESILIENZA IMPACT TEST

C00 Ident. Saggio	C01 P.P Lun	C02 Sp.	C40 Dir	B05 Provino	T.Term.	C41 Largh	C09 Unità	C03 Temp°C	C42 Valori singoli K1	K2	K3	C43 Media	C44 Duttile % D1	D2	D3	C43 Media
151161	C	P	L	KV 450		5	J	- 20	68	65	66	66				

D01 Controllo marcatura,identificazione,aspetto superficiale,forma e dimensioni : Soddisfacente
Control of marking,identification,surface appearance,shape and dimensional properties: OK
Z01 Si certifica che il materiale è conforme alle condizioni dell'ordine.
We hereby certify that the material complies with the terms of the order.

C01 Posizione di prelievo Sample location
nella lunghezza : Respect to Length :
nello spessore : Respect to Thickness :
T = Testa
C = Centro
P = Piede
P = Pelle
2 = Centro spessore
3 = 1/3 spessore
4 = 1/4 spessore
5 = 1mm dalla superficie
R = 2mm dalla superficie
T = 3mm dalla superficie
1 = Pieno spessore

C02 Senso di prelievo Testing direction
L = Longitudinale
T = Trasversale
Q = Spessore
D = Diagonale

C10 Forma del provino Shape of the test piece
P = Prismatico
C = Cilindrico

Z05 CERTIFICAZIONI DEL SISTEMA DI GESTIONE - MS CERTIFICATIONS
Sistema di gestione certificato secondo:
ISO 9001 – IATF 16949 – ISO/TS 29001 – ISO 14001 – ISO 45001

Z04 Marchio CE
CE 1608
Acciaierie d'Italia S.p.A.
Via Appia Km648, I-74123 TARANTO (ITALIA)
06
1608-CPR-P188
EN 10025-1 : 2004
Lamiera S355J2+N EN 10025-2 / 1.0577
Intesa per l'utilizzo in strutture saldate, bullonate e chiodate
Tolleranze dimensionali e di forma:
Allungamento:
Carico di Rottura:
Carico di Snervamento:
Energia di Resilienza:
Saldabilità (CEV):
Durata:(composizione chimica):
Come indicato nel DoP L0049720
http://54.36.88.47/pdf/1L0049720.pdf

Z03 Timbro dell'Ente Ispettivo
Inspection Body Stamp

Z02.2 Validazione CQ
QC Validation
A. BUFFO Skt 04972

1L0049720P AQV001I

GALPERTI TECH FORGED PRODUCTS S.p.A.
Capitale Sociale € 7.000.000,00 interamente versato
Sede legale e Amministrativa:
23823 COLICO (LC) - Via Ombriano, 14
C.C.I.A.A Lecco n. 03800290136 – R.E.A. 326757
C.F. 03800290136 - P.IVA IT03800290136
Tel. 0341-930186 - Fax 0341-930252
E-mail: galptech@galptech.com - www.galperti.com

The Original

LISTING OF ITEMS & QTY READY FOR INSPECTION

CLIENT: REMAZEL ENGINEERING SPA
PO: 24004009
GALPERTI JOB: 240413
TYPE OF MTC: 3.1
REMAZEL JOB No.: 24-27012
PROJECT: Davit Crane

Item	Description	Quantity	S/A ***	Material	Heat/Test	Certif.
001/001 0003	AN ANELLI					
	DE : 979,00 DI : 809,00 H : 70,00					
	MAT: 42CRMO4 MPS: 602					
	ST : BONIFICATO					
	(BON)					
	NCR:	1	S	ISO683-2 42CRMO4	145018/56A	24/006307
001/001 0006	AN ANELLI					
	DE : 811,00 DI : 684,00 H : 63,00					
	MAT: 42CRMO4 MPS: 602					
	ST : BONIFICATO					
	(BON)					
	NCR:	1	S	ISO683-2 42CRMO4	145018/56A	24/006308

*** S = BALANCE A = PARTIAL

21-11-2024
FRANCO CORBELLINI
QBQ
CROSSWIND

REMAZEL
Ziber
☐W ☒R

GALPERTI TECH FORGED PRODUCTS S.p.A.
Capitale Sociale € 7.000.000,00 interamente versato
23823 COLICO (LC) - Via Ombriano, 14 - Tel. 0341-930186 - Fax 0341-930252
C.C.I.A.A Lecco n. 03800290136 – R.E.A. 326757 - C.F. 03800290136 - P.IVA IT03800290136
E-mail: galptech@galptech.com - www.galperti.com

SPETT.LE / MESSRS:
REMAZEL ENGINEERING SPA

VIA CARLO OTTAVIO CORNAGGIA 10
20123 MILANO

CERTIFICATO DI COLLAUDO EN 10204
TEST CERTIFICATE EN 10204
3.1

NS.ORDINE / INTERNAL JOB
240413

Fax Original

CERTIFICATO / TEST CERTIFICATE N.	DATA / DATE	VS.ORDINE / YOUR P.O	DATA / DATE
006307/1	04/11/2024	24004009	01/07/2024

POS / ITEM	DESCRIZIONE / DESCRIPTION	QUANTITA' QUANTITY	S/A	MATERIALE / MATERIAL	N° COLATA / PROVA HEAT N°/TEST N°	ACCIAIERIA STEEL MILL	#
001/001	AN 979,00 x 809,00 x 70,00 006-0006-C0123 RALLA A SFERE A DENTATURA INTERNA M10 Z94 ANELLO ESTERNO D.884 (N.32 FORI D.26) COMMESSA 24-27012	1	S	ISO683-2 42CRMO4	145018/56A	TRAVI E PROFIL.	A

ANALISI CHIMICA / CHEMICAL ANALYSIS

#		C %	MN %	SI %	P %	S %	CR %	NI %	MO %	CU %	V %	SN %	AL %	NB %	TI %	N %	CO%	B %	H %
A	L	0,420	0,820	0,250	0,010	0,001	0,990	0,150	0,190	0,230	0,005	0,010	0,024	0,001	0,003	0,005	0,012	0,0003	0,0000
A	C	0,430	0,830	0,263	0,012	0,003	1,000	0,153	0,199	0,250	0,005	0,010	0,024	0,001	0,003	0,005	0,012	0,0003	0,0000

NOTE / NOTES

L = ANALISI COLATA / LADLE ANALYSIS
C = ANALISI DI PRODOTTO / CHECK ANALYSIS

CARATTERISTICHE MECCANICHE / MECHANICAL PROPERTIES

#		TRAZIONE / TENSILE									RESILIENZA / CHARPY TEST			
		TIPO TYPE	DIAMETRO DIAMETER mm.	SEZIONE AREA mm2.	LUNGHEZZA LENGHT mm.	TEMP. TEMPERATURE C	ROTTURA TENSILE Mpa	SNERVAMENTO YIELD Mpa	ALL. ELONG %	CONTR. REDUCT. %	TIPO TYPE KV	TEMP. TEMP. C	VALORI VALUES Joule	DUREZZA HARDNESS HB
A	S		12,50	122,70	50,00	20	835	600	15,0	55,0		-20	Min. 27 Avg. 42	Min. 260
A	O		12,50	122,70	50,00	20	937	756	19,5	61,2		-20	73 - 70 - 69	312-315

NOTE / NOTES

O = OTTENUTE / OBTAINED
S = STANDARD

#	TRATTAMENTI TERMICI / HEAT TREATMENTS
A	Quenched at 850 Dgr.C for 30min/inch minimum. Cooling in water
A	Tempered at 600 Dgr.C for 60min/inch minimum. Cooling in still air

21-11-2024
FRANCO CORBELLINI
QBQ
CROSSWIND R

NOTE GENERALI / GENERAL NOTES

FINITURE / ROUGHNESS

STANDARD

NOTE / NOTES
Sample for Mechanical Test taken as per 240413-MPS-42CM4 Rev.0
Material according to 240413-MPS-42CM4 Rev.0 & DNV-ST-0378
Forging reduction ratio: 4:1 minimum

REMAZEL
Ziber
W R

MARCHIO DI FABBRICA TRADE MARK	DATA COLLAUDO INT. INT. INSPECT DATE	COLLAUDATORE INT. INT. INSPECTOR
	04/11/2024	ACQUISTAPACE

ENTE UFFICIALE DI COLLAUDO
INSPECTION AUTHORITY

GALPERTI TECH FORGED PRODUCTS S.p.A.
Capitale Sociale € 7.000.000,00 interamente versato
23823 COLICO (LC) - Via Ombriano, 14 - Tel. 0341-930186 - Fax 0341-930252
C.C.I.A.A Lecco n. 03800290136 – R.E.A. 326757 - C.F. 03800290136 - P.IVA IT03800290136
E-mail: galptech@galptech.com - www.galperti.com

SPETT.LE / MESSRS:
REMAZEL ENGINEERING SPA

VIA CARLO OTTAVIO CORNAGGIA 10
20123 MILANO

CERTIFICATO DI COLLAUDO EN 10204
TEST CERTIFICATE EN 10204
3.1

NS.ORDINE / INTERNAL JOB
240413

Fac Originale

CERTIFICATO / M.T.CERTIFICATE N.	DATA / DATE	VS.ORDINE / YOUR P.O.	DATA / DATE
006308/1	04/11/2024	24004009	01/07/2024

POS / ITEM	DESCRIZIONE / DESCRIPTION	QUANTITA' QUANTITY	S/A	MATERIALE / MATERIAL	N° COLATA / PROVA HEAT N°/TEST N°	ACCIAIERIA STEEL MILL	#
001/001	AN 811,00 x 684,00 x 63,00 006-0006-C0123 RALLA A SFERE A DENTATURA INTERNA M10 Z94 ANELLO ESTERNO D.884 (N.32 FORI D.26) COMMESSA 24-27012	1	S	ISO683-2 42CRMO4	145018/56A	TRAVI E PROFIL.	A

ANALISI CHIMICA / CHEMICAL ANALYSIS

#		C %	MN %	SI %	P %	S %	CR %	NI %	MO %	CU %	V %	SN %	AL %	NB %	TI %	N %	CO%	B %	H %
A	L	0,420	0,820	0,250	0,010	0,001	0,990	0,150	0,190	0,230	0,005	0,010	0,024	0,001	0,003	0,005	0,012	0,0003	0,0000
A	C	0,430	0,830	0,263	0,012	0,003	1,000	0,153	0,199	0,250	0,005	0,010	0,024	0,001	0,003	0,005	0,012	0,0003	0,0000

NOTE / NOTES

L = ANALISI COLATA / LADLE ANALYSIS
C = ANALISI DI PRODOTTO / CHECK ANALYSIS

CARATTERISTICHE MECCANICHE / MECHANICAL PROPERTIES

#		TRAZIONE / TENSILE								RESILIENZA / CHARPY TEST			
		TIPO TYPE	DIAMETRO DIAMETER mm.	SEZIONE AREA mm2.	LUNGHEZZA LENGHT mm.	TEMP. TEMPERATURE C	ROTTURA TENSILE Mpa	SNERVAMENTO YIELD Mpa	ALL. ELONG %	CONTR. REDUCT. %	TIPO TYPE KV	TEMP. TEMP. C	VALORI VALUES Joule	DUREZZA HARDNESS HB
A	S		12,50	122,70	50,00	20	835	600	15,0	55,0		-20	Min. 27 Avg. 42	Min. 260
A	O		12,50	122,70	50,00	20	937	756	19,5	61,2		-20	73 - 70 - 69	312-315

NOTE / NOTES

O = OTTENUTE / OBTAINED
S = STANDARD

#	TRATTAMENTI TERMICI / HEAT TREATMENTS	NOTE GENERALI / GENERAL NOTES
A	Quenched at 850 Dgr.C for 30min/inch minimum. Cooling in water	FINITURE / ROUGHNESS
A	Tempered at 600 Dgr.C for 60min/inch minimum. Cooling in still air	STANDARD

21-11-2024
FRANCO CORBELLINI
QDQ
CROSSWIND R

NOTE / NOTES
Sample for Mechanical Test taken as per 240413-MPS-42CM4 Rev.0
Material according to 240413-MPS-42CM4 Rev.0 & DNV-ST-0378
Forging reduction ratio: 4:1 minimum

MARCHIO DI FABBRICA TRADE MARK	DATA COLLAUDO INT. INT. INSPECT DATE	COLLAUDATORE INT. INT. INSPECTOR
	04/11/2024	ACQUISTAPACE

REMAZEL
C. Zilber
DW DR

ENTE UFFICIALE DI COLLAUDO
INSPECTION AUTHORITY

File: 1724001010-QC-DB-00004 Rev.04

Duferco
TRAVI E PROFILATI

TRAVI E PROFILATI DI PALLANZENO S.p.A.
SOCIETÀ A SOCIO UNICO
SEDE LEGALE
VIA SEMPIONE, 7 – 28884 PALLANZENO (VB)
TEL. 03245011 – FAX. 032452705
PARTITA IVA IT 01910110038
CODICE FISCALE 01910110038
R.E.A. V.C.O. 191072 – REGISTRO IMPRESE (VB) N. 01910110038
CAPITALE SOCIALE € 30.000.000 I.V.
SEDE AMMINISTRATIVA
VIA A.DIAZ, 248 – 25010 SAN ZENO NAVIGLIO (BS)
STABILIMENTO DI SAN ZENO NAVIGLIO
VIA A. DIAZ, 248 - 25010 SAN ZENO NAVIGLIO (BS)
TELEFONO +3903021691 - FAX +390302867598

Azienda certificata
ISO 9001:2015
ISO 14001:2015
ISO 45001:2018

CERTIFICATO DI CONTROLLO / INSPECTION CERTIFICATE

Numero/ Number 145018/831 /24 Data/Date 31/05/24

Norma / Standard Norma EN 10204 3.1:2004

MATERIALE CONFORME ALL'ORDINE / MATERIAL COMPLIANT TO

DDT N. / Delivery note 831 Data/Date 31/05/24

Ns Ordine N. / Our Order 44/43

Ordine Cliente N./Customer PO G240097

CLIENTE / CUSTOMER

OFF.NICOLA GALPERTI & FIGLIO SPA

VIA E.FERMI 46

23824 DERVIO LC

Destinazione/Delivery location
CERCINO

COLATA n. / HEAT n.
145018

Identificazione / Identification
DOPP.FACC.RAL1003+9005+6000

Specifica cliente / Customer's Specification
MPS 33 REV.8

Prodotto / Product
Ø 280 mm

Lunghezza / Lenght (m)	Pezzi / Pieces	Massa / Mass (ton)
6,00	7	20,664

Stato di Fornitura / Delivery condition
AS CAST

Qualità acciaio / Steel grade
42CrMo4

ACCIAIO PRODOTTO IN EAF-LF-(VD) - COLATA CONTINUA - MATERIALE ESENTE DA RADIOATTIVITA'(max 0,1 Bq/g) E DA Hg (max 0,1%) - TRATTAMENTO ARGON IN SIVIERA / STEEL PRODUCTED BY EAF-LF-(VD) - CONTINUOUS CASTING - RADIOACTIVITY FREE (max 0,1 Bq/g) AND Hg FREE (n 0,1%) - ARGON STIRRING IN LADLE FURNACE

Chemical Composition %	C	Mn	Si	P	S	Al	Cu	N	Cr	Ni	Mo	V	Nb	Sn	Ti	B	Ca	Co	H2(ppm)
	0,42	0,82	0,25	0,010	0,001	0,024	0,23	0,005	0,99	0,15	0,19	0,005	0,001	0,010	0,003	0,0003	0,0010	0,012	< 2,5

REMAZEL C. Elber

JOMINY test	1/16"	1	2	3	4	6	7	8	9	12	16	20	22	26	28	32
	mm	1,5	3	5	7	9	11	13	15	20	25	30	35	40	45	50
	HRC	57,4	57,4	57,4	57,4	57,0	56,4	55,2	54,1	50,3	47,6	46,1	43,7	42,8	41,1	40,3

GALPERTI TECH FORGED PRODUCTS
STATUS:
☑ APPROVED
☐ NOT APPROVED

Q.A.
STATUS
APPROVED
NOT APPROVED

LIVELLO INCLUSIONALE / INCLUSIONAL LEVEL
ASTM E45/A

	A	B	C	D
T	1,0	0,0	0,0	1,0
H	1,0	0,0	0,0	0,5

AUSTENITIC GRAIN
UNIENISO 643
Dimensione/Size
8

Assenza di riparazioni mediante saldatura/No repairs by welding.

Trattamento Sottovuoto/Vacuum Degassed.

21-11-2024

FRANCO CORBELLINI
QBQ
CROSSWIND R

Quality Control Product
Samuele Bottari

REMAZEL	CERTIFICATION LIST	Certificate Nr.: 1 Date: 23/09/2024

Final Customer:	Order Customer:	Object:	Description:	Quantity:	Inspection and Test Plan (ITP):	Our job:
ROSETTI MARINO	24005170	BOOM + TROLLEY	C09-0001-P0004 Rev.D & C09-0001-P0006 Rev.C		1724001010-QC-ITP-00002	24-27012

MATERIAL

Drawing	Pos.	Q.ty	Description	Material	Certificates 3.1	Manufacturer	Heat/Plate ID	Additional Mechanical Test	UT Certificates	Nesting
C09-0001-P004_REV.C	24	1	Sheet 5 mm	S355 J2+N	23C227	730/0291248	730324314			
C09-0001-P004_REV.C	12	1	Sheet 6 mm	S355 J2+N	24C077	1003494977	410436			
C09-0001-P004_REV.C	13	1	Sheet 10 mm	S355 J2+N	21T018	496293	1628104			
C09-0001-P004_REV.C	1	2	Sheet 8mm	S355 J2+N	24T003	709265 5352 001	487237			L54439
C09-0001-P004_REV.C	16	1	Sheet 8mm	S355 J2+N	24T003	709265 5352 001	487237			L54439
C09-0001-P004_REV.C	17	1	Sheet 8mm	S355 J2+N	24T003	709265 5352 001	487237			L54439
C09-0001-P004_REV.C	18	1	Sheet 8mm	S355 J2+N	24T003	709265 5352 001	487237			L54439
C09-0001-P004_REV.C	23	1	Sheet 8mm	S355 J2+N	24T003	709265 5352 001	487237			L54439
C09-0001-P004_REV.C	11	2	Sheet 10 mm	S355 J2+N	21T018	496293	1628104			
C09-0001-P004_REV.C	20	1	Sheet 10 mm	S355 J2+N	21T018	496293	1628104			
C09-0001-P004_REV.C	21	1	Sheet 10 mm	S355 J2+N	21T018	496293	1628104			
C09-0001-P004_REV.C	10	2	Sheet 12 mm	S355 J2+N	24T176	230412-FP01KS-0011A1-	SU99873			
C09-0001-P006_REV.A	2	4	Sheet 12 mm	S355 J2+N	24T176	230412-FP01KS-0011A1-	SU99873			
C09-0001-P004_REV.C	2	2	Sheet 15 mm	S355 J2+N	24T169	HPL/TC/D/2010/18044	Q20592			L54443
C09-0001-P004_REV.C	6	2	Sheet 15 mm	S355 J2+N	24T169	HPL/TC/D/2010/18044	Q20592			L54443
C09-0001-P004_REV.C	8	1	Sheet 15 mm	S355 J2+N	24T169	HPL/TC/D/2010/18044	Q20592			L54443
C09-0001-P004_REV.C	9	1	Sheet 15 mm	S355 J2+N	24T169	HPL/TC/D/2010/18044	Q20592			L54443
C09-0001-P004_REV.C	19	1	Sheet 15 mm	S355 J2+N	24T169	HPL/TC/D/2010/18044	Q20592			L54443
C09-0001-P004_REV.C	14	2	Sheet 15 mm	S355 J2+N	24T169	HPL/TC/D/2010/18044	Q20592			L54443

C09-0001-P006_REV.A	3	1	Sheet 15 mm	S355 J2+N	24T169	HPL/TC/D/2010/18044	Q20592			L54443
C09-0001-P006_REV.A	4	1	Sheet 15 mm	S355 J2+N	24T169	HPL/TC/D/2010/18044	Q20592			L54443
C09-0001-P006_REV.A	5	2	Sheet 15 mm	S355 J2+N	24T169	HPL/TC/D/2010/18044	Q20592			L54443
C09-0001-P006_REV.A	6	2	Sheet 15 mm	S355 J2+N	24T169	HPL/TC/D/2010/18044	Q20592			L54443
C09-0001-P006_REV.A	7	2	Sheet 15 mm	S355 J2+N	24T169	HPL/TC/D/2010/18044	Q20592			L54443
C09-0001-P006_REV.A	8	4	Sheet 15 mm	S355 J2+N	24T169	HPL/TC/D/2010/18044	Q20592			L54443
C09-0001-P004_REV.C	4	1	Sheet 20mm	S355 J2+N	24T194	HPL/TC/D/2010/19363	P24134			L54435
C09-0001-P004_REV.C	5	1	Sheet 20mm	S355 J2+N	24T194	HPL/TC/D/2010/19363	P24134			L54435
C09-0001-P006_REV.A	1	1	Sheet 30mm	S355 J2+N	19T081	107725	A1/02808469		SGP	
C09-0001-P004_REV.C	3	1	Sheet 50mm	S355 J2+N	20T409	20170910-PS-003-043	P38608		SGP	L54436
C09-0001-P004_REV.C	7	1	Sheet 10 mm	S355 J2+N	21T018	496293	1628104			
C09-0001-P004_REV.C	15	1	Sheet 10 mm	S355 J2+N	21T018	496293	1628104			
C09-0001-P004_REV.C	22	1	Sheet 10 mm	S355 J2+N	21T018	496293	1628104			

CERTIFICATO DI CONTROLLO 3.1 / INSPECTION CERTIFICATE 3.1 - EN 10204:2004

A04/A05

METINVEST
FERRIERA VALSIDER SPA

MANNI SIPRE
STEEL ENGINEERING
UFFICIO CERTIFICATI - COPIA INFORMATICA CONFORME ORIGINALE
NS. CONFERMA: 0000006104
RIF. ORDINE: AGG.ORD. B9000100 DE
DDT: 0000101575
PLACCA/COLATA: 201840072A

(A) PROCESSO DI ELABORAZIONE / STEELMAKING PROCESS: E = ELECTRIC ; BO = BASI
(B) STATO DI FORNITURA / DELIVERY CONDITION: AR = GREZZO DI LAMINAZIONE / AS
N* = LAMINAZIONE A TEMPERATURA CONTROLLATA / NORMALIZING ROLLING ;
N = NORMALIZZATO / NORMALIZED at 910°C, 1,5 min/mm ; ARIA CALMA / STILL AIR;
R = RICOTTO / ANNEALED;
N+R = NORMALIZZATO + RINVENUTO / NORMALIZED + ANNEALED ;
M = LAMINAZIONE TERMOMECCANICA / Thermomechanical rolling
(C) TRATTAMENTO TERMICO DEL CAMPIONE / HEAT TREATMENT OF SAMPLE:
N = 910°C, 1,5 min/mm ; ARIA CALMA / STILL AIR
R = 650°C, 1,5 min/mm ; ARIA CALMA / STILL AIR
(D) Ceq_1 = C + Mn/6 ; Ceq_2 = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15 ;
Pcm = C + Si/30 + (Mn + Cu + Cr)/20 + NI/60 + Mo/15 + V/10 + B*5
(1) POSIZIONE / LOCATION: 1 = TESTA / TOP ; 2 = PIEDE / BOTTOM
(2) POSIZIONE / LOCATION: C = CUORE / 1/2 THICKNESS ; P = PELLE / SURFACE ; D = 1/4 SPESSORE / THICKNESS
(3) DIREZIONE / DIRECTION: L = LONGITUDINALE / LONGITUDINAL ; T = TRASVERSALE / TRANSVERSE
(4) FORMA DEL PROVINO / SHAPE OF TEST PIECE: P = PRISMATICO / PRISMATIC ; C = CILINDRICO / CYLINDRICAL
(5) ESITO PROVA DI PIEGA / RESULT: OK = COMPLYING ; NO = NOT COMPLYING

A01 Società per azioni con socio unico soggetta a direzione e coordinamento di Metinvest B.V
Via Antonio Salieri, 36 · 37050 Vallese di Oppeano VR, Italy
Phone +39 045 7133311 · Fax +39 39 045 7133394
Cap. Soc. Euro 22.700.937,00 i.v. · P.IVA 03067420236
C.F. e Reg. Imp. n. 13120560159 · REA 306151/VR
http://valsider.metinvestholding.com

A03 N° Certificato / Certificate no.: 107725

Z02 Data / Date: 22/01/2019

A08 N° Ordine / Works order: 95185698

A07 N° Ordine cliente / Customer's order: AM1S000795

DDT: BOL 1900858

del / date: 21/01/2019

Pratica / File no.:

del / date:

B01/B02/B03

Prodotto / Product: Lamiere / Hot rolled plates

Qualità / Steel grade: S355J2+N

Normativa / Specification: EN 10025-2:2004

A06 Cliente / Customer

Manni Sipre S.P.A.
Via Righi 7
37135 VERONA
Italy

B06 Marcatura di prodotto / Marking of the product

PRODOTTO/ORDINE/N° INFORNAMENTO/DIMENSIONI/QUALITÀ/MARCHIO DEL PRODUTTORE
PRODUCT/ORDER/INTERNAL N°/DIMENSIONS/STEEL GRADE/MANUFACTURER'S MARK

B07 ITEM	B07 IDENTIFICATIVO PRODOTTO / PRODUCT ID	B16 COLATA / HEAT	B09/B11 DIMENSIONI [mm] / DIMENSIONS	B12 PESO TEORICO [t] / THEORICAL WEIGHT	B07 LOTTO / BATCH NO.	C70 PROCESSO ELAB. (A) / STEELMAKING PROCESS	B04 STATO FORNITURA (B) / DELIVERY CONDITION	C00 CAMPIONE / SAMPLE	B05 TRATT. CAMPIONE (C) / HEAT TREATMENT	C00 CAMPIONE PWHT / SAMPLE	B05 PWHT: TEMPERATURA INIZIO °C / BEGINNING TEMPERATURE	VELOCITA' RISCALDO C/h / HEATING RATE	TEMPERATURA TRATTAMENTO °C / TEMPERATURE TREATMENT	PERMANENZA Min / HOLDING TIME	VELOCITA' RAFFREDDAMENTO °C/h / COOLING RATE	TEMPERATURA FINE °C / END TEMPERATURE	N° CICLI / CYCLES	C00 CAMPIONE Q+T / SAMPLE	B05 Q+T: TEMPERATURA (Q) °C / TEMPERATURE	PERMANENZA (Q) Min / HOLDING TIME	RAFFREDDAMENTO / COOLING	TEMPERATURA (T) °C / TEMPERATURE	PERMANENZA (T) Min / HOLDING TIME	RAFFREDDAMENTO / COOLING
1	2018/39053A	A1/02808469	30.00X2450X12000	6,92	49946	BO	N*	[ZD580]																	
1	2018/39187A	A1/02808611	30.00X2450X12000	6,92	49944	BO	N*	[ZD583]																	
1	2018/39692A	A1/02810281	30.00X2450X12000	6,92	50047	BO	N*	[ZD635]																	
1	2018/40072A	A1/02808469	30.00X2450X12000	6,92	49176	BO	N*	[ZD033]		19T081															

C71/C92 COMPOSIZIONE CHIMICA DI COLATA / HEAT CHEMICAL ANALYSIS

B07 COLATA / HEAT	C71 C %	C72 Mn %	C73 Si %	C74 P %	C75 S %	C76 Cu %	C77 Ni %	C78 Cr %	C79 Mo %	C80 Al %	C81 V %	C82 Nb %	C83 Ti %	C84 Sn %	C85 Ca %	C86 N %	C87 B %	C88 H %	C89 Ceq1 % (D)	C90 Ceq2 % (D)	C91 Pcm % (D)
S355J2+N Min																					
S355J2+N Max	0,20	1,60	0,55	0,025	0,025	0,550															
A1/02808469	0,16	1,48	0,22	0,010	0,003	0,060	0,040	0,040	0,01	0,033	0,005	0,023	0,005			0,0060	0,0005	0,0003	0,41	0,42	0,25
A1/02808611	0,17	1,53	0,30	0,011	0,002	0,040	0,020	0,040	0,01	0,038	0,005	0,022	0,005			0,0070	0,0005	0,0002	0,43	0,44	0,26
A1/02810281	0,17	1,46	0,27	0,014	0,002	0,040	0,020	0,030	0,01	0,035	0,005	0,023	0,005			0,0070	0,0005	0,0002	0,41	0,43	0,26

C00 CAMPIONE / SAMPLE	C01 SPESSORE PRODOTTO / PRODUCT THICKNESS	C01 POSIZIONE (1) / LOCATION	PROVA DI TRAZIONE / TENSILE TEST: C01 POSIZIONE (2) / LOCATION	C02 DIREZIONE (3) / ORIENTATION	C03 TEMPERATURA [°C] / TEST TEMPERATURE	C11 ReH [Mpa] / YIELD STRENGTH	C12 Rm [Mpa] / TENSILE STRENGTH	ReH/Rm	C13 A% / ELONGATION	C14 Rp 0,2 [Mpa] / PROOF STRENGTH	C10 FORMA PROVINO (4) / SHAPE OF TEST PIECE	PROVA DI RESILIENZA / IMPACT TEST - CHARPY V-NOTCH TEST: C41 LARGHEZZA [mm] / WIDTH	C02 DIREZIONE (3) / ORIENTATION	C03 TEMPERATURA [°C] / TEST TEMPERATURE	C01 POSIZIONE (2) / LOCATION	C42 INDIVIDUAL VALUES [J]	C43 MEDIA [J] / MEAN VALUE SINGOLI VALORI	PROVA DI PIEGA / BEND TEST: C02 DIREZIONE (3) / ORIENTATION	C51 MANDRINO [mm] / MANDREL	C52 ANGOLO [°] / ANGLE	C50 ESITO (5) / RESULT	PROVA DI DUREZZA / HARDNESS TEST: C01 POSIZIONE (2) / LOCATION	C30 METODO / TEST METHOD	C31 SINGOLI VALORI / INDIVIDUAL VALUES	C32 MEDIA / MEAN VALUE	PROVA DI STRIZIONE Z% TEST: C53 Z% INDIVIDUAL VALUES	C54 Z% SINGOLI VALORI / Z% MEAN VALUE	Z% VALORE MEDIO
S355J2+N Min 16.10 - 40.00													L	-20		27	0												
S355J2+N Min 16.10 - 40.00					20	345	470		20																				
S355J2+N Max 16.10 - 40.00					20	630	630																						

			PROVA DI TRAZIONE TENSILE TEST									PROVA DI RESILIENZA IMPACT TEST - CHARPY V-NOTCH TEST						PROVA DI PIEGA BEND TEST				PROVA DI DUREZZA HARDNESS TEST				PROVA DI STRIZIONE Z% TEST	
C00		C01	C01	C02	C03	C11	C12		C13	C14	C10	C41	C02	C03	C01	C42	C43	C02	C51	C52	C50	C01	C30	C31	C32	C53	C54
CAMPIONE SAMPLE	SPESSORE PRODOTTO PRODUCT THICKNESS	POSIZIONE (1) LOCATION	POSIZIONE (2) LOCATION	DIREZIONE (3) ORIENTATION	TEMPERATURA [°C] TEST TEMPERATURE	ReH [Mpa] YIELD STRENGTH	Rm [Mpa] TENSILE STRENGTH	ReH/Rm	A% ELONGATION	Rp 0,2 [Mpa] PROOF STRENGTH	FORMA PROVINO (4) SHAPE OF TEST PIECE	LARGHEZZA [mm] WIDTH	DIREZIONE (3) ORIENTATION	TEMPERATURA [°C] TEST TEMPERATURE	POSIZIONE (2) LOCATION	[J] INDIVIDUAL VALUES	MEDIA [J] SINGOLI VALORI MEAN VALUE	DIREZIONE (3) ORIENTATION	MANDREL MANDRINO [mm]	ANGOLO [°] ANGLE	ESITO (5) RESULT	POSIZIONE (2) LOCATION	METODO TEST METHOD	SINGOLI VALORI INDIVIDUAL VALUES	MEDIA MEAN VALUE	Z% INDIVIDUAL VALUES	Z% VALORE MEDIO Z% MEAN VALUE
ZD033	30,00	2	P	T	20	435	571	0,76	37		P	10,00	L	-20	P	175 176 166	173										
ZD580	30,00	2	P	T	20	416	570	0,73	34		P	10,00	L	-20	P	182 154 159	165										
ZD583	30,00	2	P	T	20	408	556	0,73	27		P	10,00	L	-20	P	156 173 169	166										
ZD635	30,00	2	P	T	20	418	544	0,77	78		P	10,00	L	-20	P	179 153 166	166										

C10

UNI EN ISO 6892-1:2009/ UNI EN ISO 148-1:2011

Z01

ITEM		TOLLERANZA DI SPESSORE TOLERANCE ON THICKNESS	TOLLERANZE DI LARGHEZZA TOLERANCE ON WIDTH	TOLLERANZE DI LUNGHEZZA TOLERANCE ON LENGTH	CONDIZIONI SUPERFICIALI SURFACE FINISH	PLANARITÀ FLATNESS
1		EN 10029:2010 CL.A	-0+100 MM	-0+200 MM	EN 10163/2:2004 CL A1	EN 10029:2010 CL. N

CERTIFICHIAMO che i prodotti elencati sono conformi alla prescrizione dell'ordine, che i controlli della marcatura, dell'aspetto superficiale e dimensionale hanno dato esito positivo.
WE CERTIFY that the above mentioned products are consistent with the order prescriptions: marking, inspection and measurement without objection.
DICHIARIAMO CHE I PRODOTTI SONO STATI CONTROLLATI IN ACCORDO ALLA NORMATIVA VIGENTE E CHE LE RADIAZIONI IONIZZANTI NON ECCEDONO IL VALORE DEL FONDO NATURALE.
WE DECLARE THAT THE PRODUCTS WERE CONTROLLED ACCORDING TO STANDARD AND RADIATION DO NOT EXCEED THE NATURAL RADIATION.

Z06

Z07	Z03 ENTE COLLAUDO / INSPECTION BODY	Z02
	TIMBRO DELL'ISPETTORE STAMP OF THE INSPECTION REPRESENTATIVE	Valsider CONTROLLO QUALITÀ

Z04	
CE 0948	**Prodotti conformi ai requisiti della marcatura CE. Certificato di conformità CE n° 0948-CPR-0015 emesso da TÜV Italia srl .** **Products in compliance with CE marking requirements. Certificate of conformity N° 0948-CPR-0015 from TÜV Italia srl.**

CERTIFICAZIONE DI SISTEMA QUALITÀ DNV·GL ISO 9001

AZIENDA CON SISTEMA DI GESTIONE QUALITÀ CERTIFICATO DA DNV GL = ISO 9001 =

Certificazione valida per materiale fornitoVi con ns. DDT nr. C4001380 del 23/09/2024 relativo a:

PZ. 1 PARTICOLARE: C09-0001-P006_REV.A SP. 30mm
POS. 1
RIF. VS. ORD. 24005170 DEL 11/09/2024
RIF. VS. COMM. 24-27012

METINVEST
FERRIERA VALSIDER SPA

Ferrirera Valsider SPA
Via Antonio Salieri, 36
37050 Vallese di Oppeano VR, Italy
Phone +39 045 7133311
Fax +39 39 045 7133394
http://valsider.metinvestholding.com

DICHIARAZIONE DI PRESTAZIONE (Reg. UE N. 305/2011)

N.S355-2

Il sottoscritto Viktor Dembytskyy, rappresentante il produttore:
Ferriera Valsider spa
Via Antonio Salieri , 36 - 37050 - vallese di Oppeano (VR)
nello stabilimento produttivo di:
Via Antonio Salieri , 36 - 37050 - vallese di Oppeano (VR)
Dichiara qui di seguito che i prodotti:
Prodotti piani laminati a caldo in acciaio secondo EN10025-1:2004.

DECLARATION OF PERFORMANCE (Reg . UE N. 305/2011)

N.S355-2

I, the undersigned, Viktor Dembytskyy, ,representing the manufacturer:
Ferriera Valsider spa
Via Antonio Salieri , 36 - 37050 - vallese di Oppeano (VR)
the production site:
Via Antonio Salieri , 36 - 37050 - vallese di Oppeano (VR)
Hereby declares that the products: Hot-rolled flat products of steel according to EN10025-1: 2004.
Hot-rolled flat products of steel according to EN10025-1: 2004.

Qualità / Steel grade	Normativa / Specification
S355J2C+N+Z25	EN 10025-2:2004
S355JR+AR	EN 10025-2:2004
S355JR+N	EN 10025-2:2004
S355K2+AR	EN 10025-2:2004
S355K2+N	EN 10025-2:2004
S355K2+N+Z15	EN 10025-2:2004
S355K2+N+Z25	EN 10025-2:2004
S355K2+N+Z35	EN 10025-2:2004
S355K2C+N	EN 10025-2:2004
S355J0+AR	EN 10025-2:2004
S355J0+AR+Z25	EN 10025-2:2004
S355J0+N	EN 10025-2:2004
S355J0+N+Z35	EN 10025-2:2004
S355J0C+AR	EN 10025-2:2004
S355J0C+N	EN 10025-2:2004
S355J2+AR	EN 10025-2:2004
S355J2+N	EN 10025-2:2004
S355J2+N+Z15	EN 10025-2:2004
S355J2+N+Z25	EN 10025-2:2004
S355J2+N+Z35	EN 10025-2:2004
S355J2C+N	EN 10025-2:2004

Tipo prodotto / Product type	Qualità / Steel grade	Codice identificativo univoco prodotto/ Unique product identifier code	Numero interno/ Internal number	Specifica tecnica armonizzata / Harmonized techical specification
Lamiera/Plate	S355J2+N	2018/39053A	1839053	EN10025-1:2004
Lamiera/Plate	S355J2+N	2018/39187A	1839187	EN10025-1:2004
Lamiera/Plate	S355J2+N	2018/39692A	1839692	EN10025-1:2004
Lamiera/Plate	S355J2+N	2018/40072A	1840072	EN10025-1:2004

Che i prodotti specificati nel presente documento sono destinati ad essere utilizzati nelle strutture saldate, bullonate e chiodate.

Che i prodotti specificati nel presente documento presentano le seguenti caratteristiche essenziali e prestazioni:

The products specified in this document are intended to be used in metal structures or mixed metal and concrete structures.

The products specified in this document have the following essential features and performance:

Caratteristiche Essenziali / Essential features	Prestazione / Performance	Norma Armonizzata / Harmonized specification
Tolleranze dimensionali e forma /Tollerance on dimensions and shape	Conforme / Compliance	EN10025-1:2004
Allungamento /Elongation	Conforme / Compliance	EN10025-1:2004
Resistenza a Trazione/Tensile Strength	Conforme / Compliance	EN10025-1:2004
Carico Unitario snervamento/Yield Strength	Conforme / Compliance	EN10025-1:2004
Resilienza/Impact	Conforme / Compliance	EN10025-1:2004
Saldabilità/Weldability	Conforme / Compliance	EN10025-1:2004
Durabilità/Durability	NPD	
Sostanza Regolamentata/Regulated substance	NPD	

Si dichiara inoltre che l'organismo notificato, TÜV Italia [N. 0948] ha effettuato:
- ispezione iniziale dello stabilimento e del controllo della produzione in fabbrica
- sorveglianza, valutazione e verifica continua del controllo della produzione in fabbrica

secondo il sistema di valutazione e verifica della costanza della prestazione 2+ ed ha rilasciato il certificato di controllo della produzione in fabbrica numero 0948-CPR-0015

It also states that the notified body, TÜV Italia [N. 0948], carried out:
- Initial inspection of factory and of factory production control
- Monitoring, evaluation and continuous assessment of factory production control

according to the system of assessment and verification of constancy of performance 2 + and released the certificate of factory production control number 0948-CPR-0015

CE 0948

Lamiere conformi ai requisiti della marcatura CE. Certificato di conformità CE n° 0948-CPR-0015 emesso da TÜV Italia srl . Plates in compliance with CE marking requirements. Certificate of conformity N° 0948-CPR-0015 from TÜV Italia srl.

Si rilascia la presente dichiarazione di prestazione sotto la responsabilità esclusiva del fabbricante

This declaration of performance is made under the sole responsibility of the manufacturer

Vallese di Oppeano,

22/01/2019

Viktor Dembytskyy

Managing Director
Ferriera Valsider s.p.a.
Metinvest Group

posco

Mill Test Certificate

Certificate No. : 230412-FP01KS-0011A1-0003
Date of Issue : Apr., 17, 2023

Order No. : 01S6041044
PO No. : 2302-23021 (23021)
Supplier :
Commodity : PLATE
Customer :
Spec & Type : EN10025-2 S355J2+NR

Size	Product No.	Quantity	Weight (kg)	Heat No.	Position	Tensile Test YP (MPa)	Tensile Test TS (MPa)	Tensile Test EL (%)	Impact Test V Notch -20 °C Energy (Joule)	Division	Chemical Composition C (%)	Si (%)	Mn (%)	P (%)	S (%)	Cr (%)	Ni (%)	B (ppm)	Cu (%)	Mo (%)	N (ppm)	Nb (%)	Ti (%)	V (%)
12x2500x12000	PP35062501-2504	4	11,304	SU99872	T	444	562	25	1: 157 2: 120 3: 136 A: 138	L P	0.1493 0.1457	0.203 0.193	1.517 1.528	0.0084 0.0071	0.0028 0.0028	0.020 0.039	0.020 0.017	2 1	0.019 0.020	0.005 0.004	36 33	0.024 0.024	0.0129 0.0124	0.001 0.002
12x2500x12000	PP35062201-2204	4	11,304	SU99872	T	450	564	27	1: 256 2: 216 3: 270 A: 247	L P	0.1493 0.1457	0.203 0.193	1.517 1.528	0.0084 0.0071	0.0028 0.0028	0.020 0.039	0.020 0.017	2 1	0.019 0.020	0.005 0.004	36 33	0.024 0.024	0.0129 0.0124	0.001 0.002
~~12x2500x12000~~	~~PP35099301-9304~~	~~4~~	~~11,304~~	~~SU99873~~	T	445	564	29	1: 117 2: 178 3: 127 A: 141	L P	0.1480 0.1490	0.199 0.195	1.530 1.536	0.0067 0.0074	0.0024 0.0031	0.042 0.037	0.020 0.014	1 1	0.020 0.020	0.004 0.004	38 35	0.026 0.024	0.0129 0.0122	0.002 0.002
12x2500x12000	PP35099401-9404 24T176	~~4~~ 1	11,304	SU99873	T	445	564	29	1: 117 2: 178 3: 127 A: 141	L P	0.1480 0.1490	0.199 0.195	1.530 1.536	0.0067 0.0074	0.0024 0.0031	0.042 0.037	0.020 0.014	1 1	0.020 0.020	0.004 0.004	38 35	0.026 0.024	0.0129 0.0122	0.002 0.002
~~12x2500x12000~~	~~PP35099501-9504~~	~~4~~	~~11,304~~	~~SU99873~~	T	445	564	29	1: 117 2: 178 3: 127 A: 141	L P	0.1480 0.1490	0.199 0.195	1.530 1.536	0.0067 0.0074	0.0024 0.0031	0.042 0.037	0.020 0.014	1 1	0.020 0.020	0.004 0.004	38 35	0.026 0.024	0.0129 0.0122	0.002 0.002
~~12x2500x12000~~	~~PP35099601-9604~~	~~4~~	~~11,304~~	~~SU99873~~	T	449	572	30	1: 178 2: 77 3: 204 A: 153	L P	0.1480 0.1490	0.199 0.195	1.530 1.536	0.0067 0.0074	0.0024 0.0031	0.042 0.037	0.020 0.014	1 1	0.020 0.020	0.004 0.004	38 35	0.026 0.024	0.0129 0.0122	0.002 0.002

CE EN10025-2 S355J2
2814

* Position - T : Top, M : Middle, B : Bottom
* Tensile Test. Direction : Transversal, Gauge Length : 5.65 $\sqrt{A_o}$ (Rectangular), YP Method : Upper Point
* Impact Test. Direction : Surface Longitudinal, Full-Size : 10 mmX10 mm
* Division - L : Ladle Analysis, P : Products Analysis
* Supply Condition : As-Rolled unless otherwise Heat Treated.

This material has been fully killed and made by basic oxygen process. This material is fine grained steel.
This material has been made by vacuum degassing process.
No repair welding was performed to the products. Test Certificate is issued according to ISO 10474/EN 10204 3.1.
We hereby certify that the material herein has been made in accordance with the order and above specification.

Legal sanction can be imposed on forging. Improper use of product can cause safety issues.

Surveyor To :

Park, Junyoung

posco

Mill Test Certificate

Certificate No. : 230412-FP01KS-0011A1-0003
Date of Issue : Apr., 17, 2023

Order No. : 01S6041044
PO No. : 2302-23021 (23021)
Supplier :
Commodity : PLATE
Customer :
Spec & Type : EN10025-2 S355J2+NR

Product No.	Division	Sol-Al (%)	CEQ (%)
PP35062501-2504	L	0.032	0.41
	P	0.031	
PP35062201-2204	L	0.032	0.41
	P	0.031	
PP35099301-9304	L	0.030	0.42
	P	0.033	
PP35099401-9404	L	0.030	0.42
	P	0.033	
PP35099501-9504	L	0.030	0.42
	P	0.033	
PP35099001-9004	L	0.030	0.42
	P	0.033	

Certificazione valida per materiale fornitoVi con ns. DDT nr. C4001380 del 23/09/2024 relativo a:

PZ. 2 PARTICOLARE: C09-0001-P004_REV.C SP. 12mm POS. 10
PZ. 4 PARTICOLARE: C09-0001-P006_REV.A SP. 12mm POS. 2
RIF. VS. ORD. 24005170 DEL 11/09/2024
RIF. VS. COMM. 24-27012

CE EN10025-2 S355J2
2814

This material has been fully killed and made by basic oxygen process. This material is fine grained steel.
This material has been made by vacuum degassing process.
No repair welding was performed to the products. Test Certificate is issued according to ISO 10474/EN 10204 3.1.
We hereby certify that the material herein has been made in accordance with the order and above specification.

Legal sanction can be imposed on forging. Improper use of product can cause safety issues.

Surveyor To :

Park, Junyoung

posco

CE marking information

Certificate No. : 230412-FP01KS-0011A1-0003
Date of Issue : Apr., 17, 2023

Order No. : 01S6041044
PO No. : 2302-23021 (23021)
Supplier :
Commodity : PLATE
Customer :
Spec & Type : EN10025-2 S355J2+NR

Product No.	CE 2814	POSCO Co., Ltd - Gwangyang Works 20-26, Pokposarang-gil, Gwangyang-si, Jeollanam-do, 57807, Korea 12 2814/CPR/0038/CPR/M U M/1210003/1
PP35099301-9304 PP35099401-9404 PP35099501-9504 PP35099001-9004 PP35099101-9104 PP35099201-9204 PP35061701-1704	**EN 10025-1:2004** **Types S355J2** To be used in construction structural steels Tolerances on dimensions and shape :EN 10029	**Elongation :** **Tensile strength :** **Yield strength :** : **EN10025-2** **Impact strength :** **Weldability :** **Durability :** Dangerous Substances : No Performance Determind

This material has been fully killed and made by basic oxygen process. This material is fine grained steel.
This material has been made by vacuum degassing process.
No repair welding was performed to the products. Test Certificate is issued according to ISO 10474/EN 10204 3.1.
We hereby certify that the material herein has been made in accordance with the order and above specification.

Legal sanction can be imposed on forging. Improper use of product can cause safety issues.

Surveyor To :

Park, Junyoung

posco

Declaration of Performance

Issued in accordance with the
CONSTRUCTION PRODUCTS REGULATIONS
(EU Regulation No. 305/2011)

EU DoP No. GY-S355J2-220805-001

Types S355J2 according EN 10025-2
To be used in construction structural steels

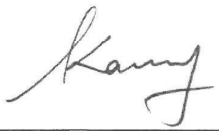
POSCO Co., Ltd. - Gwangyang works
20-26, Pokposarang-gil,
Gwangyang-si, Jeollanam-do, Korea
Tel : +82 (0)61 790 0114
Webside : www.posco.com

CE Marking Notified Body
Lloyd's Register Verification B.V.
K.P. Van der Mandelelaan 41 A Rotterdam
Country : Netherlands
Tel :+31 (0)10 4145088
Email : rotterdam@lr.org
Website : www.lr.org

system of assessment and verification of constancy of performance of the construction product as set out EN10025-1:2004
System 2+

Certificate No.
2814/CPR/0038/CPR/MUM/1210003/1

Lloyd's Register Verification B.V.(2814) performed initial inspection of the manufacturing plant and of factory. Production control and the continuous surveillance assessment and evaluation of factory production control under system 2+ and issued the certificate of conformity of the factory production control.



C.H. Kang / Head,
Quality Planning Group,
POSCO

05th August 2022
Date

Essential characteristics	Perfomance	Harmonised technical specification
Tolerances on dimensions and shape	Acc. to EN10029	EN10025-1 : 2004
Minimum yield strength (MPa)	Threshold value in EN10025-2 for S355J2	
Tensile strength (MPa)		
Minimum percentage elongation after fracture (%)		
Impact strength (longitudinal)		
Weldability Maximum CEV (Ladle analysis)		
Durability		

ArcelorMittal Nippon Steel India Limited

HAZIRA - 394270, DIST.SURAT, GUJARAT, INDIA
CIN : U27100GJ1976FLC013787

MILL TEST AND INSPECTION CERTIFICATE

Test Certificate No. : HPL/TC/D/2010/18044
Material Specification : EN 10025-2 : 2019 S355 J2+N
Sales Order No. : 2110090961

Date : 25.08.2023

M AND S GLOBAL INVESTMENTS SA,
VIA NASSA 29, 6900 LUGANO,
SWITZERLAND

WE CERTIFY THAT THE PLATES HAVE BEEN MANUFACTURED, INSPECTED AND TESTED IN ACCORANCE WITH THE REQUIEREMENT OF EN 10025-2 : 2019 S355 J2+N.

Sr. No.	Plate No.	Heat No.	Size in mm T_W_L	Theoretical Weight (Mt.)	Mechanical Properties								Chemical Analysis (%)																	
					YS	UTS	%EL	Impact in Joules at '-20°C'						C#	Mn	S	P	Si	Cr	Ni	Cu	Ti	V	Nb	Mo	Al	N	Nb+V+Ti	CE ***
					MPa	MPa	GL= 5.65√S0	1	2	3	Avg.	LA/ PA	0.200	1.600	0.025	0.025	0.150-0.250	~	~	0.550	0.050	0.130	0.050	~	0.020	0.0120	0.200	0.450	
					355 Min *	470-630	20 Min **	27 J Min						Max	Max	Max	Max				Max	Max	Max	Max		Min	Max	Max	Max	
173	JV4162211D	Q20590	20_2500_12000	4.710																										
		Q20590 Total		84.780																										
174	JV4091111D	Q20592	15_2500_12000	3.533	396	525	37	176	198	138	171	LA	0.175	1.295	0.002	0.011	0.191	0.026	0.046	0.040	0.002	0.047	0.004	0.005	0.037	0.0063	0.052	0.413		
175	JV4091112D	Q20592	15_2500_12000	3.533								PA	0.171	1.300	0.001	0.011	0.190	0.026	0.049	0.037	0.003	0.049	0.004	0.007	0.035	0.0072	0.056	0.410		
176	JV4091211D	Q20592	15_2500_12000	3.533																										
177	JV4092111D	Q20592	15_2500_12000	3.533																										
178	JV4092211D	Q20592	15_2500_12000	3.533																										
179	JV4092212D	Q20592	15_2500_12000	3.533																										
180	JV4093111D	Q20592	15_2500_12000	3.533																										
181	JV4093112D	Q20592	15_2500_12000	3.533																										
182	JV4093113D	Q20592	15_2500_12000	3.533																										
183	JV4101111D	Q20592	15_2500_12000	3.533	391	542	35	192	148	198	179																			
184	JV4101112D	Q20592	15_2500_12000	3.533																										
185	JV4101113D	Q20592	15_2500_12000	3.533																										
186	JV4103111D	Q20592	15_2500_12000	3.533																										
187	JV4103112D	Q20592	15_2500_12000	3.533																										
188	JV4103211D	Q20592	15_2500_12000	3.533																										
189	JV4104111D	Q20592	15_2500_12000	3.533																										
190	JV4104211D	Q20592	15_2500_12000	3.533																										
191	JV4104212D	Q20592	15_2500_12000	3.533																										
192	JV4105111D	Q20592	15_2500_12000	3.533																										
193	JV4105211D	Q20592	15_2500_12000	3.533																										
194	JV4105212D	Q20592	15_2500_12000	3.533																										
195	JV4106111D	Q20592	15_2500_12000	3.533	431	544	32	182	162	196	180																			
196	JV4106112D	Q20592	15_2500_12000	3.533																										
197	JV4106211D	Q20592	15_2500_12000	3.533																										
198	JV4107111D	Q20592	15_2500_12000	3.533																										
199	JV4107112D	Q20592	15_2500_12000	3.533																										
200	JV4107113D	Q20592	15_2500_12000	3.533																										
201	JV4108111D	Q20592	15_2500_12000	3.533																										
202	JV4108112D	Q20592	15_2500_12000	3.533																										
203	JV4108113D	Q20592	15_2500_12000	3.533																										
204	JV4109111D	Q20592	15_2500_12000	3.533																										
205	JV4109211D	Q20592	15_2500_12000	3.533	435	525	36	130	144	160	145																			
206	JV4109212D	Q20592	15_2500_12000	3.533																										
207	JV4110111D	Q20592	15_2500_12000	3.533																										
208	JV4110112D	Q20592	15_2500_12000	3.533																										
209	JV4110211D	Q20592	15_2500_12000	3.533																										

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COPIA CONFORME ALL'ORIGINALE
IL PRESENTE CERTIFICATO VALE PER
LA QUANTITA' DEL NS. DDT 946 DEL 05/04/2024
SETAL S.P.A.

HS Code: 72085110
Place of Melting: INDIA, Facility: AM/NS INDIA
Place of Hot-rolling: INDIA, Facility: AM/NS INDIA

Authorised Signatory (Quality Assurance)
ArcelorMittal Nippon Steel India Limited

ArcelorMittal Nippon Steel India Limited

HAZIRA - 394270, DIST.SURAT, GUJARAT, INDIA
CIN : U27100GJ1976FLC013787

MILL TEST AND INSPECTION CERTIFICATE

CE 0045 ArcelorMittal Nippon Steel India Limited 06 0045-CPR-0978

Test Certificate No. : HPL/TC/D/2010/18044
Material Specification : EN 10025-2 : 2019 S355 J2+N
Sales Order No. : 2110090961

Date : 25.08.2023

M AND S GLOBAL INVESTMENTS SA,
VIA NASSA 29, 6900 LUGANO,
SWITZERLAND

WE CERTIFY THAT THE PLATES HAVE BEEN MANUFACTURED, INSPECTED AND TESTED IN ACCORANCE WITH THE REQUIEREMENT OF EN 10025-2 : 2019 S355 J2+N.

Sr. No.	Plate No.	Heat No.	Size in mm T_W_L	Theoretical Weight (Mt.)	Mechanical Properties								Chemical Analysis (%)																	
					YS	UTS	%EL	Impact in Joules at '-20°C'																						
					MPa	MPa	GL= 5.65√S0	1	2	3	Avg.	LA/ PA	C#	Mn	S	P	Si	Cr	Ni	Cu	Ti	V	Nb	Mo	Al	N	Nb+V+Ti	CE ***
					355 Min *	470-630	20 Min **	27 J Min					0.200	1.600	0.025	0.025	0.150-0.250	~	~	0.550	0.050	0.130	0.050	~	0.020	0.0120	0.200	0.450		
													Max	Max	Max	Max				Max	Max	Max	Max		Min	Max	Max	Max		
312	JV4175212D	R19261	20_2500_12000	4.710																										
313	JV4176111D	R19261	20_2500_12000	4.710																										
314	JV4176112D	R19261	20_2500_12000	4.710																										
315	JV4176211D	R19261	20_2500_12000	4.710																										
316	JV4190111D	R19261	20_2500_12000	4.710																										
317	JV4190211D	R19261	20_2500_12000	4.710																										
318	JV4190311D	R19261	20_2500_12000	4.710																										
319	JV4191111D	R19261	20_2500_12000	4.710																										
320	JV4191211D	R19261	20_2500_12000	4.710	436	545	33	196	174	176	182																			
321	JV4191212D	R19261	20_2500_12000	4.710																										
322	JV4316111D	R19261	20_2500_12000	4.710																										
323	JV4316211D	R19261	20_2500_12000	4.710																										
324	JV4317111D	R19261	20_2500_12000	4.710																										
325	JV4317211D	R19261	20_2500_12000	4.710																										
326	JV4317311D	R19261	20_2500_12000	4.710																										
327	JV4318111D	R19261	20_2500_12000	4.710																										
328	JV4318211D	R19261	20_2500_12000	4.710	401	553	31	180	160	160	167																			
329	JV4318212D	R19261	20_2500_12000	4.710																										
		R19261 Total		122.460																										
330	JV4111111D	R19262	15_2500_12000	3.533	429	534	37	180	132	146	153	LA	0.172	1.289	0.003	0.011	0.196	0.020	0.014	0.010	0.002	0.045	0.004	0.002	0.036	0.0060	0.051	0.402		
331	JV4111112D	R19262	15_2500_12000	3.533								PA	0.169	1.293	0.002	0.013	0.193	0.018	0.016	0.011	0.004	0.047	0.005	0.005	0.034	0.0069	0.056	0.400		
332	JV4111113D	R19262	15_2500_12000	3.533																										
333	JV4112111D	R19262	15_2500_12000	3.533																										
334	JV4112112D	R19262	15_2500_12000	3.533																										
335	JV4112211D	R19262	15_2500_12000	3.533																										
336	JV4113111D	R19262	15_2500_12000	3.533																										
337	JV4113211D	R19262	15_2500_12000	3.533																										
338	JV4113212D	R19262	15_2500_12000	3.533	403	539	36	142	186	182	170																			
339	JV4114111D	R19262	15_2500_12000	3.533																										
340	JV4114112D	R19262	15_2500_12000	3.533																										
341	JV4114113D	R19262	15_2500_12000	3.533																										
342	JV4115111D	R19262	15_2500_12000	3.533																										
343	JV4115112D	R19262	15_2500_12000	3.533																										
344	JV4115113D	R19262	15_2500_12000	3.533																										
345	JV4116111D	R19262	15_2500_12000	3.533																										
346	JV4116112D	R19262	15_2500_12000	3.533																										
347	JV4116113D	R19262	15_2500_12000	3.533																										
348	JV4117111D	R19262	15_2500_12000	3.533																										

COPIA CONFORME ALL'ORIGINALE

IL PRESENTE CERTIFICATO VALE PER

LA QUANTITA' DEL NS. DDT 946 DEL 05/04/2024

Authorised Signatory (Quality Assurance)
ArcelorMittal Nippon Steel India Limited
AMNSIL/QAC-PMP/05/F
www.amns.in

HS Code: 7 2 0 8 5 1 9 0

SETAL S.P.A.

Place of Melting & Casting: INDIA, Facility: AM/NS INDIA
Place of Hot-rolling: INDIA, Facility: AM/NS INDIA

ArcelorMittal Nippon Steel India Limited

HAZIRA - 394270, DIST.SURAT, GUJARAT, INDIA
CIN : U27100GJ1976FLC013787

MILL TEST AND INSPECTION CERTIFICATE

CE 0045 ArcelorMittal Nippon Steel India Limited DB 0045-CPR-0975

Test Certificate No. : HPL/TC/D/2010/18044
Material Specification : EN 10025-2 : 2019 S355 J2+N
Sales Order No. : 2110090961

Date : 25.08.2023

M AND S GLOBAL INVESTMENTS SA,
VIA NASSA 29, 6900 LUGANO,
SWITZERLAND

WE CERTIFY THAT THE PLATES HAVE BEEN MANUFACTURED, INSPECTED AND TESTED IN ACCORANCE WITH THE REQUIEREMENT OF EN 10025-2 : 2019 S355 J2+N.

Sr. No.	Plate No.	Heat No.	Size in mm T_W_L	Theoretical Weight (Mt.)	Mechanical Properties								Chemical Analysis (%)																	
					YS	UTS	%EL	Impact in Joules at '-20°C'						C#	Mn	S	P	Si	Cr	Ni	Cu	Ti	V	Nb	Mo	Al	N	Nb+V+Ti	CE ***
					MPa	MPa	GL= 5.65√S0	1	2	3	Avg.	LA/ PA	0.200	1.600	0.025	0.025	0.150-0.250	~	~	0.550	0.050	0.130	0.050	~	0.020	0.0120	0.200	0.450		
					355 Min *	470-630	20 Min **	27 J Min						Max	Max	Max	Max				Max	Max	Max	Max		Min	Max	Max	Max		
		S21512 Total		76.539																										
416	JV4479000G	S21537	50_2500_12000	11.775	410	528	34	152	152	138	147	LA	0.180	1.373	0.002	0.015	0.219	0.027	0.025	0.023	0.003	0.055	0.004	0.006	0.034	0.0072	0.062	0.430		
417	JV4480000G	S21537	50_2500_12000	11.775								PA	0.178	1.374	0.001	0.014	0.216	0.026	0.024	0.023	0.002	0.056	0.006	0.008	0.032	0.0081	0.064	0.428		
418	JV4481000G	S21537	50_2500_12000	11.775																										
419	JV4482000G	S21537	50_2500_12000	11.775	403	521	35	172	136	152	153																			
420	JV4483000G	S21537	50_2500_12000	11.775																										
421	JV4484000G	S21537	50_2500_12000	11.775																										
422	JV4485000G	S21537	50_2500_12000	11.775	418	553	37	168	152	164	161																			
423	JV4486000G	S21537	50_2500_12000	11.775																										
		S21537 Total		94.200																										
		Grand Total		**2322.277**																										

Note: (1) Test Certificate conforms to EN 10204:2004 Type 3.1
(2) Material conforms to standard rolling & weight tolerance.
(3) Supply condition : Plates in Normalizing rolled and trimmed edge condition.
(4) Process Route : Hot Metal/ HBI - EAF/Conarc - LF (Fully Killed steel) - VD- CCM - RHF - Plate Rolling (Normalizing Rolling).
(5) Orientation of Tensile test Specimen is Transverse and Impact test specimen is Longitudinal to the rolling direction.
(6) Tensile specimen size : 10 mm dia round specimen for thickness >20mm & full thickness flat specimen for thickness ≤20mm. Impact specimen size : 10x10x55mm for thickness ≥11mm & 7.5x10x55mm for thickness 8mm to <11mm.
(7) * Requirement of YS is 355 MPa min for thickness ≤16mm, 345 MPa min for thickness >16mm to ≤40mm, 335 MPa min for >40 to ≤63mm thicknes & 325 MPa min for >63 to ≤80mm thickness
** Requirement of %EL is 20min for thickness >3mm to ≤40mm, 19min for thickness >40mm to ≤63mm & 18min for thickness >63mm to ≤80mm.
*** Requirement of CE is 0.450 max for thickness ≤30mm & 0.470 max for thickness >30mm.
# Requirement of %C is 0.200 max for thickness ≤40mm & 0.220 max for thickness >40mm.
(8) Surface condition as per EN 10163-2 : 2004 Class B Sub class 3. Reconditioning / Repair of plates by welding on steel not performed.
(9) Ultrasonic Test found satisfactory as per EN10160_CLASS_S1E1.
(10) Stencilling marking details : Manufacturer Name, Plate No, Heat No, Size, Specification, UT code, CE Marking. Low stress steel die stamping details: Plate No, Heat No, Specification.
(11) Tolerance on Thickness as per EN 10029 Class A. Flatness as per EN 10029 Class N Type L Table 4:2010 & Camber as per EN 10029:2010 (0.2% max of actual length of the plate).
(12) Durability : No performance determined
(13) Regulated Substance : No performance determined
(14) Intended uses : Hot rolled steel plates for Building Construction or Civil Engineering.

Legend: LA: Ladle Analysis(%), PA: Product Analysis(%), T-Thickness, W-Width, L-Length, CE: C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15.
HBI - Hot Briquetted Iron, EAF- Electric Arc Furnace, LF- Ladle Furnace, VD- Vacuum Degassing, CCM- Continuous Casting Mill, RHF- Reheating Furnace.

COPIA CONFORME ALL'ORIGINALE
IL PRESENTE CERTIFICATO VALE PER
LA QUANTITA' DEL NS. DDT 946 DEL 05/04/2024
SETAL S.P.A.

HS Code: 7 2 0 6 9 1 1 0
Place of Melting & Casting: INDIA, Facility: AM/NS INDIA
Place of Hot-rolling: INDIA, Facility: AM/NS INDIA

Authorised Signatory (Quality Assurance)
ArcelorMittal Nippon Steel India Limited

Certificazione valida per materiale fornitoVi con ns. DDT nr. C4001380 del 23/09/2024 relativo a:
PZ. 2 PARTICOLARE: C09-0001-P004_REV.C SP. 15mm POS. 2
PZ. 2 PARTICOLARE: C09-0001-P004_REV.C SP. 15mm POS. 6
PZ. 1 PARTICOLARE: C09-0001-P004_REV.C SP. 15mm POS. 8
PZ. 1 PARTICOLARE: C09-0001-P004_REV.C SP. 15mm POS. 9
PZ. 1 PARTICOLARE: C09-0001-P004_REV.C SP. 15mm POS. 19
PZ. 2 PARTICOLARE: C09-0001-P004_REV.C SP. 15mm POS. 14
PZ. 1 PARTICOLARE: C09-0001-P006_REV.A SP. 15mm POS. 3
PZ. 1 PARTICOLARE: C09-0001-P006_REV.A SP. 15mm POS. 4
PZ. 2 PARTICOLARE: C09-0001-P006_REV.A SP. 15mm POS. 5
PZ. 2 PARTICOLARE: C09-0001-P006_REV.A SP. 15mm POS. 6
PZ. 2 PARTICOLARE: C09-0001-P006_REV.A SP. 15mm POS. 7
PZ. 4 PARTICOLARE: C09-0001-P006_REV.A SP. 15mm POS. 8
RIF. VS. ORD. 2400177 DEL 11/09/2024 - RIF. VS. COMM. 24-27012

AM/NS INDIA

DECLARATION OF PERFORMANCE

No: PM/CE/2016/02

Unique identification code of the product-type:
Plate S355J2 / 1.0577

1. Type, batch or serial number or any other element allowing identification of the construction product as required under Article 11(4):

   Plate S355J2 / 1.0577 according to EN 10025-2

2. Intended use or uses of the construction product, in accordance with the applicable harmonized technical specification, as foreseen by the manufacturer:

   Welded, bolted and riveted structures

3. Name, registered trade name or registered trade mark and contact address of the manufacturer as required pursuant Article 11(5):

   ArcelorMittal Nippon Steel India Limited
   Address: 27th KM, Surat-Hazira Road, Hazira, Surat, India - 394270

4. Name and contact address of the authorised representative whose mandate covers the tasks specified in Article 12(2):

   Not applicable

5. System or systems of assessment and verification of constancy of performance of the construction product as set out in Annex V:

   System 2+

6. In case of the declaration of performance concerning a construction product covered by a harmonised standard:

7. Notified body TUV NORD System GmbH & Co KG, Germany performed the initial inspection of the manufacturing plant and of factory production control and the continuous surveillance, assessment and evaluation of factory production control under system 2+ and issued the certificate of conformity of the factory production control with no 0045-CPR-0978.

AM/NS INDIA

8. Declared performance:

Essential characteristic			Performance		Harmonised techn. specification
Tolerances on dimensions / shape	Thickness		EN 10029		EN 10025-1:2004
	Flatness		EN 10029		
Yield strength	Nominal thickness (mm)		Values		
	>	≤	min (MPa)		
		16	355		
	16	40	345		
	40	63	335		
	63	80	325		
	80	100	315		
	100	150	295		
Tensile strength	Nominal thickness (mm)		Values		
	>	≤	min (MPa)	max (MPa)	
		100	470	630	
	100	400	450	600	
Elongation	Nominal thickness (mm)		Values		
	>	≤	min (%)		
		40	20		
	40	63	19		
	63	150	18		
	150	400	17		
Impact strength	Nominal thickness (mm)		Values		
	>	≤	min (J)		
		400	27 at -20°C		
Weldability	Nominal thickness (mm)		Values		
	>	≤	max (CEV, %)		
		40	0,43		
	40	100	0,45		
Durability (chemical composition)	Nominal thickness (mm)		Values		
	>	≤		min (%)	max (%)
		30	C		0,20
			Si		0,55
			Mn		1,60
			P		0,025
			S		0,025
			Cu		0,55
	30	400	C		0,22
			Si		0,55
			Mn		1,60
			P		0,025
			S		0,025
			Cu		0,55

9. The performance of the product identified in points 1 and 2 is in conformity with the declared performance in point 8.

This declaration of performance is issued under the sole responsibility of the manufacturer identified in point 3.
Signed for and on behalf of the manufacturer by:

Sumanta Dasgupta

(Quality Assurance)

Hazira-Surat, Date: 19.07.2023

PM/CE/2016/02

TRACCIABILITA' ORDINE REMAZEL 4122-24006104

POS.	SP.	Q.TA	CERTIFICATO	COLATA	ID PLATE
C09-0001-P0003_REV.A	15	4	24066181	3300962	1000046726
C09-0001-P0005/01	45	1	619669	LNAA78	LNAA780802A
C09-0001-P0005/02	15	1	2440	NLK-2466898	L2403769
C09-0001-P0005/03	15	1	2440	NLK-2466898	L2403769
C09-0001-P0005/05	15	1	2440	NLK-2466898	L2403769
C09-0001-P0005/06	15	1	2440	NLK-2466898	L2403769
C09-0001-P0011/01	15	2	2440	NLK-2466898	L2403769
C09-0001-P0085/03	15	2	2440	NLK-2466898	L2403769
C09-0001-P0087	15	1	2440	NLK-2466898	L2403769
C09-0001-P0005/04	25	2	16624648524	340928	16F.7120.03
C09-0001-P0011/02	25	2	16624648524	340928	16F.7120.03
C09-0001-P0005/07	30	1	1347	SHA-2472001126	SHA-2472001126
C09-0001-P0028/01	20	1	2443	EUS/420526	L2403765
C09-0001-P0028/02	20	1	2443	EUS/420526	L2403765
C09-0001-P0056/03	20	2	2443	EUS/420526	L2403765
C09-0001-P0085/04	20	1	2443	EUS/420526	L2403765
C09-001-P0085/05	20	1	2443	EUS/420526	L2403765
C09-0001-P0028/03	10	2	627031	STAD49	STAD490209A
C09-0001-P0056/02	10	2	627031	STAD49	STAD490209A
C09-0001-P0056/05	10	1	627031	STAD49	STAD490209A
C09-0001-P0057/01	10	2	627031	STAD49	STAD490209A
C09-0001-P0057/03	10	1	627031	STAD49	STAD490209A
C09-0001-P0057/04	10	2	627031	STAD49	STAD490209A
C09-0001-P0057/05	10	2	627031	STAD49	STAD490209A

COSME GROUP

(A04)
(A01)

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0948-CPR-0617 del 14/05/2024 Rev.00

(B06) (Z04) **Marcatura CE**

CE 0948 24

CERTIFICATO DI COLLAUDO INSPECTION CERTIFICATE EN 10204		**TIPO CERTIFICATO TYPE OF CERTIFICATE**	
			3.1
(A03) N°	2443	DATA	25/10/2024
Standard Product Reference		EN 10025-2	

(A06) CLIENTE / CUSTOMER	COSME GROUP SRL	(B07) COLATA / HEAT	EUS/420526

N° ORDINE / CUSTOMER ORDER (A07)	RIF. VS. ORD. DEL 21/10/2024	CODICE ARTICOLO / PRODUCT NUMBER (A09)	L.S355.020.2000.GG00	REF. DDT N°	870 VEDT24 del 24/10/2024
N* ORDINE INTERNO / INTERNAL ORDER (A08)	136 / 24VEOR	LOTTO / LOT	**L2403765**		

ANALISI CHIMICHE DI COLATA / HEAT ANALYSIS

%C	%Si	%Mn	%P	%S	%Cr	%Ni	%Cu	%Mo	%V	%Nb	%Ti	%Al	%N	%H
0,186	0,218	1,520	0,010	0,008	0,021	0,008	0,015	0,000	0,002	0,002	0,002	0,042	37,000	0,000

					Dimensioni Nominali/Nominal Dimension			
Condizioni Fornitura (B04) Product Delivery Conditions	+N	Elaborazione dell'acciaio (C70)	BOF	Grade (B02) (B03) S355J2	T (B09)	W (B10)	L (B11)	CEV (C82)
					20,0	2015	12230	0,445

Prodotto/Product (B01)	Massa Teorica / Theoretical Mass (B12)		Massa Effettiva / Actual Mass (B13)		IDL	N° Pezzi / N° Pieces
LAMIERE		3869		960	1643-2/24	1 (B08)

CARATTERISTICHE MECCANICHE / MECHANICAL PROPERTIES

NORMA / STANDARD (C05)	PROVE DI TRAZIONE\TENSILE TEST			Orientamento dei provon / direction of test pieces (1) (C02)	T
	Rm (Mpa)	ReH (Mpa)	A%	Forma del provino / Test piece shape (2) (C10)	FT
ISO 6892	510 (C12)	372 (C11)	29,00 (C13)	(1): T Trasversale/transverse L longitudinale/longitudinal (2): Rett Sezione Rettangolare/ Rectangular Cross-Section Circ. Sezione Circolare/ Circular Cross-Section	

Norme Standard (C05)	PROVE DI RESILIENZA						Orientamento Provini / Direction of test pieces (C02)
ISO 148-1	Tipo Provini/Test Pieces Type (C40)	K1 (C42)	K2 (C42)	K3 (C42)	KX (C03)	Temp (C43)	
	V-notch	96,000	96,000	102,00	98,000	-20,00	L

Norme Standard (C05)	PROVE DI TRAZIONE ASSE Z / TENSILE TEST Z AXIS (C50)			Orientamento Provini / Direction of test pieces (C02)
EN 10164	Tipo Provini/Test Pieces Type (C51)	Z% AVERAGE THREE TESTS (C52)	MINIMUM Z% (C53)	
				Z

Norme Standard (D03)	CLASSE ULTRASUONI / ULTRASONIC CLASS (D02)		Strumento: AnyScan 30 (D06)
EN 10160	Classe UT / UT Class (D04)	Classe UT Bordo / UT Class Edge (D05)	Sonda:DoppiaPiana4MHz//2Mhz (D07)
			UT 9712: D-00427-UT (D08)

(D01) TOLLERANZE FORMA E DIMENSIONE / SHAPE AND DIMENSION TOLLERANCE

Planarità / Flatness		Classe Superficie/Surface class		Tolleranza Spessore / Thickness Tolerance		Tolleranza Lunghezza/ Lenght Tolerance	- 0 / + 200
Norma / Standard	N	Norma / Standard	A1	Norma / Standard	A	Tolleranza Larghezza/ Width Tollerance	- 0 / + 70
EN 10029		EN 10163-2		EN 10029			

La spedizione è conforme all'ordine (Z01)
The delivery is in accordance with the order

Organizzazione del controllo / Inspection organization:
QUALITY DEPARTMENT (A05)

Ispettore / Inspector 25/10/2024

ORT. 3614 DEL 12/11/2024
W.ORD. 24006104 DEL 28/10/2024

COSME GROUP SRL
VIA DEI PLATANI, 15/2
33050 SANTA MARIA LA LONGA (UD)
Tel. 0432 801333 - Fax 0432 801991
P.IVA - C.F. - R.I. di Udine 02815120304
e-mail: info@cosmegroup.it

siderscal

COSME GROUP

Scheda controllo ultrasuoni
Inspection Certificate

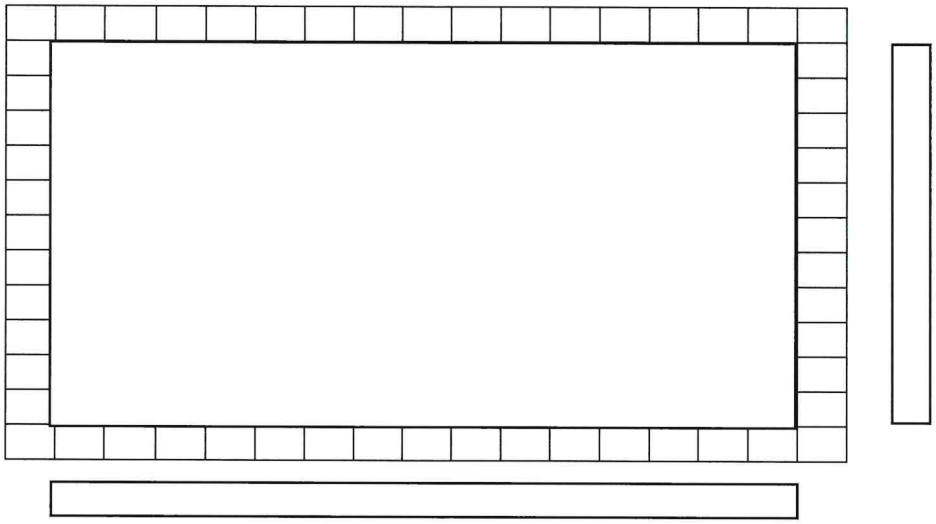
Impresa best 2022 Friuli Venezia Giulia

TÜV SÜD ISO 9001

SCHEDA CONTROLLO ULTRASUONI LAMIERE

CONFERMA GROUP 2024	CLIENTE:		QUALITA': S355J2+N	
ID LAMIERA: L2403765	COLATA: EUS/420526			
CONTROLLO DIMENSIONALE	*SPESSORE*	*LARGHEZZA*	*LUNGHEZZA*	*PESO*
DIMENSIONI ORDINE	20	2015	12230	3870
CONTROLLO ASPETTO E STATO SUPERFICIALE (EN 10163)	NATURALE DI LAMINAZIONE			
GIUDIZIO SUPERFICIE	CONFORME			

SCHEDA LAMIERA



STRUMENTO:
GILARDONI RDG450

ACCOPPIANTE:
ACQUA

4 - CONTROLLO
***CAMPIONE*: REF. D. 8mm ECO.**

5 – SONDA UTILIZZATA:
- □ - BDD 20/2 0°
- □ - BDD 20/4 0°
- □ - BDD 20/4 5°
- **X - DP 25/2 0°**
- □ - SD 25/4 0°

ISTRUZIONE TECNICA: PO_851_14 (PG. CONTROLLI UT)

CONTROLLO UT

NORMA:	CLASSE:	GRIGLIA/BORDO:	-TIPO CONTROLLO:	- CLASSE ASSEGNATA:
UNI EN 10160	**S2E3**	**100x100**	**100% SUPERFICIE INDICATA**	**S2E3**

- ANOMALIE RISCONTRATE: NESSUNA ANOMALIA RISCONTRATA.

LAMIERA BORDI NATURALI

COMPILATO: ANDREA ORSO
UNI EN ISO 9712:12 – SNT TC 1°
LEV. 3 UT – C,F,T,W,WP – IND-21-02444-R

- DATA COMPILAZIONE SCHEDA: 25/10/2024

(A04)
(A01)

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CERTIFICATO DI COLLAUDO INSPECTION CERTIFICATE EN 10204		TIPO CERTIFICATO TYPE OF CERTIFICATE 3.1	
(A03) N°	2440	DATA	25/10/2024
Standard Product Reference			

(A06) CLIENTE / CUSTOMER	COSME GROUP SRL	(B07) COLATA / HEAT	NLK-2466898

N° ORDINE / CUSTOMER ORDER (A07)	RIF. VS. ORD. DEL 21/10/2024	CODICE ARTICOLO / PRODUCT NUMBER (A09)	L.S355.015.2450.GG12	REF. DDT N°	870 VEDT24 del 24/10/2024
N* ORDINE INTERNO / INTERNAL ORDER (A08)	136 / 24VEOR	LOTTO / LOT	**L2403769**		

ANALISI CHIMICHE DI COLATA / HEAT ANALYSIS

%C	%Si	%Mn	%P	%S	%Cr	%Ni	%Cu	%Mo	%V	%Nb	%Ti	%Al	%N	%H
0,157	0,183	1,430	0,008	0,002	0,025	0,013	0,030	0,001	0,049	0,003	0,001	0,050	0,003	0,000

Condizioni Fornitura (B04) Product Delivery Conditions	+N	Elaborazione dell'acciaio (C70)	BOF	Grade (B02) (B03)	S355J2	Dimensioni Nominali/Nominal Dimension T (B09)	W (B10)	L (B11)	CEV (C82)
						15,0	2525	12170	0,413

Prodotto/Product (B01)	Massa Teorica / Theoretical Mass (B12)	3618	Massa Effettiva / Actual Mass (B13)	3997	IDL	N° Pezzi / N° Pieces (B08)
LAMIERE					1670-1/24	1

CARATTERISTICHE MECCANICHE / MECHANICAL PROPERTIES

NORMA / STANDARD (C05)	PROVE DI TRAZIONE\TENSILE TEST Rm (Mpa)	ReH (Mpa)	A%	Orientamento dei provon / direction of test pieces (1) (C02)	
				Forma del provino / Test piece shape (2) (C10)	
ISO 6892	(C12)	(C11)	(C13)	(1): T Trasversale/transverse L longitudinale/longitudinal (2): Rett Sezione Rettangolare/ Rectangular Cross-Section Circ. Sezione Circolare/ Circular Cross-Section	

Norme Standard (C05)	PROVE DI RESILIENZA Tipo Provini/Test Pieces Type (C40)	K1 (C42)	K2 (C42)	K3 (C42)	KX (C03)	Temp (C43)	Orientamento Provini / Direction of test pieces (C02)
ISO 148-1	V-notch						

Norme Standard (C05)	PROVE DI TRAZIONE ASSE Z / TENSILE TEST Z AXIS (C50) Tipo Provini/Test Pieces Type (C51)	Z% AVERAGE THREE TESTS (C52)	MINIMUM Z% (C53)	Orientamento Provini / Direction of test pieces (C02)
EN 10164				

Norme Standard (D03)	CLASSE ULTRASUONI / ULTRASONIC CLASS (D02) Classe UT / UT Class (D04)	Classe UT Bordo / UT Class Edge (D05)	Strumento: AnyScan 30 (D06)	Sonda:DoppiaPiana4MHz//2Mhz (D07)	UT 9712: D-00427-UT (D08)
EN 10160					

(D01) TOLLERANZE FORMA E DIMENSIONE / SHAPE AND DIMENSION TOLLERANCE

Planarità / Flatness	Classe Superficie/Surface class	Tolleranza Spessore / Thickness Tolerance	Tolleranza Lunghezza/ Lenght Tolerance	- 0 / + 200
Norma / Standard: EN 10029	Norma / Standard: EN 10163-2	Norma / Standard: EN 10029	Tolleranza Larghezza/ Width Tollerance	- 0 / + 70

La spedizione è conforme all'ordine (Z01)
The delivery is in accordance with the order

Organizzazione del controllo / Inspection organization:
QUALITY DEPARTMENT (A05)

Ispettore / Inspector 25/10/2024

sidersca l

COSME GROUP SRL
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P.IVA - C.F. - R.I. di Udine 02815120304
cosmegroup.it e-mail: info@cosmegroup.it

ORT. 3614 DEL 12/11/2024
V.S. DDT/E 2400001014 DEL 28/10/2024

(A04)
(A01)

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CERTIFICATO DI COLLAUDO INSPECTION CERTIFICATE EN 10204		TIPO CERTIFICATO TYPE OF CERTIFICATE
		3.1
(A03) N°	2440	DATA 25/10/2024
Standard Product Reference		

(A06) CLIENTE / CUSTOMER	COSME GROUP SRL	(B07) COLATA / HEAT	NLK-2466898

N° ORDINE / CUSTOMER ORDER (A07)	RIF. VS. ORD. DEL 21/10/2024	CODICE ARTICOLO / PRODUCT NUMBER (A09)	L.S355.015.2450.GG12	REF. DDT N°	870 VEDT24 del 24/10/2024
N* ORDINE INTERNO / INTERNAL ORDER (A08)	136 / 24VEOR	LOTTO / LOT	**L2403769**		

ANALISI CHIMICHE DI COLATA / HEAT ANALYSIS

%C	%Si	%Mn	%P	%S	%Cr	%Ni	%Cu	%Mo	%V	%Nb	%Ti	%Al	%N	%H
0,157	0,183	1,430	0,008	0,002	0,025	0,013	0,030	0,001	0,049	0,003	0,001	0,050	0,003	0,000

Condizioni Fornitura (B04) Product Delivery Conditions	+N	Elaborazione dell'acciaio (C70)	BOF	Grade (B02) (B03)	S355J2	Dimensioni Nominali/Nominal Dimension T (B09)	W (B10)	L (B11)	CEV (C82)
						15,0	2525	12170	0,413

Prodotto/Product (B01)	Massa Teorica / Theoretical Mass (B12)	3618	Massa Effettiva / Actual Mass (B13)	3997	IDL	N° Pezzi / N° Pieces (B08)
LAMIERE					1670-1/24	1

CARATTERISTICHE MECCANICHE / MECHANICAL PROPERTIES

NORMA / STANDARD (C05)	PROVE DI TRAZIONE\TENSILE TEST			Orientamento dei provon / direction of test pieces (1) (C02)	
	Rm (Mpa)	ReH (Mpa)	A%	Forma del provino / Test piece shape (2) (C10)	
ISO 6892	(C12)	(C11)	(C13)	(1): T Trasversale/transverse L longitudinale/longitudinal (2): Rett Sezione Rettangolare/ Rectangular Cross-Section Circ. Sezione Circolare/ Circular Cross-Section	

Norme Standard (C05)	PROVE DI RESILIENZA						Orientamento Provini / Direction of test pieces (C02)
	Tipo Provini/Test Pieces Type (C40)	K1 (C42)	K2 (C42)	K3 (C42)	KX (C03)	Temp (C43)	
ISO 148-1	V-notch						

Norme Standard (C05)	PROVE DI TRAZIONE ASSE Z / TENSILE TEST Z AXIS (C50)			Orientamento Provini / Direction of test pieces (C02)
	Tipo Provini/Test Pieces Type (C51)	Z% AVERAGE THREE TESTS (C52)	MINIMUM Z% (C53)	
EN 10164				

Norme Standard (D03)	CLASSE ULTRASUONI / ULTRASONIC CLASS (D02)		Strumento: AnyScan 30 (D06)
	Classe UT / UT Class (D04)	Classe UT Bordo / UT Class Edge (D05)	Sonda:DoppiaPiana4MHz//2Mhz (D07)
EN 10160			UT 9712: D-00427-UT (D08)

(D01) TOLLERANZE FORMA E DIMENSIONE / SHAPE AND DIMENSION TOLLERANCE

Planarità / Flatness		Classe Superficie/Surface class		Tolleranza Spessore / Thickness Tolerance		Tolleranza Lunghezza/ Lenght Tolerance	- 0 / + 200
Norma / Standard		Norma / Standard		Norma / Standard		Tolleranza Larghezza/ Width Tollerance	- 0 / + 70
EN 10029		EN 10163-2		EN 10029			

La spedizione è conforme all'ordine (Z01)
The delivery is in accordance with the order

Organizzazione del controllo / Inspection organization:
QUALITY DEPARTMENT (A05)

Ispettore / Inspector 25/10/2024

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COSME GROUP SRL
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Tel. 0432 801333 - Fax 0432 801991
P.IVA - C.F. - R.I. di Udine 02815120304
cosmegroup.it e-mail: info@cosmegroup.it

ORT. 3614 DEL 12/11/2024
V.S. ORDINE 24000104 DEL 28/10/2024

CERTIFICATO DI CONTROLLO 3.1 / INSPECTION CERTIFICATE 3.1 - EN 10204:2004

A02

A04/A05

METINVEST

METINVEST TRAMETAL SPA

A01

Società per azioni con socio unico soggetta a direzione e coordinamento di Metinvest B.V
Registered office: Via XII Ottobre 1, 5° piano - 16121 Genova, Italy
Phone +39 010 5762911 - Fax +39 010 5762990
Works: Via E. Fermi, 44 - 33058 San Giorgio di Nogaro UD, Italy
Phone +39 0431 629989 - Fax +39 0431 629985
Cap. Soc. Euro 300.120.000,00 i.v.
C.F., P.IVA e Iscr. Reg. Imp. GE 05956630965 - REA 437720/GE
http://trametal.metinvestholding.com

(A) PROCESSO DI ELABORAZIONE / STEELMAKING PROCESS: E = ELECTRIC ; BO = BASIC OXYGEN
(B) STATO DI FORNITURA / DELIVERY CONDITION: AR = GREZZO DI LAMINAZIONE / AS ROLLED ;
N* = LAMINAZIONE A TEMPERATURA CONTROLLATA / NORMALIZING ROLLING ;
N = NORMALIZZATO / NORMALIZED at 910°C, 1,5 min/mm ; ARIA CALMA / STILL AIR;
R = RICOTTO / ANNEALED;
N+R = NORMALIZZATO + RINVENUTO / NORMALIZED + TEMPERED
(C) TRATTAMENTO TERMICO DEL CAMPIONE / HEAT TREATMENT OF SAMPLE:
N = 910°C, 1,5 min/mm ; ARIA CALMA / STILL AIR
R = 650°C, 1,5 min/mm ; ARIA CALMA / STILL AIR
(D) Ceq_1 = C + Mn/6 ; Ceq_2 = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15 ;
Pcm = C + Si/30 + (Mn + Cu + Cr)/20 + NI/60 + Mo/15 + V/10 + B*5
(1) POSIZIONE / LOCATION: 1 = TESTA / TOP ; 2 = PIEDE / BOTTOM
(2) POSIZIONE / LOCATION: C = CUORE / 1/2 THICKNESS ; P = PELLE / SURFACE ; D = 1/4 SPESSORE / THICKNESS
(3) DIREZIONE / DIRECTION: L = LONGITUDINALE / LONGITUDINAL ; T = TRASVERSALE / TRANSVERSE
(4) FORMA DEL PROVINO / SHAPE OF TEST PIECE: P = PRISMATICO / PRISMATIC ; C = CILINDRICO / CYLINDRICAL
(5) ESITO PROVA DI PIEGA / RESULT: OK = COMPLYING ; NO = NOT COMPLYING

A03 N° Certificato / Certificate no.: 619669

Z02 Data / Date: 24/07/2024

A08 N° Ordine Trametal / Works order: 32403786

A07 N° Ordine cliente / Customer's order: email 03/07

DDT: BOL 32414527

del / date: 23/07/2024

Pratica / File no.:

del / date:

A06 Cliente / Customer

COSME GROUP SRL

Via dei platani 15/2
33050 SANTA MARIA LA LONGA 33050 IT

UD ITALIA

B06 Marcatura di prodotto / Marking of the product

LAMIERA/ORDINE/N° INFORNAMENTO/DIMENSIONI/QUALITÀ/MARCHIO DEL PRODUTTORE
PLATE/ORDER/INTERNAL N°/DIMENSIONS/STEEL GRADE/MANUFACTURER'S MARK

B01/B02/B03

Prodotto / Product: Lamiere / Hot rolled plates

Qualità / Steel grade: S355J2+N

Normativa / Specification: EN10025-2:2019

B07 ITEM	B07 LAMIERA PLATE	B07 N° INFORN. INTERNAL NUMBER	B09/B11 DIMENSIONI [mm] DIMENSIONS	B12 MASSA TEORICA [t] THEORICAL WEIGHT	B07 LOTTO BATCH NO.	C70 PROCESSO ELAB. (A) STEELMAKING PROCESS	B04 STATO FORNITURA LAMIERA (B) DELIVERY CONDITION	C00 CAMPIONE SAMPLE	B05 TRATT. CAMPIONE (C) HEAT TREATMENT	C00 CAMPIONE PWHT SAMPLE	B05 PWHT BEGINNING TEMPERATURE °C	TEMPERATURA INIZIO	HEATING RATE °C/h	VELOCITA' RISCALDO	TEMPERATURE TREATMENT °C	TEMPERATURA TRATTAMENTO	HOLDING TIME	PERMANENZA Min	COOLING RATE °C/h	VELOCITA' RAFFREDDAMENTO	END TEMPERATURE °C	TEMPERATURA FINE	N° CICLI / CYCLES	C00 CAMPIONE Q+T SAMPLE	B05 Q+T TEMPERATURE (Q) °C	TEMPERATURA	HOLDING TIME (Q) Min	PERMANENZA	COOLING	RAFFREDDAMENTO	TEMPERATURE (T) °C	TEMPERATURA	HOLDING TIME (T) Min	PERMANENZA	COOLING	RAFFREDDAMENTO
1	LNAA780802A	1947873	45.00X2000X12000	8,48	793486	BO	N	GD891																											

C71/C92 COMPOSIZIONE CHIMICA DI COLATA / HEAT CHEMICAL ANALYSIS

B07 COLATA HEAT	C71 C %	C72 Mn %	C73 Si %	C74 P %	C75 S %	C76 Cu %	C77 Ni %	C78 Cr %	C79 Mo %	C80 Al %	C81 V %	C82 Nb %	C83 Ti %	C84 Sn %	C85 Ca %	C86 N %	C87 B %	C88 H %	C89 Ceq1 % (D)	C90 Ceq2 % (D)	C91 Pcm % (D)
S355J2+N Min 40.10 - 200.00																					
S355J2+N Max 40.10 - 200.00	0,22	1,60	0,55	0,025	0,025	0,550														0,47	
LNAA78	0,17	1,44	0,23	0,015	0,002	0,010	0,010	0,010	<0.005	0,031	0,001	0,024	0,002	<0.005	0,0000	0,0056	0,0003	0,0000	0,41	0,41	0,25

C00 CAMPIONE SAMPLE		C01 POSIZIONE (1) LOCATION	PROVA DI TRAZIONE TENSILE TEST C01 POSIZIONE (2) LOCATION	C02 DIREZIONE (3) ORIENTATION	C03 TEMPERATURA [°C] TEST TEMPERATURE	C11 ReH [Mpa] YIELD STRENGTH	C12 Rm [Mpa] TENSILE STRENGTH	ReH/Rm	C13 A% ELONGATION	C14 Rp 0.2 [Mpa] PROOF/YIELD STRENGTH	C10 FORMA PROVINO (4) SHAPE OF TEST PIECE	PROVA DI RESILIENZA IMPACT TEST - CHARPY V-NOTCH TEST C41 LARGHEZZA [mm] WIDTH	C02 ORIENTATION (3)	C03 TEMPERATURA [°C] TEST TEMPERATURE	C01 POSIZIONE (2) LOCATION	C42 SINGOLI VALORI [J] INDIVIDUAL VALUES	C43 MEDIA [J] MEAN VALUE	PROVA DI PIEGA BEND TEST C02 DIREZIONE (3) ORIENTATION	C51 MANDRINO MANDREL	C52 ANGOLO [°] ANGLE	C50 ESITO (5) RESULT	PROVA DI DUREZZA HARDNESS TEST C01 POSIZIONE (2) LOCATION	C30 METODO TEST METHOD	C31 SINGOLI VALORI INDIVIDUAL VALUES	C32 MEDIA MEAN VALUE	PROVA DI STRIZIONE Z% TEST C53 Z% SINGOLI VALORI Z% INDIVIDUAL VALUES	C54 Z% VALORE MEDIO Z% MEAN VALUE
		SPESSORE LAMIERA PLATE THICKNESS																										
S355J2+N Min 40.10 - 63.00					20	335	470		19,0																			
S355J2+N Max 40.10 - 63.00					20		630																					
S355J2+N Min 6.00 - 999.00													L	-20			27											
GD891	45,00	2	D	T	20	388	515	0,75	33,3		C	10,00	L	-20	P	239 192 207	213											

C10

UNI EN ISO 6892-1:2020 / UNI EN ISO 148-1:2016

Z01						
ITEM		**TOLLERANZA DI SPESSORE TOLERANCE ON THICKNESS**	**TOLLERANZE DI LARGHEZZA TOLERANCE ON WIDTH**	**TOLLERANZE DI LUNGHEZZA TOLERANCE ON LENGTH**	**CONDIZIONI SUPERFICIALI SURFACE FINISH**	**PLANARITÀ FLATNESS**
1	A200F	EN 10029 CL.A	-0+100 MM	-0+200 MM	EN 10163/2 CL A1	EN 10029 CL. N

CERTIFICHIAMO che le lamiere elencate sono conformi alla prescrizione dell'ordine, che i controlli della marcatura, dell'aspetto superficiale e dimensionale hanno dato esito positivo.
WE CERTIFY that the above mentioned plates are consistent with the order prescriptions: marking, inspection and measurement without objection.
DICHIARIAMO CHE LE LAMIERE SONO STATE CONTROLLATE IN ACCORDO ALLA NORMATIVA VIGENTE E CHE LE RADIAZIONI IONIZZANTI NON ECCEDONO IL VALORE DEL FONDO NATURALE.
WE DECLARE THAT THE PLATES WERE CONTROLLED ACCORDING TO STANDARD AND RADIATION DO NOT EXCEED THE NATURAL RADIATION.

Z06		
Z07	**Z03 ENTE COLLAUDO / INSPECTION BODY**	**Z02**
	TIMBRO DELL'ISPETTORE STAMP OF THE INSPECTION REPRESENTATIVE	METINVEST TRAMETAL S.p.A/ F. Andrian CQ Manager

COSME GROUP SRL
VIA DEI PLATANI, 138
33050 SANTA MARIA LA LONGA (UD)
Tel. 0432 801333 - Fax 0432 801991
P.IVA - C.F. - R.I. di Udine 02815120304
cosmegroup.it e-mail: info@cosmegroup.it

DDT. 3614 DEL 12/11/2024
VS. ORDINE 2400610A DEL 28/10/2024

METINVEST
METINVEST TRAMETAL SPA

Metinvest Trametal spa
Head Office:
Via XII Ottobre 1, 5° piano
16121 Genova - Italy
Tel. +39 010 5762911
Fax +39 010 5762990
trametal@trametal.it

DICHIARAZIONE DI PRESTAZIONE (Reg. UE N. 305/2011)

N.S355-2

Il sottoscritto Roberto Re, rappresentante il produttore:
METINVEST TRAMETAL SpA
Via XII Ottobre 1, 5° Piano – 16121 Genova
nello stabilimento produttivo di:
Via E. Fermi, 44 – 33058 San Giorgio di Nogaro (UD)
Dichiara qui di seguito che i prodotti:
Prodotti piani laminati a caldo in acciaio secondo EN10025-1:2004.

DECLARATION OF PERFORMANCE (Reg . UE N. 305/2011)

N.S355-2

I, the undersigned Roberto Re, representing the manufacturer:

METINVEST TRAMETAL SpA
Via XII Ottobre, 1 – 16121 Genova
the production site:
Via E. Fermi, 44 – 33058 San Giorgio di Nogaro (UD)
Hereby declares that the products:
Hot-rolled flat products of steel according to EN10025-1: 2004.

Qualità / Steel grade	Normativa / Specification
S355J2NZ15	EN10025-2:2019
S355JR+AR	EN10025-2:2019
S355JR+N	EN10025-2:2019
S355J0+AR	EN10025-2:2019
S355J0+N	EN10025-2:2019
S355J2+N	EN10025-2:2019
S355K2+N	EN10025-2:2019
S355J2NZ25	EN10025-2:2019
S355J2NZ35	EN10025-2:2019
S355K2NZ15	EN10025-2:2019
S355K2NZ25	EN10025-2:2019
S355K2NZ35	EN10025-2:2019
S355J0C+N	EN10025-2:2019
S355J2C+N	EN10025-2:2019
S355K2C+N	EN10025-2:2019

Tipo prodotto / Product type	Qualità / Steel grade	Codice identificativo univoco prodotto/ Unique product identifier code	Numero interno/ Internal number	Specifica tecnica armonizzata / Harmonized techical specification
Lamiera/ Plate	S355J2+N	LNAA780802A	1947873	EN10025-1:2004

Che i prodotti specificati nel presente documento sono destinati ad essere utilizzati nelle strutture saldate, bullonate e chiodate.

Che i prodotti specificati nel presente documento presentano le seguenti caratteristiche essenziali e prestazioni:

The products specified in this document are intended to be used in welded structures, bolted and riveted.

The products specified in this document have the following essential features and performance:

Caratteristiche Essenziali / Essential features	Prestazione / Performance	Norma Armonizzata / Harmonized specification
Tolleranze dimensionali e forma /Tollerance on dimensions and shape	Conforme / Compliance	EN10025-1:2004
Allungamento /Elongation	Conforme / Compliance	EN10025-1:2004
Resistenza a Trazione/Tensile Strength	Conforme / Compliance	EN10025-1:2004
Carico Unitario snervamento/Yield Strength	Conforme / Compliance	EN10025-1:2004
Resilienza/Impact	Conforme / Compliance	EN10025-1:2004
Saldabilità/Weldability	Conforme / Compliance	EN10025-1:2004
Durabilità/Durability	NPD	
Sostanza Regolamentata/Regulated substance	NPD	

Si dichiara inoltre che l'organismo notificato, TUV SUD - Italia [N. 0948] ha effettuato:
- ispezione iniziale dello stabilimento e del controllo della produzione in fabbrica
- sorveglianza, valutazione e verifica continua del controllo della produzione in fabbrica

secondo il sistema di valutazione e verifica della costanza della prestazione 2+ ed ha rilasciato il certificato di controllo della produzione in fabbrica numero 0948-CPR-0157 Rev.02

It also states that the notified body, TUV SUD - Italia [N. 0948], carried out:
- Initial inspection of factory and of factory production control
- Monitoring, evaluation and continuous assessment of factory production control

according to the system of assessment and verification of constancy of performance 2 + and released the certificate of factory production control number 0948-CPR-0157 Rev.02.

CE

Lamiere conformi ai requisiti della marcatura CE. Certificato di conformità CE n° 0948-CPR-0157 Rev.02 emesso da TUV SUD - Italia in data 13/12/2019. Plates in compliance with CE marking requirements. Certificate of conformity N° 0948-CPR-0157 Rev.02 from TUV SUD - Italia on 13/12/2019.

Si rilascia la presente dichiarazione di prestazione sotto la responsabilità esclusiva del fabbricante

This declaration of performance is made under the sole responsibility of the manufacturer

San Giorgio di Nogaro,

24/07/2024

Roberto Re



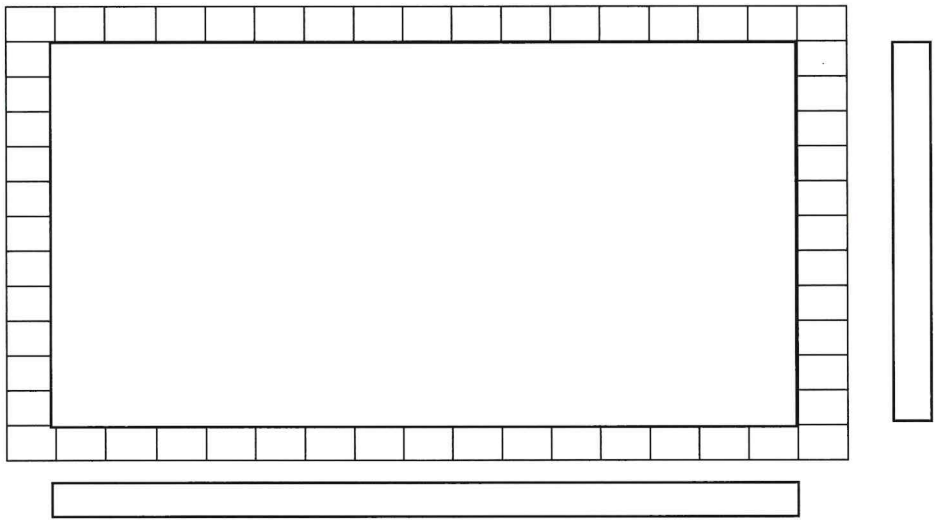
Managing Director
Metinvest Trametal spa
Metinvest Group

Metinvest Trametal SpA • Società per azioni con socio unico soggetta a direzione e coordinamento di Metinvest B.V.
Registered office: Via XII Ottobre, 3 • 16121 Genova, Italy • Phone +39 010 5762911 • Fax +39 010 5762990
Works: Via E. Fermi, 44 • 33058 San Giorgio di Nogaro UD, Italy • Phone +39 0431 629989 • Fax +39 0431 629985
Cap. Soc. Euro 300.120.000,00 i.v. • C.F., P.IVA e Iscr. Reg. Imp. GE 05956630965 • REA 437720/GE
http://trametal.metinvestholding.com

SCHEDA CONTROLLO ULTRASUONI LAMIERE

CONFERMA GROUP 2024	CLIENTE:		QUALITA': S355J2+N	
ID LAMIERA: LNAA780802A	COLATA: LNAA78			
CONTROLLO DIMENSIONALE	*SPESSORE*	*LARGHEZZA*	*LUNGHEZZA*	*PESO*
DIMENSIONI ORDINE	45	2000	12000	8480
CONTROLLO ASPETTO E STATO SUPERFICIALE (EN 10163)	NATURALE DI LAMINAZIONE			
GIUDIZIO SUPERFICIE	CONFORME			

SCHEDA LAMIERA



STRUMENTO:
GILARDONI RDG450

ACCOPPIANTE:
ACQUA

4 - CONTROLLO
***CAMPIONE*: REF. D. 8mm ECO.**

5 – SONDA UTILIZZATA:
- □ - BDD 20/2 0°
- □ - BDD 20/4 0°
- □ - BDD 20/4 5°
- **X - DP 25/2 0°**
- □ - SD 25/4 0°

ISTRUZIONE TECNICA: PO_851_14 (PG. CONTROLLI UT)

CONTROLLO UT

NORMA:	CLASSE:	GRIGLIA/BORDO:	-TIPO CONTROLLO:	- CLASSE ASSEGNATA:
UNI EN 10160	**S2E3**	**100x100**	**100% SUPERFICIE INDICATA**	**S2E3**

- ANOMALIE RISCONTRATE: NESSUNA ANOMALIA RISCONTRATA.

LAMIERA BORDI NATURALI

COMPILATO: ANDREA ORSO
UNI EN ISO 9712:12 – SNT TC 1°
LEV. 3 UT – C,F,T,W,WP – IND-21-02444-R

- DATA COMPILAZIONE SCHEDA: 23/07/2024

(A04)
(A01)

siderscal

0948-CPR-0617 del 14/05/2024 Rev.00

(B06) (Z04) **Marcatura CE**

CE 0948 24

CERTIFICATO DI COLLAUDO INSPECTION CERTIFICATE EN 10204			TIPO CERTIFICATO TYPE OF CERTIFICATE
			3.1
(A03) N°	1347	DATA	30/08/2024
Standard Product Reference			EN 10025-2

(A06) CLIENTE / CUSTOMER	COSME GROUP SRL	(B07) COLATA / HEAT	SHA-2472001126

N° ORDINE / CUSTOMER ORDER (A07)		N* ORDINE INTERNO / INTERNAL ORDER (A08)		CODICE ARTICOLO / PRODUCT NUMBER (A09)	L.S355.030.2450.GS	REF. DDT N°	555 VEDT24 del 29/08/2024

ANALISI CHIMICHE DI COLATA / HEAT ANALYSIS

%C	%Si	%Mn	%P	%S	%Cr	%Ni	%Cu	%Mo	%V	%Nb	%Ti	%Al	%N	%H
0,201	0,230	1,450	0,008	0,004	0,020	0,010	0,020	0,000	0,000	0,001	0,017	0,038	0,004	0,000

Condizioni Fornitura (B04) Product Delivery Conditions	+N	Elaborazione dell'acciaio (C70)	BOF	Grade (B02)	S355J2	Dimensioni Nominali Nominal Dimension	T (B09)	W (B10)	L (B11)	CEV (C82)
							30,0	2525	12075	0,449

Prodotto/Product (B01)	Massa Teorica / Theoretical Mass (B12)	7180	Massa Effettiva / Actual Mass (B13)	7179	IDL	N° Pezzi / N° Pieces
LAMIERE					1006-1/24	1 (B08)

CARATTERISTICHE MECCANICHE / MECHANICAL PROPERTIES

NORMA / STANDARD (C05)	PROVE DI TRAZIONE\TENSILE TEST			Orientamento dei provon / direction of test pieces (1) (C02)	T
	Rm (Mpa)	ReH (Mpa)	A%	Forma del provino / Test piece shape (2) (C10)	Circ
ISO 6892	504 (C12)	364 (C11)	24,00 (C13)	(1): T Trasversale/transverse L longitudinale/longitudinal (2): Rett Sezione Rettangolare/ Rectangular Cross-Section Circ. Sezione Circolare/ Circular Cross-Section	

Norme Standard (C05)	PROVE DI RESILIENZA						Orientamento Provini / Direction of test pieces (C02)
	Tipo Provini/Test Pieces Type (C40)	K1 (C42)	K2 (C42)	K3 (C42)	KX (C03)	Temp (C43)	
ISO 148-1	V-notch	100,00	97,000	133,00	110,00	-20,00	L

Norme Standard (C05)	PROVE DI TRAZIONE ASSE Z / TENSILE TEST Z AXIS (C50)			Orientamento Provini / Direction of test pieces (C02)
	Tipo Provini/Test Pieces Type (C51)	Z% AVERAGE THREE TESTS (C52)	MINIMUM Z% (C53)	
EN 10164				Z

Norme Standard (D03)	CLASSE ULTRASUONI / ULTRASONIC CLASS (D02)		Strumento: AnyScan 30 (D06)
	Classe UT / UT Class (D04)	Classe UT Bordo / UT Class Edge (D05)	Sonda:DoppiaPiana4MHz//2Mhz (D07)
EN 10160			UT 9712: D-00427-UT (D08)

(D01) TOLLERANZE FORMA E DIMENSIONE / SHAPE AND DIMENSION TOLLERANCE

Planarità / Flatness		Classe Superficie/Surface class		Tolleranza Spessore / Thickness Tolerance		Tolleranza Lunghezza/ Lenght Tolerance	- 0 / + 200
Norma / Standard	N	Norma / Standard	A1	Norma / Standard	A	Tolleranza Larghezza/ Width Tollerance	- 0 / + 70
EN 10029		EN 10163-2		EN 10029			

La spedizione è conforme all'ordine (Z01)
The delivery is in accordance with the order

Organizzazione del controllo / Inspection organization:
QUALITY DEPARTMENT (A05)

Ispettore / Inspector 30/08/2024

siderscal

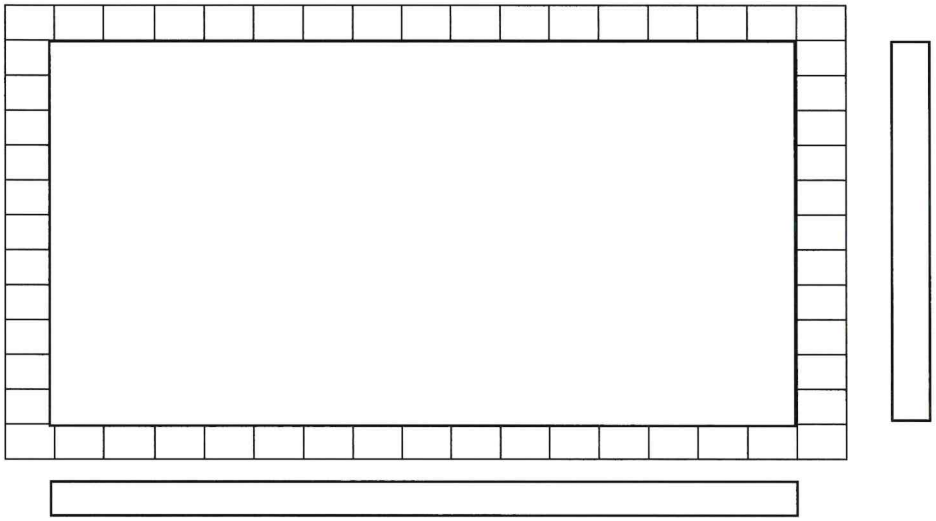
COSME GROUP SRL
VIA DEI PLATANI, 15/B
33050 SANTA MARIA LA LONGA (UD)
Tel. 0432 801333 - Fax 0432 801991
P.IVA - C.F. - R.I. di Udine 02815120304
www.cosmegroup.it e-mail: info@cosmegroup.it

DDT. 3614 DEL 12/11/2024
VS ORD DE 2400 6104 DEL 28/10/2024

SCHEDA CONTROLLO ULTRASUONI LAMIERE

CONFERMA GROUP 2024	CLIENTE:		QUALITA': S355J2+N	
ID LAMIERA: SHA-2472001126	COLATA: SHA-2472001126			
CONTROLLO DIMENSIONALE	*SPESSORE*	*LARGHEZZA*	*LUNGHEZZA*	*PESO*
DIMENSIONI ORDINE	30	2525	12075	7179
CONTROLLO ASPETTO E STATO SUPERFICIALE (EN 10163)	NATURALE DI LAMINAZIONE			
GIUDIZIO SUPERFICIE	CONFORME			

SCHEDA LAMIERA



STRUMENTO:
GILARDONI RDG450

ACCOPPIANTE:
ACQUA

4 - CONTROLLO
***CAMPIONE*: REF. D. 8mm ECO.**

5 – SONDA UTILIZZATA:
- □ - BDD 20/2 0°
- □ - BDD 20/4 0°
- □ - BDD 20/4 5°
- **X - DP 25/2 0°**
- □ - SD 25/4 0°

ISTRUZIONE TECNICA: PO_851_14 (PG. CONTROLLI UT)

CONTROLLO UT

NORMA:	CLASSE:	GRIGLIA/BORDO:	-TIPO CONTROLLO:	- CLASSE ASSEGNATA:
UNI EN 10160	**S2E3**	**100x100**	**100% SUPERFICIE INDICATA**	**S2E3**

- ANOMALIE RISCONTRATE: NESSUNA ANOMALIA RISCONTRATA.

LAMIERA BORDI NATURALI

COMPILATO: ANDREA ORSO
UNI EN ISO 9712:12 – SNT TC 1°
LEV. 3 UT – C,F,T,W,WP – IND-21-02444-R

- DATA COMPILAZIONE SCHEDA: 30/08/2024

MARCEGAGLIA PALINI E BERTOLI

Marcegaglia
46040 Via Bresciani, 16-Gazoldo degli Ippoliti Mantova-Italy
Tel. +39 - 0376 685 1 Fax. +39 - 0376 685 600
www.marcegaglia.com

Marcegaglia Palini e Bertoli S.P.A.
via E.Fermi, 28 33058 San Giorgio di Nogaro, Udine - Italy
tel +39 0431623111

Type/Tipo 3.1 CERTIFICATO DI COLLAUDO EN10204 | questo documento è stato generato automaticamente ed è valido senza firma | Number/Numero 16624648524 | Creato il 04/10/2024

Product: Hot Rolled Heavy Plates
NormaCollaudoLamieraTreno: EN10025-2:2019
Steel grade:: S355J2+N

Customer/Cliente
COSME GROUP S.R.L.
VIA DEI PLATANI 15/2
33050 SANTA MARIA LA LONGA IT

Code: 0000091849

Del. Address/Destinatario Merci
COSME GROUP S.R.L.
VIA DEI PLATANI 15/2
33050 SANTA MARIA LA LONGA IT

Delivery/N° Consegna 8920670772
Of/Del 04/10/2024
Delivery note nr/N° doc. di trasp. 1066012337

Quality Control/Controllo Qualità
Q.M.D./RESP. M.Rizzatti
Plant/Stab. Palini e Bertoli

Pages/Pagine 1/3

Material/Codice Materiale
LTS

Description/Descrizione
25,00 X 2450,00 X 12000,00 S355J2+N

Surface Quality: EN10163-2 CL A1
Flatness: rif EN 10029 cl. N
Thickness tolerance: EN10029 CLASSE B

Delivery Condition: NORMALIZING ROLLING
Steel Making Process: BO= Basic oxigen

Order Nr/ordine **1191806012/10**
Materiale Cliente

Client Order/Ordine cliente *** ORD. 194/24**
Client Date/data cliente **18/09/2024**

Item	Batch/N° Partita	ID Palini	Heat/Colata	Quantity/Q.tà KG	Quantity/Q.tà PZZ
1	24PZ005623	16F.7118.01	340930	5880	1
2	24PZ005620	16F.7121.02	340801	5880	1
3	24PZ005621	16F.7121.01	340801	5880	1
4	24PZ005622	16F.7120.03	340928	5880	1

Remarks/Note:
LAMIERE SABBIATE in acc. ISO 8501:2012 SA 2 ½.
CE Marking Certificate N.0474-CPR-0033 last issued 14/09/2020 Rev.05. Hot rolled products of structural steels in compliance with Regulation n°305/2011/EU dated 09/03/2011. DOP available on https://www.quality.marcegaglia.com.
UKCA Marking Certificate N.1244-CPR-1051 last issued 01/01/2023. Hot rolled products of structural steels in compliance with the Construction Products Regulation 2011 (retained EU law EUR 305/2011). DOP available on https://www.quality.marcegaglia.com.

DDT. 3614 DEL 12/11/2024
VS. ORD DE 2400614 DEL 28/10/2024

Batch/N° Partita	C (%)	Mn (%)	Si (%)	S (%)	P (%)	Cr (%)	Ni (%)	Cu (%)	Al (%)	Mo (%)	Nb (%)	V (%)	Ti (%)	N (%)	H (%)	B (%)	Ceq (%)
	0.2	1.6	0.55	0.025	0.025	0.29	0.42	0.55	0.02 0.3	0.11	0.06	0.1	0.05				0.45
24PZ005623	.150	1.500	.230	.0030	.0150	.010	.010	.020	.037	.0000	.030	.001	.0010	.0040	.00000	.0001	.40
24PZ005620	.160	1.420	.200	.0040	.0190	.020	.010	.020	.034	.0000	.030	.001	.0010	.0020	.00000	.0001	.40
24PZ005621	.160	1.420	.200	.0040	.0190	.020	.010	.020	.034	.0000	.030	.001	.0010	.0020	.00000	.0001	.40
24PZ005622	.150	1.470	.210	.0040	.0150	.010	.010	.010	.033	.0000	.028	.001	.0030	.0030	.00000	.0001	.40

Batch/N° Partita	Forma	(1)	(2)	(3)	Tst [°C]	Rm [N/mmq]	ReH [N/mmq]	A% (%)	(1)	(2)	(3)	(4)	T [°C]	Kv1 [J]	Kv2 [J]	Kv3 [J]	Kv[a] [J]	TESTN
					20	470	345	20					-20				27	
					20	630												
24PZ005623	C	1	P	T	20	596	493	27.1	1	P	L	10.0	-20	240	235	224	233	24-P17806R
24PZ005620	P	1	P	T	20	574	470	30.0	1	P	L	10.0	-20	188	207	212	202	24-P17896S
24PZ005621	P	1	P	T	20	562	455	29.8	1	P	L	10.0	-20	206	211	212	209	24-P17219R
24PZ005622	C	1	P	T	20	607	481	28.5	1	P	L	10.0	-20	186	173	194	184	24-P17807R

COSME GROUP SRL
VIA DEI PLATANI, 15/2
33050 SANTA MARIA LA LONGA (UD)
Tel. 0432 801333 - Fax 0432 801991
P.IVA - C.F. - R.I. di Udine 02815120304
cosmegroup.it e-mail: info@cosmegroup.it

Controllo ad ultrasuoni

Apparecchiatura	Numero di serie	Condizioni di superficie	Accoppiante	Mod. operativie	Taratura
Gilardoni RDG2000	050858001	As Rolled	Acqua	Secondo le specifiche	Secondo le specifiche

Firma
II Liv. EN/ISO 9712
Q.M.D. M.Rizzatti

MARCEGAGLIA Palini e Bertoli S.p.A. QUALITY CONTROL Rizzatti Marco

Item	Norma di riferimento	Classe accettabilità	Esito	Indicazioni	Reticolo	Bordi	Sonda	Frequenza	Angolo

(1)Posizione:1=Testa;2=Piede.(2)Posizione:1/2=1/2 spessore;P=Pelle;1/4=1/4 spessore.(3)Direzione:L=Longitudinale;T=Trasversale;(4)Spessore provino

DescrizioneMarchi

UKCA 1244 22 MARCEGAGLIA PALINI E BERTOLI v. Enrico Fermi, 28 33058 - S. Giorgio Nogaro Udine - Italy EN 10025-1 EN 10025-2

CE 0474 06 MARCEGAGLIA PALINI E BERTOLI v. Enrico Fermi, 28 33058 - S. Giorgio Nogaro Udine - Italy EN 10025-1 EN 10025-2

- Material Free of radioactive contamination
- Dimensional check and visual examination of the surface condition: without objection
- We Declare that the above mentioned plates are in compliance with the order prescription
- We hereby declare that the above mentioned material have been manufactured in Italy, thus of European Community origin

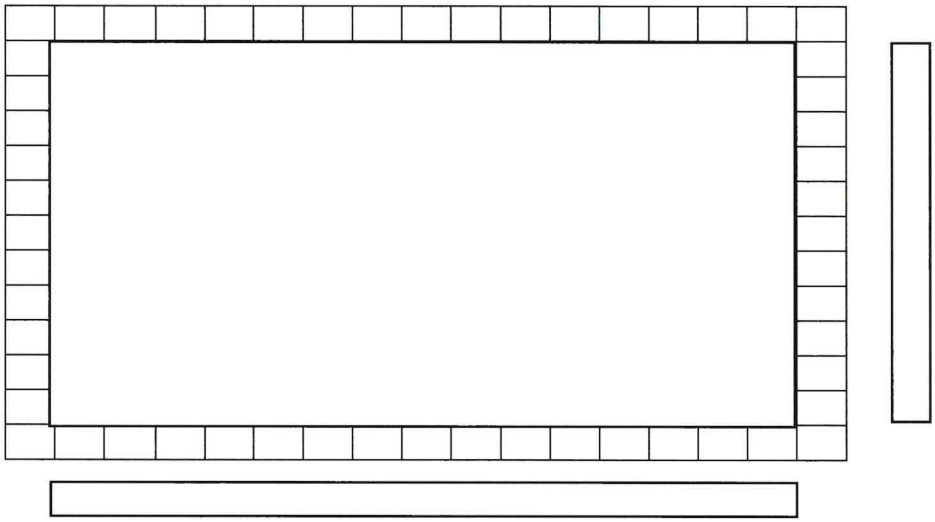
COSME GROUP

Scheda controllo ultrasuoni
Inspection Certificate

SCHEDA CONTROLLO ULTRASUONI LAMIERE

CONFERMA GROUP 2024	CLIENTE:		QUALITA': S355J2+N	
ID LAMIERA: 16F.7120.03	COLATA: 340928			
CONTROLLO DIMENSIONALE	*SPESSORE*	*LARGHEZZA*	*LUNGHEZZA*	*PESO*
DIMENSIONI ORDINE	25	2450	12000	5880
CONTROLLO ASPETTO E STATO SUPERFICIALE (EN 10163)	NATURALE DI LAMINAZIONE			
GIUDIZIO SUPERFICIE	CONFORME			

SCHEDA LAMIERA



STRUMENTO:
GILARDONI RDG450

ACCOPPIANTE:
ACQUA

4 - CONTROLLO
***CAMPIONE*: REF. D. 8mm ECO.**

5 – SONDA UTILIZZATA:
- □ - BDD 20/2 0°
- □ - BDD 20/4 0°
- □ - BDD 20/4 5°
- **X - DP 25/2 0°**
- □ - SD 25/4 0°

ISTRUZIONE TECNICA: PO_851_14 (PG. CONTROLLI UT)

CONTROLLO UT

NORMA:	CLASSE:	GRIGLIA/BORDO:	-TIPO CONTROLLO:	- CLASSE ASSEGNATA:
UNI EN 10160	**S2E3**	**100x100**	**100% SUPERFICIE INDICATA**	**S2E3**

- ANOMALIE RISCONTRATE: NESSUNA ANOMALIA RISCONTRATA.

LAMIERA BORDI NATURALI

COMPILATO: ANDREA ORSO
UNI EN ISO 9712:12 – SNT TC 1°
LEV. 3 UT – C,F,T,W,WP – IND-21-02444-R

- DATA COMPILAZIONE SCHEDA: 04/10/2024

REMAZEL	CERTIFICATION LIST	Certificate Nr.: 001/24 Date: 30/10/2024

Final Customer:	Order Customer:	Object:	Description:	Quantity:	Inspection and Test Plan (ITP):	Our job:
Rosetti Marino	EFC					

MATERIAL

Drawing	Pos.	Q.ty	Description	Material	Certificates 3.1	Order	Heat/Plate ID	Additional Mechanical Test	UT Certificates	Nesting
C09-0001-P0015	1	1	WHEEL Ø200mm	C45	B2202309120154	24006083	23807325	*	*	
C09-0001-P0066	1	1	PULLEY BOOM Ø320mm	S355J2	255714\1	24006433	457170	*	*	
C09-0001-P0045	1	1	PULLEY Ø240mm	S355J2	H72116580	24006083	0014477Z	*	*	
C09-0001-P0046	1	1	ANTISKID	S355J2	CRL2413532164	24006083	815265	*	*	
C09-0001-P0085	1	1	Ø279*35	S355J2+N	1154/4	24006083	1240905	*	*	
C09-0001-P0085	2	1	Ø127*30	S355J2+N	1253/3	24006083	1241244	*	*	

Продукція виготовлена в умовах сертифікованих систем менеджменту якості, навколишнього середовища та безпеки./The products were manufactured in controlled conditions of certified quality, environment and safety management system

(A01)
ТОВАРИСТВО З ОБМЕЖЕНОЮ ВІДПОВІДАЛЬНІСТЮ
"ИНТЕРПАЙП НИКО ТЬЮБ"
Юридична адреса: пр.Трубников,56,м.Нікополь,Україна,53200
Адрес виробництва: вул.Каштанова,35,м.Дніпро,Україна,49081
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LIMITED LIABILITY COMPANY "INTERPIPE NIKO TUBE"
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ІНСПЕКЦІЙНИЙ СЕРТИФІКАТ
INSPECTION CERTIFICATE (A02)
EN 10204-2004/3.1

No : 1154/4
Аркуш / Page 1/3 (A03)
Дата / Data 02.04.2024

(A13)
CE
07
DoP №LLC"INTERPIPE NIKO TUBE" /1.0576-2021
EN 10210-1:2006
0090

Вантажоодержувач/ Consignee (A06.1) E. F. C. ACCIAI s.r.l. 25030 - Via Quinzano 84, Castelmella (Brescia), 25030, Italy	Контракт №/ Contract # COC24/0583
	Заводське замовлення/Production order # (A08) 640583/101
Країна/ Country (A06.1) Італія/Italy	№ замовлення клієнта/ Customers ref # (A07) PO#201/24
Транспортний засіб/ Vehicle № AO 7197CE/AO0150XP	Унікальний №/ Unique # 24-002284 (A09)

(B01,B02,B03) Стан постачання / Dellivery condition	Труби сталеві безшовні гарячекатані/Seamless steel hot-rolled pipes
	EN 10210-1:2006/ EN 10210-2:2019/ EN 10297-1:2003/ EN 10216-3:2013
	E355+N/ P355N TC1/ S355J2H
	Труби обрізані під прямим кутом / Pipes are cut off under a right angle
	Труби без ковпачків / Pipes without caps.
	Труби без покриття./ Pipes without coating.

Додаткова інформація/Additional information
Завод сертифікований по PED (Pressure Equipment Directive) 2014/68/EU (appendix 1 exp. 4.3 and 7.5). / The Mill is PED (Pressure Equipment Directive) 2014/68/EU (appendix 1 exp. 4.3 and 7.5) certified.
Маса фактична. / Actual weight.
Без травлення/ Pipes without etching

Термообробка/Heat treatment
Нормалізація з прокатного нагріву за температури 845-945°C / Normalized rolling at the temperature 845-945 deg C.

№ поз. Item No	(B07.4) Номер пакунка Bundie#	(B07.3) Номери труб Pipe#	(B07.1) Номер плавки Heat#	(B07.2) Номер партії Inspection Lot#	(B09) Зовнішній діаметр OD мм mm	(B09) Товщина стінки WT мм mm	(B010) Довжина Length м m	(B11) Загальна довжина Total length м m	(B08) штуки pieces	(B13) Фактична вага Actual weight брутто gross кг kg	(B13) нетто net кг kg
1	51	8236	1240905	653	298.5	45.00	6.00-7.10	6,88	1	1978	1968
2	52	8235	1240905	653	298.5	45.00	6.00-7.10	6,86	1	2006	1996
3	53	8234	1240905	653	298.5	45.00	6.00-7.10	6,03	1	1760	1750
		For item/поз.: # 24-002284-008				РАЗОМ/TOTAL		19,77	3	5744	5714

ПАКУНКІВ/BUNDLES 3

Продукція виготовлена в умовах сертифікованих систем менеджменту якості, навколишнього середовища та безпеки./The products were manufactured in controlled conditions of certified quality, environment and safety management system

(A01)
ТОВАРИСТВО З ОБМЕЖЕНОЮ ВІДПОВІДАЛЬНІСТЮ
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ІНСПЕКЦІЙНИЙ СЕРТИФІКАТ
INSPECTION CERTIFICATE
EN 10204-2004/3.1 (A02)

No : 1154/4
Аркуш / Page 2/3 (A03)
Дата / Data 02.04.2024

(C71) **Хімічний склад по сертифікатним даним на заготівку в % /Heat analysis acc.to the billet manufacturer certificate %**

(B07.1) Номер плавки Heat #	C x100	Mn x100	Si x100	S x1000	P x1000	Cr x100	Ni x100	Cu x100	Mo x1000	Ti x1000	V x1000	Nb x1000	Al x1000	B x1000	N x1000	CEV
min	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
max	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0,47
1240905	19.2	149.9	24	3	14	9.3	10.5	17.1	11	4	5	3	31	0.4	6.2	0.48

CEV	C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15
НД на заготівку/Normative documentation for billets	ТУ У 24.1-33718431-001:2015 Изм.№1
Завод виробник/ Plant-manufacturer	"Дніпросталь"/"MP"DNEPROSTEEL"LLC
(C70)	Сталь вироблена методом плавління в електродуговій печі з подальшим безперервним розливом. Сталь повністю розкислена та дрібнозерниста. Сталь розкислена алюмінієм. Заготовка виготовлена з чавуну та сталі на ТОВ «МЗ Дніпросталь» (ЄДРПОУ номер 33718431) за адресою: Україна, м. Дніпро, вул. Дніпросталівська 4/ The steel is produced by melting in an electric arc furnace followed by continuous casting. The steel is fully killed and fine-grained. The steel is killed with aluminium. The billet is made of cast iron and steel at "MP"DNEPROSTEEL"LLC (USREOU number 33718431) at the following address: 4, Dneprostalivska Str., Dnipro, Ukraine.
(C93-C99)	Не містить жодних матеріалів або компонентів, що походять з Росії, Білорусі, окупованих територій України (Крим, Донецька, Луганська, Херсонська, Запорізька області), Ірану, Сирії, Північної Кореї чи будь-якої іншої санкційної юрисдикції. Митний код: заготовка, одержана безперервним литтям, кругла, з нелегованої сталі, з масовою часткою вуглецю менш як 0,25 % - 720719/ Does not contain any materials or components originating from Russia, Belarus, the occupied territories of Ukraine (Crimea, Donetsk, Luhansk, Kherson, Zaporizhzhia regions), Iran, Syria, North Korea or any other sanctioned jurisdiction. Customs code: The billets produced by continuous casting, round, of unalloyed steel with a mass fraction of carbon less than 0.25% – 720719

(C72) **Результати контролю хімічного складу метала труб/Results of chemical analysis of pipes**

(B07.1) Номер плавки Heat #	Номер партії Lot#	(C00.1) зразок Test piece	C x100	Mn x100	Si x100	S x1000	P x1000	Cr x100	Ni x100	Cu x100	Mo x1000	Ti x1000	V x1000	Nb x1000	Al x1000	B x1000	N x1000	CEV
min			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
max			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0,47
1240905	653	1	19	149	23	2	13	9	10	17	10	5	5	2	30		6	0.48

CEV	C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15

Результати випробувань труб - Test results for pipes

Випробування на розтягнення/ Tensile test

(B07.1) Номер плавки Heat#	(B07.2) Номер партії Lot#	(C12) Межа міцності Tensile strength Rm	(C12) Межа міцності Tensile strength t= Rm	(C11) Межа плинності Rp0,2 Yield strength Rp0,2	(C11) Межа плинності Yield strength t=	(C13) Відносне подовження Elongation 70	(C13) Відносне подовження Elongation t=	(C15) Відносне звуження Relative narrowing	(C15) Відносне звуження Relative narrowing t=	(C14) Ставлення Rt/Rm Ratio Rt/Rm	(C02) Орієнтація зразків Spesimens orientation*	(C10.1) Ширина смугового зразка Width of stip specimen	(C10.2) Діаметр циліндричного зразка Diameter of cylindrical specimen	(C10.1) Довжина зразка Length of specimen
		МПа	МПа	МПа	МПа	%	%	%	%			мм/mm	мм/mm	мм/mm
min		490		335		22				-				
max		630								-				
1240905	653	556	-	381	-	31,0	-	-	-	-	L		14	70

* L - Поздовжній зразок / Longitudinal specimen; T - Поперечний зразок / transverse specimen

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(A01)
ТОВАРИСТВО З ОБМЕЖЕНОЮ ВІДПОВІДАЛЬНІСТЮ
"ИНТЕРПАЙП НИКО ТЬЮБ"
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Адрес виробництва: вул.Каштанова,35,м.Дніпро,Україна,49081
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ІНСПЕКЦІЙНИЙ СЕРТИФІКАТ
INSPECTION CERTIFICATE
EN 10204-2004/3.1 (A02)

No : 1154/4
Аркуш / Page 3/3 (A03)
Дата / Data 02.04.2024

Випробування на удар/Impact test

(B07.1) Номер плавки Heat#	(C00.1) Номер партії Lot#	(C02) Орієнтація зразка Spesimens orientation*	(C40) Тип надрізання, температура Type of notch, temperature	Норматив Norm	Випробування на удар (Ударна в'язкість) Impact test (Impact strength) (C42) 1	(C42) 2	(C42) 3	(C43) сер.знач./av.	(C44) Площа зсуву Shear area	(C41) Ширина смугового зразка Width of stip specimen
				min	Дж	Дж	Дж	Дж	%	мм/mm
1240905	653	L	KV -20°C	40	102,0	121,8	117,6	113,8		10x10
1240905	653	T	KV -20°C	27	75,6	118,6	69,6	87,9		10x10

* L - поздовжній зразок/Longitudial spesimen; T - поперечний зразок/transverse spesimen
** Результати випробувань зменшених зразків перераховані на повнорозмірні/Non-fullsize specimens results convert to fullsize (10x10mm)

(C50,D55)
Інші види контролю / Other tests

Вид випробування/ Type of test	Параметри/ Criteria		Результати контролю/ Test results
Сплющення/ Flattening test	За стандартом / As per Standard	100%	Задовільно / Satisfactory
Кільцеве розтягнення/ Ring tensile	За стандартом/ As per Standard	100%	Задовільно / Satisfactory
Випробування гідравлічним тиском/ Hydrostatic test	7MPa/5sec	100%	Задовільно / Satisfactory
Візуальний контроль/ Visual inspection	За стандартом / As per Standard	100%	Задовільно / Satisfactory
Контроль геометричних параметрів/ Dimensional inspection	За стандартом/ As per Standard	100%	Задовільно / Satisfactory

(A04,B06)
Маркування фарбою/ Marking paint
INTERPIPE NIKO TUBE EN 10210-1.2 S355J2H EN 10297-1 E355+N EN 10216-3 P355N TC1 pipe dimensions Heat# Lot# Pipe# stamp QD Conformance symbol CE

(Z01)
Труби виготовлені і випробувані відповідно до вимог EN 10210-1:2006/ EN 10210-2:2019/ EN 10297-1:2003/ EN 10216-3:2013 і замовлення / Pipes were produced and inspected according to requirements of EN 10210-1:2006/ EN 10210-2:2019/ EN 10297-1:2003/ EN 10216-3:2013 and order's requirements

(A05,Z02,Z03)

Дата/Data	
02.04.2024	Підпис особи, відповідальної за видачу сертифікату /Signature of Certificate ispector Іваненко Дарина Андріївна/Ivanenko Darina

Вказівка в дужках відповідає кодам згідно EN 10168 /Indication in parentheses correspond to sttributes according to EN 10168.

(Z05)
Ваші пропозиції щодо поліпшення продукції просимо надсилати на ел.адресу / Please send Your proposals for improving the product by e-mail or fax or by phone info@ nstp.interpipe.biz www.interpipe.biz Phone: +380 566-630-133 Fax: +380 566-639-379. e-mail: info@ua.interpipe.biz Phone: +38 (056)74-74-066 Fax: +38(056)770-20-01 Цей інспекційний сертифікат стосується лише перерахованої в ньому продукції. Неприпустимо внесення змін або інше неправомірне використання сертифіката. /This inspection certificateis only for the listed products. Modification or unauthorized use of the certificate is strictly prohibited. Violations can be considered as forgery and is subject to prosecution

INTERPIPE NIKO TUBE

EN ISO 14001 2015 2010422000777 6 ISO 45001 2018 2010422000777 7

The testing laboratory is accredited in accordance with the requirements of DSTU EN ISO IEC 17025:2019 (2018-09)

ООВ ВНІТІ-ТЕСТ № 80054 ДСТУ ISO 9001:2015

Продукція виготовлена в умовах сертифікованих систем менеджменту якості, навколишнього середовища та безпеки./The products were manufactured in controlled conditions of certified quality, environment and safety management system

(A01)
ТОВАРИСТВО З ОБМЕЖЕНОЮ ВІДПОВІДАЛЬНІСТЮ "ИНТЕРПАЙП НИКО ТЬЮБ"
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(A02)
ІНСПЕКЦІЙНИЙ СЕРТИФІКАТ
INSPECTION CERTIFICATE
EN 10204-2004/3.1

(A03)
No :
1253/3
Аркуш / Page 1/5
Дата / Data
01.05.2024

(A13)
CE
07
DoP №LLC"INTERPIPE NIKO TUBE" /1.0576-2021
EN 10210-1:2006
0090

Вантажоодержувач/ Consignee (A06.1) E. F. C. ACCIAI s.r.l. 25030 - Via Quinzano 84, Castelmella (Brescia), 25030, Italy	Контракт №/ Contract # COC24/0761
	Заводське замовлення/Production order # (A08) 540761/101
Країна/ Country (A06.1) Італія/Italy	№ замовлення клієнта/ Customers ref # (A07) PO#511/24
Транспортний засіб/ Vehicle № AO 2500KB/AO2221XP	Унікальний №/ Unique # 24-003142 (A09)

(B01,B02,B03)	
Стан постачання / Dellivery condition Нормалізовані/ Normalized condition	Труби сталеві безшовні гарячекатані/Seamless steel hot-rolled pipes
	EN 10210-1:2006/ EN 10210-2:2019/ EN 10297-1:2003/ EN 10216-3:2013
	E355+N/ P355N TC1/ S355J2H
	Труби обрізані під прямим кутом / Pipes are cut off under a right angle
	Труби без ковпачків / Pipes without caps.
	Труби без покриття./ Pipes without coating.

Додаткова інформація/Additional information
Виробник труб сертифікований відповідно до EN ISO 9001:2015, відповідно сертифіката № 2010022314373/001 / The manufacturer of pipes is certified EN ISO 9001: 2015, according to certificate No. 2010022314373/001
Завод сертифікований по PED (Pressure Equipment Directive) 2014/68/EU (appendix 1 exp. 4.3 and 7.5). / The Mill is PED (Pressure Equipment Directive) 2014/68/EU (appendix 1 exp. 4.3 and 7.5) certified.
Маса фактична. / Actual weight.
Країна виплавки та виробництва - Україна./Country of melt and manufacturer UKRAINE.
Без травлення/ Pipes without etching

Термообробка/Heat treatment
Труби виготовлені шляхом гарячої деформації та нормалізовані при температурі 845...945°C, охолоджені на повітрі /Pipes produced by Hot Forming followed by normalizing at the temperature 845 deg C to 945 deg C cooled at air

№ поз. Item No	(B07.4) Номер пакунка Bundle#	(B07.3) Номери труб Pipe#	(B07.1) Номер плавки Heat#	(B07.2) Номер партії Inspection Lot#	(B09) Зовнішній діаметр OD мм mm	(B09) Товщина стінки WT мм mm	(B010) Довжина Length м m	(B11) Загальна довжина Total length м m	(B08) штуки pieces	(B13) Фактична вага Actual weight брутто gross кг kg	(B13) Фактична вага Actual weight нетто net кг kg
1	4076	1-6	1241244	1104	101.6	25.00	7.00-8.00	45,69	6	2124	2114
2	4078	13-15	1241244	1104	101.6	25.00	7.00-8.00	22,74	3	1062	1052
							РАЗОМ/TOTAL ПАКУНКІВ/BUNDLES 2	68,43	9	3186	3166

For item/поз.: # 24-003142-015

Супровідний дерев'яний пакувальний матеріал / Accompanying packaging wooden material 4

INTERPIPE NIKO TUBE

ООВ ВНІТІ-ТЕСТ
№ 80054
ДСТУ ISO 9001:2015

The testing laboratory is accredited in accordance with the requirements of DSTU EN ISO IEC 17025:2018 (20050)

Продукція виготовлена в умовах сертифікованих систем менеджменту якості, навколишнього середовища та безпеки./The products were manufactured in controlled conditions of certified quality, environment and safety management system

(A01)
ТОВАРИСТВО З ОБМЕЖЕНОЮ ВІДПОВІДАЛЬНІСТЮ
"ИНТЕРПАЙП НИКО ТЬЮБ"
Юридична адреса:
пр.Трубников,56,м.Нікополь,Україна,53200
Адрес виробництва:
вул.Каштанова,35,м.Дніпро,Україна,49081
Контактна інформація: +38(0562)35-85-07,quality@m.interpipe.biz
LIMITED LIABILITY COMPANY "INTERPIPE NIKO TUBE"
Legal address: Trubnykiv Av.,56,Nikopol,Ukraine,53200
Facility address: Kaschtanova Str.,35,Dnipro,Ukraine,49081
Contact information: +38(0562)35-85-07,quality@m.interpipe.biz

(A02)
ІНСПЕКЦІЙНИЙ СЕРТИФІКАТ
INSPECTION CERTIFICATE
EN 10204-2004/3.1

(A03)
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						РАЗОМ ВАНТАЖ/TOTAL CARGO				3190	
3	3864	16	1241244	964	127.0	30.00	6.00-7.00	6,69	1	474	472
						РАЗОМ/TOTAL ПАКУНКІВ/BUNDLES 1		6,69	1	474	472
		For item/поз.: # 24-003142-022									
4	4319	10	1241296	1030	152.4	25.00	6.50-7.50	7,07	1	557	556
						РАЗОМ/TOTAL ПАКУНКІВ/BUNDLES 1		7,07	1	557	556
		For item/поз.: # 24-003142-023									
5	4307	7,8	1241277	1117	152.4	30.00	7.00-8.00	14,56	2	1339	1336
						РАЗОМ/TOTAL ПАКУНКІВ/BUNDLES 1		14,56	2	1339	1336
		For item/поз.: # 24-003142-025									
						Супровідний дерев'яний пакувальний матеріал / Accompanying packaging wooden material				1	
						РАЗОМ ВАНТАЖ/TOTAL CARGO				1340	
6	4231 A	41	1241277	1131	159.0	28.00	5.92-6.02	6,01	1	544	542
						РАЗОМ/TOTAL ПАКУНКІВ/BUNDLES 1		6,01	1	544	542
		For item/поз.: # 24-003142-030									
7	3827	8	1241278	982	193.7	30.00	5.50-6.50	6,16	1	710	708
						РАЗОМ/TOTAL ПАКУНКІВ/BUNDLES 1		6,16	1	710	708
		For item/поз.: # 24-003142-039									
						Супровідний дерев'яний пакувальний матеріал / Accompanying packaging wooden material				1	
						РАЗОМ ВАНТАЖ/TOTAL CARGO				711	
						РАЗОМ/TOTAL		**108,92**	**15**	**6810**	**6780**
						ПАКУНКІВ/BUNDLES 7					
						Супровідний дерев'яний пакувальний матеріал / Accompanying packaging wooden material				**6**	
						РАЗОМ ВАНТАЖ/TOTAL CARGO		**108,92**	**15**	**6816**	**6780**

(A01)

ТОВАРИСТВО З ОБМЕЖЕНОЮ ВІДПОВІДАЛЬНІСТЮ
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(A02)

ІНСПЕКЦІЙНИЙ СЕРТИФІКАТ
INSPECTION CERTIFICATE
EN 10204-2004/3.1

(A03)

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(C71) **Хімічний склад по сертифікатним даним на заготівку в % /Heat analysis acc.to the billet manufacturer certificate %**

(B07.1) Номер плавки Heat #	C x100	Mn x100	Si x100	S x1000	P x1000	Cr x100	Ni x100	Cu x100	Mo x1000	Ti x1000	V x1000	Nb x1000	Al x1000	B x1000	N x1000	CEV
min	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
max	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.47
1241244	17.2	135.4	20	4	18	13.8	10.7	21.4	9	2	4	3	33	0.4	5	0.45
1241277	17.1	132.5	18.8	4	16	11.9	11.9	22.5	12	3	4	2	25	0.4	6.1	0.44
1241278	17.5	132.8	19.5	4	15	11.3	11.3	21.9	10	4	4	2	28	0.4	5.5	0.44
1241296	18	135.3	20.6	3	14	10.4	10.3	20.8	10	3	4	3	31	0.5	5.2	0.45

CEV	C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15
НД на заготівку/Normative documentation for billets	ТУ У 24.1-33718431-001:2015 Изм.№1
Завод виробник/ Plant-manufacturer	"Дніпросталь"/"MP"DNEPROSTEEL"LLC
(C70)	Сталь вироблена методом плавління в електродуговій печі з подальшим безперервним розливом. Сталь повністю розкислена та дрібнозерниста. Сталь розкислена алюмінієм. Заготовка виготовлена з чавуну та сталі на ТОВ «МЗ Дніпросталь» (ЄДРПОУ номер 33718431) за адресою: Україна, м. Дніпро, вул. Дніпросталівська 4/ The steel is produced by melting in an electric arc furnace followed by continuous casting. The steel is fully killed and fine-grained. The steel is killed with aluminium. The billet is made of cast iron and steel at "MP"DNEPROSTEEL"LLC (USREOU number 33718431) at the following address: 4, Dneprostalivska Str., Dnipro, Ukraine.
(C93-C99)	Не містить жодних матеріалів або компонентів, що походять з Росії, Білорусі, окупованих територій України (Крим, Донецька, Луганська, Херсонська, Запорізька області), Ірану, Сирії, Північної Кореї чи будь-якої іншої санкційної юрисдикції. Митний код: заготовка, одержана безперервним литтям, кругла, з нелегованої сталі, з масовою часткою вуглецю менш як 0,25 % - 720719/ Does not contain any materials or components originating from Russia, Belarus, the occupied territories of Ukraine (Crimea, Donetsk, Luhansk, Kherson, Zaporizhzhia regions), Iran, Syria, North Korea or any other sanctioned jurisdiction. Customs code: The billets produced by continuous casting, round, of unalloyed steel with a mass fraction of carbon less than 0.25% – 720719

(C72) **Результати контролю хімічного складу метала труб/Results of chemical analysis of pipes**

(B07.1) Номер плавки Heat #	Номер партії Lot#	(C00.1) зразок Test piece	C x100	Mn x100	Si x100	S x1000	P x1000	Cr x100	Ni x100	Cu x100	Mo x1000	Ti x1000	V x1000	Nb x1000	Al x1000	B x1000	N x1000	CEV
min			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
max			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.47
1241244	1104	2	17	132	20	3	18	13	11	21	10	5	5	1	34		5	0.44
	964	1	19	134	19	3	18	13	11	21	10	5	5	2	30		6	0.46
1241277	1117	2	17	133	20	2	15	12	12	22	12	5	5	2	25		6	0.44
	1131	1	18	132	20	3	14	11	12	21	11	5	5	2	25		6	0.45
1241278	982	1	19	134	20	3	16	11	12	22	11	5	5	2	29		6	0.46
1241296	1030	1	17	134	20	2	14	10	11	23	12	5	5	2	34		5	0.44

CEV	C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15

Результати випробувань труб - Test results for pipes

Випробування на розтягнення/ Tensile test

(B07.1)	(B07.2)	(C12)	(C12)	(C11)	(C11)	(C13)	(C13)	(C15)	(C15)	(C14)	(C02)	(C10.1)	(C10.2)	(C10.1)

INTERPIPE NIKO TUBE

ТОВ ВНІТІ-ТЕСТ № 80054 ДСТУ ISO 9001:2015

The testing laboratory is accredited in accordance with the requirements of DSTU EN ISO IEC 17025:2019

Продукція виготовлена в умовах сертифікованих систем менеджменту якості, навколишнього середовища та безпеки./The products were manufactured in controlled conditions of certified quality, environment and safety management system

(A01)
ТОВАРИСТВО З ОБМЕЖЕНОЮ ВІДПОВІДАЛЬНІСТЮ "ИНТЕРПАЙП НИКО ТЬЮБ"
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(A02)
ІНСПЕКЦІЙНИЙ СЕРТИФІКАТ
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EN 10204-2004/3.1

(A03)
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Номер плавки Heat#	Номер партії Lot#	Межа міцності Tensile strength Rm	Межа міцності Tensile strength t= Rm	Межа плинності Yield strength	Межа плинності Yield strength t=	Відносне подовження Elongation	Відносне подовження Elongation t=	Відносне звуження Relative narrowing	Відносне звуження Relative narrowing t=	Ставлення Rt/Rm Ratio Rt/Rm	Орієнтація зразків Spesimens orientation*	Ширина смугового зразка Width of stip specimen	Діаметр циліндричного зразка Diameter of cylindrical	Довжина зразка Length of specimen
		МПа	МПа	МПа	МПа	%	%	%	%			мм/mm	мм/mm	мм/mm
min		490		345		22				-				
max		630								-				
1241244	1104	543	-	425	-	30,0	-	-	-	-	L		14	70
1241244	964	538	-	375	-	25,2	-	-	-	-	L		14	70
1241277	1117	546	-	436	-	28,8	-	-	-	-	L		14	70
1241277	1131	532	-	397	-	28,4	-	-	-	-	L		14	70
1241278	982	523	-	356	-	27,1	-	-	-	-	L		14	70
1241296	1030	515	-	400	-	27,0	-	-	-	-	L		14	70

* L - Поздовжній зразок / Longitudinal specimen; T - Поперечний зразок / transverse specimen

Випробування на удар/Impact test

(B07.1) Номер плавки Heat#	(C00.1) Номер партії Lot#	(C02) Орієнтація зразка Spesimens orientation*	(C40) Тип надрізання, температура Type of notch, temperature	Норматив Norm	Випробування на удар (Ударна в 'язкість) Impact test (Impact strength) (C42) 1	(C42) 2	(C42) 3	(C43) сер.знач./av.	(C44) Площа зсуву Shear area	(C41) Ширина смугового зразка Width of stip specimen
				min	Дж	Дж	Дж	Дж	%	мм/mm
1241244	1104	L	KV -20°C	40	177,6	201,0	189,6	189,4		10x10
1241244	1104	T	KV -20°C	27	173,4	166,8	175,8	172,0		10x10
1241244	964	L	KV -20°C	40	168,0	161,4	123,6	151,0		10x10
1241244	964	T	KV -20°C	27	161,4	134,4	159,0	151,6		10x10
1241277	1117	L	KV -20°C	40	153,6	103,8	192,0	149,8		10x10
1241277	1117	T	KV -20°C	27	177,6	128,4	133,2	146,4		10x10
1241277	1131	L	KV -20°C	40	177,0	162,0	184,2	174,4		10x10
1241277	1131	T	KV -20°C	27	148,2	153,0	165,0	155,4		10x10
1241278	982	L	KV -20°C	40	158,4	163,2	162,6	161,4		10x10
1241278	982	T	KV -20°C	27	149,4	154,2	157,8	153,8		10x10
1241296	1030	L	KV -20°C	40	161,4	167,2	143,4	157,3		10x10
1241296	1030	T	KV -20°C	27	136,8	144,0	140,4	140,4		10x10

* L - поздовжній зразок/Longitudial spesimen; T - поперечний зразок/transverse spesimen

** Результати випробувань зменшених зразків перераховані на повнорозмірні/Non-fullsize specimens results convert to fullsize (10x10mm)

(A01)
ТОВАРИСТВО З ОБМЕЖЕНОЮ ВІДПОВІДАЛЬНІСТЮ
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(A02)
ІНСПЕКЦІЙНИЙ СЕРТИФІКАТ
INSPECTION CERTIFICATE
EN 10204-2004/3.1

(A03)
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(C50,D55)

Інші види контролю / Other tests

Вид випробування/ Type of test	Параметри/ Criteria		Результати контролю/ Test results
Сплющення/ Flattening test	За стандартом / As per Standard	100%	Задовільно / Satisfactory
Випробування гідравлічним тиском/ Hydrostatic test	7MPa/5sec	100%	Задовільно / Satisfactory
Візуальний контроль/ Visual inspection	За стандартом/ As per Standard	100%	Задовільно / Satisfactory
Контроль геометричних параметрів/ Dimensional inspection	За стандартом/ As per Standard	100%	Задовільно / Satisfactory

(A04,B06)

Маркування фарбою/ Marking paint

INTERPIPE NIKO TUBE EN 10210-1.2 S355J2H EN 10297-1 E355+N EN 10216-3 P355N TC1 pipe dimensions Heat# Lot# Pipe# stamp QD Conformance symbol CЄ

(Z01)

Труби виготовлені і випробувані відповідно до вимог EN 10210-1:2006/ EN 10210-2:2019/ EN 10297-1:2003/ EN 10216-3:2013 і замовлення / Pipes were produced and inspected according to requirements of EN 10210-1:2006/ EN 10210-2:2019/ EN 10297-1:2003/ EN 10216-3:2013 and order's requirements

(A05,Z02,Z03)

Дата/Data	
01.05.2024	Підпис особи, відповідальної за видачу сертифікату /Signature of Certificate ispector Карягіна Л.А./Karyagina L.A.

Вказівка в дужках відповідає кодам згідно EN 10168 /Indication in parentheses correspond to sttributes according to EN 10168.

(Z05)

Ваші пропозиції щодо поліпшення продукції просимо надсилати на ел.адресу / Please send Your proposals for improving the product by e-mail or fax or by phpne info@ nstp.interpipe.biz www.interpipe.biz Phone: +380 566-630-133 Fax: +380 566-639-379. e-mail: info@ua.interpipe.biz Phone: +38(056)74-74-066 Fax: +38(056)770-20-01 Цей інспекційний сертифікат стосується лише перерахованої в ньому продукції. Неприпустимо внесення змін або інше неправомірне використання сертифіката. /This inspection certificateis only for the listed products. Modification or unauthorized use of the certificate is strictly prohibited. Violations can be considered as forgery and is subject to prosecution

9 Pin/Shaft/Wheel/Pulley

Pin for Davit Crane X-99001								
Part Number	*Rev.*	*Description*	*Material*	*Pos.*	*Qt.y*	*Heat/IDplate*	*Certificates 3.1*	*Other mechanical test*
C09-0001-P0013	A	Shaft traveling trolley	Rod Bar Ø50 mm AISI 630	01	1	400197	2024031179	N.A.
C09-0001-P0014	A	Pulley Axis Ø60	Rod Bar Ø 65 mm AISI 630	01	1	400197	202402159	N.A.
C09-0001-P0015	A	Wheel Ø 167	C45	1	1	23807325	B2202309120154	N.A.
C09-0001-P0016	A	Axis for Wheel Ø90	AISI 630	01	1	300549	2023053221	N.A.
C09-0001-P0037	A	Shaft Pulley Hook	Rod Bar Ø 60 mm AISI 630	01	1	400197	202402159	N.A.
C09-0001-P0038	B	Roller Bearing Swivels	S355J2	01	1	480592	429339/1	N.A.
C09-0001-P0066	A	Pulley Boom Ø320	S355J2	01	1	457170	255714/1	N.A.
C09-0001-P0045	A	Pulley Ø209 for rope Ø11	S355J2	01	1	0014477Z	H72116580	N.A.
C09-0001-P0046	A	Hook Anti-Skid	S355J2C	01	1	815265	CRL2413532164	N.A.
C09-0001-P0050	A	Trolley Pinion M=6 Z=13	42CrMo4	01	1	220602441	4883	N.A.
C09-0001-P0040	A	Shaft Winch Ø80 mm	AISI 630	01	1	401373	2024049141	N.A.
We declare that all dimensions checked are in compliance with the drawings								

REMAZEL

CERTIFICATION LIST

Certificate Nr.: 001/24
Date: 04/11/2024

Final Customer:	Order Customer:	Object:	Description:	Quantity:	Inspection and Test Plan (ITP):	Our job:
Rosetti Marino	COGNE		Pins/Axis		1724001010-QC-ITP-00002	

MATERIAL

Drawing	Pos.	Q.ty	Description	Material	Certificates 3.1	Order	Heat/Plate ID	Additional Mechanical Test	UT Certificates	Nesting
C09-0001-P0013	1	1	T TRAVELLING TROLLEY Ø	AISI 630	2024031179	24005759	400197	MICRO	1177/24	
C09-0001-P0014	1	1	PULLEY AXIS Ø65mm	AISI 630	2024024159	24005759	400197	MICRO	982/24	
C09-0001-P0016	1	1	AXIS FOR WHEEL Ø90mm	AISI 630	2023053221	24005759	300549	MICRO	2029/23	
C09-0001-P0037	1	1	PULLEY HOOK Ø65mm	AISI 630	2024024159	24005759	400197	MICRO	982/24	
C09-0001-P0040	1	1	SHAFT WINCH Ø80mm	AISI 630	2024049141	24006040	401373	MICRO	1903/24	

COGNE ACCIAI SPECIALI S.p.a.

ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 405.563.167,00 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.

INSPECTION CERTIFICATE 3.1 (EN 10204:2004)

CUSTOMER:	REMAZEL ENGINEERING S.P.A.
CUSTOMER'S ORDER:	24005967
MANUFACTURER'S WORKS:	AOSTA, VIA PARAVERA 16 - ITALY
PRODUCER OF THE DOC:	OUALITY DEPARTMENT
MANUFACTURER'S WORKS ORDER NO:	0001142588 / 000010
MARK OF THE MANUFACTURER:	**COGNE**
DISPATCH NOTE:	0081635683 / 000010 WEIGHT: 10 KG / 22 LB
INTERNAL SPEC:	H1150DLT
PRODUCT:	PEL PEELED ROUND BARS TOLERANCE: ISOK11
SURFACE FINISH:	2B Cold Finished
PRODUCT DELIVERY CONDITION:	SI SOL.ANN+PRECIPIT. HARDENED
PRODUCT DIMENSIONS (mm):	50,000 (1,969 in)
GRADE:	AISI 630-17.4PH-1.4542 INTERNAL GRADE: 630 3 IMCO
IDENTIFICATION HEAT NO:	400197 IDENTIFICATION LOT NO: 398000
MARKING OF THE PRODUCT:	TEST PIECE N: 800

THE MATERIAL MEETS THE REQUIREMENTS OF: ASTM A564 / ASME SA564 (R19a) H1150D, ASTM A484/A484M (21), NACE MR0175 (21)/ISO 15156-3, NACE MR0103 (15).
REFERENCE NORMS FOR CHEMICAL COMPOSITION ONLY: EN 10088-3 (14).
STEELMAKING EAF + AOD
PRODUCTION ROUTE: HOT ROLLING
HEAT TREATMENT: SOL.ANNEALING 1040°C+/-14°C 1H+30 MIN/INCH FORCED AIR COOLING BELOW 32°C;
DOUBLE AGING 620+/-14°C 4H MIN AIR COOLING BELOW 32°C.(FURNACE THERMOCOUPLES)
HOT ROLLED
REDUCTION RATIO 169,2

CHEMICAL LADLE ANALYSIS ACCORDING TO ASTM A751 - EN ISO 14284
Control lot No. - Weight :21000000681 - 0 - 0 LB

ELEMENTS	C	Si	Mn	P	S	Cr	Mo	Ni	Nb	Cu
MEASUREMENT UNIT	% w/w	% w/w	% w/w	% w/w	% w/w	% w/w	% w/w	% w/w	% w/w	% w/w
OBTAINED	0,018	0,31	0,72	0,024	0,025	15,75	0,20	4,64	0,27	3,55
ELEMENTS	Co	Ta								
MEASUREMENT UNIT	% w/w	% w/w								
OBTAINED	0,08	0,005								

HARDNESS TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :21000002161 - 3.086 KG - 6.803 LB
SPECIFICATION ENISO6508 HARDNESS TEST HRC TESTING METHOD:
OBTAINED 32,7

IMPACT TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :21000002161 - 3.086 KG - 6.803 LB
SPECIFICATION EN ISO 148-1-KV2 DIRECTION OF THE TEST PIECE: L
TYPE OF TEST PIECE KV
TEST TEMPERATURE °C 60-
MEASUREMENT UNIT J
OBTAINED 86 71 78

DATE 03.07.2024 VALENTINA PRAZ VP(QUALITY CERTIFICATOR) - ELECTRONICALLY GENERATED CERTIFICATE -**Cogne**

COGNE ACCIAI SPECIALI S.p.a.

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CAP. SOC. 405.563.167,00 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.

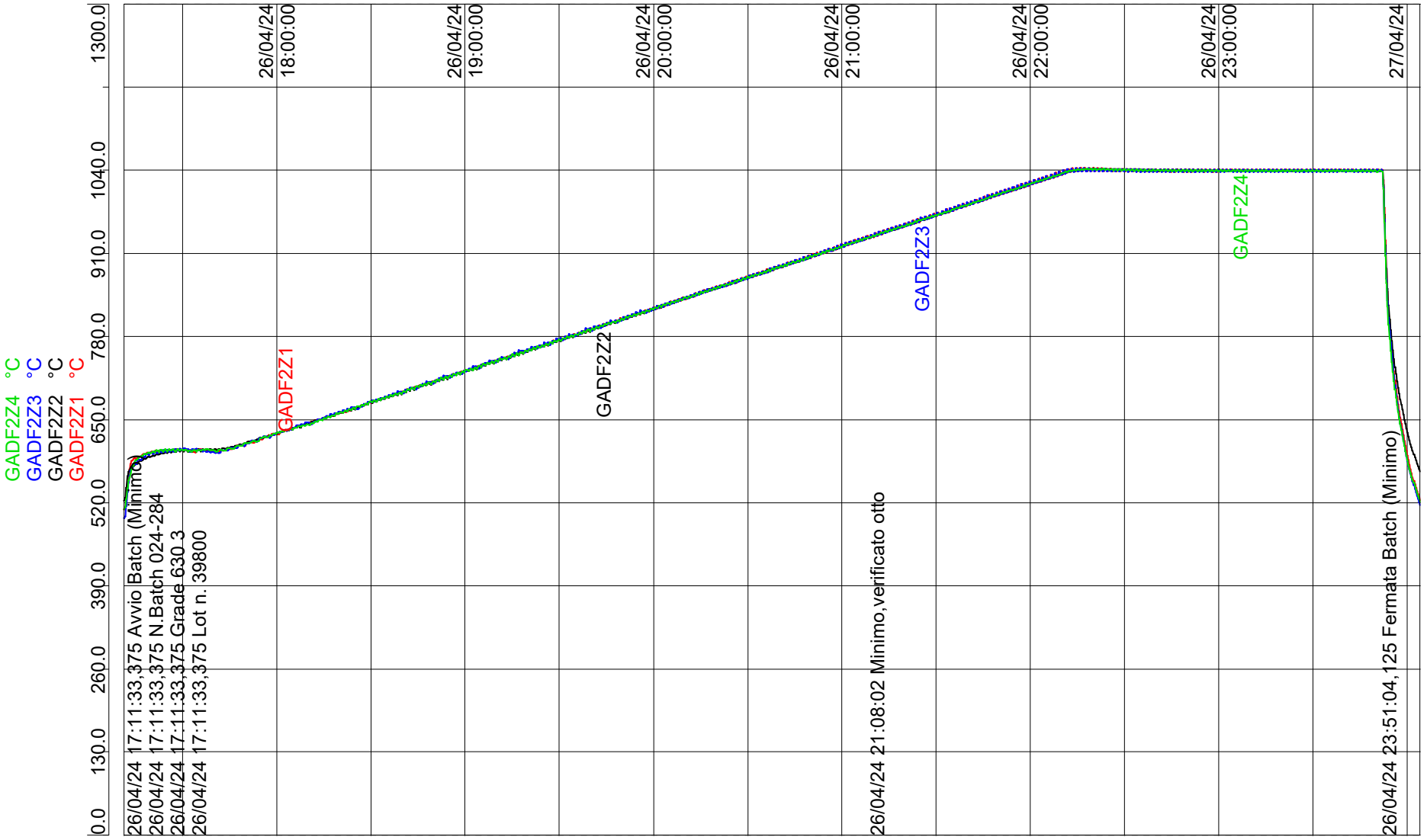
GRAIN SIZE
Control lot No. - Weight :21000002161 - 3.086 KG - 6.803 LB
SPECIFICATION ASTME112 --
OBTAINED 7

LATERAL EXPANSION
Control lot No. - Weight :21000002161 - 3.086 KG - 6.803 LB
SPECIFICATION -- --
OBTAINED 1,05 0,95 1,00

ULTRASONIC TEST ACCORDING TO EN10308 class 4 equivalent to SEP 1920 group C class 3 and ASTM A388 FBH 3 for sizes less than 120 mm and ACCORDING TO EN 10308 class 3, equivalent to ASTM A388 FBH5 for sizes more than 120 mm: SATISFACTORY
TENSILE TEST
Control lot No. - Weight :21000002161 - 3.086 KG - 6.803 LB
SPECIFICATION ASTMA370-E8-0.5"SPEC DIRECTION OF THE TEST PIECE: L

	RMB	RP02B	ZB	AL2B
MEASUREMENT UNIT	NMM	NMM	%	%
				4,0 D
OBTAINED	1002	908	66,2	22,2

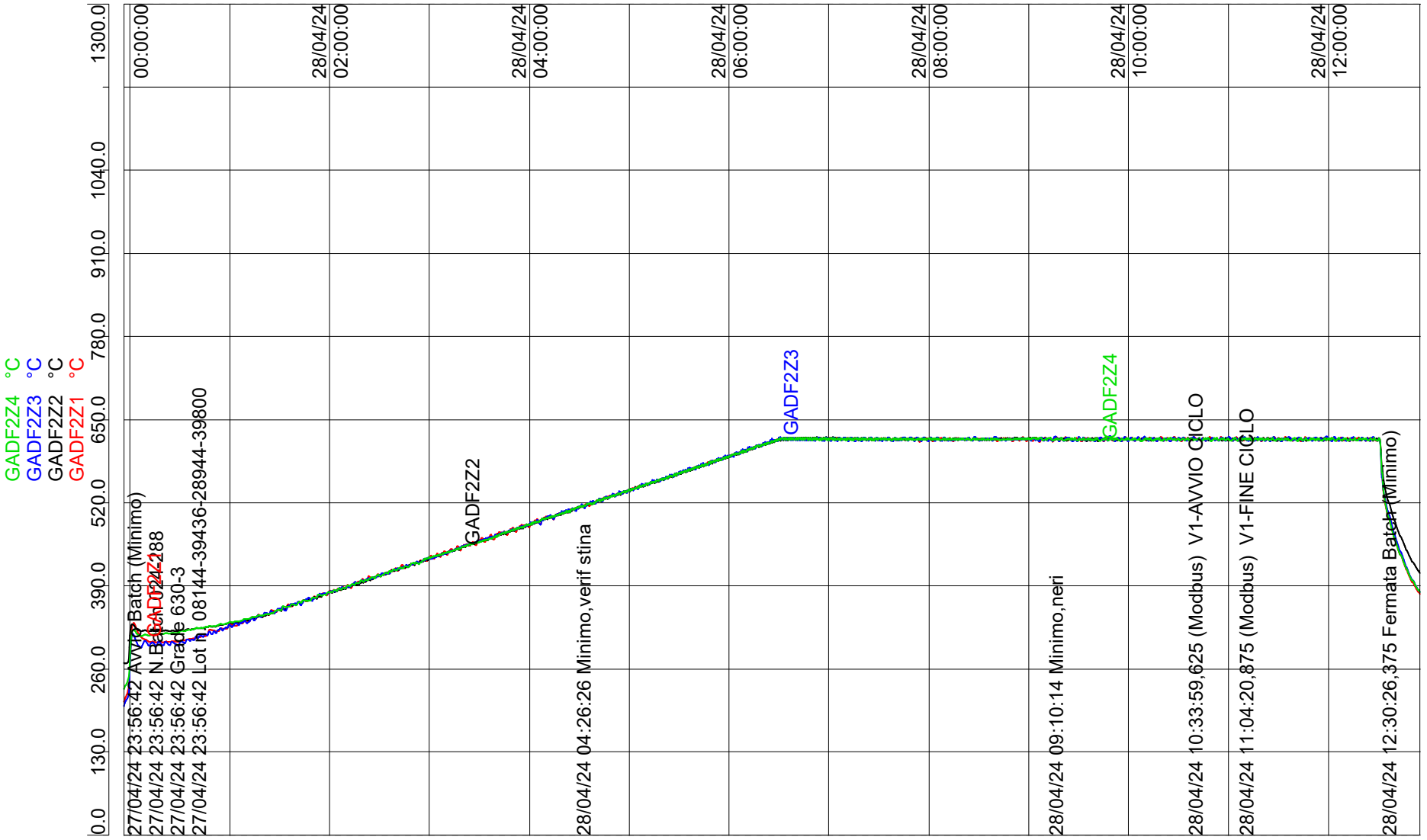
THE PRODUCT SATISFIES THE DIRECTIVES: 2015/863/EU (ROHS3) - 2011/65/EU (ROHS2) - 2000/53/EU - 2002/95/EU(RoHS) - 2003/11/EU-2005/618/EU AND PED 2014/68/EU (ANNEX I, SECTION 4.3).
MARKING: PRODUCER LOGO, MATERIAL NO, HEAT NO, LOT NR.
RADIOACTIVITY CONTROL PERFORMED WITH A GAMMA SPECTROMETER: ASTM E181.
GAMMA ACTIVITY ON THE PRODUCTS BELOW 0.1 BQ/G ACCORDING TO EU RESOLUTION 2013/59/EURATOM , IAEA RS-G-1.7 AND IAEA SSG-17.
WHERE NOT SPECIFIED ALL THE NORMS MENTIONED ARE INTENDED IN THEIR LAST REVISION AT THE DATE OF ISSUE OF THIS DOCUMENT.



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02/07/2024 12:41:43

Grafico13

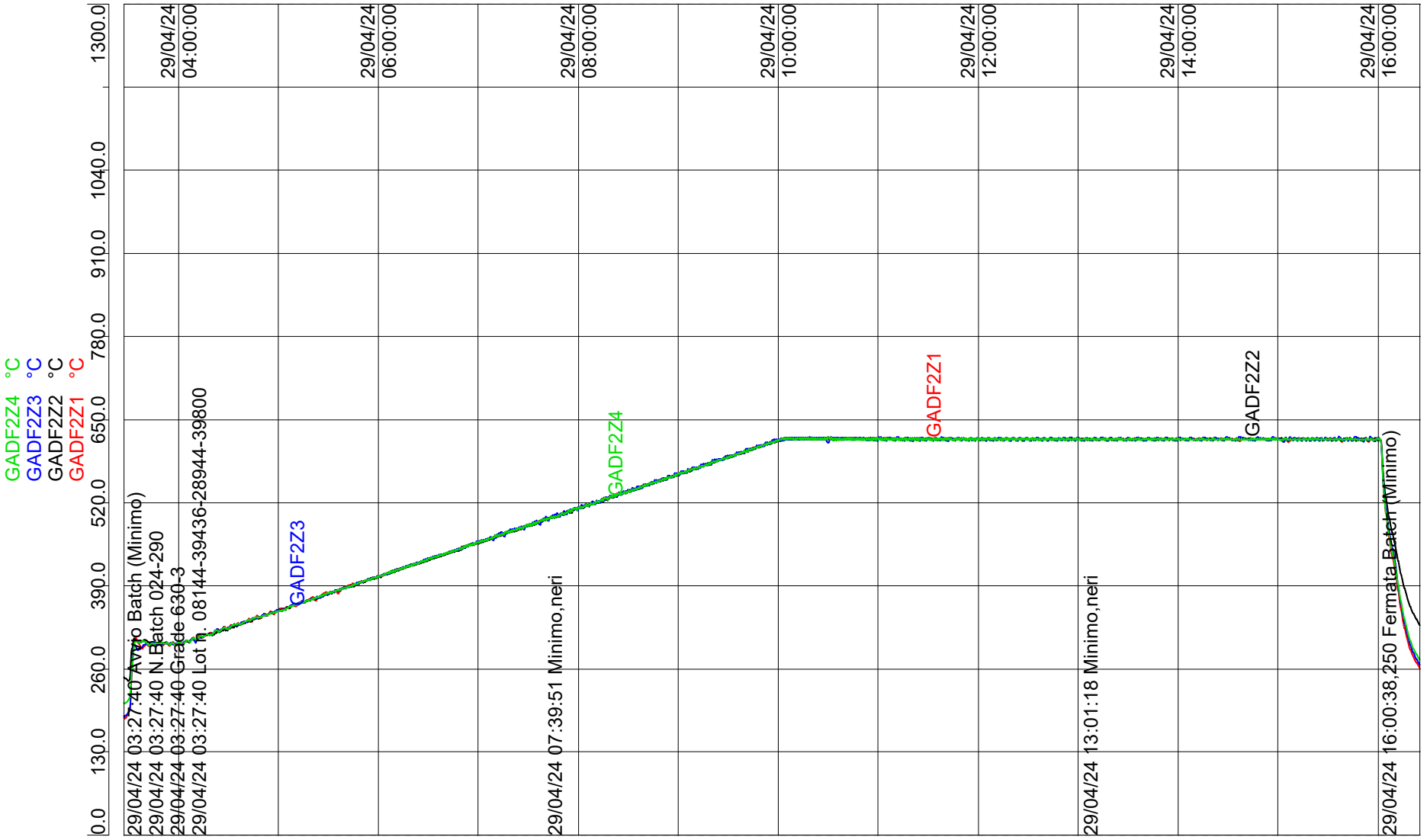
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Page 1 of 1



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Grafico13

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Page 1 of 1



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Grafico13

29/04/24 16:25:22,210
Page 1 of 1

COGNE ACCIAI SPECIALI S.p.a.
Via Paravera, 16
I-11100 AOSTA

MICROPHOTO **All.N 1**
МИКРОСЪЁМКА

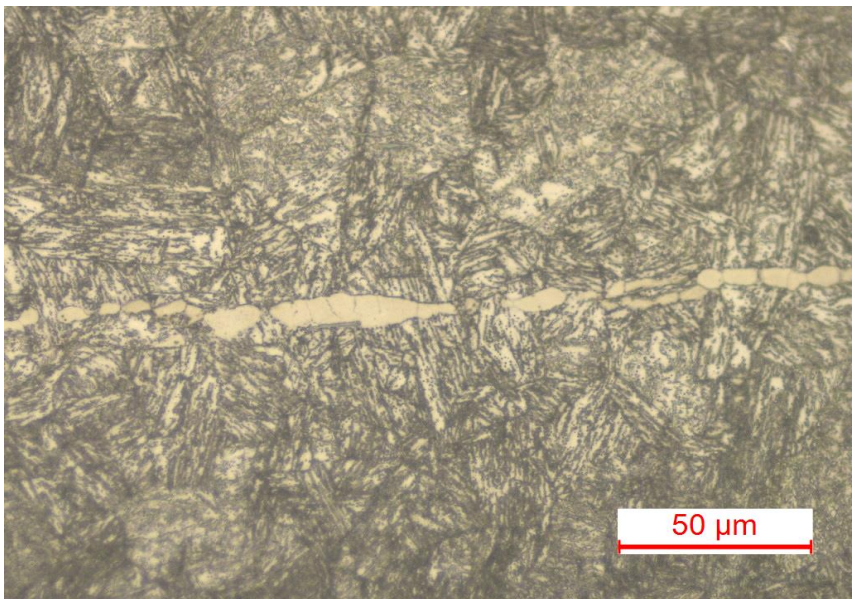
MARCA *NUANCES* *WERKESTOFF* *GRADE* *МАРКА*	630 3	***LOTTO DI CONTROLLO*** *LOT DE CONTRÔLE* *LAUFKARTE* *CONTROL LOT* *ПАРТИЯ КОНТРОЛЯ*	21000002161
COLATA *COULEE* *SCHMELZE* *HEAT* *ПЛАВКА*	400197	***REAGENTE*** *RÉACTIF* *REAGENS* *ETCHANT* *РЕАГЕНТ*	Cogne Unico
TIPO DI APPARECCHIO *TIPE D'APPAREIL* *PRUEFGERAT TYP* *INSTRUMENT TYPE* *ТИП АППАРАТА*	Microscopio:	**Leica DMI3000M s/n342700**	
INGRANDIMENTO *AGRANDISSEMENT* *VERGRÖSSERUNG* *ENLARGEMENT* *УВЕЛИЧЕНИЕ*	X500		

DIREZIONE D'ESAME
DIRECTION D'EXAMEN
PRUEFRICHTUNG
SCANNING DIRECTION
НАПРАВЛЕНИЕ
ПРИ ИССЛЕДОВАНИИ

[X] **LONGITUDINALE - LONGITUDINAL - ПРОДОЛЬНОЕ**

[ ] **TRASVERSALE – TRANSVERSAL – KREUZEND-ПОПЕРЕЧНОЕ**

PHOTO (ELECTRONIC IMAGE) – ФОТОСНИМКИ (ЭЛЕКТРОННОЕ ИЗОБРАЖЕНИЕ)



NOTE:
ПРИМЕЧАНИЯ:

FIRMA UNTERSCHRIFT SIGNATURE SIGNATURE ПОДПИСЬ	**DATA** DATUM DATE DATE ДАТА
Christian Del Guerra	06/05/24

Mod.Micro Rev.5

COGNE ACCIAI SPECIALI S.P.A.

CERTIFICATO DI COLLAUDO ULTRASUONI
CERTIFICAT DE CONTROLE PAR ULTRASONS
ULTRASCHALL PRUEFZEUGNIS
REPORT OF ULTRASONIC INSPECTION
ОТЧЕТ ОБ УЛЬТРАЗВУКОВОМ КОНТРОЛЕ

N. US.
1177/24

CLIENTE *CLIENTSGG BESTELLER CUSTOMER* ЗАКАЗЧИК	***CONFERMA*** *CONFIRMATION AUFTRAGSBESTRAKTIGUNG CONFIRMATION* ПОДТВЕРЖД. ЗАКАЗА
MARCA *NUANCES WERKESTOFF GRADE* МАРКА: 630 3 W.No 1.4542	***ORDINE*** *COMMANDE AUFTRAG ORDER* ЗАКАЗ
SPECIFICA *SPECIFICATION PRUKEVORSCHRIFT SPECIFICATION* ТЕХ. ТРЕБОВАНИЯ: EN10308 prospetto2 cl4	***COLATA*** *COULEE SCHMELZE HEAT* ПЛАВКА: 400197 — ***SCHEDA*** *LOT LAUFKARTE LOT* ПАРТИЯ: 398000
PRODOTTO *PRODUIT ERZEUGNISFORM PRODUCT* ИЗДЕЛИЕ: ROUND BARS 50 mm	***STATO DI LAVORAZIONE*** *STADE DU PRODUIT LIEFERZUSTAND WORKING STEP* ОБРАБОТКА: PEELED
TIPO DI APPARECCHIO *TIPE D'APPAREILPARUS PRUEFGERAT TYP INSTRUMENT TYPE* ТИП АППАРАТА: USM36 18107589	***COSTRUTTORE*** *CONSTRUCTEUR BAUART MAKE* ИЗГОТОВИТЕЛЬ: KRAUTKRAMER
TIPO DI SONDA *TIPE DE PALPEUR PRUFKOPT PROBETYPE* ТИП ЗОНДА: SEB4-S	***FREQUENZA*** ***FREQUENCE*** *FREQUENZ FREQUENCY* ЧАСТОТА: 4 MHz S/N 67257 50316

DIREZIONE D'ESAME *DIRECTION D'EXAMEN PRUEFRICHTUNG SCANNING DIRECTION* НАПРАВЛЕНИЕ ПРИ

- [X] *RADIALE - RADIAL*
- [ ] *ASSIALE - AXIAL*
- [ ] *SONDE ANGOLATE - ANGLE BEAMS*

- [ ] ***MATRICOLA BLOCCO CAMPIONE***
DENTIFICATION BLOC DE REFERENCE MUSTER BLOCK
MUSTER BLOCK
TEST BLOCK NR
№ ОБРАЗЦА ДЛЯ ИСПЫТАНИЯ

AVG SCALE *ECRANS ABAQUES AVG AVG SKALEN AVG SCALE* ШКАЛА *AVG*: [ ]

AVG DIAGRAMMI ***DIAGRAMMES AVG*** ***AVG DIAGRAMM*** ***AVG DIAGRAM*** ДИАГРАММЫ ***AVG***: [X]

V1: [ ] **V2**: [ ]

RISULTATODELL'ESAME
RESULTAT DE L' ESSAI
PRUEFERGERBNISSE
RESULT OF THE TEST
РЕЗУЛЬТАТ ИСПЫТАНИЯ

EXAM DATA : 28/06/2024
INSPECTED N. BARS 29

THE MATERIAL IS IN ACCORDANCE TO THE FOLLOWING SPECIFICATIONS:

EN10308 prospetto2 cl4

L'ISPETTORE CND ZUSTANDER CND L'INSPECTEUR CND CND INSPECTOR ИНСПЕКТОР НРК NADALIN SIMONE Liv. II - ISO 9712 N° Cert.32040/PND/C	**III LIV.CND** **III** УРОВЕНЬ НРК BAISOTTI MARCO Liv.III - ISO 9712 N° Cert.34194/PND/C		**DATA** DATUM DATE DATE ДАТА 29/06/2024

(Mod. Certus Rev. 6)

COGNE ACCIAI SPECIALI S.p.a.

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C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.

INSPECTION CERTIFICATE 3.1 (EN 10204:2004)

CUSTOMER:	REMAZEL ENGINEERING S.P.A.		
CUSTOMER'S ORDER:	24005967		
MANUFACTURER'S WORKS:	AOSTA, VIA PARAVERA 16 - ITALY		
PRODUCER OF THE DOC:	OUALITY DEPARTMENT		
MANUFACTURER'S WORKS ORDER NO:	0001142588 / 000020		
MARK OF THE MANUFACTURER:	**COGNE**		
DISPATCH NOTE:	0081634250 / 000020 WEIGHT: 8 KG / 18 LB		
INTERNAL SPEC:	H1150DLT		
PRODUCT:	PEL PEELED ROUND BARS TOLERANCE: ISOK11		
SURFACE FINISH:	2B Cold Finished		
PRODUCT DELIVERY CONDITION:	SI SOL.ANN+PRECIPIT. HARDENED		
PRODUCT DIMENSIONS (mm):	65,000 (2,559 in)	LENGTH (mm)	04000 06200 (00157 00244 in)
GRADE:	AISI 630-17.4PH-1.4542	INTERNAL GRADE:	630 3 IMCO
IDENTIFICATION HEAT NO:	400197	IDENTIFICATION LOT NO:	236590
MARKING OF THE PRODUCT:		TEST PIECE N:	659

THE MATERIAL MEETS THE REQUIREMENTS OF: ASTM A564 / ASME SA564 (R19a) H1150D, ASTM A484/A484M (21), NACE MR0175 (21)/ISO 15156-3, NACE MR0103 (15).
REFERENCE NORMS FOR CHEMICAL COMPOSITION ONLY: EN 10088-3 (14).
STEELMAKING EAF + AOD
PRODUCTION ROUTE: HOT ROLLING
HEAT TREATMENT: SOL.ANNEALING 1040°C+/-14°C 1H+30 MIN/INCH FORCED AIR COOLING BELOW 32°C;
DOUBLE AGING 620+/-14°C 4H MIN AIR COOLING BELOW 32°C.(FURNACE THERMOCOUPLES)
HOT ROLLED
REDUCTION RATIO 100,8

CHEMICAL LADLE ANALYSIS ACCORDING TO ASTM A751 - EN ISO 14284
Control lot No. - Weight :21000000681 - 0 - 0 LB

ELEMENTS	C	Si	Mn	P	S	Cr	Mo	Ni	Nb	Cu
MEASUREMENT UNIT	% w/w	% w/w	% w/w	% w/w	% w/w	% w/w	% w/w	% w/w	% w/w	% w/w
OBTAINED	0,018	0,31	0,72	0,024	0,025	15,75	0,20	4,64	0,27	3,55
ELEMENTS	Co	Ta								
MEASUREMENT UNIT	% w/w	% w/w								
OBTAINED	0,08	0,005								

HARDNESS TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :21000006291 - 1.781 KG - 3.926 LB
SPECIFICATION ENISO6508 HARDNESS TEST HRC TESTING METHOD:
OBTAINED 32,4

IMPACT TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :21000006291 - 1.781 KG - 3.926 LB
SPECIFICATION EN ISO 148-1-KV2 DIRECTION OF THE TEST PIECE: L
TYPE OF TEST PIECE KV
TEST TEMPERATURE °C 60-
MEASUREMENT UNIT J
OBTAINED 82 87 87

DATE 31.05.2024 MORABITO ROSA CF(QUALITY CERTIFICATOR) - ELECTRONICALLY GENERATED CERTIFICATE -**Cogne**

COGNE ACCIAI SPECIALI S.p.a.

ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 405.563.167,00 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.

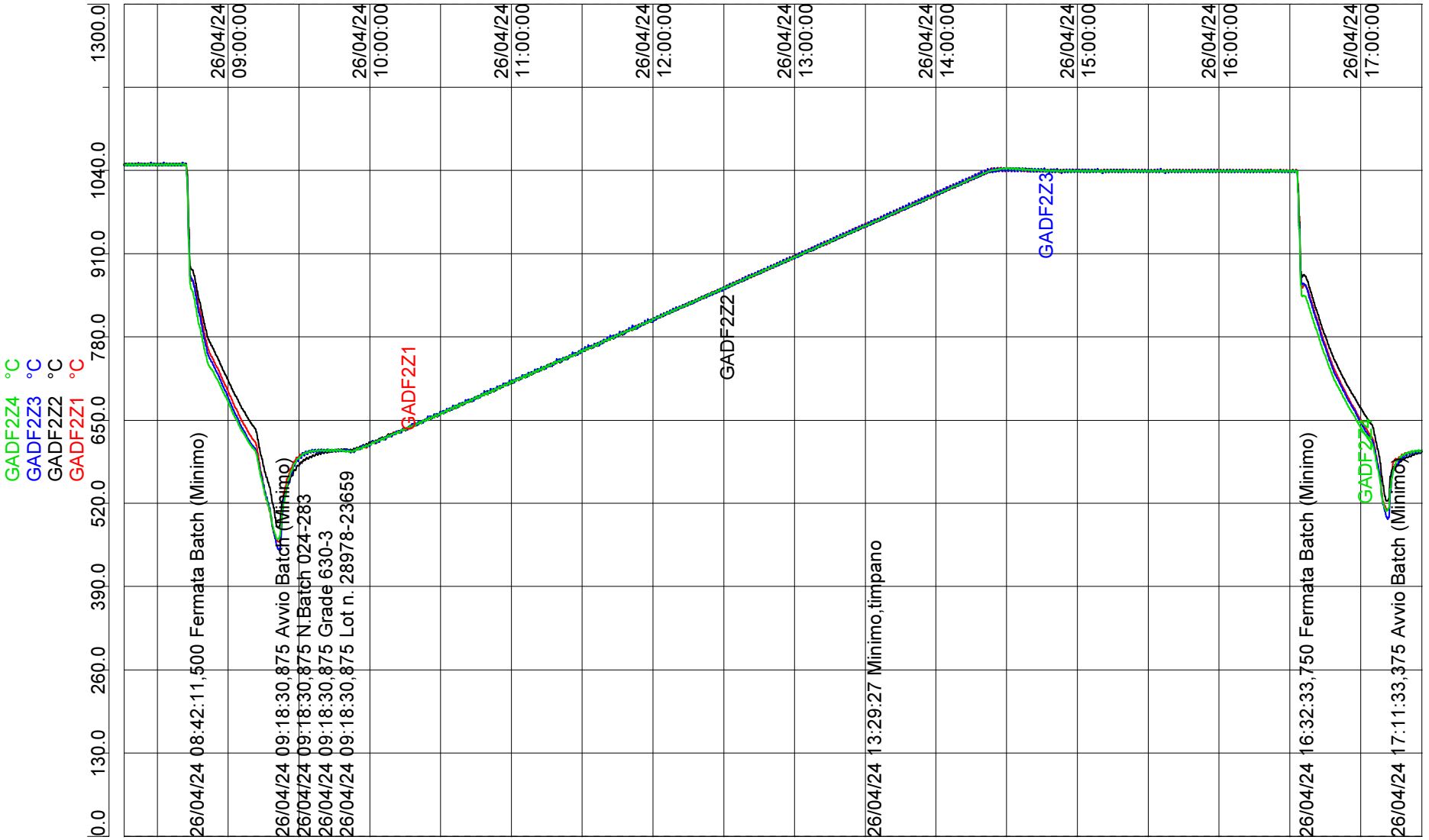
GRAIN SIZE
Control lot No. - Weight :21000006291 - 1.781 KG - 3.926 LB
SPECIFICATION ASTME112 --
OBTAINED 7

LATERAL EXPANSION
Control lot No. - Weight :21000006291 - 1.781 KG - 3.926 LB
SPECIFICATION -- --
OBTAINED 0,8 0,7 0,8

ULTRASONIC TEST ACCORDING TO EN10308 class 4 equivalent to SEP 1920 group C class 3 and ASTM A388 FBH 3 for sizes less than 120 mm and ACCORDING TO EN 10308 class 3, equivalent to ASTM A388 FBH5 for sizes more than 120 mm: SATISFACTORY
TENSILE TEST
Control lot No. - Weight :21000006291 - 1.781 KG - 3.926 LB
SPECIFICATION ASTMA370-E8-0.5"SPEC DIRECTION OF THE TEST PIECE: L

	RMB	RP02B	ZB	AL2B
MEASUREMENT UNIT	NMM	NMM	%	%
				4,0 D
OBTAINED	989	890	66,5	21,0

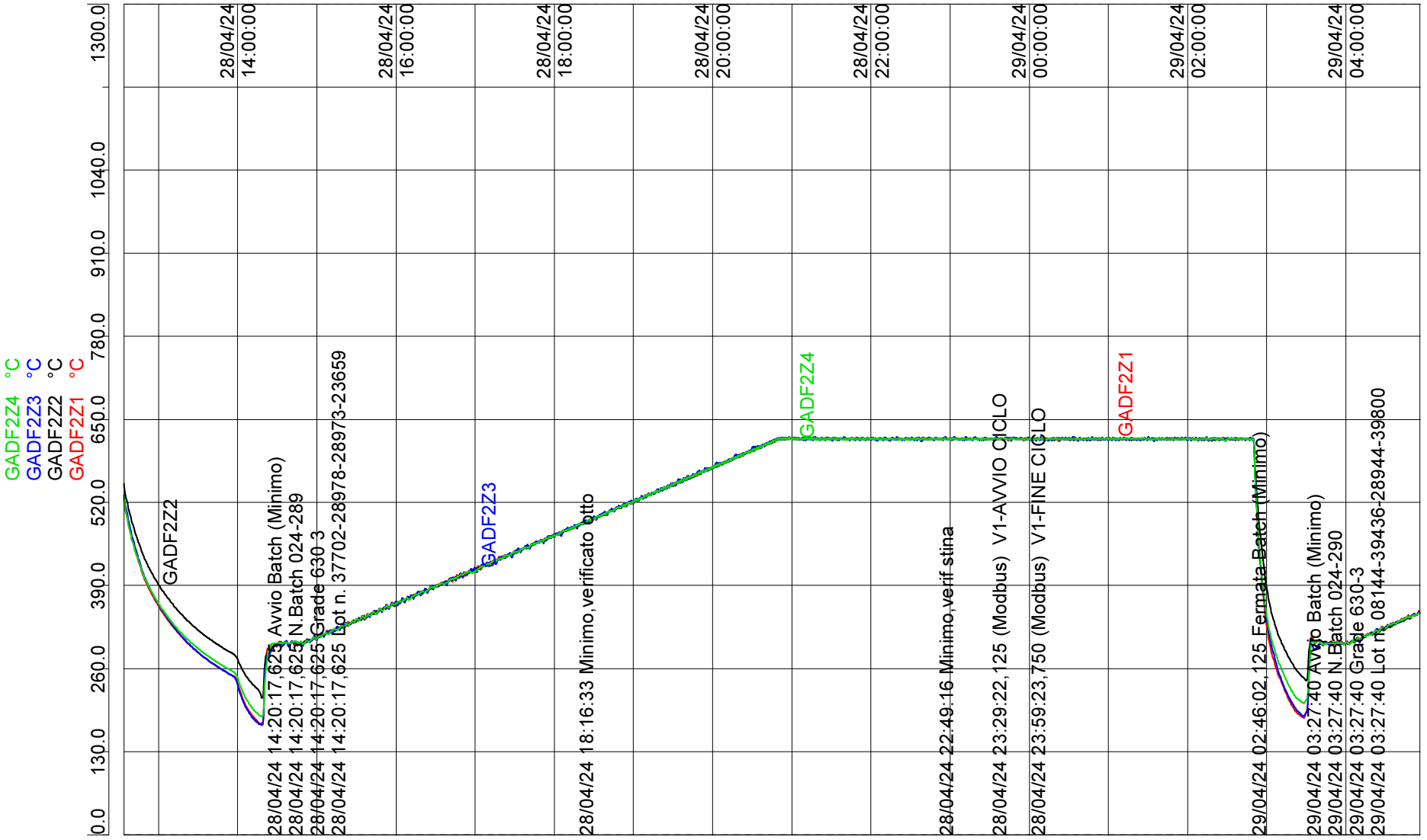
THE PRODUCT SATISFIES THE DIRECTIVES: 2015/863/EU (ROHS3) - 2011/65/EU (ROHS2) - 2000/53/EU - 2002/95/EU(RoHS) - 2003/11/EU-2005/618/EU AND PED 2014/68/EU (ANNEX I, SECTION 4.3).
MARKING: PRODUCER LOGO, MATERIAL NO, HEAT NO, LOT NR.
RADIOACTIVITY CONTROL PERFORMED WITH A GAMMA SPECTROMETER: ASTM E181.
GAMMA ACTIVITY ON THE PRODUCTS BELOW 0.1 BQ/G ACCORDING TO EU RESOLUTION 2013/59/EURATOM , IAEA RS-G-1.7 AND IAEA SSG-17.
WHERE NOT SPECIFIED ALL THE NORMS MENTIONED ARE INTENDED IN THEIR LAST REVISION AT THE DATE OF ISSUE OF THIS DOCUMENT.



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31/05/2024 11:25:17

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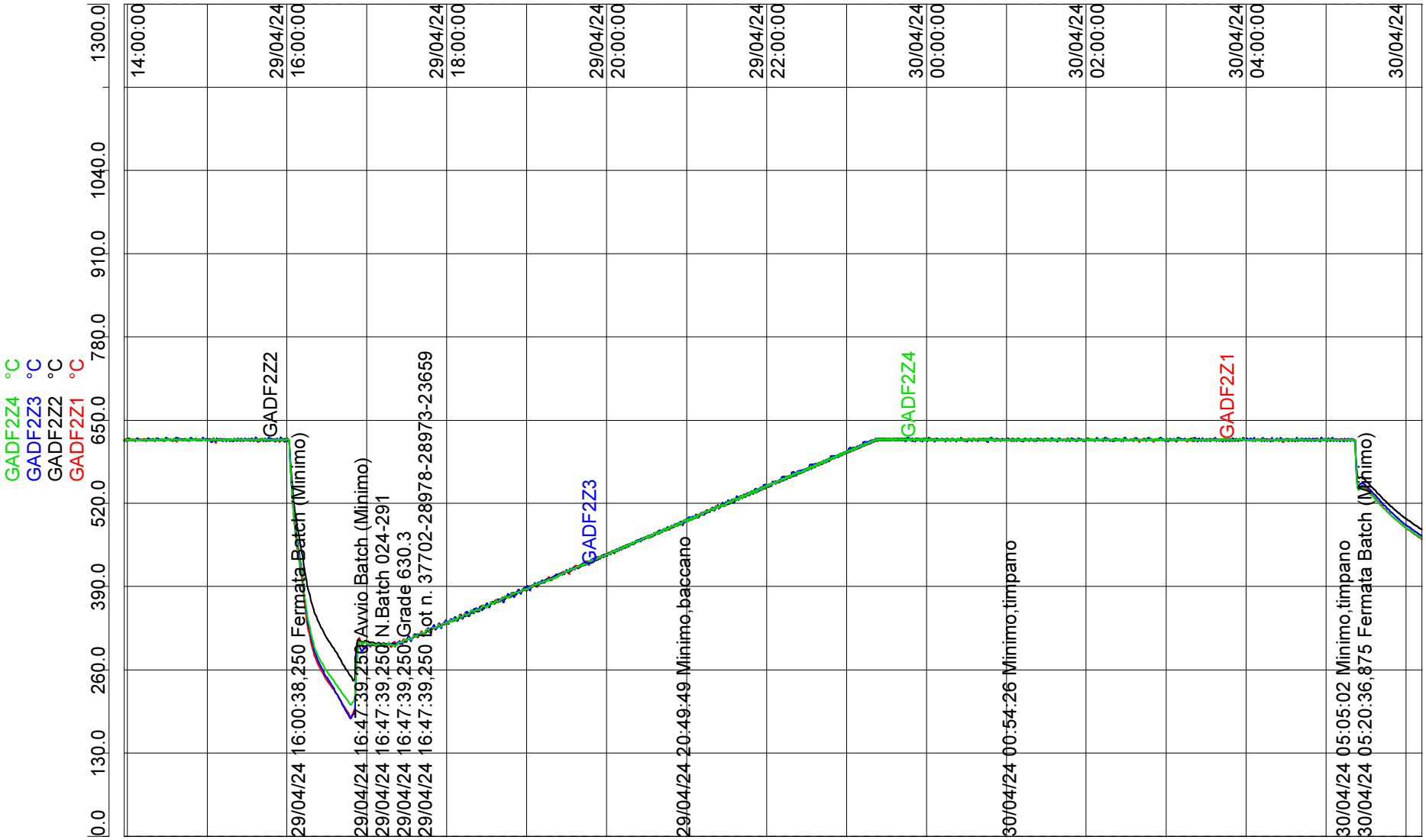
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29/04/24 04:56:00
Page 1 of 1



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Grafico1

30/04/24 06:12:00
Page 1 of 1

COGNE ACCIAI SPECIALI S.p.a.
Via Paravera, 16
I-11100 AOSTA

MICROPHOTO **All.N 1**
МИКРОСЪЁМКА

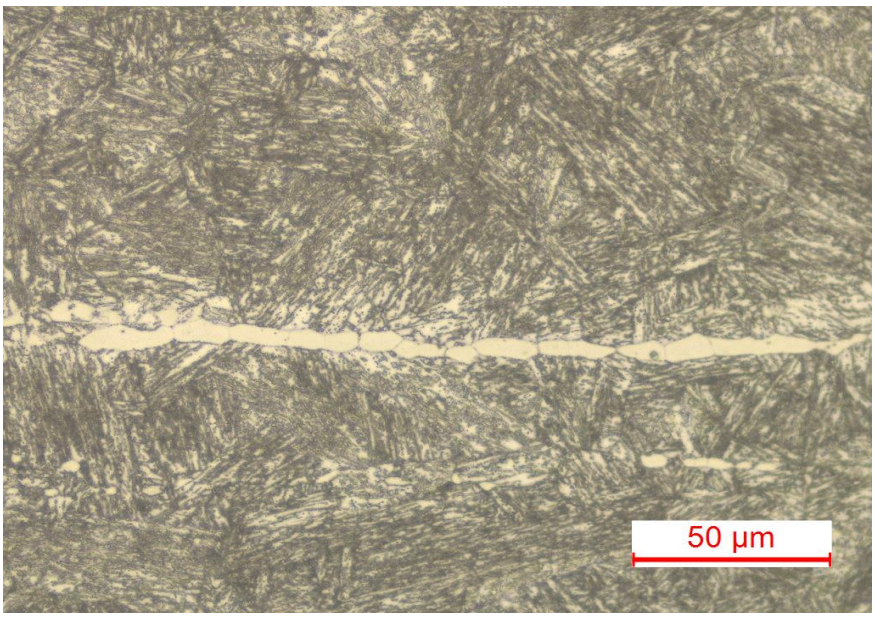
MARCA *NUANCES* *WERKESTOFF* *GRADE* *МАРКА*	630 3	***LOTTO DI CONTROLLO*** *LOT DE CONTRÔLE* *LAUFKARTE* *CONTROL LOT* *ПАРТИЯ КОНТРОЛЯ*	21000006291
COLATA *COULEE* *SCHMELZE* *HEAT* *ПЛАВКА*	400197	***REAGENTE*** *RÉACTIF* *REAGENS* *ETCHANT* *РЕАГЕНТ*	Cogne Unico
TIPO DI APPARECCHIO *TIPE D'APPAREIL* *PRUEFGERAT TYP* *INSTRUMENT TYPE* *ТИП АППАРАТА*	Microscopio:	**Leica DMI3000M s/n342700**	
INGRANDIMENTO *AGRANDISSEMENT* *VERGRÖSSERUNG* *ENLARGEMENT* *УВЕЛИЧЕНИЕ*	X500		

DIREZIONE D'ESAME
DIRECTION D'EXAMEN
PRUEFRICHTUNG
SCANNING DIRECTION
НАПРАВЛЕНИЕ
ПРИ ИССЛЕДОВАНИИ

[X] **LONGITUDINALE - LONGITUDINAL - ПРОДОЛЬНОЕ**

[ ] **TRASVERSALE – TRANSVERSAL – KREUZEND-ПОПЕРЕЧНОЕ**

PHOTO (ELECTRONIC IMAGE) – ФОТОСНИМКИ (ЭЛЕКТРОННОЕ ИЗОБРАЖЕНИЕ)



NOTE:
ПРИМЕЧАНИЯ:

FIRMA UNTERSCHRIFT SIGNATURE SIGNATURE ПОДПИСЬ	**DATA** DATUM DATE DATE ДАТА
Christian Del Guerra	06/05/24

Mod.Micro Rev.5

COGNE ACCIAI SPECIALI S.P.A.

CERTIFICATO DI COLLAUDO ULTRASUONI
CERTIFICAT DE CONTROLE PAR ULTRASONS
ULTRASCHALL PRUEFZEUGNIS
REPORT OF ULTRASONIC INSPECTION
ОТЧЕТ ОБ УЛЬТРАЗВУКОВОМ КОНТРОЛЕ

N. US.
982/24

CLIENTE *CLIENTSGG BESTELLER CUSTOMER* ЗАКАЗЧИК			***CONFERMA*** *CONFIRMATION AUFTRAGSBESTRAKTIGUNG CONFIRMATION* ПОДТВЕРЖД. ЗАКАЗА		
MARCA *NUANCES WERKESTOFF GRADE* МАРКА	630 3 W.No 1.4542		***ORDINE*** *COMMANDE AUFTRAG ORDER* ЗАКАЗ		
SPECIFICA *SPECIFICATION PRUKEVORSCHRIFT SPECIFICATION* ТЕХ. ТРЕБОВАНИЯ	EN10308 prospetto2 cl4		***COLATA*** *COULEE SCHMELZE HEAT* ПЛАВКА	400197	***SCHEDA*** *LOT LAUFKARTE LOT* ПАРТИЯ 236590
PRODOTTO *PRODUIT ERZEUGNISFORM PRODUCT* ИЗДЕЛИЕ	ROUND BARS 65 mm		***STATO DI LAVORAZIONE*** *STADE DU PRODUIT LIEFERZUSTAND WORKING STEP* ОБРАБОТКА	PEELED	
TIPO DI APPARECCHIO *TIPE D'APPAREILPARUS PRUEFGERAT TYP INSTRUMENT TYPE* ТИП АППАРАТА	USM36 SN	23010091	***COSTRUTTORE*** *CONSTRUCTEUR BAUART MAKE* ИЗГОТОВИТЕЛЬ	KRAUTKRAMER	
TIPO DI SONDA *TIPE DE PALPEUR PRUFKOPT PROBETYPE* ТИП ЗОНДА	SEB4-S		***FREQUENZA*** ***FREQUENCE*** *FREQUENZ FREQUENCY* ЧАСТОТА	4 MHz S/N	67257 50316

DIREZIONE D'ESAME
DIRECTION D'EXAMEN PRUEFRICHTUNG SCANNING DIRECTION
НАПРАВЛЕНИЕ ПРИ

- [X] *RADIALE - RADIAL*
- [ ] *ASSIALE - AXIAL*
- [ ] *SONDE ANGOLATE - ANGLE BEAMS*

- [ ] ***MATRICOLA BLOCCO CAMPIONE***
DENTIFICATION BLOC DE REFERENCE MUSTER BLOCK
MUSTER BLOCK
TEST BLOCK NR
№ ОБРАЗЦА ДЛЯ ИСПЫТАНИЯ

- [ ] ***AVG SCALE***
ECRANS ABAQUES AVG AVG SKALEN AVG SCALE
ШКАЛА *AVG*

- [X] ***AVG DIAGRAMMI***
DIAGRAMMES AVG
AVG DIAGRAMM
AVG DIAGRAM
ДИАГРАММЫ ***AVG***

- [ ] **V1**
- [ ] **V2**

RISULTATODELL'ESAME
RESULTAT DE L' ESSAI
PRUEFERGERBNISSE
RESULT OF THE TEST
РЕЗУЛЬТАТ
ИСПЫТАНИЯ

EXAM DATA : 25/05/2024
INSPECTED N. BARS 10

THE MATERIAL IS IN ACCORDANCE TO THE FOLLOWING SPECIFICATIONS:

EN10308 prospetto2 cl4

L'ISPETTORE CND ZUSTANDER CND L'INSPECTEUR CND CND INSPECTOR ИНСПЕКТОР НРК NADALIN SIMONE Liv. II - ISO 9712 N° Cert.32040/PND/C	**III LIV.CND** **III** УРОВЕНЬ НРК BAISOTTI MARCO Liv.III - ISO 9712 N° Cert.34194/PND/C		**DATA** DATUM DATE DATE ДАТА 30/05/2024

(Mod. Certus Rev. 6)

COGNE ACCIAI SPECIALI S.p.a.

ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 405.563.167,00 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.

INSPECTION CERTIFICATE 3.1 (EN 10204:2004)

CUSTOMER:	REMAZEL ENGINEERING S.P.A.		
CUSTOMER'S ORDER:	24005967		
MANUFACTURER'S WORKS:	AOSTA, VIA PARAVERA 16 - ITALY		
PRODUCER OF THE DOC:	OUALITY DEPARTMENT		
MANUFACTURER'S WORKS ORDER NO:	0001142588 / 000030		
MARK OF THE MANUFACTURER:	**COGNE**		
DISPATCH NOTE:	0081634250 / 000030 WEIGHT: 18 KG / 40 LB		
INTERNAL SPEC:	H1150DLT		
PRODUCT:	PEL PEELED ROUND BARS TOLERANCE: ISOK11		
SURFACE FINISH:	2B Cold Finished		
PRODUCT DELIVERY CONDITION:	SI SOL.ANN+PRECIPIT. HARDENED		
PRODUCT DIMENSIONS (mm):	90,000 (3,543 in)	LENGTH (mm)	04000 06200 (00157 00244 in)
GRADE:	AISI 630-17.4PH-1.4542	INTERNAL GRADE:	630 3 IMCO
IDENTIFICATION HEAT NO:	300549	IDENTIFICATION LOT NO:	401710
MARKING OF THE PRODUCT:		TEST PIECE N:	171

THE MATERIAL MEETS THE REQUIREMENTS OF: ASTM A564 / ASME SA564 (R19a) H1150D, ASTM A484/A484M (21), NACE MR0175 (21)/ISO 15156-3, NACE MR0103 (15).
REFERENCE NORMS FOR CHEMICAL COMPOSITION ONLY: EN 10088-3 (14).
STEELMAKING EAF + AOD
PRODUCTION ROUTE: HOT ROLLING
HEAT TREATMENT: SOL.ANNEALING 1040°C+/-14°C 1H+30 MIN/INCH FORCED AIR COOLING BELOW 32°C;
DOUBLE AGING 620+/-14°C 4H MIN AIR COOLING BELOW 32°C.(FURNACE THERMOCOUPLES)
HOT ROLLED
REDUCTION RATIO 52,8

CHEMICAL LADLE ANALYSIS ACCORDING TO ASTM A751 - EN ISO 14284
Control lot No. - Weight :020000961376 - 81.550 KG - 179.784 LB

ELEMENTS	C	Si	Mn	P	S	Cr	Mo	Ni	Nb	Cu
MEASUREMENT UNIT	% w/w	% w/w	% w/w	% w/w	% w/w	% w/w	% w/w	% w/w	% w/w	% w/w
OBTAINED	0,018	0,35	0,71	0,022	0,024	15,69	0,19	4,62	0,26	3,37

ELEMENTS	Co	Ta
MEASUREMENT UNIT	% w/w	% w/w
OBTAINED	0,09	0,005

HARDNESS TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000971110 - 4.000 KG - 8.818 LB
SPECIFICATION ENISO6508 HARDNESS TEST HRC TESTING METHOD:
OBTAINED 32

IMPACT TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000971110 - 4.000 KG - 8.818 LB
SPECIFICATION EN ISO 148-1-KV2 DIRECTION OF THE TEST PIECE: L
TYPE OF TEST PIECE KV
TEST TEMPERATURE °C 60-
MEASUREMENT UNIT J

OBTAINED	62	68	57

DATE 20.11.2023 BARBARA VIETTI MV(QUALITY CERTIFICATOR) - ELECTRONICALLY GENERATED CERTIFICATE -**Cogne**

COGNE ACCIAI SPECIALI S.p.a.

ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 405.563.167,00 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.

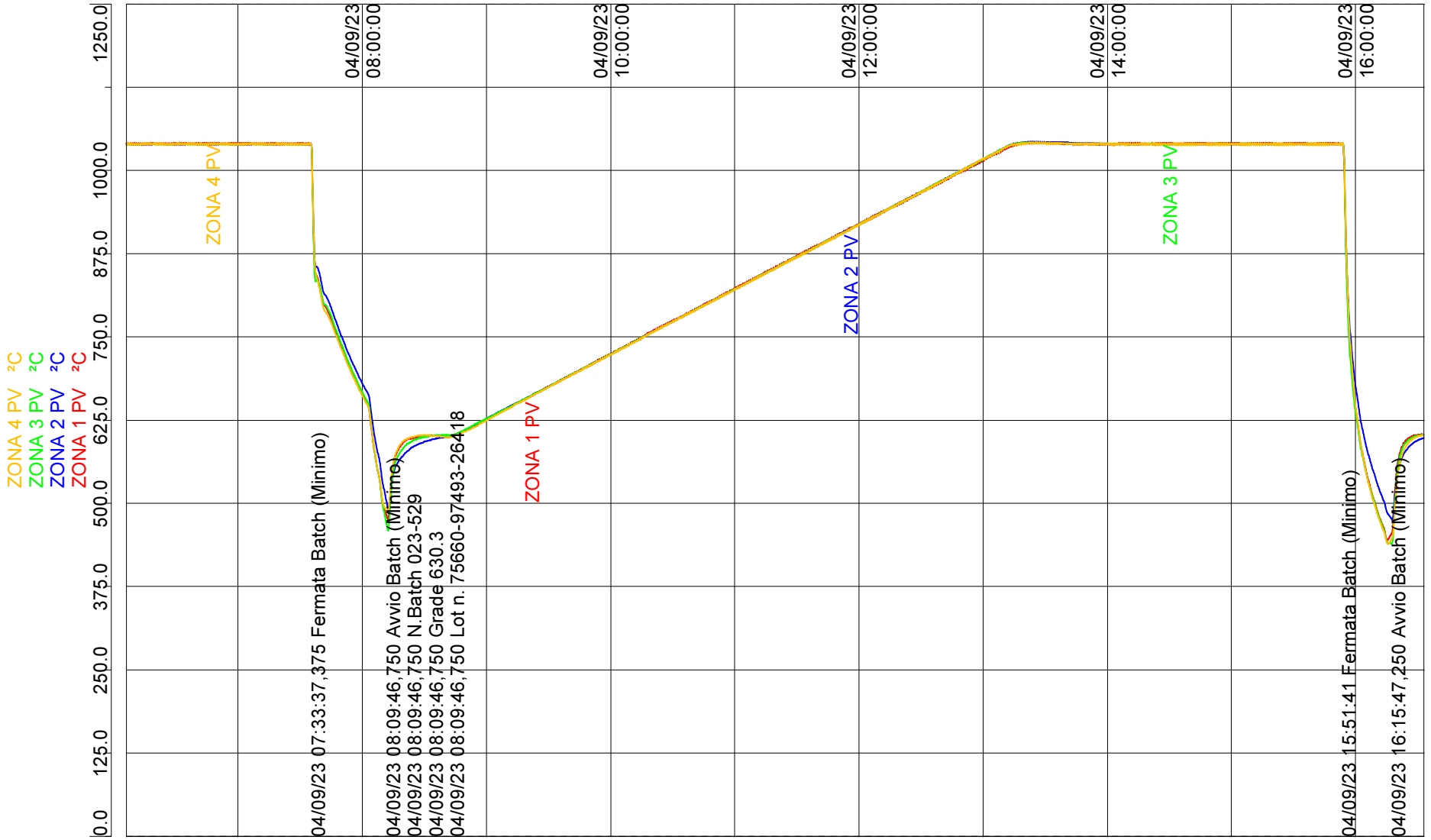
GRAIN SIZE
Control lot No. - Weight :020000971110 - 4.000 KG - 8.818 LB
SPECIFICATION ASTME112 --
OBTAINED 6

LATERAL EXPANSION
Control lot No. - Weight :020000971110 - 4.000 KG - 8.818 LB
SPECIFICATION -- --
OBTAINED 0,7 0,7 0,6

ULTRASONIC TEST ACCORDING TO EN10308 class 4 equivalent to SEP 1920 group C class 3 and ASTM A388 FBH 3 for sizes less than 120 mm and ACCORDING TO EN 10308 class 3, equivalent to ASTM A388 FBH5 for sizes more than 120 mm: SATISFACTORY
TENSILE TEST
Control lot No. - Weight :020000971110 - 4.000 KG - 8.818 LB
SPECIFICATION ASTMA370-E8-0.5"SPEC DIRECTION OF THE TEST PIECE: L

	RMB	RP02B	ZB	AL2B
MEASUREMENT UNIT	NMM	NMM	%	%
				4,0 D
OBTAINED	974	848	64,9	21,8

THE PRODUCT SATISFIES THE DIRECTIVES: 2015/863/EU (ROHS3) - 2011/65/EU (ROHS2) - 2000/53/EU - 2002/95/EU(RoHS) - 2003/11/EU-2005/618/EU AND PED 2014/68/EU.
MARKING: PRODUCER LOGO, MATERIAL NO, HEAT NO, LOT NR.
WHERE NOT SPECIFIED ALL THE NORMS MENTIONED ARE INTENDED IN THEIR LAST REVISION AT THE DATE OF ISSUE OF THIS DOCUMENT.



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17/10/2023 16:15:01

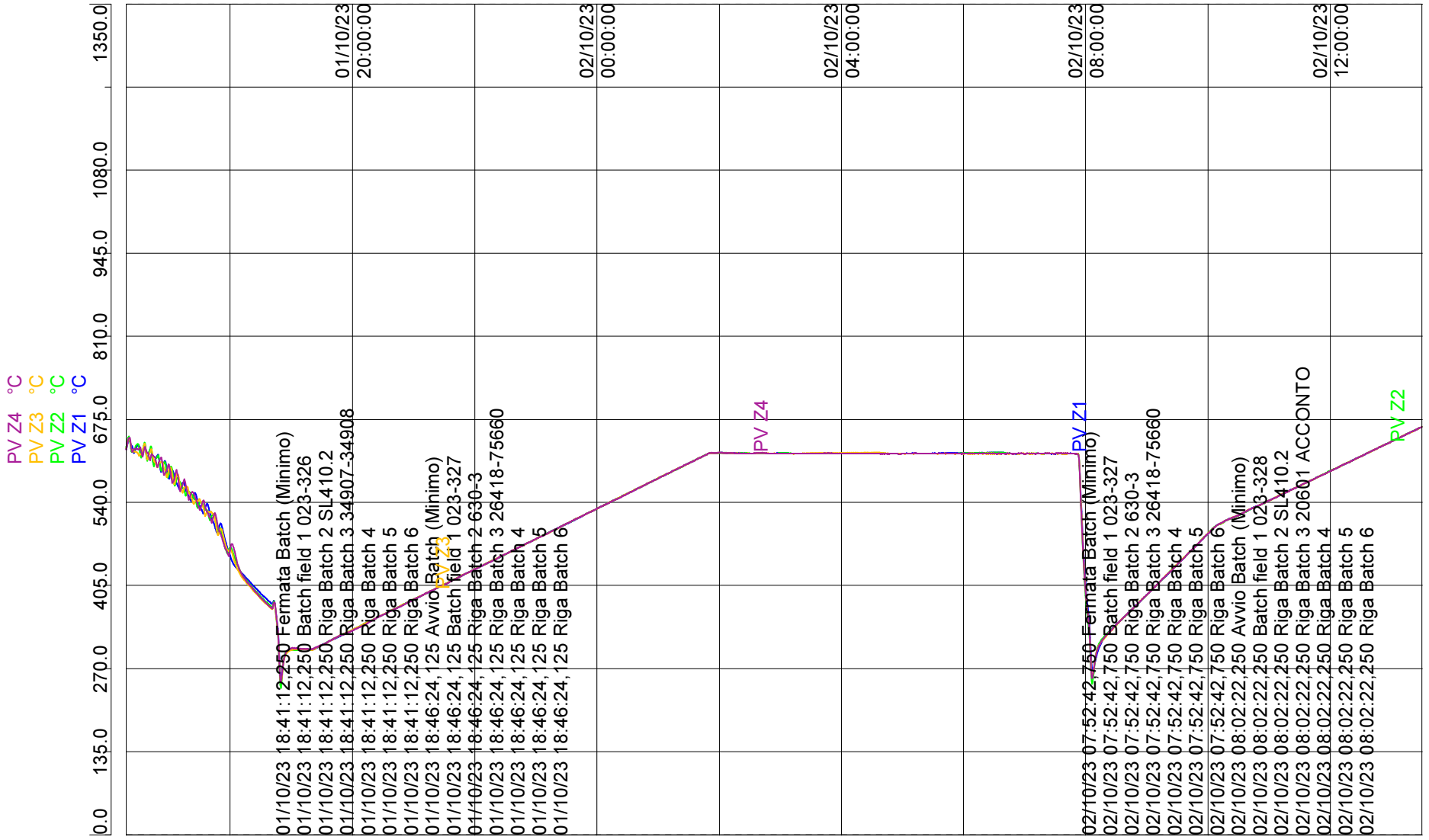
Grafico12

04/09/23 16:33:00
Page 1 of 1

30/09/23 03:54:00
17/10/2023 16:17:52

Grafico13

01/10/23 01:06:00
Page 1 of 1



01/10/23 16:18:00
17/10/2023 16:19:01

Grafico13

02/10/23 13:30:00
Page 1 of 1

COGNE ACCIAI SPECIALI S.p.a.
Via Paravera, 16
I-11100 AOSTA

MICROPHOTO **All.N 1**
МИКРОСЪЁМКА

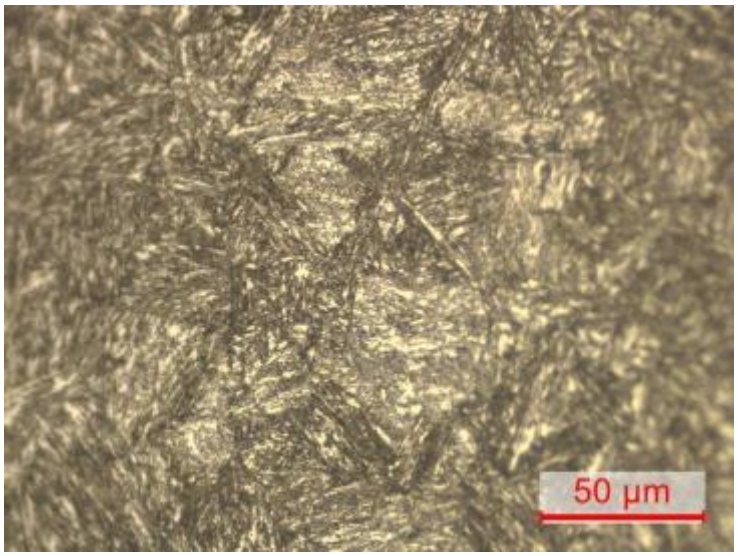
MARCA *NUANCES* *WERKESTOFF* *GRADE* *МАРКА*	630 3	***LOTTO DI CONTROLLO*** *LOT DE CONTRÔLE* *LAUFKARTE* *CONTROL LOT* *ПАРТИЯ КОНТРОЛЯ*	020000971110
COLATA *COULEE* *SCHMELZE* *HEAT* *ПЛАВКА*	300549	***REAGENTE*** *RÉACTIF* *REAGENS* *ETCHANT* *РЕАГЕНТ*	Cogne Unico (UNI 3137-65)
TIPO DI APPARECCHIO *TIPE D'APPAREIL* *PRUEFGERAT TYP* *INSTRUMENT TYPE* *ТИП АППАРАТА*	Microscopio:	**Leica DM2700M s/n430371**	
INGRANDIMENTO *AGRANDISSEMENT* *VERGRÖSSERUNG* *ENLARGEMENT* *УВЕЛИЧЕНИЕ*	**500 X**		

DIREZIONE D'ESAME
DIRECTION D'EXAMEN
PRUEFRICHTUNG
SCANNING DIRECTION
НАПРАВЛЕНИЕ
ПРИ ИССЛЕДОВАНИИ

[X] **LONGITUDINALE - LONGITUDINAL - ПРОДОЛЬНОЕ**

[ ] **TRASVERSALE – TRANSVERSAL – KREUZEND-ПОПЕРЕЧНОЕ**

PHOTO (ELECTRONIC IMAGE) – ФОТОСНИМКИ (ЭЛЕКТРОННОЕ ИЗОБРАЖЕНИЕ)



NOTE:
ПРИМЕЧАНИЯ:

FIRMA UNTERSCHRIFT SIGNATURE SIGNATURE ПОДПИСЬ	**DATA** DATUM DATE DATE ДАТА
Daidone/Frison	05/10/23

Mod.Micro Rev.5

COGNE ACCIAI SPECIALI S.P.A.

CERTIFICATO DI COLLAUDO ULTRASUONI
CERTIFICAT DE CONTROLE PAR ULTRASONS
ULTRASCHALL PRUEFZEUGNIS
REPORT OF ULTRASONIC INSPECTION
ОТЧЕТ ОБ УЛЬТРАЗВУКОВОМ КОНТРОЛЕ

N. US.
2029/23

CLIENTE *CLIENTSGG* *BESTELLER* *CUSTOMER* ЗАКАЗЧИК	***CONFERMA*** *CONFIRMATION* *AUFTRAGSBESTRAKTIGUNG* *CONFIRMATION* ПОДТВЕРЖД. ЗАКАЗА
MARCA *NUANCES* *WERKESTOFF* *GRADE* МАРКА: 630 3 W.No 1.4542	***ORDINE*** *COMMANDE* *AUFTRAG* *ORDER* ЗАКАЗ
SPECIFICA *SPECIFICATION* *PRUKEVORSCHRIFT* *SPECIFICATION* ТЕХ. ТРЕБОВАНИЯ: EN10308 prospetto2 cl4	***COLATA*** *COULEE* *SCHMELZE* *HEAT* ПЛАВКА: 300549 ***SCHEDA*** *LOT* *LAUFKARTE* *LOT* ПАРТИЯ: 401710
PRODOTTO *PRODUIT* *ERZEUGNISFORM* *PRODUCT* ИЗДЕЛИЕ: ROUND BARS 90 mm	***STATO DI LAVORAZIONE*** *STADE DU PRODUIT* *LIEFERZUSTAND* *WORKING STEP* ОБРАБОТКА: ROUGH GROUND
TIPO DI APPARECCHIO *TIPE D'APPAREILPARUS* *PRUEFGERAT TYP* *INSTRUMENT TYPE* ТИП АППАРАТА: USM36 18107589	***COSTRUTTORE*** *CONSTRUCTEUR* *BAUART* *MAKE* ИЗГОТОВИТЕЛЬ: KRAUTKRAMER
TIPO DI SONDA *TIPE DE PALPEUR* *PRUFKOPT* *PROBETYPE* ТИП ЗОНДА: SEB-4-S	***FREQUENZA*** ***FREQUENCE*** *FREQUENZ* *FREQUENCY* ЧАСТОТА: 4 MHz S/N 67257-50474

DIREZIONE D'ESAME
DIRECTION D'EXAMEN
PRUEFRICHTUNG
SCANNING DIRECTION
НАПРАВЛЕНИЕ ПРИ

- [X] *RADIALE - RADIAL*
- [ ] *ASSIALE - AXIAL*
- [ ] *SONDE ANGOLATE - ANGLE BEAMS*

- [ ] ***MATRICOLA BLOCCO CAMPIONE***
DENTIFICATION BLOC DE REFERENCE MUSTER BLOCK
MUSTER BLOCK
TEST BLOCK NR
№ ОБРАЗЦА ДЛЯ ИСПЫТАНИЯ

- [ ] ***AVG SCALE***
ECRANS ABAQUES AVG
AVG SKALEN
AVG SCALE
ШКАЛА *AVG*

- [X] ***AVG DIAGRAMMI***
DIAGRAMMES AVG
AVG DIAGRAMM
AVG DIAGRAM
ДИАГРАММЫ ***AVG***

- [ ] **V1**
- [ ] **V2**

RISULTATODELL'ESAME
RESULTAT DE L' ESSAI
PRUEFERGERBNISSE
RESULT OF THE TEST
РЕЗУЛЬТАТ ИСПЫТАНИЯ

EXAM DATA : 22/10/2023
INSPECTED N. BARS 5

THE MATERIAL IS IN ACCORDANCE TO THE FOLLOWING SPECIFICATIONS:

EN10308 prospetto2 cl4

L'ISPETTORE CND ZUSTANDER CND L'INSPECTEUR CND CND INSPECTOR ИНСПЕКТОР НРК NADALIN SIMONE Liv.II - ISO 9712 N° Cert.32040/PND/C	**III LIV.CND** **III** УРОВЕНЬ НРК BAISOTTI MARCO Liv.III - ISO 9712 N° Cert.34194/PND/C		**DATA** DATUM DATE DATE ДАТА 23/10/2023

(Mod. Certus Rev. 6)

COGNE ACCIAI SPECIALI S.p.a.

ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 439.208.027,00 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.

INSPECTION CERTIFICATE 3.1 (EN 10204:2004)
DOCUMENT NUMBER 2024049141

CUSTOMER:
CUSTOMER'S ORDER:
MANUFACTURER'S WORKS: AOSTA, VIA PARAVERA 16 - ITALY
PRODUCER OF THE DOC: QUALITY DEPARTMENT
MANUFACTURER'S WORKS ORDER NO:
MARK OF THE MANUFACTURER: **COGNE**
DISPATCH NOTE: WEIGHT:

INTERNAL SPEC: H1150DLT
PRODUCT: PEL PEELED ROUND BARS TOLERANCE: ISOK11
SURFACE FINISH: 2B Cold Finished
PRODUCT DELIVERY CONDITION: SI SOL.ANN+PRECIPIT. HARDENED
PRODUCT DIMENSIONS (mm): 80,000 (3,150 in) LENGTH (mm) 06000 06200 (00236 00244 in)
GRADE: AISI 630-17.4PH-1.4542 INTERNAL GRADE: 630 3 IMCO
IDENTIFICATION HEAT NO: 401373 IDENTIFICATION LOT NO: 578420
MARKING OF THE PRODUCT: 1.4542 TEST PIECE N: 842

THE MATERIAL MEETS THE REQUIREMENTS OF: ASTM A564 / ASME SA564 (R19a) H1150D, ASTM A484/A484M (21), NACE MR0175 (21)/ISO 15156-3, NACE MR0103 (15).
REFERENCE NORMS FOR CHEMICAL COMPOSITION ONLY: EN 10088-3 (14).
STEELMAKING EAF + AOD
PRODUCTION ROUTE: HOT ROLLING
HEAT TREATMENT: SOL.ANNEALING 1040°C+/-14°C 1H+30 MIN/INCH FORCED AIR COOLING BELOW 32°C;
DOUBLE AGING 620+/-14°C 4H MIN AIR COOLING BELOW 32°C.(FURNACE THERMOCOUPLES)
HOT ROLLED ROUND BARS
REDUCTION RATIO 66,1

CHEMICAL LADLE ANALYSIS ACCORDING TO ASTM A751 - EN ISO 14284
Control lot No. - Weight :21000023506 - 87.399 KG - 192.679 LB

ELEMENTS	C	Si	Mn	P	S	Cr	Mo	Ni	Nb	Cu
MEASUREMENT UNIT	% w/w	% w/w	% w/w	% w/w	% w/w	% w/w	% w/w	% w/w	% w/w	% w/w
OBTAINED	0,018	0,32	0,71	0,019	0,026	15,97	0,18	4,66	0,27	3,46

ELEMENTS	Co	Ta
MEASUREMENT UNIT	% w/w	% w/w
OBTAINED	0,10	0,005

HARDNESS TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :21000028440 - 1.620 KG - 3.571 LB
SPECIFICATION ENISO6508 HARDNESS TEST HRC TESTING METHOD:
OBTAINED 28,2

IMPACT TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :21000028440 - 1.620 KG - 3.571 LB
SPECIFICATION EN ISO 148-1-KV2 DIRECTION OF THE TEST PIECE: L
TYPE OF TEST PIECE KV
TEST TEMPERATURE °C 60-
MEASUREMENT UNIT J
OBTAINED 55 57 56

DATE 17.10.2024 MORABITO ROSA CF(QUALITY CERTIFICATOR) - ELECTRONICALLY GENERATED CERTIFICATE -**Cogne**

COGNE ACCIAI SPECIALI S.p.a.

ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 439.208.027,00 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.

GRAIN SIZE
Control lot No. - Weight :21000028440 - 1.620 KG - 3.571 LB
SPECIFICATION ASTME112 --
OBTAINED 6,5

LATERAL EXPANSION
Control lot No. - Weight :21000028440 - 1.620 KG - 3.571 LB
SPECIFICATION -- --
OBTAINED 0,71 0,78 0,75

ULTRASONIC TEST ACCORDING TO EN10308 class 4 equivalent to SEP 1920 group C class 3 and ASTM A388 FBH 3 for sizes less than 120 mm and ACCORDING TO EN 10308 class 3, equivalent to ASTM A388 FBH5 for sizes more than 120 mm: SATISFACTORY
TENSILE TEST
Control lot No. - Weight :21000028440 - 1.620 KG - 3.571 LB
SPECIFICATION ASTMA370-E8-0.5"SPEC DIRECTION OF THE TEST PIECE: L

	RMB	RP02B	ZB	AL2B
MEASUREMENT UNIT	NMM	NMM	%	%
				4,0 D
OBTAINED	958	819	64,9	24,0

THE PRODUCT SATISFIES THE DIRECTIVES: 2015/863/EU (ROHS3) - 2011/65/EU (ROHS2) - 2000/53/EU - 2002/95/EU(RoHS) - 2003/11/EU-2005/618/EU AND PED 2014/68/EU (ANNEX I, SECTION 4.3).
MARKING: PRODUCER LOGO, MATERIAL NO, HEAT NO, LOT NR.
RADIOACTIVITY CONTROL PERFORMED WITH A GAMMA SPECTROMETER: ASTM E181.
GAMMA ACTIVITY ON THE PRODUCTS BELOW 0.1 BQ/G ACCORDING TO EU RESOLUTION 2013/59/EURATOM , IAEA RS-G-1.7 AND IAEA SSG-17.
WHERE NOT SPECIFIED ALL THE NORMS MENTIONED ARE INTENDED IN THEIR LAST REVISION AT THE DATE OF ISSUE OF THIS DOCUMENT.

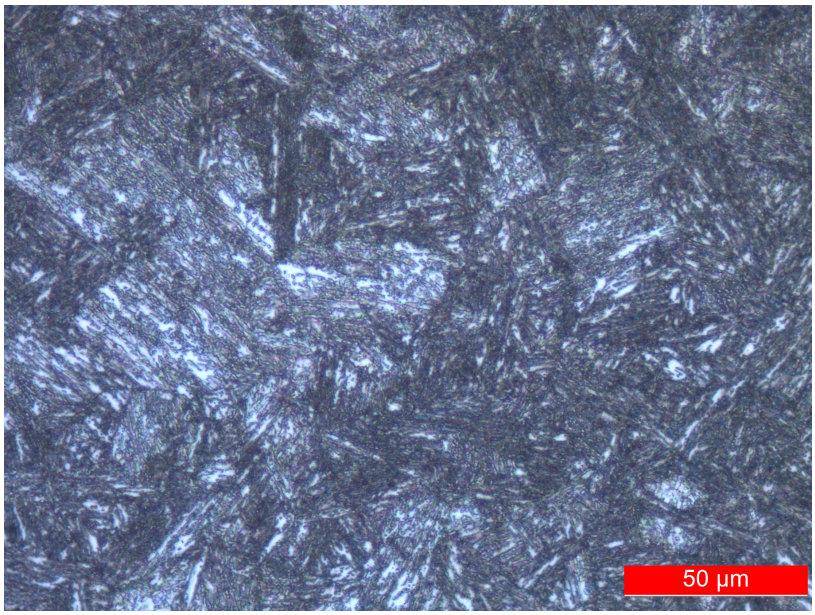
COGNE ACCIAI SPECIALI S.p.a.
Via Paravera, 16
I-11100 AOSTA

MICROPHOTO
МИКРОСЪЁМКА

Annex 1

MARCA *NUANCES* *WERKESTOFF* *GRADE* *МАРКА*	630 3	***LOTTO DI CONTROLLO*** *LOT DE CONTRÔLE* *LAUFKARTE* *CONTROL LOT* *ПАРТИЯ КОНТРОЛЯ*	21000028440
COLATA *COULEE* *SCHMELZE* *HEAT* *ПЛАВКА*	401373	***REAGENTE*** *RÉACTIF* *REAGENS* *ETCHANT* *РЕАГЕНТ*	Cogne Unico (UNI 3137-65)
TIPO DI APPARECCHIO *TIPE D'APPAREIL* *PRUEFGERAT TYP* *INSTRUMENT TYPE* *ТИП АППАРАТА*	Leica DMI3000M S/N 342700		
INGRANDIMENTO *AGRANDISSEMENT* *VERGROSSERUNG* *ENLARGEMENT* *УВЕЛИЧЕНИЕ*	500X		
DIREZIONE D'ESAME *DIRECTION D'EXAMEN* *PRUEFRICHTUNG* *SCANNING DIRECTION* *НАПРАВЛЕНИЕ ПРИ ИССЛЕДОВАНИИ*	Longitudinal		

PHOTO (ELECTRONIC IMAGE) – ФОТОСНИМКИ (ЭЛЕКТРОННОЕ ИЗОБРАЖЕНИЕ)



NOTE:
ПРИМЕЧАНИЯ:

FIRMA UNTERSCHRIFT SIGNATURE SIGNATURE ПОДПИСЬ	**DATA** DATUM DATE DATE ДАТА
N. Avati	08-10-2024

Mod.Micro Rev.6

COGNE ACCIAI SPECIALI S.P.A.

CERTIFICATO DI COLLAUDO ULTRASUONI
CERTIFICAT DE CONTROLE PAR ULTRASONS
ULTRASCHALL PRUEFZEUGNIS
REPORT OF ULTRASONIC INSPECTION
ОТЧЕТ ОБ УЛЬТРАЗВУКОВОМ КОНТРОЛЕ

N. US.
1903/24

CLIENTE *CLIENTSGG BESTELLER CUSTOMER* ЗАКАЗЧИК			***CONFERMA*** *CONFIRMATION AUFTRAGSBESTRAKTIGUNG CONFIRMATION* ПОДТВЕРЖД. ЗАКАЗА		
MARCA *NUANCES WERKESTOFF GRADE* МАРКА	630 3 W.No 1.4542		***ORDINE*** *COMMANDE AUFTRAG ORDER* ЗАКАЗ		
SPECIFICA *SPECIFICATION PRUKEVORSCHRIFT SPECIFICATION* ТЕХ. ТРЕБОВАНИЯ	EN10308 prospetto2 cl4		***COLATA*** *COULEE SCHMELZE HEAT* ПЛАВКА	401373	***SCHEDA*** *LOT LAUFKARTE LOT* ПАРТИЯ 578420
PRODOTTO *PRODUIT ERZEUGNISFORM PRODUCT* ИЗДЕЛИЕ	ROUND BARS 80 mm		***STATO DI LAVORAZIONE*** *STADE DU PRODUIT LIEFERZUSTAND WORKING STEP* ОБРАБОТКА	PEELED	
TIPO DI APPARECCHIO *TIPE D'APPAREILPARUS PRUEFGERAT TYP INSTRUMENT TYPE* ТИП АППАРАТА	USM36 SN	23010091	***COSTRUTTORE*** *CONSTRUCTEUR BAUART MAKE* ИЗГОТОВИТЕЛЬ	KRAUTKRAMER	
TIPO DI SONDA *TIPE DE PALPEUR PRUFKOPT PROBETYPE* ТИП ЗОНДА	SEB-4-S		***FREQUENZA*** ***FREQUENCE*** *FREQUENZ FREQUENCY* ЧАСТОТА	4 MHz S/N	67257-50474

DIREZIONE D'ESAME
DIRECTION D'EXAMEN PRUEFRICHTUNG SCANNING DIRECTION
НАПРАВЛЕНИЕ ПРИ

- [X] *RADIALE - RADIAL*
- [ ] *ASSIALE - AXIAL*
- [ ] *SONDE ANGOLATE - ANGLE BEAMS*

- [ ] ***MATRICOLA BLOCCO CAMPIONE***
DENTIFICATION BLOC DE REFERENCE MUSTER BLOCK
MUSTER BLOCK
TEST BLOCK NR
№ ОБРАЗЦА ДЛЯ ИСПЫТАНИЯ

- [ ] ***AVG SCALE***
ECRANS ABAQUES AVG AVG SKALEN AVG SCALE
ШКАЛА *AVG*

- [X] ***AVG DIAGRAMMI***
DIAGRAMMES AVG
AVG DIAGRAMM
AVG DIAGRAM
ДИАГРАММЫ ***AVG***

- [ ] **V1**
- [ ] **V2**

RISULTATODELL'ESAME
RESULTAT DE L' ESSAI
PRUEFERGERBNISSE
RESULT OF THE TEST
РЕЗУЛЬТАТ ИСПЫТАНИЯ

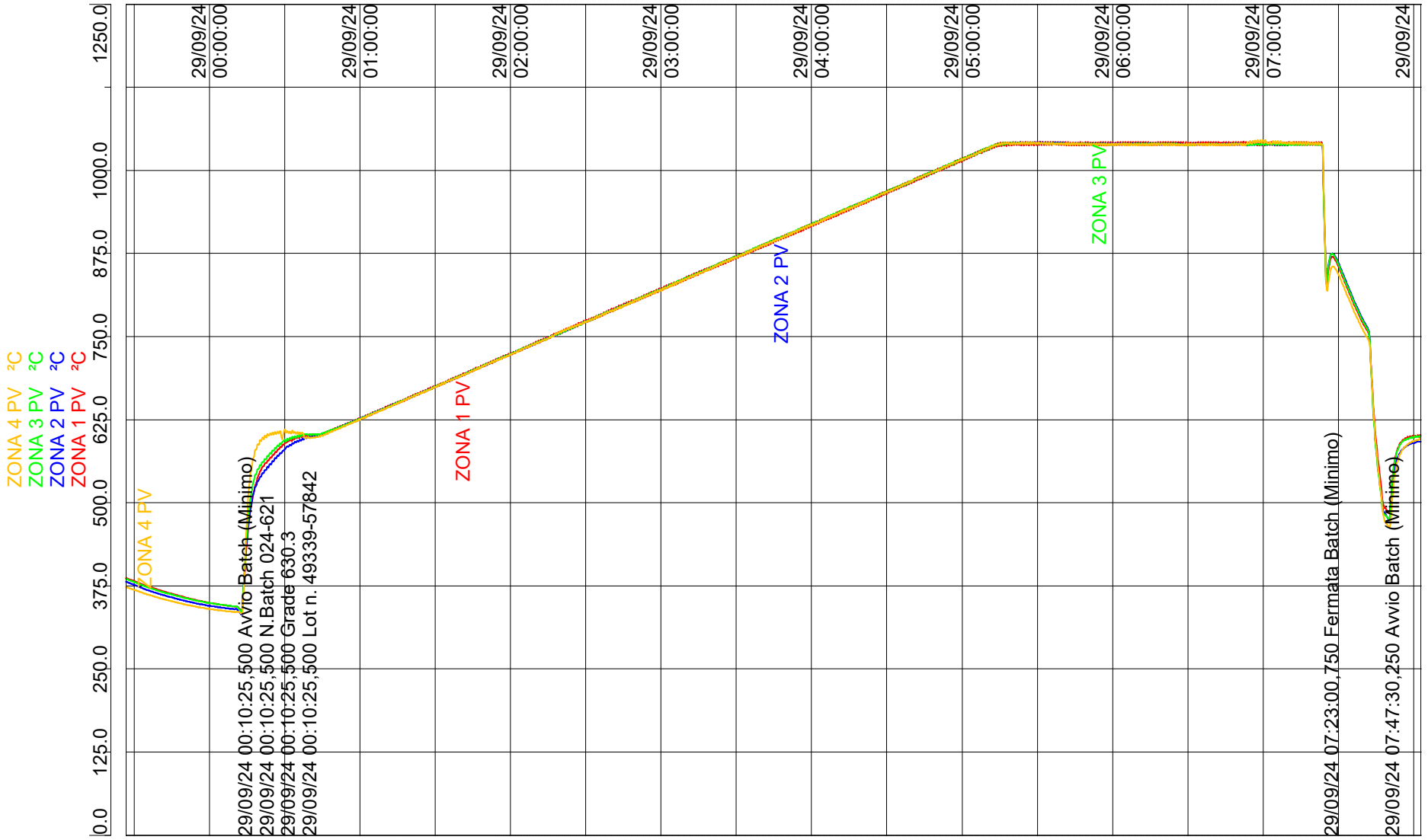
EXAM DATA : 14/10/2024
INSPECTED N. BARS 6

THE MATERIAL IS IN ACCORDANCE TO THE FOLLOWING SPECIFICATIONS:

EN10308 prospetto2 cl4

L'ISPETTORE CND ZUSTANDER CND L'INSPECTEUR CND CND INSPECTOR ИНСПЕКТОР НРК NADALIN SIMONE Liv. II - ISO 9712 N° Cert.32040/PND/C	**III LIV.CND** **III** УРОВЕНЬ НРК BAISOTTI MARCO Liv.III - ISO 9712 N° Cert.34194/PND/C		**DATA** DATUM DATE DATE ДАТА 17/10/2024

(Mod. Certus Rev. 6)

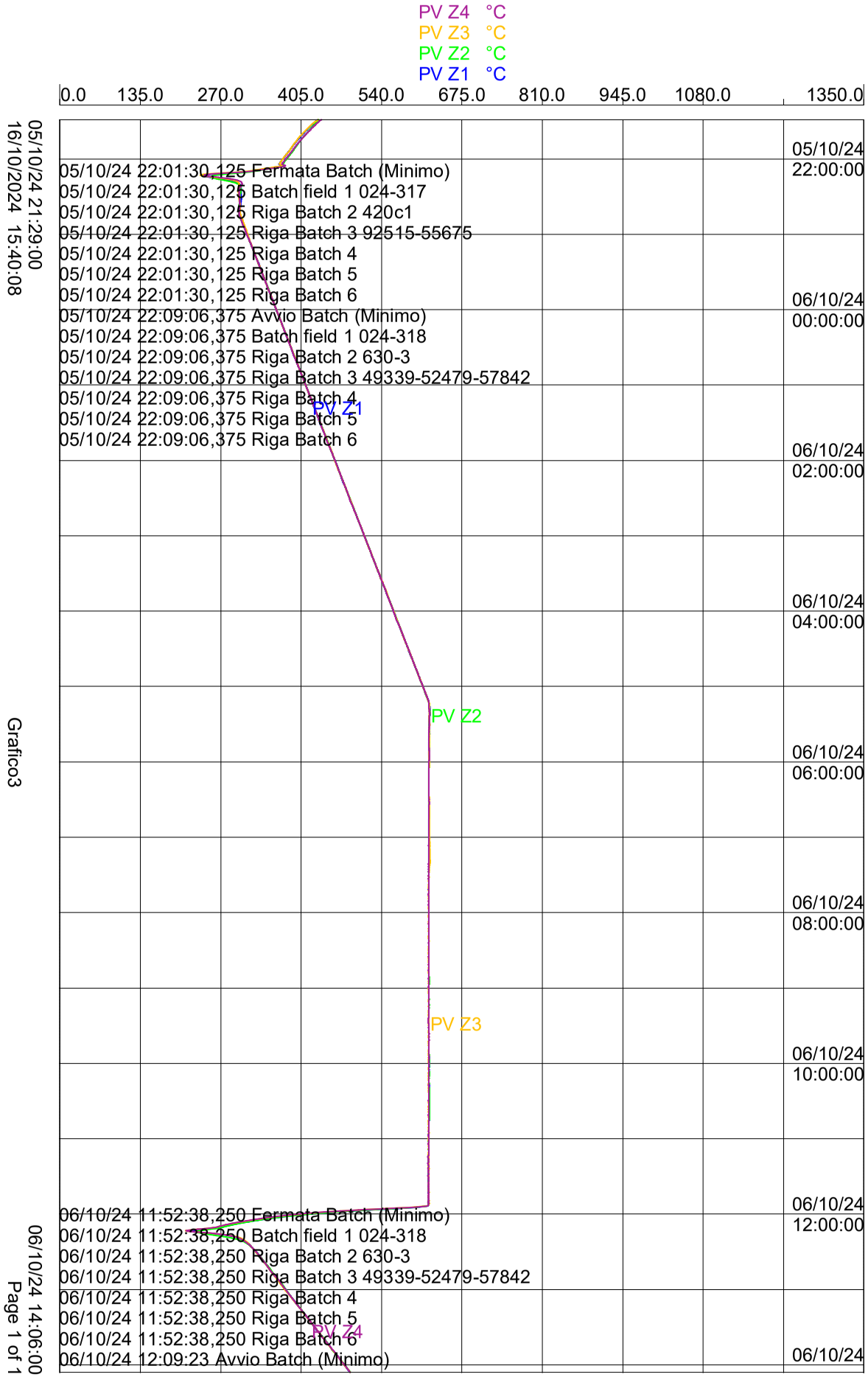


28/09/24 23:27:00
16/10/2024 15:26:23

Grafico1

29/09/24 08:03:00
Page 1 of 1


PV Z4 °C
PV Z3 °C
PV Z2 °C
PV Z1 °C
0.0
135.0
270.0
405.0
540.0
675.0
810.0
945.0
1080.0
1350.0
04/10/24 10:12:00
16/10/2024 15:36:49
Grafico3
05/10/24 00:32:00
Page 1 of 1
04/10/24 10:22:26,625 Avvio Batch (Minimo)
04/10/24 10:22:26,625 Batch field 1 024-316
04/10/24 10:22:26,625 Riga Batch 2 630.3
04/10/24 10:22:26,625 Riga Batch 3 49339-52479-57842
04/10/24 10:22:26,625 Riga Batch 4
04/10/24 10:22:26,625 Riga Batch 5
04/10/24 10:22:26,625 Riga Batch 6
04/10/24 23:24:15,875 Fermata Batch (Minimo)
04/10/24 23:24:15,875 Batch field 1 024-316
04/10/24 23:24:15,875 Riga Batch 2 630.3
04/10/24 23:24:15,875 Riga Batch 3 49339-52479-57842
PV Z4
PV Z1
PV Z2
04/10/24 12:00:00
04/10/24 14:00:00
04/10/24 16:00:00
04/10/24 18:00:00
04/10/24 20:00:00
04/10/24 22:00:00
05/10/24 00:00:00


PV Z4 °C
PV Z3 °C
PV Z2 °C
PV Z1 °C
0.0
135.0
270.0
405.0
540.0
675.0
810.0
945.0
1080.0
1350.0
05/10/24 21:29:00
16/10/2024 15:40:08
05/10/24
22:00:00
06/10/24
00:00:00
06/10/24
02:00:00
06/10/24
04:00:00
06/10/24
06:00:00
06/10/24
08:00:00
06/10/24
10:00:00
06/10/24
12:00:00
06/10/24
05/10/24 22:01:30,125 Fermata Batch (Minimo)
05/10/24 22:01:30,125 Batch field 1 024-317
05/10/24 22:01:30,125 Riga Batch 2 420c1
05/10/24 22:01:30,125 Riga Batch 3 92515-55675
05/10/24 22:01:30,125 Riga Batch 4
05/10/24 22:01:30,125 Riga Batch 5
05/10/24 22:01:30,125 Riga Batch 6
05/10/24 22:09:06,375 Avvio Batch (Minimo)
05/10/24 22:09:06,375 Batch field 1 024-318
05/10/24 22:09:06,375 Riga Batch 2 630-3
05/10/24 22:09:06,375 Riga Batch 3 49339-52479-57842
05/10/24 22:09:06,375 Riga Batch 4
05/10/24 22:09:06,375 Riga Batch 5
05/10/24 22:09:06,375 Riga Batch 6
PV Z1
PV Z2
PV Z3
PV Z4
06/10/24 11:52:38,250 Fermata Batch (Minimo)
06/10/24 11:52:38,250 Batch field 1 024-318
06/10/24 11:52:38,250 Riga Batch 2 630-3
06/10/24 11:52:38,250 Riga Batch 3 49339-52479-57842
06/10/24 11:52:38,250 Riga Batch 4
06/10/24 11:52:38,250 Riga Batch 5
06/10/24 11:52:38,250 Riga Batch 6
06/10/24 12:09:23 Avvio Batch (Minimo)
Grafico3
06/10/24 14:06:00
Page 1 of 1

REMAZEL

CERTIFICATION LIST

Certificate Nr.: 001/24

Date: 30/10/2024

Final Customer:	Order Customer:	Object:	Description:	Quantity:	Inspection and Test Plan (ITP):	Our job:
Rosetti Marino	EFC-24006083+24006433					

MATERIAL

Drawing	Pos.	Q.ty	Description	Material	Certificates 3.1	Order	Heat/Plate ID	Additional Mechanical Test	UT Certificates	Nesting
C09-0001-P0015	1	1	WHEEL Ø200mm	C45	B2202309120154	24006083	23807325	*	*	
C09-0001-P0045	1	1	PULLEY Ø240mm	S355J2	H72116580	24006083	0014477Z	*	*	
C09-0001-P0046	1	1	ANTISKID	S355J2	CRL2413532164	24006083	815265	*	*	
C09-0001-P0085	1	1	Ø279*35	S355J2+N	1154/4	24006083	1240905	*	*	
C09-0001-P0085	2	1	Ø127*30	S355J2+N	1253/3	24006083	1241244	*	*	
C09-0001-P0066	1	1	PULLEYBOOM Ø320mm	S355J2+N	255714/1	24006433	457170	*	*	

湖南华菱湘潭钢铁有限公司
HUNAN VALIN XIANGTAN IRON AND STEEL CO., LTD

产品质量证明书
MILL'S TEST CERTIFICATE/INSPECTION CERTIFICATE

湘钢

湖南省湘潭市岳塘区
Zip Code: 411101
Yuetang, Xiangtan, Hunan, P.R.C.
Phone: (0086-731) 58653019
Fax: (0086-731) 58653019
http://www.hnxg.com.cn

正页第1页共1页

证明书号 Certificate No.	B2202309120154	交货状态 Condition Of Supply	热轧(AR)	车号 Train No.	PACIFIC TAMARITA	标准 Specification	XYXB2022-187
订单号 Order No.	812304K014	牌号 Steel Grade	C45	发货日期 Date Of Delivery	20230912162519	产品名称 Product	HOT ROLLED ROUND BAR
采购订单号Pur Order No	RB23ITA139-CM						
订货单位 Customer	中联物产有限公司			运输方式 Transported By	水运代运	许可证号 License No.	
收货单位 Purchaser Product	中联物产有限公司			到站 Destination	上海罗泾港	许可证有效期 Valid To	

炉号 Heat No.	轧制批号 Lot No.	生产日期 Date Of Production	规格 Size (mm)	数量 Quantity 捆 (Bundles)	重量 Weight (t)	化学成分 Chemical Compositon, % Cu	C	Si	Mn	P	S	Ni	Cr	Mo	Alt	A22	气体量,% Gas content O	N	H
						-2 10	-2 10	-2 10	-2 10	-3 10	-3 10	-2 10	-2 10	-3 10	-3 10	-2 10		-4 10	
23807325	B22371020	20230723	200	2	8.932	3	43	21	72	12	20	1	6	10	20	8		78	

炉号 Heat No.	轧制批号 Lot No.	屈服强度 Y.S (Mpa) HT 毛坯尺寸mm	抗拉强度 T.S (Mpa) HT 毛坯尺寸mm	断后伸长率 A (%) HT 毛坯尺寸mm	冲击试验 Impact Test HT V型冲击 (J) T= 20℃ °C 毛坯尺寸 mm	晶粒度 G.S 奥氏体 HT Max	Min
23807325	B22371020	423/414	670/634	24.0/23.0	37.0/37.0/39.0/38.0	7	7

1) NO RUSSIAN PRODUCTS.
2) Name of the plant where production takes place:HUNAN VALIN XIANGTAN IRON AND STEEL CO., LTD. in XIANGTAN city HUNAN Province, China.
3) Name of the country corresponding to the melting ladle (heat number):China .
4) HS code of the product:721499.
5) Name and address of the country and plant for the hot rolling:HUNAN VALIN XIANGTAN IRON AND STEEL CO., LTD. in XIANGTAN city HUNAN Province, China.
6) Scrap was purchased in China with HS code: 7204.
7) UT TEST AS PER EN10308 CLASS 3.
8) Reduction of area,37%.

无内容

合计 (Total)	2 捆(Bundles)	小计(Subtotal) 8.932 t /总计(Total) 8.932 t	探伤检查标准 Detection Standard	表面Surface 内部Inside EN10308 3	判定 Determine 合格
备注 Remarks	A22:Ni+Cr+Mo。热轧态：AR,热处理态：HT。 无放射性， 且无铅、汞等污染元素。。				
声明 Declaration	本证明书所列产品均按订单标准进行制造和检验，其结果符合要求，特此证明。 WE HEREBY CERTIFY THAT MATERIAL DESCRIBED HEREIN HAS MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE ABOVE MATERIAL SPECIFICATION.		质量管理负责人 Quality Control Principal		

棒材产品质量鉴定章

CERTIFICATE NO.:H720116580

DAYE SPECIAL STEEL CO., LTD.
NO. 316 HUANGSHI AVENUE, HUANGSHI, HUBEI, CHINA PC:435000

QUALITY CERTIFICATE

ACC TO EN10204 3.1

DESCRIPTION OF GOODS: HOT ROLLED HIGH QUALITY ALLOY STEEL ROUND BARS
CUSTOM SPECIFICATION:XYGW0366-2013

Batch No.	Grade	Heat No.	Size(MM)	Pieces	Bundles	Weight(MT)	Total Length(M)	Delivery Condition
H720116580	S355J2	00144772	240	20	20	40.236	112.34	hot rolled

I、Chemical Composition:(%):

Ladle: C:0.15 Si:0.30 Mn:1.32 P:0.010 S:0.014 Cr:0.32 Ni:0.04 Mo:0.02 Cu:0.05 Al:0.027 As:0.0052 Sn:0.0052 Pb:0.0005 CEV:0.44 Cr+Mo+Ni:0.38
Product: N:0.0088 radioactivity:0.02 Bq/g

II、Mechanical Properties Examination:

1、tensile test temp:	R.M Temp		2、tensile test direction:	longitudinal	
3、tensile test standard:	EN 10002-1		4、yield strength ReH(MPa):	372	
5、tensile strength Rm(MPa):	540		6、elongation after fracture A(%):	31.5	
7、impact test temp:	-20℃		8、impact test direction:	longitudinal	
9、impact notch depth:	2mm		10、impact test standard:	EN 10045-1	
11、charpyimpact absorbed energy KV2(J) :	162	163	164		

III、Microstructure Examination:

1、inclusion test standard:	ASTM E45		2、A-thin(level):	2.0	2.0
3、A-thick(level):	1.0	1.0	4、B-thin(level):	1.0	0.5
5、B-thick(level):	0	0	6、C-thin(level):	0	0
7、C-thick(level):	0	0	8、D-thin(level):	0.5	0.5
9、D-thick(level):	0.5	0.5	10、grain size test standard:	ASTM E112	
11、grain size(level):	8				

IV、NDT:

1、UT :good 2、standard:SEP1921-1984 3、level:NC/e

V、Dimensions,Appearance and Surface Quality:

1、dimension,appearance and surface quality: good

VI、Others:

1、reduction ratio:4.8

DAYE SPECIAL STEEL CO., LTD
0036-CPR-M-069-2013

Note:

(1) We hereby certify that the material herein described has been manufactured, sampled, tested and inspected in accordance with the requirements of specifications and purchase order, and meet the requirements
(2) When there is any complaint, you are kindly requested to mark the Steel Grade, Heat No., Size, Delivery Date, Causes and reserve the material in the condition of delivery
(3) Our company's quality management system has been certified by TÜV SÜD for fulfilling all requirements of ISO9001:2015&IATF16949:2016&AS9100D.
The defects per the requirement such as flakes,sub-surface bubble,macro inclusion in macrostructure of acid etched surface are not allowed and we assure the parts quality for delivery.Production standard acc. to EN10025-1、-2 Size tolerance acc. to EN10060 ; Mechanical properties obtained from normalized samples.

Date: 2020-07-15
Inspector: Ming Chao
Manager of Inspection: Liuguanghui

TRAFILIX
INDUSTRIES

TRAFILIX S.p.A.
ESINE PRODUCTION UNIT
I-25040 Esine (BS) Via Ruc, 30
Tel. +39 0364 367 600
Fax +39 0364 466 713

P. IVA IT00557640984 | C.F. 00366210177
R.E.A. BS 176980 | Cap. Soc. € 9.669.700 i.v.
info@trafilix.com | trafilix@legalmail.it
società assoggettata a direzione e coordinamento da parte di Lucefin S.p.A.

GRUPPO LUCEFIN

A06 - Cliente/Customer:	**E.F.C. ACCIAI SRL**	VIA QUINZANO 84	_ 25030 - CASTELMELLA _ ITALIA

A02 - Tipo di documento di controllo/Type of inspection document	A03 - Numero di documento/Document number	Z02 - Data di emissione/Date of issue
2.2 secondo EN 10204:2004/2.2 according to EN 10240:2004	**CRL2413532164**	15/07/2024

B02 - Qualità/Grade	B03 - Esecuzione/Execution	B01 - Sezione/Section
S355J2C	**Trafilato/Cold Drawn**	**Tondo/Round**

B02 - Norme di riferimento (edizione in vigore alla data dell'ordine)/Standard of reference (edition in force at the date of the order)	
	EN 10277/18

B09 - Misura/Size [mm]	B03 - Tolleranza/Tolerance	B04 - Stato di fornitura/Delivery condition	B05 - Trattamento Termico/Heat treatment
20	**h9**	**+C**	**Stato naturale/As rolled**

A09 - Designazione articolo del cliente/Customer article designation	B08 - Quantità/Quantity	B10 - Lunghezza/Length [mm]
	[kg] 626	**6000/6200**

B07 - Lotto	B07 - Colata/Heat	C70 - Processo elaborazione acciaio/Steelmaking process	C93 - Rapp. di riduz. del lam./Reduct. ratio of the hot rolled
L24009901	**815265**		**91,00**

A07 - Vs.ordine/Your Order	A08 - Ns. Conferma/Our Confirmation	A10 - D.D.T. n./Transport document NR.
1454	**TVA2401859**	**TRX2403171 del 15/07/2024**

ANALISI DI COLATA/HEAT ANALYSIS

C71	C72	C73	C74	C75	C76	C77	C78	C79	
C %	Si %	Mn %	P %	S %	Cr %	Mo %	Ni %	Cu %	CEV
0,1710	**0,190**	**1,270**	**0,0170**	**0,0220**	**0,110**	**0,0200**	**0,090**	**0,1700**	**0,43**

Caratteristiche meccaniche/Mechanical properties

Prova di trazione secondo norma EN-ISO 6892/Tensile test according to standard EN-ISO 6892

C12 - Rm [MPa]	C11 - Re-Rp 0,2 (*) [MPa]	C13 - A % 5d (Long)
708,0	**624,0**	**10,90**

* Secondo quanto previsto dalla norma di riferimento/* According to the reference standard

DUREZZA SECONDO NORMA EN-ISO 6506-1/HARDNESS ACCORDING TO STANDARD EN-ISO 6506-1

C30 -	HB
C42 -	**215**

Dimensione grano EN ISO 643 **8,00**

Note: dare certificato 2.2 con meccaniche statistiche

Z01 - Note/Remarks:

Il materiale non contiene prodotti di acciaio originari della Russia menzionati nell'Allegato XVII del Regolamento (UE) n. 833/2014 e sue ulteriori modifiche/
The material does not contain steel products originating in Russia mentioned in Annex XVII of Regulation (EU) No 833/2014 and its additional amendments.

Il prodotto fornito è conforme ai requisiti dell'ordine/The product supplied complies with the requirements of the order.
Materiale conforme alla Direttiva 2011/65/EU RoHS II/This product complies with the Directive 2011/65/EU RoHS II
Materiale conforme al Regolamento (CE) n. 1907/2006 REACH/ This product complies with the Regulation (EC) n. 1907/2006 REACH
Materiale esente da contaminazione radioattiva/Material free from radioactive contamination

Paese di produzione: Italia/Country of production: Italy

A05 - Responsabile controllo qualità/Responsible for quality control
Fulvio Galli

ACCIAIERIE BERTOLI SAFAU
ABSOLUTE STEEL QUALITY
ACCIAIERIE BERTOLI SAFAU SpA
Via Buttrio n.28 - Frazione Carpacco - 33050 Pozzuolo del Friuli (UD)
Tel. +39 0432 613211 - Fax +39 0432 613209 - www.absacciai.it

CERTIFICATO DI COLLAUDO

Inspection Certificate 3.1/Certificat de reception 3.1/
Abnahmeprufzeugnis 3.1

N. 255714 / 1
Data 03.03.2020
COLATA N. Heat-Coulee-Schmelze 457170
Pag. 1 / 2

CLIENTE Customer-Client-Besteller
PROFILO Shape-Section-Profili: LAMINATO BARRE TONDO GREZZO 320 MM -
ACCIAIO Steel-Acier-Stahl: ST52.3/S355J2
CAPITOLATO ABS: Technical Specification: ABS
CAPITOLATO DI ANALISI: Material Specification:
CAPITOLATO DI FORNITURA: Technical Delivery Requirements:

ORDINE Order-Commande-Bestellung: ORDINE ST52-3/S355J2
STATO DI FORNITURA SupplyCondition-Etat de livraison: NATURALE
COMESSA/POS Sales Order/Pos: 1065415/80

Rf

COMPOSIZIONE CHIMICA DI COLATA %

CAST ANALYSIS % - COMPOSITION CHIMIQUE DE COULEE % - SCHMELZE CHEMISCHE ANALYSE %

	C	Mn	Si	P	S	Cr	Ni	Mo	Al (T)	Cu	Sn	Ti
Min												
Max	0,200	1,60	0,55	0,025	0,025	0,30	0,30	0,08	0,100	0,30	0,050	0,0500
Colata/Heat	0,161	1,25	0,21	0,009	0,003	0,19	0,12	0,04	0,023	0,18	0,008	0,0018
	B (T)	V	Nb	As	Ca	Sb	Co	Pb	O/ppm	H/ppm	C Eq. Formula	
Min												
Max	0,0008	0,100	0,060	0,050	0,0500	0,050	0,100	0,4000	20,00	2,00	0,450	
Colata/Heat	0,0001	0,004	0,003	0,005	0,0014	0,001	0,008	0,0001	14,00	0,80	0,436	

CARATT. MECCANICHE

MECHANICAL PROPERTIES - CARACTERISTIQUES MECANIQUE - MECHANISCHE EIGSNSCHAFTER

TRAZIONE/RESILIENZA DI RIFERIMENTO

TRATTAMENTO TERMICO HEAT TREATMENT: NORMALIZZAZIONE

TRAZIONE

TENSILE TEST

	R LONG.	RE LONG.	A%5D LONG.									
Min	490Mpa	355Mpa	22%									
Max	630Mpa											
Colata/Heat	516Mpa	363Mpa	28,3%									

RESILIENZE

IMPACT TEST

	KV -20°C Long	KV -20°C Long	KV -20°C Long									
Min	27J	27J	27J									
Max												
Colata/Heat	130J	137J	134J									

DUREZZE

HARDNESS

	IN PELLE					
Min						
Max	9.999HB					
Colata/Heat	140HB					

INCLUSIONI NON METALLICHE

NON METALLIC INCLUSION - INCLUSIONS NON METALLIQUES - PRUFUNG NICHTEMETALLISCHE EINSCHLUSSE

K4
2

MICROINCLUSIONI: METODO K
MICROINCLUSIONI: NORMA UNI 3244

GRANO

GRAIN - GRAIN - KORNGROSSE

GRANO AUSTENITICO: NORMA UNI 3245
GRANO AUSTENITICO: METODO MC QUAID
TEMPERATURA GRANO AUSTENITICO 920 °C
DIMENSIONE GRANO AUSTENITICO 7

ACCIAIERIE BERTOLI SAFAU
ABSOLUTE STEEL QUALITY
ACCIAIERIE BERTOLI SAFAU SpA
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Tel. +39 0432 613211 - Fax +39 0432 613209 - www.absacciai.it

CERTIFICATO DI COLLAUDO

Inspection Certificate 3.1/Certificat de reception 3.1/
Abnahmeprufzeugnis 3.1

N.	255714 / 1
Data	03.03.2020
COLATA N. Heat-Coulée-Schmelze	457170
Pag.	2 / 2

ALTRE PROVE
OTHER TESTS - AUTRES ESSAIS - SONSTIGE PRUFUNGEN

GRADO BANDATURA ASSENTE
BANDATURA NORMA UNI 8449

NOTE

DIFETTI INTERNI METODO CONTROLLO US ESEGUITO AL 100%
DIFETTI INTERNI ACC. TO EN 10308 CL.4
ANTIMIX 100 %
R/R = 5
CERTIFICATO REDATTO IN ACCORDO A: EN 10204/3.1
ACCIAIO COMPLETAMENTE CALMATO .
ACCIAIO GRANO FINE .
ACCIAIO ELABORATO AL FORNO ELETTRICO .
ACCIAIO DEGASATO SOTTOVUOTO .
PAESE D'ORIGINE ITALIA
- Materiale esente da piombo, mercurio, cadmio e cromo esavalente (dir. 2000/53/CE - dir. 2011/65/UE e s.m.i.)
- Materiale con radioattivita' non superiore a 0,1Bq/g (d.lgs. 230/1995 e s.m.i.)

CONTROLLO QUALITA'
QUALITY CONTROL - CONTROLE DE QUALITE - QUALITATSSTEILE

Azienda con sistema di gestione certificato da IGQ secondo
ISO 9001 e IATF 16949

Verif.:Sabrina Anzile

REMAZEL	CERTIFICATION LIST	Certificate Nr.: 001/24 Date: 30/10/2024

Final Customer:	Order Customer:	Object:	Description:	Quantity:	Inspection and Test Plan (ITP):	Our job:
Rosetti Marino	24006039 'celotti		Pins/Axis/Shaft		1724001010-QC-ITP-00002	

MATERIAL

Drawing	Pos.	Q.ty	Description	Material	Certificates 3.1	Order	Heat/Plate ID	Additional Mechanical Test	UT Certificates	Nesting
C09-0001-P0050	1	1	PINION Ø100mm	42CRMOS4	4883	24006039	220602441	TRATTAMENTO	*	
C09-0001-P0038	1	1	swivel Ø150mm	S355J2	429339/1	24006039	480592	*	*	
C09-0001-P0083	1	1	shaft Ø40mm	AISI316	2018/003330	24006039	R2LR	*	*	

EURO sider SCALO S.p.A.
Cap. Soc. € 2.000.000 i.v.
Reg. Imprese Brescia n. 302331
C.F. 02887820179
P.IVA 00701510984

Sede legale e amministrativa:
Via degli Emigranti, 9
25040 Cividate Camuno, BRESCIA
Tel. 0364-340206 Fax 0364-340209
www.eurosiderscalo.com

Azienda con sistema di Gestione Qualità certificato da TUV italia SRL secondo la norma UNI EN 9001:2015

Certificato di controllo
Inspection Certificate

Tipo certificato / Type of certificate	Norma certificato / Certificate norm
3.1	EN 10204
Data emissione / Issue date	**N° certificato / N° of certificate**
05.03.2024	4883

Cliente / Customer
CELOTTI ROBERTO & C. S.R.L.
Via Chiari 49/C
I-25033 COLOGNE BS

Ordine cliente / Customer order	Data ord. cliente / Client order date
49	26.01.2024
Ordine ESS / ESS Order	**Data ordine ESS / Ess order date**
101569	29.01.2024
DDT / Delivery note	**Data DDT / Delivery note's date**
1377	05.03.2024

Qualità / Steel grade	Norma / Norm	Stato fornitura / Delivery state	Trattamento termico / Heat treatment	Sezione (mm) / Section (mm)	Rif. Int. / Int. Ref.	Colata / Heat
42CRMOS4	EN 10083-1/3	Barra laminata Grezza	BONIFICATO	100,00 mm	E26457	220602441

ANALISI CHIMICA % / CHEMICAL ANALYSIS %

C	Mn	Si	P	S	Cr	Ni	Mo	Al	Cu	V	B	Pb	Co	Nb	Ti	Sn	N [ppm]	Ceq
0,42	0,810	0,22	0,0150	0,0270	1,070	0,020	0,170	0,0320	0,040									0,80700

CARATTERISTICHE MECCANICHE / MECHANICAL PROPERTIES

Di riferimento / Reference test piece ☐ — Di prodotto / On the product ☒ — Trattamento termico del provino / Sample's heat: +QT

Rottura / Tensile strenght	Snervamento / Yield point	Allungamento / Elongation	Resilienza / Impact test					Strizione / Reduction of area	Durezza / Hardness			Controllo ultrasuoni / Ultrasonic test	
N/mm^2	N/mm^2	%	Kv (J)				° C	%	HB			Classe / Class	Norma / Norm
920	770	18	1 60	2 59	3 53	media / average 57,333	KV-40°CJ	64	1	2	3		

Prova Jominy / Jominy test														Grano austenitico / Grain size		Inclusioni non metalliche / Not metallic inclusions	
mm	1,5	3	5	7	9	11	13	15	20	25	30	35	40	JK <	Norma / Norm	K4 <	Norma / Norm
HRC	58,8	57,9	57,5	56,8	56,5	55,6	54,5	53,7	53,5	50,8	49,7	46,7	44,6	7	ASTM E112	1.0	ASTM E381

Note / Note

Il presente certificato è conforme all'originale archiviato presso la nostra sede.
This certificate is in compliance with the original one stored at our facility.
R/R=8.9

N.B.: I prodotti forniti sono conformi ai requisiti dell'ordine
The products supplied are in compilance with the requirements of the order

EURO sider SCALO S.p.A.
Controllo Qualità – Quality Control
Marco Ravelli

ACCIAIERIE BERTOLI SAFAU
ABSOLUTE STEEL QUALITY
ACCIAIERIE BERTOLI SAFAU SpA
Via Buttrio n.28 - Frazione Cargnacco - 33050 Pozzuolo del Friuli (UD)
Tel. +39 0432 613211 - Fax +39 0432 613209 - www.absacciai.it

CERTIFICATO DI COLLAUDO

Inspection Certificate 3.1/Certificat de reception 3.1/
Abnahmeprufzeugnis 3.1

N. 429339 / 1
Data 31.10.2024
COLATA N. Heat-Couiée-Schmelze 480592

CLIENTE Customer-Client-Besteller: CELOTTI ROBERTO & C. SRL
ORDINE Order-Commande-Bestellung: 421
PROFILO Shape-Section-Profili: LAMINATO BARRE TONDO GREZZO 150 MM -
STATO DI FORNITURA SupplyCondition-Etat de livraison: NATURALE
ACCIAIO Steel-Acier-Stahl: S355J2+AR / ST52.3
COMESSA/POS Sales Order/Pos: 1111254/10

CAPITOLATO ABS: Technical Specification: ABS
CAPITOLATO DI ANALISI: Material Specification: EN10025-2/DIN17100 (ASQ) REV.0 2022.03
CAPITOLATO DI FORNITURA: Technical Delivery Requirements:

COMPOSIZIONE CHIMICA DI COLATA %

CAST ANALYSIS % - COMPOSITION CHIMIQUE DE COULEE % - SCHMELZE CHEMISCHE ANALYSE %

	C	Mn	Si	P	S	Cr	Ni	Mo	Al (T)	Cu	Sn	Ti
Min	0,160	0,60	0,15		0,020				0,015			
Max	0,200	1,35	0,30	0,025	0,035	0,29	0,42	0,11	0,050	0,55	0,030	0,0200
Colata/Heat	0,174	1,28	0,19	0,011	0,024	0,13	0,10	0,03	0,020	0,13	0,006	0,0020

	B (T)	V	Nb	As	Ca	Sb	Co	Pb	O/ppm	H/ppm	N/ppm	C Eq. Formula
Min												
Max	0,0008	0,080	0,020	0,020	0,0020	0,050	0,100	0,1000	20,00	2,00	120	0,450
Colata/Heat	0,0001	0,003	0,002	0,004	0,0001	0,001	0,007	0,0001	10,00	0,90	73	0,435

CARATT. MECCANICHE

MECHANICAL PROPERTIES - CARACTERISTIQUES MECANIQUE - MECHANISCHE EIGSNSCHAFTER

TRAZIONE/RESILIENZA DI PRODOTTO

TRATTAMENTO TERMICO HEAT TREATMENT

TRAZIONE

TENSILE TEST

	Rm LONG.	REH	A%5D LONG.									
Min	450Mpa	295Mpa	18%									
Max	600Mpa											
Colata/Heat	510Mpa	329Mpa	25,3%									

RESILIENZE

IMPACT TEST

	KV -20°C Long	KV -20°C Long	KV -20°C Long	KV 0°C Long	KV 0°C Long	KV 0°C Long						
Min	27J	27J	27J									
Max												
Colata/Heat	61J	75J	53J	119J	126J	116J						

DUREZZE

HARDNESS

	IN PELLE	IN PELLE				
Min						
Max	999HBW	238HB				
Colata/Heat	165HBW	165HB				

RESILIENZE : ACC. TO EN ISO 148-1

TRAZIONE : ACC. TO EN ISO 6892-1

INCLUSIONI NON METALLICHE

NON METALLIC INCLUSION - INCLUSIONS NON METALLIQUES - PRUFUNG NICHTEMETALLISCHE EINSCHLUSSE

	Tipo A Type A	Tipo B Type B	Tipo C Type C	Tipo D Type D
Fine Thin	2	0,5	0	1
Grosso Heavy	1,5	1	0	0,5

MICROINCLUSIONI: METODO A

MICROINCLUSIONI: NORMA ISO 4967/ASTM E45

GRANO

GRAIN - GRAIN - KORNGROSSE

GRANO AUSTENITICO: NORMA EN ISO 643/ASTM E45

GRANO AUSTENITICO: METODO MC QUAID

ACCIAIERIE BERTOLI SAFAU
ABSOLUTE STEEL QUALITY
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Via Buttrio n.28 - Frazione Cargnacco - 33050 Pozzuolo del Friuli (UD)
Tel. +39 0432 613211 - Fax +39 0432 613209 - www.absacciai.it

CERTIFICATO DI COLLAUDO

Inspection Certificate 3.1/Certificat de reception 3.1/
Abnahmeprufzeugnis 3.1

N.	429339 / 1
Data	31.10.2024
COLATA N. Heat-Couiée-Schmelze	480592
Pag.	2 / 2

TEMPERATURA GRANO AUSTENITICO 920 °C

DIMENSIONE GRANO AUSTENITICO 8

NOTE

DIFETTI SUPERFICIALI: NESSUNA RIPARAZIONE MEDIANTE SALDATURA

DIFETTI INTERNI METODO CONTROLLO US ESEGUITO AL 100%

DIFETTI INTERNI EN10308 CL.4/SEP1920 CL.C

ANTIMIX 100 %

METODO DI CONTROLLO TRAMITE SPETTROMETRO PORTATILE

R/R = 7

CERTIFICATO REDATTO IN ACCORDO A: EN 10204/3.1

ACCIAIO COMPLETAMENTE CALMATO .

ACCIAIO GRANO FINE .

ACCIAIO ELABORATO AL FORNO ELETTRICO .

ACCIAIO DEGASATO SOTTOVUOTO .

PAESE D'ORIGINE ITALIA

- Materiale esente da piombo, mercurio, cadmio e cromo esavalente (dir. 2000/53/CE - dir. 2011/65/UE e s.m.i.)
- Materiale con radioattivita' non superiore a 0,1Bq/g (d.lgs. 101/2020 e s.m.i.)

- Con la presente dichiariamo che i prodotti sopra descritti sono conformi ai requisiti concordati all'ordine sulla base dei risultati di prova qui inclusi.

CONTROLLO QUALITA'

QUALITY CONTROL - CONTROLE DE QUALITE - QUALITATSSTEILE

Azienda con sistema di gestione certificato da IGQ secondo
ISO 9001 e IATF 16949

Verif.:Omar Tonetti

MEGHINOX ACCIAI S.R.L.
Via P. Nenni, 47
24050 Calcinate BG

Barra Inox Tonda Caldopelato/a ricotto/a
A 316L 40,00
Client Order NR. 230
Your Code:
Your Item:
Your Job:

HEAT: R2LR **OUR ORDER:** 2018 SC 31084 / 100
QTY: NR 4,00 MT KG 431,00

ROLDAN, S.A. - Stainless Steels

FACTORY
Santo Tomás de las Ollas, S/N
Apdo. de Correos 11
PONFERRADA (LEÓN)
TEL.: +34 987 44 61 00
FAX: +34 987 44 61 01
E-MAIL: rdn_fabrica@acerinox.com

HEAD OFFICE
Santiago de Compostela, 100-3º
28035 MADRID (ESPAÑA)
TEL.: +34 913 98 52 57
FAX: +34 913 98 51 93
E-MAIL: roldan@acerinox.com

INSPECTION CERTIFICATE
3.1
EN 10204

TÜVRheinland® CERT ISO 9001

CE 0432 11 0432-CPR-00190-01

CERTIFICATE Nº 2018/003330	**DATE** 25/01/2018	**SHEET** 1	**DELIVERY NOTE Nº** 2018/000477
GRADE ROLDAMAX-339	EN10088:3 (1.4401/1.4404.)		
CUSTOMER			
DIMENSIONS 40,00 mm.	Surface finish according EN10088-3 Table 7:1X		
LENGTH 6.100 mm.	**TOLERANCE** ISO k12		
PRODUCT [30] Round bar, annealed, smooth turned			
REQUIREMENTS EN10088:3	**CUSTOMER ORDER** 41948/17-207155		
TENSILE TEST EN ISO 6892-1			
ACCORDING TO EN 10272	**EDITION** AD-2000 W2 AD-2000 W10		
INTERGRANULAR CORROSION EN ISO 3651-2 method A: SATISFACTORY	WITHOUT OBJETIONS		
SURFACE AND DIMENSIONS CONTROL WITHOUT OBJECTIONS	Spektrometrical Identity Test: O.K.		
IMPACT TEST, SAMPLE DIMENSIONS EN ISO 148-1	**MATERIAL FREE FROM RADIOACTIVITY**	EN 10.088:5	

ORDER Nº	WORKS Nº	MARKS / BOX	HEAT NUMBER	SAMPLE	WEIGHT
DW05567 11	DW05567 11 1	67027 / RI30589	R2LR	R2LR	431
	DW05567 11 1	67028 / RI30591	R2LR		431
	DW05567 11 1	67029 / RI30592	R2LR		431
	DW05567 11 1	67030 / RI30602	R2LR		369

TD100117145

Tipo:Certificati di origine

PRODUCTION PROCESS
EAF + AOD +CC

TRADE MARK
RDN

MARKING
HEAT NUMBER
GRADE (ACX-339)

INSPECTOR STAMP
R3

QUALITY INSPECTOR
JUAN JOSE ALVAREZ RODRIGUEZ
QUALITY CONTROL REPRESENTATIVE

MECHANICAL PROPERTIES

CAST	SAMPLE	SAMPLE DIMENSIONS mm.	Observ. Tª.	Rm MPa	Rp 0,2% MPa	Rp 1% MPa	Z %	A % L=5Ø	A % L=4Ø	Agt %	IMPACT STRENGHT ISO-V (J) 20ºC	IMPACT STRENGHT ISO-V (J) -196ºC		HARDNESS HB	FATIGUE TEST	BEND TEST	CROSS SECTIONAL AREA mm²	Kg / m
R2LR	R2LR	30,00	20ºC	610	256	300	71	53	55					162				
REQUIREMENTS		EN ISO 377		500 700	200	235		40			100			215				

CHEMICAL COMPOSITION %

CAST	C	P	S	Si	Mn	Cr	Ni	Mo	Ti	N	Cu				
R2LR	0,0260	0,0290	0,0270	0,2960	1,5270	16,7600	10,4900	2,0180	0,0050	0,0470	0,4880				
REQUIREMENTS	0,0300	0,0450	0,0300	1,0000	2,0000	16,5000 18,5000	10,0000 13,0000	2,0000 2,5000		0,1000					

OBSERVATIONS
ASTM A-182. ASTM A-193 Class 1 Grade B8M. ASTM A-276 Condition A. ASTM A-320 Class 1 Grade B8M. ASTM A-479 Condition A. ASME SA-182. ASME SA-193 Class 1 Grade B8M. ASME SA-320 Class 1 Grade B8M. ASME SA-479 Condition A. AMS 5648. AMS 5653. AMS QQ-S-763. AISI 316/316L. UNS S31600/S31603.
Si dichiara che tutta la materia prima utilizzata per la ns produzione di acciaio inox é esente da conta minazione radioattiva grazie alle nostre procedure di controllo interne. NACE MR0175 & MR0103.

CER_IN4

OTHER TEST RESULTS		**REQUIREMENTS**	TRD100 TRB100,AD-2000-W2-W10,2014/68/EU (PED)
HEAT TREATMENT	1.050 ºC AND WATERCOOLED	Crack tested acc. to EN10277 table 1 class 2	

12 Ndt Reports

SGPTESTING
VIA J. RESSEL, 2/5/A - 34018 SAN DORLIGO DELLA VALLE - TRIESTE - ITALY
TEL. +39 040 3220841 - info@sgptesting.com - www.sgptesting.com

RAPPORTO ESAME VISIVO
VISUAL EXAMINATION REPORT

VT nr. 274 /24 pag. 001 di 001 sheet of

cliente / customer	REMAZEL S.p.A.	commessa / project	---
materiale esaminato / examined material	Boom Carpentry		
riferimenti / reference	**Dwg. C09-0001-P0004 rev. E**	particolare / item	100% Welds

procedura d'esame / examination procedure	UNI EN ISO 17637 1724001010-NDT-PRO-00006	limiti di accettazione / acceptance criteria	UNI EN ISO 5817 Class C 1724001010-NDT-PRO-00006	
stato superficiale / surface condition	☑ saldato / welded	☐ molato / ground	☐ lav. di macchina / machined	☐ forgiato / forged
	☐ fuso / casting	☐ sabbiato / sandblasted	☐ verniciato / painted	☐ finito / finished

metodo d'esame / testing method	☑ esame visivo diretto / direct testing	☐ esame visivo remoto / remote testing		
distanza visiva: 30 cm / visual distance	angolo: 30° / visual angle	illuminazione / light	☐ 500 lux	☑ 1000 lux

apparecchiature / equipments	☑ calibro per saldature / welding gauge	☐ calibro ventesimale / gauge	☐ metro / rule	☐ livella / level
	☐ lente / lens	☐ specchio / mirror	☐ endoscopio / endoscope	☐ boroscopio / borescope

esito dell'esame / examination result	☐ cricca / crack 100	☐ cricca da cratere / crater crack 104	☐ porosità, soffiature / porosity 2011-2012-2014-2017	☐ porosità (nido) / clustered porosity 2013
☐ cavità allungate (tarli) / elongated cavity 2015-2016-2018	☐ inclusioni solide / solid inclusions 300	☐ inclusioni di rame / copper inclusions 3042	☐ inclusioni di tungsteno / tungsten inclusions 3041	☐ mancanza di penetrazione / lack of penetration 402
☐ mancanza di fusione / lack of fusion 401	☐ ripresa carente / lack of recovery 517	☐ allineamento non corretto / incorrect root gap 617	☐ incisione marginale / undercut 5011-5012	☐ sovrametallo eccessivo / excess weld metal 502
☐ convessità eccessiva / excessive convexity 503	☐ altezza di gola maggiore / excess. throat thickness 5214	☐ altezza di gola minore / insuff. throat thickness 5213	☐ eccesso di penetrazione / excess penetration 504	☐ sgocciolamento locale / local drip 5041
☐ slivellamento / linear misalignment 507	☐ riempimento incompleto / incompletely filled groove 511	☐ avvallamento / sagging 509	☐ asimmetria eccessiva / excessive asymmetry 512	☐ insellamento al vertice / root concavity 515
☐ incisione al vertice / shrinkage groove 5013	☐ traboccamento / overlap 506	☐ colpo d'arco / stray arc 601	☐ spruzzo / spatter 602	☐ difetti in sez. trasversale / cross-section imperfections -

SATISFACTORY

note / remarks

NDT Operator	QA/QC	Third Party	Client
Name: Mr. Michele Pellis 2nd and 3rd level UNI EN ISO 9712 Signature: Place/Date: Trieste, 14.10.2024	Name: Signature: Date:	Name: Signature: Date:	Name: Signature: Date:

SGPTESTING
VIA J. RESSEL, 2/5/A - 34018 SAN DORLIGO DELLA VALLE - TRIESTE - ITALY
TEL. +39 040 3220841 - info@sgptesting.com - www.sgptesting.com

RAPPORTO ESAME MAGNETOSCOPICO

MAGNETIC PARTICLE EXAMINATION REPORT

MT nr. 381 /24

cliente customer	REMAZEL S.p.A.	commessa project	---
materiale esaminato examined material	Boom Carpentry		
riferimenti reference	**Dwg. C09-0001-P0004 rev. E**	particolare item	100% Welds

procedura d'esame examination procedure	UNI EN ISO 17638 1724001010-NDT-PRO-00006	limiti di accettazione acceptance criteria	EN ISO 23278 - Lev.2 1724001010-NDT-PRO-00006
stato superficiale surface condition	☑ saldato welded	☐ molato ground	☐ lav. di macchina machined
			☐ forgiato forged
temperatura: 15-20 °C test temperature		☐ fuso casting	☐ sabbiato sandblasted
			☐ verniciato painted

mezzo di rivelazione detection medium	☐ a secco dry	☑ a umido wet	black magnetic powder suspension ELITE BW2
metodo di rivelazione detection method	☑ contrasto di colore colour contrast	☐ luce di Wood Wood light	contrast laquer ELITE WBL5

tipo di corrente current type	☑ alternata A.C.	☐ continua D.C.	☐ raddrizzata rectified	☐ magnete permanente permanent magnet
tipo di magnetizzazione type of magnetization	☐ longitudinale longitudinal	☑ giogo yoke	☐ bobina coil	
	☐ circolare circular	☐ puntali prods	☐ conduttore centrale central conductor	☐ di testa head shot
metodo method	☑ continuo continuous	☐ residuo residuos	☐ smagnetizzazione SI smagnetization yes	☑ smagnetizzazione NO smagnetization no
attrezzatura: equipment	Parker B300S		nr. matricola: serial number	26166
distanza : 135 mm. distance	intensità corrente: A current intensity	spire: turns	ampere-spire: ampere-turns	

esito dell'esame
examination result

Acceptable as per specification.

note
remarks

NDT Operator	QA/QC	Third Party	Client
Name: Mr. Michele Pellis 2nd and 3rd level UNI EN ISO 9712	Name:	Name:	Name:
Signature:	Signature:	Signature:	Signature:
Place/Date: Trieste, 14.10.2024	Date:	Date:	Date:

SGPTESTING
VIA J. RESSEL, 2/5/A - 34018 SAN DORLIGO DELLA VALLE - TRIESTE - ITALY
TEL. +39 040 3220841 - info@sgptesting.com - www.sgptesting.com

RAPPORTO ESAMI ULTRASUONI
ULTRASONIC EXAMINATION REPORT

UT nr. 370 /24

cliente / customer: REMAZEL S.p.A.

commessa / project:

materiale esaminato / examined material: Boom Carpentry
plates thk. ≥ 20 mm

riferimenti / reference: **dwg. C09-0001-P0004 rev. E**

particolare / item: 100% surface where accessible
(pos. 3, 4, 5)

procedura d'esame / examination procedure: UNI EN ISO 10160
1724001010-NDT-PRO-00006

limiti di accettazione / acceptance criteria: planar discontinuities research

stato superficiale / surface condition: ☐ saldato / welded ☐ molato / ground ☑ lav. di macchina / machined ☐ forgiato / forged

temperatura / test temperature: 0-10 °C

accoppiante / coupling medium: tjlosa

☐ verniciato / painted ☐ fuso / casting ☐ sabbiato / sandblasted

apparecchiatura / equipment:

☐ Olympus 38 DL Plus ID 120486408
☐ Panametrics 36 DLP ID 992126711
☐ Panametrics Epoch III ID 01457206
☐ Panametrics Epoch IV ID 081590305
☐ Olympus OMNI-MX2 ID 102691-2681
☐ Olympus Epoch 600 ID 120459312
☐ Olympus Epoch 600 ID 120240601
☑ Olympus Epoch 600 ID 130530605

sonda / transducer	dimensioni / probe size	angolo / angle	frequenza / frequency	dB riferimento / primary ref.	correz. di trasferimento / transfer correction	dB scansione / scanning	dB totali / total dB
Krautkramer MB4S-N *sn: 53465*	Ø10 mm	0°	4 MHz	50,8	<2		50,8
IMG D8-5B *sn: 2389*	Ø10 mm	0°	4 MHz	43,7	<2		43,7

blocchi di taratura / reference blocks: IIW Reference Block

metodo di taratura / calibration mode: -

dettaglio / item detail: ---

esito dell'esame / examination result:

Acceptable as per specification.

NDT Operator	QA/QC	Third Party	Client
Name: Mr. Michele Pellis 2nd and 3rd level UNI EN ISO 9712	Name:	Name:	Name:
Signature:	Signature:	Signature:	Signature:
Place/Date: Trieste, 14.10.2024	Date:	Date:	Date:

RAPPORTO DI ESAME Visivo N° 1260/24

Visual del of **22/10/2024**
EXAMINATION REPORT
Pag. Sheet 1 di of 1

ANTARES CONTROL
di Righetto Davide
Ufficio : Via Roma, 15/7
36040 Grumolo delle Abbadesse (VI)
Sede operativa : Via Galileo Galilei, 1 A6
Zona Nogarazza, 36057 Arcugnano (VI)

Cliente Sidertaglio Calandratura S.r.L.
Customer Via Marzotto, 9, 36031 Povolaro VI
Ordine* 24005073 **Comm. Vs cliente***
Order* Custoner Job*
Cliente REMAZEL ENGINEERING SPA **Comm.*** R0177
Custoner Job
Incarico R0177-01
Assignment
Data/Luogo 22/10/2024 Sidertaglio Calandratura S.r.L.
Date and place Via Marzotto, 9, 36031 Povolaro VI

Descrizione del pezzo* WELDED SHELL Øe 700
Description object* L. 4196, Th 15 mm
Disegno* **Quantità** 1
Drawing* Quantity
Codice pezzo* 240904R0177A
Code name*
Materiale* S355J2+N **Colata***
Material* Heat*
Tipo Giunto Testa a Testa
Joint type Butt Weld

Tipo prodotto Laminato / Saldato **WPS di riferimento***
Product Type Laminate / welded
Fase di controllo Finale
Inspection Phase Final
Stadio di controllo Trattamento termico non richiesto
Inspection Phase Heat treatment not required
Condizioni superficiali Spazzolato
Tests surface status Brushed

Procedura/Cliente* **Norme di rif. :**
Specification customer* Procedure
Procedura/Specifica* ISO 17637
Specification* ***Ultima edizione / Latest edition***
Classe accettazione* ISO 5817 LIV. B
Acceptance criteria* ***Ultima edizione / Latest edition***
Estensione del controllo* 100% saldatura
Extension examination* weld 100%

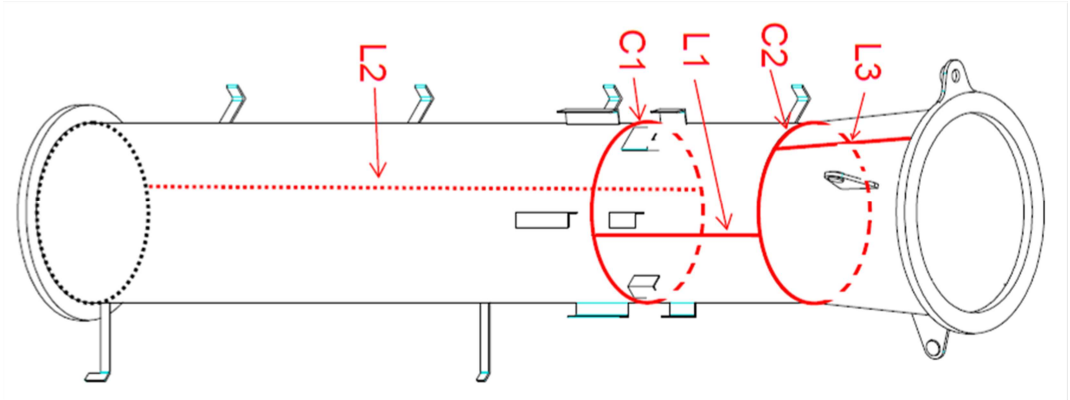
* DATI FORNITI DAL CLIENTE - *THESE DATA ARE SUPPLIED BY THE CUSTOMER Sidertaglio Calandratura S.r.L. Via Marzotto, 9, 36031 Povolaro VI WELDED SHELL Comm. 0 Antares Control Report VT N° 1260/24 22/10/2024

Tipo luce Artificiale luce fredda
Light type Artificial cold light
Illuminamento Superfice del pezzo >500 LUX
Light Piece surface >500 LUX
Luxmetro Delta Ohm ND2102,2 +LP471PHOT
Matricola/ Serial n° 14004390 + 14011722

Distanza massima 600 mm **Angolo di visione > 30°**
Max distance 600 mm Visual angle >30°
Strumenti di controllo
Equipment
Controllo Non assistito **Controllo** Localizzato
Test No support Test Localized

Ufficio 3462181857 *Cellulare* 3487376550 *Sito Web* www.antarescontrol.it *E-Mail* antarescontrolli@gmail.com

Note - schizzo / Notes or sketch:



Risultato / Result	OPERATORE - OPERATOR	RESPONSABILE - WORD REFERENCE	ISPETTORE - INSPECTOR
Conforme a Norma Acceptable	Righetto Davide II° LIV. SNT-TC-1A / ISO 9712	SIDERTAGLIO CALANDRATURA S.R.L.	

RAPPORTO DI ESAME MAGNETOSCOPICO

N° 786/24 del of **22/10/2024**

MAGNETOSCOPIC
EXAMINATION REPORT

Pag. Sheet 1 di of 1

ANTARES CONTROL
di Righetto Davide
Ufficio : Via Roma, 15/7
36040 Grumolo delle Abbadesse (VI)
Sede operativa : Via Galileo Galilei, 1 A6
Zona Nogarazza, 36057 Arcugnano (VI)

Cliente Sidertaglio Calandratura S.r.L.
Customer Via Marzotto, 9, 36031 Povolaro VI
Ordine* 24005073 **Comm. Vs cliente***
Order* Custoner Job*
Cliente REMAZEL ENGINEERING SPA **Comm.*** R0177
Custoner Job
Incarico R0177-01
Assignment
Data/Luogo 22/10/2024 Sidertaglio Calandratura S.r.L.
Date and place Via Marzotto, 9, 36031 Povolaro VI

Descrizione del pezzo* WELDED SHELL Øe 700
Description object* L. 4196, Th 15 mm
Disegno* **Quantità** 1
Drawing* Quantity
Codice pezzo* 240904R0177A
Code name*
Materiale* S355J2+N **Colata***
Material* Heat*
Tipo Giunto Testa a Testa
Joint type Butt Weld

Tipo prodotto Laminato / Saldato **WPS di riferimento***
Product Type
Fase di controllo Finale
Inspection Phase Final
Stadio di controllo Trattamento termico non richiesto
Inspection Phase Heat treatment not required
Condizioni superficiali Spazzolato
Tests surface status Brushed

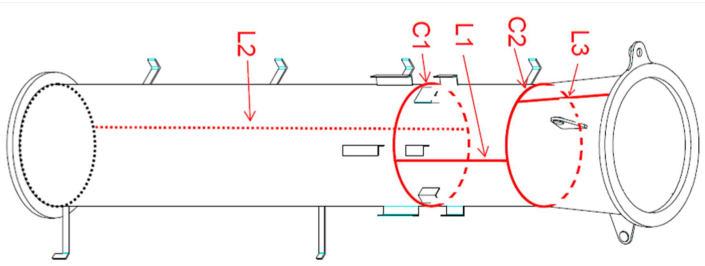
Procedura/Cliente*
Specification customer* **Norme di rif. :** Procedure:
Procedura/Specifica* UNI EN ISO 17638: 2016
Specification - Standard* ***Ultima edizione / Latest edition***
Classe accettazione* UNI EN ISO 23278 Lev. 2:2016
Acceptance criteria* ***Ultima edizione / Latest edition***
Estensione del controllo* 100% saldatura
Extension examination* 100% weld

Ufficio 3462181857 *Cellulare* 3487376550 *Sito Web* www.antarescontrol.it *E-Mail* antarescontrolli@gmail.com

Corrente corrente alternata
Current alternating current
Metodo di controllo Diretto
Examination method Direct
Apparecch. ***Model KY-2 Matricola 220824***
Equipment ***CONFORMITY REPORT n. PRONDT 22-Y02***
Metodo di magnetizzazione elettromagnete
Magnetizing method electromagnet
Flusso magnetico Longitudinale
Magnetic flux Longitudinal
Tipo di polvere Umido
Type of podwer Wet
Distanza tra i poli 75 - 200 mm
Poles pitch 75 - 200 mm
Piastra di sollevamento 10 LB (4500 g)
Matricola - Lifting plate Matr. PRO - NDT 21 - 054
Intensità di corrente >2,4 kA/m
Current intensity
Intensità di Campo >2,4 kA/m
Field intensity
Densità di flusso **> T**
Density flux
Gaussmetro- Gaussmeter - LINKJOIN + SONDA LZ-643
Matricola/ Serial n° S180423355 SONDA 64100782160117
Radiometer UV-A Delta Ohm HD2102,2 + LP 471 UVA
Matricola/ Serial n° **14004390 + 13041178**
Tipo luce Artificiale luce fredda
Light type Artificial warm light
Intensità di luce Superfice del pezzo >500 LUX
Light intensity Piece surface >500 LUX

Temperatura ambiente tra 20° 40° Attuale 21 C°
Temperature environment from 20° to 40° Actual 21 C°
Produttore **MR Chemie GmbH**
Productor
Vernice a contrasto di colore ***MR 72*** Contrast paint white
White contrast paint ***Lotto - Batch*** ***#01/2022 E:01/2025***
Mezzo Rilevatore ***MR 76*** Magnetic poweder suspension black
Detector type ***Lotto - Batch*** ***100581140323***
Smagnetizzazione non richiesta
Demagnetization not required

Note - schizzo / Notes or sketch:



Risultato / Result	OPERATORE - OPERATOR	RESPONSABILE - WORD REFERENCE	ISPETTORE - INSPECTOR
Conforme a Norma Acceptable	Righetto Davide II° Liv. SNT-TC1A / ISO 9712	SIDERTAGLIO CALANDRATURA S.R.L.	

RAPPORTO DI PROVA ULTRASUONI N° 782/24

ULTRASONIC del of **22/10/2024**
EXAMINATION REPORT
Pag. Sheet 1 di of 1

ANTARES CONTROL
di Righetto Davide
Ufficio : Via Roma, 15/7
36040 Grumolo delle Abbadesse (VI)
Sede operativa : Via Galileo Galilei, 1 A6
Zona Nogarazza, 36057 Arcugnano (VI)

Cliente Sidertaglio Calandratura S.r.L.
Customer Via Marzotto, 9, 36031 Povolaro VI
Ordine* 24005073 **Comm. Vs cliente***
Order* Custoner Job*
Cliente REMAZEL ENGINEERING SPA **Comm.*** R0177
Custoner Job
Incarico R0177-01
Assignment
Data/Luogo 22/10/2024 Sidertaglio Calandratura S.r.L.
Date and place Via Marzotto, 9, 36031 Povolaro VI

Descrizione del pezzo* WELDED SHELL Øe 700
Description object* L. 4196, Th 15 mm
Disegno* **Quantità** 1
Drawing* Quantity
Codice pezzo* 240904R0177A
Code name*
Materiale* S355J2+N **Colata***
Material* Heat*
Tipo Giunto testa a testa
Joint type Butt Weld

Tipo prodotto Laminato / Saldato **WPS di riferimento***
Product Type Laminate / welded
Fase di controllo Finale
Inspection Phase Final
Stadio di controllo Trattamento termico non richiesto
Inspection Phase Heat treatment not required
Condizioni superficiali Spazzolato
Tests surface status Brushed

Procedura/Cliente* **Norme di rif. :**
Specification customer* Procedure:
Procedura/Specifica* UNI EN ISO 17640 liv. B
Specification* ***Ultima edizione / Latest edition***
Classe accettazione* UNI EN ISO11666 Lev. 2
Acceptance criteria* ***Ultima edizione / Latest edition***
Estensione del controllo* 100% saldatura
Extension examination* weld 100%

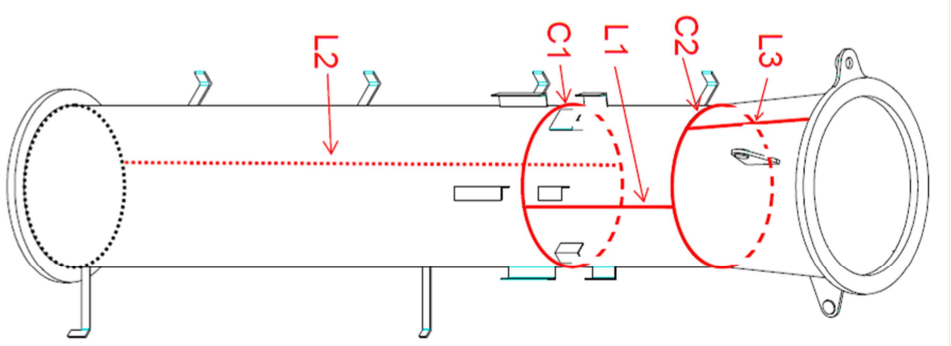
* DATI FORNITI DAL CLIENTE - *THESE DATA ARE SUPPLIED BY THE CUSTOMER Sidertaglio Calandratura S.r.L. Via Marzotto, 9, 36031 Povolaro VI WELDED SHELL Øe 700 Comm. 0 Antares Control Report UT N° 782/24 22/10/2024

Metodo di controllo Manuale - contatto **Accoppiante** COUPLANT FYp **Sovrap. Sonda** >20%
Scanning method Manual - contact reflection Coupling medium COUPLANT FYp Overlap
Strumento tipo WAVE SONATEST **Cavo** SEKG2 **Vel. di scans.** 150 mm/sec.
Instrument : Type Matricola SN - N° I0202645 Cable L 2000 Scanning velocity
Report taratura/calibration EN n° E240181 scad. 17/09/2025
Report taratura/calibration ASME n° A240203 scad. 04/10/2024
Sonde piane ad onde long. PRO NDT MD10-4 N°178220
Probes Long. waves type Matricola - Serial n°
Dimens. crist. Ø 10 mm. **freq.** 4 MHZ
Crystal dim. freq.
Sonde angol. ad onde trasv. PRO NDT MA45-4 2031 12
Probes Transv. waves type Matricola - Serial n°
Dimens. crist. 8 X 9 **freq.** 4 MHZ
Crystal dim. freq.
Sonde angol. ad onde trasv. PRO NDT MA60-4 2032 10
Probes Transv. waves type Matricola - Serial n°
Dimens. crist. 8 X 9 **freq.** 4 MHZ
Crystal dim. freq.
Sonde angol. ad onde trasv. PRO NDT MA70-4 2033 08
Probes Transv. waves type Matricola - Serial n°
Dimens. crist. 8 X 9 **freq.** 4 MHZ
Crystal dim. freq.

Blocco di calibrazione Eco di fondo/ Back Raflection
Calibration Block
Foro di Riferimento FBH Ø 3 mm
Reference pole Sonde piane / Plain Probes
Curve di riferimento Curva DAC
Reference curve Sonde piane / Plain Probes
Limite di Registrazione -4 dB Curva DAC
Recording level Sonde piane / Plain Probes
Blocco di calibrazione V 1 Carbon STEEL
Calibration Block Sonde angolate / Angular Probes
Foro di Riferimento SDH Ø 3 mm
Reference pole Sonde angolate / Angular Probes
Curve di riferimento Curva DAC
Reference curve Sonde angolate / Angular Probes
Limite di Registrazione -4 dB Curva DAC
Recording level Sonde angolate / Angular Probes
Cavo MPKLL2 **Vel. di scans.**
Cable L 2000 Scanning velocity

Ufficio 3487376550 *Cellulare* 3462181857 *Sito Web* www.antarescontrol.it *E-Mail* antarescontrolli@gmail.com

Note - schizzo / Notes or sketch:
CONTROLLO MATERIALE BASE:
Non sono state riscontrate indicazioni degne di nota.
BASIC MATERIAL CHECK:
No noteworthy indications were found.



Risultato / Result	OPERATORE - OPERATOR	RESPONSABILE - WORD REFERENCE	ISPETTORE - INSPECTOR
Conforme a Norma Acceptable	Davide Righetto II° Liv. SNT-TC1A / ISO 9712	SIDERTAGLIO CALANDRATURA S.R.L.	

SGPTESTING
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RAPPORTO ESAME VISIVO
VISUAL EXAMINATION REPORT

VT nr. 287 /24

cliente customer	REMAZEL S.p.A.	commessa project	24-27012
materiale esaminato examined material	Fixed Column Carpentry		
riferimenti reference	**Dwg. C09-0001-P0002 rev. E**	particolare item	100% Welds

procedura d'esame examination procedure	UNI EN ISO 17637 1724001010-NDT-PRO-00006	limiti di accettazione acceptance criteria	UNI EN ISO 5817 Class C 1724001010-NDT-PRO-00006	
stato superficiale surface condition	☑ saldato welded	☐ molato ground	☐ lav. di macchina machined	☐ forgiato forged
	☐ fuso casting	☐ sabbiato sandblasted	☐ verniciato painted	☐ finito finished

metodo d'esame testing method	☑ esame visivo diretto direct testing	☐ esame visivo remoto remote testing		
distanza visiva: 30 cm visual distance	angolo: 30° visual angle	illuminazione light	☐ 500 lux	☑ 1000 lux

apparecchiature equipments	☑ calibro per saldature welding gauge	☐ calibro ventesimale gauge	☐ metro rule	☐ livella level
	☐ lente lens	☐ specchio mirror	☐ endoscopio endoscope	☐ boroscopio borescope

esito dell'esame examination result	☐ cricca crack 100	☐ cricca da cratere crater crack 104	☐ porosità, soffiature porosity 2011-2012-2014-2017	☐ porosità (nido) clustered porosity 2013
☐ cavità allungate (tarli) elongated cavity 2015-2016-2018	☐ inclusioni solide solid inclusions 300	☐ inclusioni di rame copper inclusions 3042	☐ inclusioni di tungsteno tungsten inclusions 3041	☐ mancanza di penetrazione lack of penetration 402
☐ mancanza di fusione lack of fusion 401	☐ ripresa carente lack of recovery 517	☐ allineamento non corretto incorrect root gap 617	☐ incisione marginale undercut 5011-5012	☐ sovrametallo eccessivo excess weld metal 502
☐ convessità eccessiva excessive convexity 503	☐ altezza di gola maggiore excess. throat thickness 5214	☐ altezza di gola minore insuff. throat thickness 5213	☐ eccesso di penetrazione excess penetration 504	☐ sgocciolamento locale local drip 5041
☐ slivellamento linear misalignment 507	☐ riempimento incompleto incompletely filled groove 511	☐ avvallamento sagging 509	☐ asimmetria eccessiva excessive asymmetry 512	☐ insellamento al vertice root concavity 515
☐ incisione al vertice shrinkage groove 5013	☐ traboccamento overlap 506	☐ colpo d'arco stray arc 601	☐ spruzzo spatter 602	☐ difetti in sez. trasversale cross-section imperfections -

SATISFACTORY

note
remarks

NDT Operator	QA/QC	Third Party	Client
Name: Mr. Michele Pellis 2nd and 3rd level UNI EN ISO 9712 Signature: Place/Date: Trieste, 28.10.2024	Name: Signature: Date:	Name: Signature: Date:	Name: Signature: Date:

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RAPPORTO ESAME MAGNETOSCOPICO

MAGNETIC PARTICLE EXAMINATION REPORT

MT nr. 392 /24

cliente / customer	REMAZEL S.p.A.	commessa / project	24-27012
materiale esaminato / examined material	Fixed Column Carpentry		
riferimenti / reference	**Dwg. C09-0001-P0002 rev. E**	particolare / item	100% Welds

procedura d'esame / examination procedure	UNI EN ISO 17638 1724001010-NDT-PRO-00006	limiti di accettazione / acceptance criteria	EN ISO 23278 - Lev.2 1724001010-NDT-PRO-00006
stato superficiale / surface condition	☑ saldato / welded	☐ molato / ground	☐ lav. di macchina / machined ☐ forgiato / forged
temperatura: 15-20 °C / test temperature		☐ fuso / casting	☐ sabbiato / sandblasted ☐ verniciato / painted

mezzo di rivelazione / detection medium	☐ a secco / dry	☑ a umido / wet	black magnetic powder suspension ELITE BW2
metodo di rivelazione / detection method	☑ contrasto di colore / colour contrast	☐ luce di Wood / Wood light	contrast laquer ELITE WBL5

tipo di corrente / current type	☑ alternata / A.C.	☐ continua / D.C.	☐ raddrizzata / rectified	☐ magnete permanente / permanent magnet
tipo di magnetizzazione / type of magnetization	☐ longitudinale / longitudinal	☑ giogo / yoke	☐ bobina / coil	
	☐ circolare / circular	☐ puntali / prods	☐ conduttore centrale / central conductor	☐ di testa / head shot
metodo / method	☑ continuo / continuous	☐ residuo / residuos	☐ smagnetizzazione SI / smagnetization yes	☑ smagnetizzazione NO / smagnetization no
attrezzatura: / equipment	Parker B300S		nr. matricola: / serial number	26166
distanza : 135 mm. / distance	intensità corrente: A / current intensity	spire: / turns	ampere-spire: / ampere-turns	

esito dell'esame / examination result

Acceptable as per specification.

note / remarks

NDT Operator	QA/QC	Third Party	Client
Name: Mr. Michele Pellis 2nd and 3rd level UNI EN ISO 9712	Name:	Name:	Name:
Signature:	Signature:	Signature:	Signature:
Place/Date: Trieste, 28.10.2024	Date:	Date:	Date:

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RAPPORTO ESAMI ULTRASUONI
ULTRASONIC EXAMINATION REPORT

UT nr. 379 /24

cliente / customer: REMAZEL S.p.A.

commessa / project: 24-27012

materiale esaminato / examined material: Fixed Column Carpentry

riferimenti / reference: **Dwg. C09-0001-P0002 rev. E**

particolare / item: 100% BW where practicable *(as indicated in dwg)*

procedura d'esame / examination procedure: UNI EN ISO 17640 — 1724001010-NDT-PRO-00006

limiti di accettazione / acceptance criteria: UNI EN ISO 11666 Liv.2 — 1724001010-NDT-PRO-00006

stato superficiale / surface condition: ☑ saldato / welded ☐ molato / grounded ☐ lav. di macchina / machined ☐ forgiato / forged

temperatura / test temperature: 10-15 °C

accoppiante / coupling medium: tjlosa

☐ verniciato / painted ☐ fuso / casting ☐ sabbiato / sandblasted

apparecchiatura / equipment:

☐ Olympus 38 DL Plus ID 120486408 ☐ Panametrics 36 DLP ID 992126711 ☐ Panametrics Epoch III ID 01457206 ☐ Panametrics Epoch IV ID 081590305

☐ Olympus OMNI-MX2 ID 102691-2681 ☑ Olympus Epoch 600 ID 120459312 ☐ Olympus Epoch 600 ID 120240601 ☐ Olympus Epoch 600 ID 130530605

sonda / transducer	dimensioni / probe size	angolo / angle	frequenza / frequency	dB riferimento / primary ref.	correz. di trasferimento / transfer correction	dB scansione / scanning	dB totali / total dB
Krautkramer MB4S-N *sn: 53465*	Ø10 mm	0°	4 MHz	50,8	<2	+6	56,8
Krautkramer MWB60-N4 *sn: 53476*	8x9 mm	60°	4 MHz	46,9	<2	+6	52,9
Krautkramer MWB70-4 *sn: 56929-31760*	8x9 mm	70°	4 MHz	47,6	<2	+6	53,6

blocchi di taratura / reference blocks: IIW Reference Block; SDH Ø3 calibration block

metodo di taratura / calibration mode: DAC on SDH Ø3 mm + transfer correction

dettaglio / item detail: Preparation: simm. K - Weld Thickness: 15 mm

esito dell'esame / examination result: Acceptable as per specification.

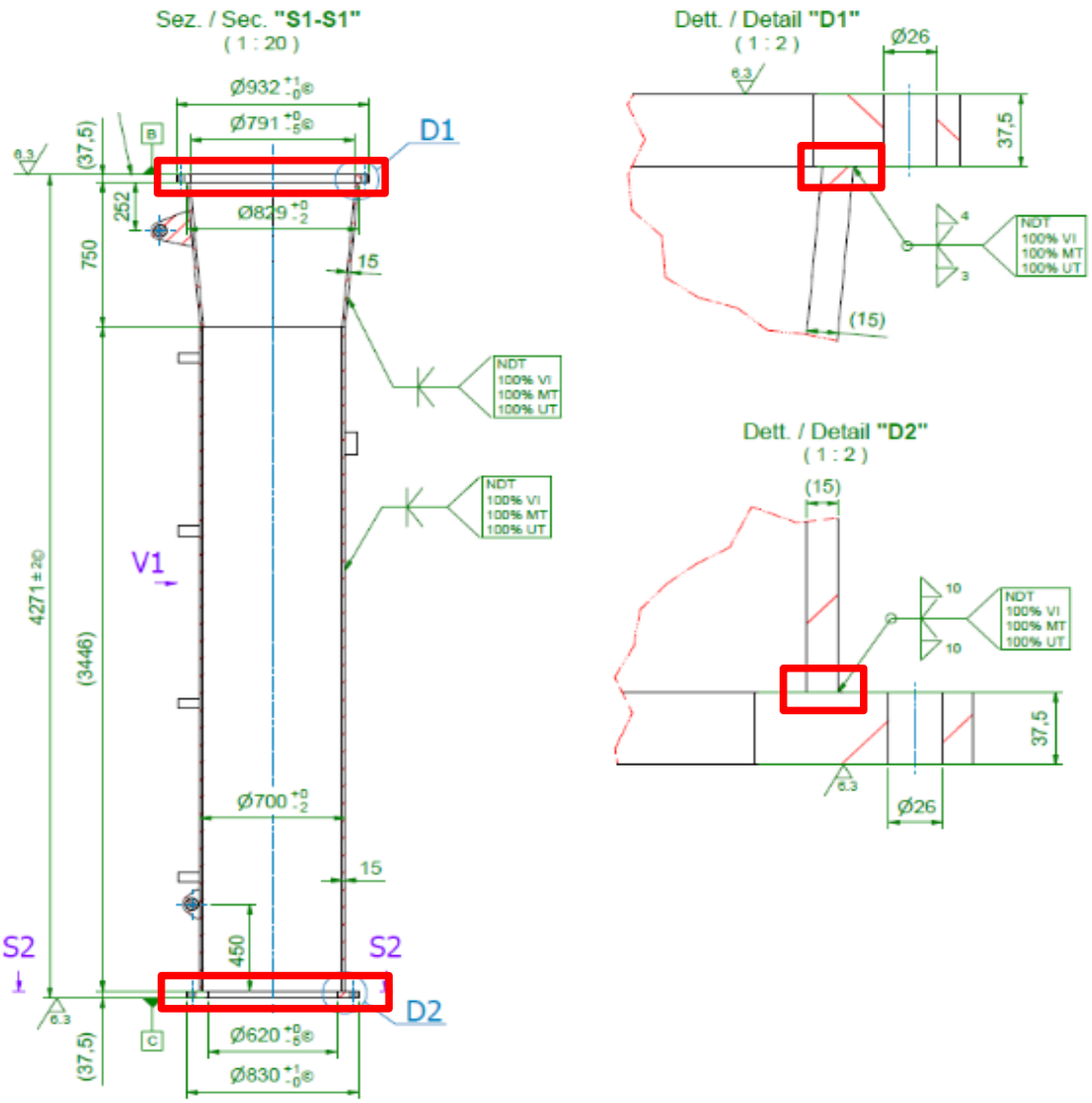
NDT Operator	QA/QC	Third Party	Client
Name: Mr. Michele Pellis 2nd and 3rd level UNI EN ISO 9712	Name:	Name:	Name:
Signature:	Signature:	Signature:	Signature:
Place/Date: Trieste, 28.10.2024	Date:	Date:	Date:

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RAPPORTO ESAMI ULTRASUONI
ULTRASONIC EXAMINATION REPORT

UT nr. 379 /24

esito dell'esame
examination result



NDT Operator	QA/QC	Third Party	Client
Name: Mr. Michele Pellis 2nd and 3rd level UNI EN ISO 9712	Name:	Name:	Name:
Signature:	Signature:	Signature:	Signature:
Place/Date: Trieste, 28.10.2024	Date:	Date:	Date:

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RAPPORTO ESAMI ULTRASUONI

ULTRASONIC EXAMINATION REPORT

UT nr. 380 /24 pag. 001 di 001 sheet of

cliente / customer: REMAZEL S.p.A.

commessa / project: 24-27012

materiale esaminato / examined material: Fixed Column Carpentry
plates thk. ≥ 20 mm

riferimenti / reference: **Dwg. C09-0001-P0002 rev. E**

particolare / item: 100% surface where accessible

procedura d'esame / examination procedure: UNI EN ISO 10160
1724001010-NDT-PRO-00006

limiti di accettazione / acceptance criteria: planar discontinuities research

stato superficiale / surface condition: ☐ saldato / welded ☐ molato / ground ☑ lav. di macchina / machined ☐ forgiato / forged

temperatura / test temperature: 0-10 °C

accoppiante / coupling medium: tjlosa

☐ verniciato / painted ☐ fuso / casting ☐ sabbiato / sandblasted

apparecchiatura / equipment:

☐ Olympus 38 DL Plus ID 120486408 ☐ Panametrics 36 DLP ID 992126711 ☐ Panametrics Epoch III ID 01457206 ☐ Panametrics Epoch IV ID 081590305

☐ Olympus OMNI-MX2 ID 102691-2681 ☐ Olympus Epoch 600 ID 120459312 ☐ Olympus Epoch 600 ID 120240601 ☑ Olympus Epoch 600 ID 130530605

sonda / transducer	dimensioni / probe size	angolo / angle	frequenza / frequency	dB riferimento / primary ref.	correz. di trasferimento / transfer correction	dB scansione / scanning	dB totali / total dB
Krautkramer MB4S-N *sn: 53465*	Ø10 mm	0°	4 MHz	50,8	<2		50,8
IMG D8-5B *sn: 2389*	Ø10 mm	0°	4 MHz	43,7	<2		43,7

blocchi di taratura / reference blocks: IIW Reference Block

metodo di taratura / calibration mode: -

dettaglio / item detail: nom thk 37,5 mm (see page 002 for details)

esito dell'esame / examination result:

Acceptable as per specification.

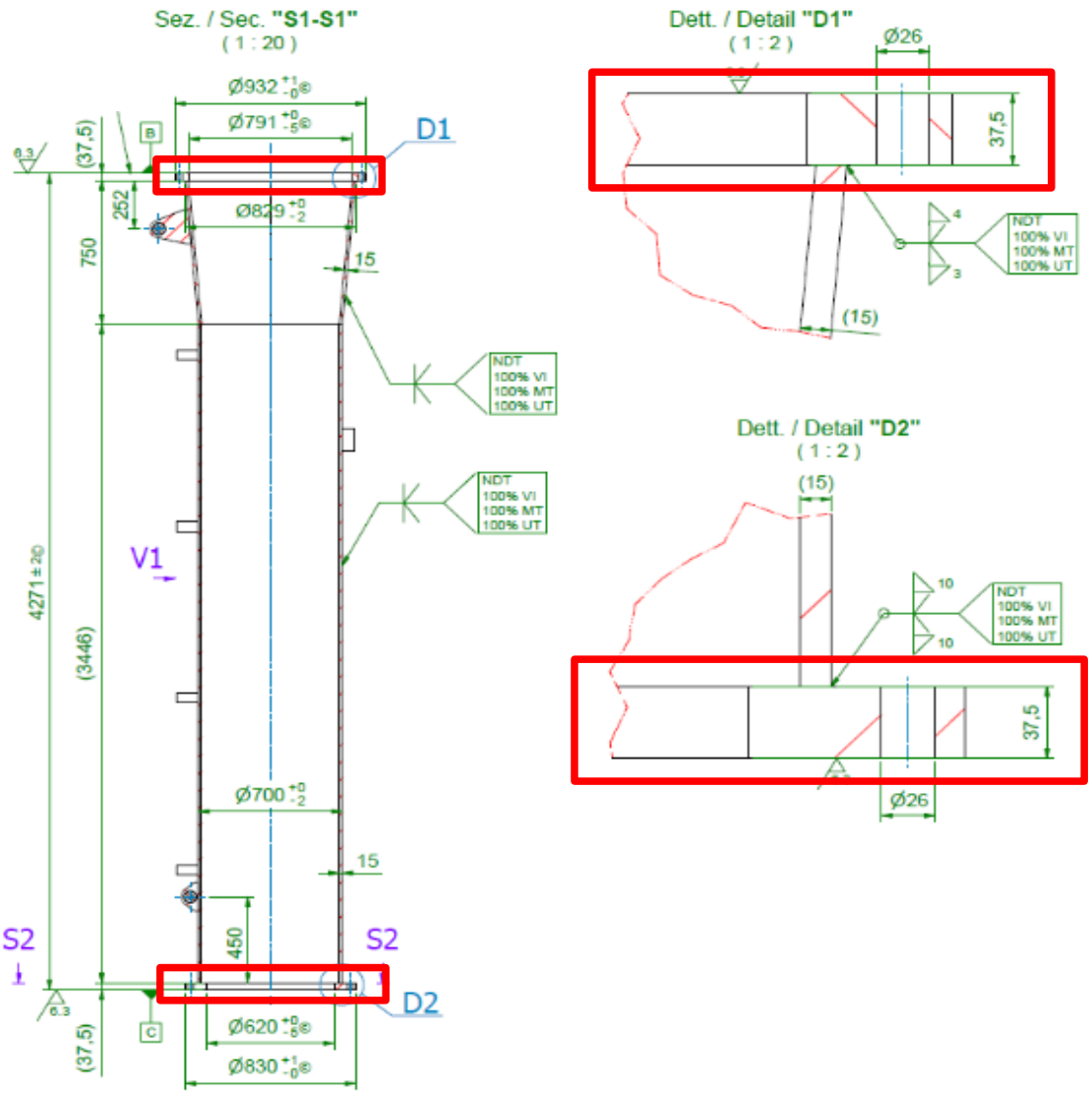
NDT Operator	QA/QC	Third Party	Client
Name: Mr. Michele Pellis 2nd and 3rd level UNI EN ISO 9712	Name:	Name:	Name:
Signature:	Signature:	Signature:	Signature:
Place/Date: Trieste, 28.10.2024	Date:	Date:	Date:

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RAPPORTO ESAMI ULTRASUONI
ULTRASONIC EXAMINATION REPORT

UT nr. 380 /24

esito dell'esame
examination result



NDT Operator	QA/QC	Third Party	Client
Name: Mr. Michele Pellis 2nd and 3rd level UNI EN ISO 9712	Name:	Name:	Name:
Signature:	Signature:	Signature:	Signature:
Place/Date: Trieste, 28.10.2024	Date:	Date:	Date:

SGPTESTING
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RAPPORTO ESAME VISIVO
VISUAL EXAMINATION REPORT

VT nr. 272 /24 pag. 001 di 001 sheet of

cliente / customer	REMAZEL S.p.A.	commessa / project	---
materiale esaminato / examined material	Pedestral Carpentry		
riferimenti / reference	**Dwg. C09-0001-P0001 rev. D**	particolare / item	100% Welds

procedura d'esame / examination procedure	UNI EN ISO 17637 1724001010-NDT-PRO-00006	limiti di accettazione / acceptance criteria	UNI EN ISO 5817 Class C 1724001010-NDT-PRO-00006	
stato superficiale / surface condition	☑ saldato / welded	☐ molato / ground	☐ lav. di macchina / machined	☐ forgiato / forged
	☐ fuso / casting	☐ sabbiato / sandblasted	☐ verniciato / painted	☐ finito / finished

metodo d'esame / testing method	☑ esame visivo diretto / direct testing	☐ esame visivo remoto / remote testing		
distanza visiva: 30 cm / visual distance	angolo: 30° / visual angle	illuminazione / light	☐ 500 lux	☑ 1000 lux

apparecchiature / equipments	☑ calibro per saldature / welding gauge	☐ calibro ventesimale / gauge	☐ metro / rule	☐ livella / level
	☐ lente / lens	☐ specchio / mirror	☐ endoscopio / endoscope	☐ boroscopio / borescope

esito dell'esame / examination result	☐ cricca / crack 100	☐ cricca da cratere / crater crack 104	☐ porosità, soffiature / porosity 2011-2012-2014-2017	☐ porosità (nido) / clustered porosity 2013
☐ cavità allungate (tarli) / elongated cavity 2015-2016-2018	☐ inclusioni solide / solid inclusions 300	☐ inclusioni di rame / copper inclusions 3042	☐ inclusioni di tungsteno / tungsten inclusions 3041	☐ mancanza di penetrazione / lack of penetration 402
☐ mancanza di fusione / lack of fusion 401	☐ ripresa carente / lack of recovery 517	☐ allineamento non corretto / incorrect root gap 617	☐ incisione marginale / undercut 5011-5012	☐ sovrametallo eccessivo / excess weld metal 502
☐ convessità eccessiva / excessive convexity 503	☐ altezza di gola maggiore / excess. throat thickness 5214	☐ altezza di gola minore / insuff. throat thickness 5213	☐ eccesso di penetrazione / excess penetration 504	☐ sgocciolamento locale / local drip 5041
☐ slivellamento / linear misalignment 507	☐ riempimento incompleto / incompletely filled groove 511	☐ avvallamento / sagging 509	☐ asimmetria eccessiva / excessive asymmetry 512	☐ insellamento al vertice / root concavity 515
☐ incisione al vertice / shrinkage groove 5013	☐ traboccamento / overlap 506	☐ colpo d'arco / stray arc 601	☐ spruzzo / spatter 602	☐ difetti in sez. trasversale / cross-section imperfections -

SATISFACTORY

note / remarks

NDT Operator	QA/QC	Third Party	Client
Name: Mr. Michele Pellis 2nd and 3rd level UNI EN ISO 9712 Signature: Place/Date: Trieste, 14.10.2024	Name: Signature: Date:	Name: Signature: Date:	Name: Signature: Date:

SGPTESTING
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RAPPORTO ESAME MAGNETOSCOPICO

MAGNETIC PARTICLE EXAMINATION REPORT

MT nr. 379 /24

cliente / customer	REMAZEL S.p.A.	commessa / project	---
materiale esaminato / examined material	Pedestral Carpentry		
riferimenti / reference	**Dwg. C09-0001-P0001 rev. D**	particolare / item	100% Welds

procedura d'esame / examination procedure	UNI EN ISO 17638 1724001010-NDT-PRO-00006	limiti di accettazione / acceptance criteria	EN ISO 23278 - Lev.2 1724001010-NDT-PRO-00006		
stato superficiale / surface condition	☑ saldato / welded	☐ molato / ground	☐ lav. di macchina / machined	☐ forgiato / forged	
temperatura: 15-20 °C / test temperature		☐ fuso / casting	☐ sabbiato / sandblasted	☐ verniciato / painted	

mezzo di rivelazione / detection medium	☐ a secco / dry	☑ a umido / wet	black magnetic powder suspension ELITE BW2
metodo di rivelazione / detection method	☑ contrasto di colore / colour contrast	☐ luce di Wood / Wood light	contrast laquer ELITE WBL5

tipo di corrente / current type	☑ alternata / A.C.	☐ continua / D.C.	☐ raddrizzata / rectified	☐ magnete permanente / permanent magnet	
tipo di magnetizzazione / type of magnetization	☐ longitudinale / longitudinal	☑ giogo / yoke	☐ bobina / coil		
	☐ circolare / circular	☐ puntali / prods	☐ conduttore centrale / central conductor	☐ di testa / head shot	
metodo / method	☑ continuo / continuous	☐ residuo / residuos	☐ smagnetizzazione SI / smagnetization yes	☑ smagnetizzazione NO / smagnetization no	
attrezzatura: / equipment	Parker B300S		nr. matricola: / serial number	26166	
distanza : 135 mm. / distance	intensità corrente: A / current intensity	spire: / turns	ampere-spire: / ampere-turns		

esito dell'esame / examination result

Acceptable as per specification.

note / remarks

NDT Operator	QA/QC	Third Party	Client
Name: Mr. Michele Pellis 2nd and 3rd level UNI EN ISO 9712	Name:	Name:	Name:
Signature:	Signature:	Signature:	Signature:
Place/Date: Trieste, 14.10.2024	Date:	Date:	Date:

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RAPPORTO ESAMI ULTRASUONI

ULTRASONIC EXAMINATION REPORT

UT nr. 368 /24 pag. 001 di 001 sheet of

cliente / customer: REMAZEL S.p.A.

commessa / project:

materiale esaminato / examined material: Pedestral Carpentry plates thk. ≥ 20 mm

riferimenti / reference: **dwg. C09-0001-P0001 rev. D**

particolare / item: 100% surface where accessible (pos. 1, 2)

procedura d'esame / examination procedure: UNI EN ISO 10160 1724001010-NDT-PRO-00006

limiti di accettazione / acceptance criteria: planar discontinuities research

stato superficiale / surface condition: ☐ saldato / welded ☐ molato / ground ☑ lav. di macchina / machined ☐ forgiato / forged

temperatura / test temperature: 0-10 °C

accoppiante / coupling medium: tjlosa

☐ verniciato / painted ☐ fuso / casting ☐ sabbiato / sandblasted

apparecchiatura / equipment:

☐ Olympus 38 DL Plus ID 120486408 ☐ Panametrics 36 DLP ID 992126711 ☐ Panametrics Epoch III ID 01457206 ☐ Panametrics Epoch IV ID 081590305

☐ Olympus OMNI-MX2 ID 102691-2681 ☐ Olympus Epoch 600 ID 120459312 ☐ Olympus Epoch 600 ID 120240601 ☑ Olympus Epoch 600 ID 130530605

sonda / transducer	dimensioni / probe size	angolo / angle	frequenza / frequency	dB riferimento / primary ref.	correz. di trasferimento / transfer correction	dB scansione / scanning	dB totali / total dB
Krautkramer MB4S-N *sn: 53465*	Ø10 mm	0°	4 MHz	50,8	<2		50,8
IMG D8-5B *sn: 2389*	Ø10 mm	0°	4 MHz	43,7	<2		43,7

blocchi di taratura / reference blocks: IIW Reference Block

metodo di taratura / calibration mode: -

dettaglio / item detail: ---

esito dell'esame / examination result:

Acceptable as per specification.

NDT Operator	QA/QC	Third Party	Client
Name: Mr. Michele Pellis 2nd and 3rd level UNI EN ISO 9712	Name:	Name:	Name:
Signature:	Signature:	Signature:	Signature:
Place/Date: Trieste, 14.10.2024	Date:	Date:	Date:

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RAPPORTO ESAMI ULTRASUONI
ULTRASONIC EXAMINATION REPORT

UT nr. 371 /24

cliente / customer: REMAZEL S.p.A.
commessa / project: ---

materiale esaminato / examined material: Pedestral Carpentry

riferimenti / reference: **Dwg. C09-0001-P0001 rev. D**
particolare / item: 100% BW where practicable *(as indicated in dwg)*

procedura d'esame / examination procedure: UNI EN ISO 17640 — 1724001010-NDT-PRO-00006
limiti di accettazione / acceptance criteria: UNI EN ISO 11666 Liv.2 — 1724001010-NDT-PRO-00006

stato superficiale / surface condition: ☑ saldato / welded ☐ molato / grounded ☐ lav. di macchina / machined ☐ forgiato / forged
temperatura / test temperature: 10-15 °C
accoppiante / coupling medium: tjlosa
☐ verniciato / painted ☐ fuso / casting ☐ sabbiato / sandblasted

apparecchiatura / equipment:
☐ Olympus 38 DL Plus ID 120486408
☐ Panametrics 36 DLP ID 992126711
☐ Panametrics Epoch III ID 01457206
☐ Panametrics Epoch IV ID 081590305
☐ Olympus OMNI-MX2 ID 102691-2681
☑ Olympus Epoch 600 ID 120459312
☐ Olympus Epoch 600 ID 120240601
☐ Olympus Epoch 600 ID 130530605

sonda / transducer	dimensioni / probe size	angolo / angle	frequenza / frequency	dB riferimento / primary ref.	correz. di trasferimento / transfer correction	dB scansione / scanning	dB totali / total dB
Krautkramer MB4S-N *sn: 53465*	Ø10 mm	0°	4 MHz	50,8	<2	+6	56,8
Krautkramer MWB60-N4 *sn: 53476*	8x9 mm	60°	4 MHz	46,9	<2	+6	52,9
Krautkramer MWB70-4 *sn: 56929-31760*	8x9 mm	70°	4 MHz	47,6	<2	+6	53,6

blocchi di taratura / reference blocks: IIW Reference Block; SDH Ø3 calibration block

metodo di taratura / calibration mode: DAC on SDH Ø3 mm + transfer correction

dettaglio / item detail: Preparation: simm. K - Weld Thickness: 20 mm

esito dell'esame / examination result: Acceptable as per specification.

NDT Operator	QA/QC	Third Party	Client
Name: Mr. Michele Pellis 2nd and 3rd level UNI EN ISO 9712	Name:	Name:	Name:
Signature:	Signature:	Signature:	Signature:
Place/Date: Trieste, 14.10.2024	Date:	Date:	Date:

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E-mail: galptech@galptech.com - www.galperti.com

HARDNESS TEST CERTIFICATE

Certificate No.:	240413-001 h001
Revision No.:	0
Date :	14/11/2024

Main Information

Client Name:	REMAZEL ENGINEERING SPA
Client P.O.:	24004009
Supplier Ref.:	240413 Pos. 001
Customer Job:	24-27012
Drawing No.:	V41-0979-013-COMM Rev.1

Procedure

Examination Procedure:	HT 002 Rev.1
Applicable Specification:	\
Acceptance Criteria:	V41-0979-013-COMM Rev.1
Customer Specification:	24-27012_ITP-001

Examination Material

GTFP Ref.:	0003	**Dimensions:**	979x809x70	**Quantity:**	1 pc
GTFP Ref.:	0006	**Dimensions:**	811x684x63	**Quantity:**	1 pc
Product Form:	Inner and outer rings		**Material Type:**	42CrMo4 Q+T	
Area of Test:	Gear induction hardened area		**Surface Condition:**	Final machining	

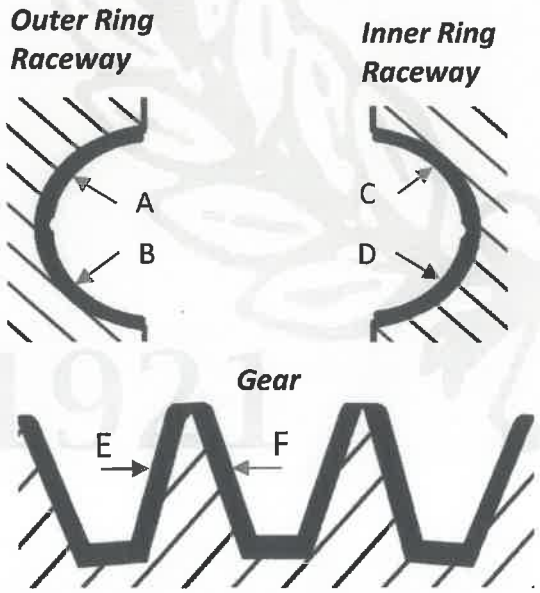
Equipment Details / Technique

Instrument Type:	Portable Hardness Instrument	**Instrument SN:**	E301-002-0028
Instrument Manufacturer:	Equotip		

Items Description / Result

Items: **240413-001 (1 pc) 4-Points Contact Ball Bearing V41-0979-013-COMM Rev.1**

Sketch (Area to be inspected):



Results:

PCS SN	Req. Hardness (HRC)	Detected values (HRC)	Location:
24/03784	58 +3/0	OK	A - B
	58 +3/0	OK	C - D
	55 ±5	OK	E - F

Result: Material found 100% in compliance with relevant specifications/drawings

Operator / Inspection

Tested by:	Acquistapace Thomas
Level:	-
Date:	14/11/2024
Verified By:	Panzeri Luca
Date:	14/11/2024

21-11-2024
FRANCO CORBELLINI
QBQ
CROSSWIND
External Inspector:
REMAZEL
C. Zber
W R

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HARDNESS DEPTH TEST CERTIFICATE

Certificate No.:	240413-001 hd001
Revision No.:	0
Date :	14/11/2024

Main Information

Client Name:	REMAZEL ENGINEERING SPA
Client P.O.:	24004009
Supplier Ref.:	240413 Pos. 001
Customer Job:	24-27012
Drawing No.:	V41-0979-013-COMM Rev.1

Procedure

Examination Procedure:	HT 001 Rev.0
Applicable Specification:	\
Acceptance Criteria:	V41-0979-013-COMM Rev.1
Customer Specification:	24-27012_ITP-001

Examination Material

GTFP Ref.:	0003	**Dimensions:**	979x809x70	**Quantity:**	1 pc
GTFP Ref.:	0006	**Dimensions:**	811x684x63	**Quantity:**	1 pc
Product Form:	Inner and outer rings		**Material Type:**	42CrMo4 Q+T	
Area of Test:	Gear induction hardened area		**Surface Condition:**	Final machining	

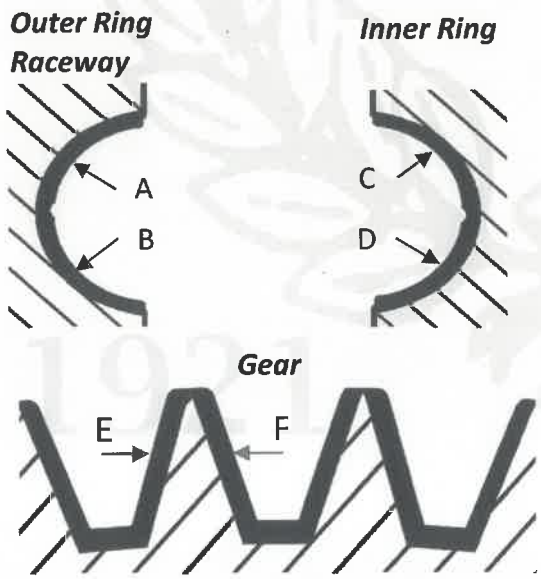
Equipment Details / Technique

Instrument Type:	Ultrasonic Instrument	**Instrument SN:**	P3121-01143
Instrument Manufacturer:	Q-Net		

Items Description / Result

Items: **240413-001 (1 pc) 4-Points Contact Ball Bearing V41-0979-013-COMM Rev.1**

Sketch (Area to be inspected):



Results:

PCS SN	Req. Hardness Depth (mm)	Detected values (mm)	Location:
24/03784	5 Min.	OK	A - B
	5 Min.	OK	C - D
	1.5 Min.	OK	E - F

Result: Material found 100% in compliance with relevant specifications/drawings

Operator / Inspection

Tested by:	Acquistapace Thomas
Level:	-
Date:	14/11/2024
Verified By:	Panzeri Luca
Date:	14/11/2024

21-11-2024
FRANCO CORBELLINI
QBQ
CROSSWIND

External Inspector:

REMAZEL
C. Ziber
W R

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Tel. 0341-930186 - Fax 0341-930252
E-mail: galptech@galptech.com - www.galperti.com

MAGNETIC PARTICLE EXAMINATION REPORT

Certificate No.:	240413-001 mt001
Revision No.:	0
Date :	14/11/2024

Main Information

Client Name:	REMAZEL ENGINEERING SPA
Client P.O.:	24004009
Supplier Ref.:	240413 Pos. 001
Customer Job:	24-27012
Drawing No.:	V41-0979-013-COMM Rev.1

Procedure

Examination Procedure:	MT1-3-22 Rev.0
Applicable Specification:	UNI EN 10228-1
Acceptance Criteria:	UNI EN 10228-1 Quality Class 3
Customer Specification:	24-27012_ITP-001

Examination Material

GTFP Ref.:	0003	**Dimensions:**	979x809x70	**Quantity:**	1 pc
GTFP Ref.:	0006	**Dimensions:**	811x684x63	**Quantity:**	1 pc

Product Form:	Inner and outer rings	**Material Type:**	42CrMo4 Q+T
Area of Test:	100% of the piece	**Surface Condition:**	Final machining

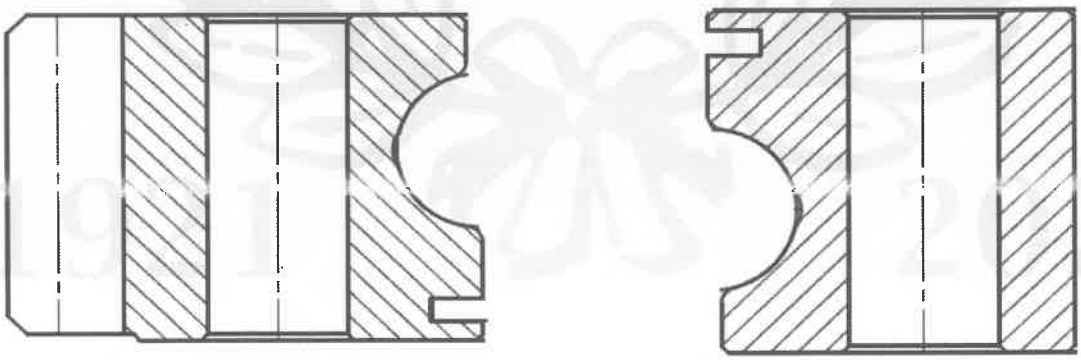
Equipment Details / Technique

Magnetic Particles:	CGM LK31-73S	**Type:**	Fluorescent Method
Powder solution in:	Kerosenoil	**Ambient light:**	<20 Lux
Type method:	Yoke	**Serial No.:**	1400150
Magnetizing current:	90 - 110 A/inch	**Current type:**	AC
Demagnatization:	Not necessary	**Surface cleaning after test:**	Cleaned and degreased with Vel-Net (CGM)
Lifting Force:	4,5 Kg	**Surface light intensity:**	Light intensity >10 W/m2 at a distance of 15 inch. from the lamp.

Items Description / Result

Items: **240413-001 (1 pc) 4-Points Contact Ball Bearing V41-0979-013-COMM Rev.1**

Sketch (area to be inspected):



Result: Material found 100% in compliance with relevant specifications

Operator / Inspection

Tested by:	Tengattini Simone
Level:	UNI EN ISO 9712 lvl 2
Date:	14/11/2024
Verified By:	Acquistapace Thomas
Date:	14/11/2024

21-11-2024
FRANCO CORBELLINI
QBQ
CROSSWIND
External Inspector:

REMAZEL Engineering

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ULTRASONIC EXAMINATION REPORT

Certificate No.:	240413-001 us001
Revision No.:	0
Date :	28/10/2024

Main Information

Client Name:	REMAZEL ENGINEERING SPA
Client P.O.:	24004009
Supplier Ref.:	240413 Pos. 001
Customer Job:	24-27012
Drawing No.:	V41-0979-013-COMM Rev.1

Procedure

Examination Procedure:	UT1-3-02 Rev.1
Applicable Specification:	UNI EN 10228-3
Acceptance Criteria:	UNI EN 10228-3 Quality Class 2
Customer Specification:	24-27012_ITP-001

Examination Material

GTFP Ref.:	0003	**Dimensions:**	979x809x70	**Quantity:**	1 pc
GTFP Ref.:	0006	**Dimensions:**	811x684x63	**Quantity:**	1 pc

Product Form:	Forged Rings	**Material Type:**	42CrMo4 Q+T
Area of Test:	100 % of all accessible surface	**Surface Condition:**	Pre-Machined Conditions (<12.5 Ra)

Equipment Details/Tecnique

Type of Apparatus:	Epoc4 Plus - SN 81573801	**Made by:**	Olympus
Couplant:	GEL	**Examination Tecnique:**	Contact Examination
Scanning Method:	Manual	**Scanning Overlap:**	15% Min.
Cable Type:	LEMO	**Cable Length:**	150cm

Trasducers Name	Type	Serial Number	Frequency	Dimension	Position
B2S (GE)	Straight beam	SN 57745 - 57441	2 Mhz (±0,1)	24 mm	P1-P2
SEB 4 (GE)	Dual Element beam	SN 57469 - 53211	4 Mhz (±0,1)	6 x 20 mm	P1
WB 45-4 (GE)	Angle beam	SN 56927 - 17872	4 Mhz (±0,1)	8 x 9 mm	P2

Calibration Data

Calibration Block Type:	V1	**Curve Construction Method:**	DGS Method
Sizing of Indications:	-6db		

Items Description / Result

Items: **Forged Rings for V41-0979-013-COMM Rev.1**

Scan Plan:



Result: Material found 100% in compliance with relevant specifications

Operator / Inspection

Tested by:	Tengattini Simone
Level:	UNI EN ISO 9712 lvl 2
Date:	28/10/2024
Verified By:	Acquistapace Thomas
Date:	28/10/2024

21-11-2024
FRANCO CORBELLINI
QBQ
CROSSWIND

External Inspector:

REMAZEL
C. Tiber
DW DR

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Capitale Sociale € 4.000.000,00 interamente versato
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C.F. 03800290136 -P.IVA IT03800290136
Tel. 0341-930186 - Fax 0341-930252
E-mail: galptech@galptech.com - www.galperti.com

DIMENSIONAL CERTIFICATE

Certificate No.:	240413-001 d001
Revision No.:	0
Date :	15/11/2024

Main Information

Client Name:	REMAZEL ENGINEERING SPA
Client P.O.:	24004009
Supplier Ref.:	240413 Pos. 001
Customer Job:	24-27012
Drawing No.:	V41-0979-013-COMM Rev.1

Procedure

Examination Procedure:	\
Applicable Specification:	UNI EN 22768-1
Acceptance Criteria:	V41-0979-013-COMM Rev.1
Customer Specification:	24-27012_ITP-001

Examination Material

Item ID:	24/03784	**Quantity:**	1 pc
Product Form:	4-Points Contact Ball Bearing	**Material Type:**	42CrMo4 Q+T
Area of Test:	100% of the piece	**Surface Condition:**	Final machining

Equipment Details / Technique

Instrument Type:	Digital Balls Calliper	**Instrument SN:**	80297/01	**Instrument Manufacturer:**	Bocchi
Instrument Type:	Digital Calliper	**Instrument SN:**	0036579	**Instrument Manufacturer:**	Mitutoyo

Items Description / Result

Items: **240413-001 (1 pc) 4-Points Contact Ball Bearing V41-0979-013-COMM Rev.1**

Item	Description	Required	Toll.	24/03784			
01	Base Tangent Length Over 13 Teeth	389,542 389,354	Max. Min.	OK			
02	Total Thickness	79	±1	OK			
03	Inner Ring Thickness	63	±0.5	OK			
04	Outer Ring Thickness	70	±0.5	OK			
05	Inner Diameter	Ø 684	±1	OK			
06	Tip Diameter	Ø 979	0/-1	OK			
07	Holes Number Inner Ring	No. 32	\	OK			
08	Holes Number Outer Ring	No. 32	\	OK			
09	Holes Diameter Inner Ring	Ø 26	±0,2	OK			
10	Holes Diameter Outer Ring	Ø 26	±0,2	OK			
11	Pitch Circle Holes Inner Ring	Ø 736	±0,6	OK			
12	Pitch Circle Holes Outer Ring	Ø 884	±0,6	OK			

Note: • All values where not specified are expressed in mm

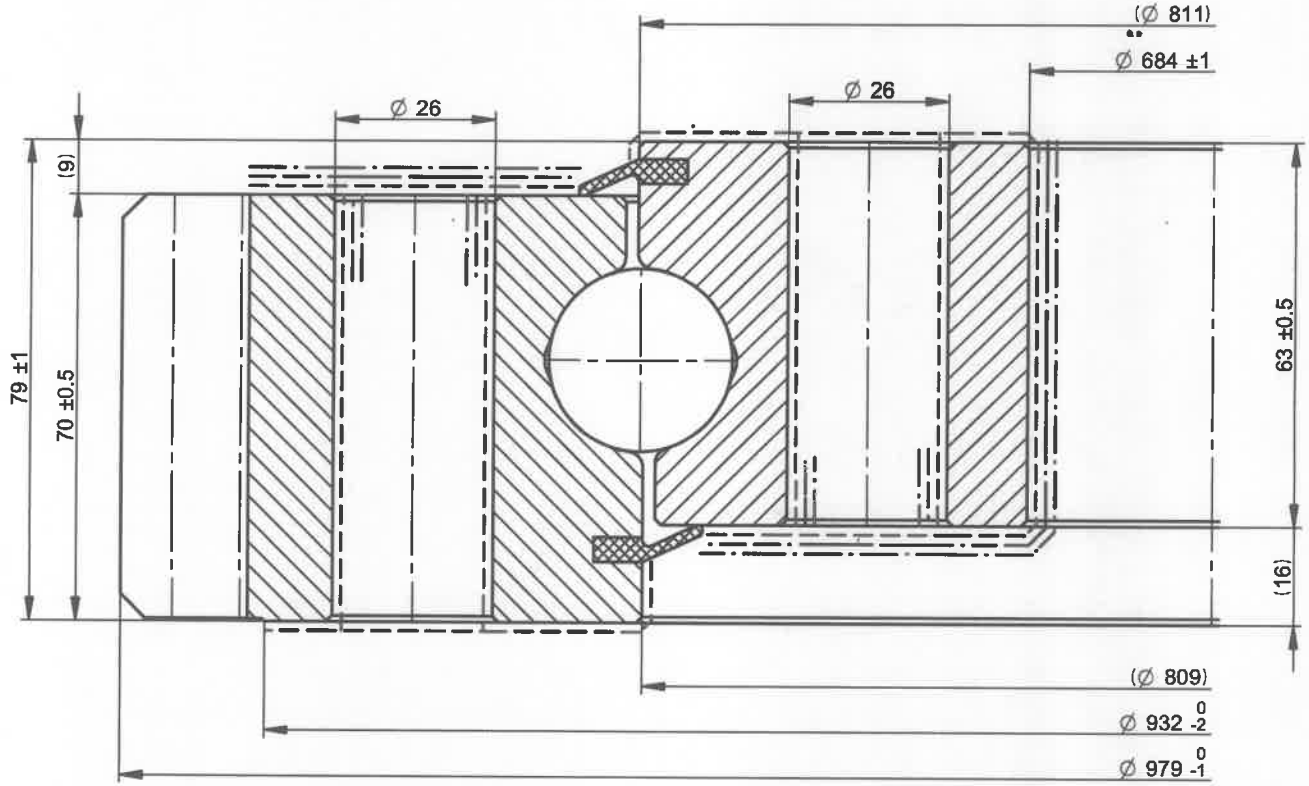
Result: Material found 100% in compliance with relevant specifications/drawings

Operator / Inspection

Tested by:	Tengattini Simone
Level:	-
Date:	15/11/2024
Verified By:	Acquistapace Thomas
Date:	15/11/2024

21-11-2024
FRANCO CORBELLINI
OBJ
CROSSWIND
External Inspector:

REMAZEL Elber W R



Base coat: Zinc Rich Epoxy Primer

Second Coat: Epoxy coat sealer

Top Coat: Polyurethane
agate grey RAL 7038

Painting according to procedure P04 001

Note: dimensions and tolerances before painting

Ref	Description	Date	Drawn	Approved
1	Modified paint in holes area	27/09/24	S.F.	C.C.

REVISIONS

For bearing general assembly see drawing:
V41-0979-013-COMM

Date	Drawn	Checked	Approved
27/08/24	S.F.	C.C.	

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Dimensions without tolerance UNI EN 22768-1-1989

Class	Allowances: Over 120 up to 400	Over 400 up to 1000	Over 1000 up to 2000
m	±0.5	±0.8	±1.2

Scale -

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Code V41 0979 013 21 30 0810

Drawing SKV-V41-0979-013

Description 8 Point contact ball bearing

Weight Kg 165 kg

Sheet A3 1 of 1

Sizes in mm

Revision level

1	6
2	7
3	8
4	9
5	10

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RAPPORTO ESAME VISIVO
VISUAL EXAMINATION REPORT

VT nr. 273 /24 pag. 001 di 001 sheet of

cliente / customer	REMAZEL S.p.A.	commessa / project	---
materiale esaminato / examined material	Travelling Trolley Carpentry		
riferimenti / reference	**Dwg. C09-0001-P0006 rev. C**	particolare / item	100% Welds

procedura d'esame / examination procedure	UNI EN ISO 17637 1724001010-NDT-PRO-00006	limiti di accettazione / acceptance criteria	UNI EN ISO 5817 Class C 1724001010-NDT-PRO-00006	
stato superficiale / surface condition	☑ saldato / welded	☐ molato / ground	☐ lav. di macchina / machined	☐ forgiato / forged
	☐ fuso / casting	☐ sabbiato / sandblasted	☐ verniciato / painted	☐ finito / finished

metodo d'esame / testing method	☑ esame visivo diretto / direct testing	☐ esame visivo remoto / remote testing		
distanza visiva: 30 cm / visual distance	angolo: 30° / visual angle	illuminazione / light	☐ 500 lux	☑ 1000 lux

apparecchiature / equipments	☑ calibro per saldature / welding gauge	☐ calibro ventesimale / gauge	☐ metro / rule	☐ livella / level
	☐ lente / lens	☐ specchio / mirror	☐ endoscopio / endoscope	☐ boroscopio / borescope

esito dell'esame / examination result	☐ cricca / crack 100	☐ cricca da cratere / crater crack 104	☐ porosità, soffiature / porosity 2011-2012-2014-2017	☐ porosità (nido) / clustered porosity 2013
☐ cavità allungate (tarli) / elongated cavity 2015-2016-2018	☐ inclusioni solide / solid inclusions 300	☐ inclusioni di rame / copper inclusions 3042	☐ inclusioni di tungsteno / tungsten inclusions 3041	☐ mancanza di penetrazione / lack of penetration 402
☐ mancanza di fusione / lack of fusion 401	☐ ripresa carente / lack of recovery 517	☐ allineamento non corretto / incorrect root gap 617	☐ incisione marginale / undercut 5011-5012	☐ sovrametallo eccessivo / excess weld metal 502
☐ convessità eccessiva / excessive convexity 503	☐ altezza di gola maggiore / excess. throat thickness 5214	☐ altezza di gola minore / insuff. throat thickness 5213	☐ eccesso di penetrazione / excess penetration 504	☐ sgocciolamento locale / local drip 5041
☐ slivellamento / linear misalignment 507	☐ riempimento incompleto / incompletely filled groove 511	☐ avvallamento / sagging 509	☐ asimmetria eccessiva / excessive asymmetry 512	☐ insellamento al vertice / root concavity 515
☐ incisione al vertice / shrinkage groove 5013	☐ traboccamento / overlap 506	☐ colpo d'arco / stray arc 601	☐ spruzzo / spatter 602	☐ difetti in sez. trasversale / cross-section imperfections -

SATISFACTORY

note / remarks

NDT Operator	QA/QC	Third Party	Client
Name: Mr. Michele Pellis 2nd and 3rd level UNI EN ISO 9712 Signature: Place/Date: Trieste, 14.10.2024	Name: Signature: Date:	Name: Signature: Date:	Name: Signature: Date:

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RAPPORTO ESAME MAGNETOSCOPICO

MAGNETIC PARTICLE EXAMINATION REPORT

MT nr. 380 /24

cliente customer	REMAZEL S.p.A.	commessa project	---
materiale esaminato examined material	Travelling Trolley Carpentry		
riferimenti reference	**Dwg. C09-0001-P0006 rev. C**	particolare item	100% Welds

procedura d'esame examination procedure	UNI EN ISO 17638 1724001010-NDT-PRO-00006	limiti di accettazione acceptance criteria	EN ISO 23278 - Lev.2 1724001010-NDT-PRO-00006
stato superficiale surface condition	☑ saldato welded	☐ molato ground	☐ lav. di macchina machined
		☐ forgiato forged	
temperatura: 15-20 °C test temperature		☐ fuso casting	☐ sabbiato sandblasted
		☐ verniciato painted	

mezzo di rivelazione detection medium	☐ a secco dry	☑ a umido wet	black magnetic powder suspension ELITE BW2
metodo di rivelazione detection method	☑ contrasto di colore colour contrast	☐ luce di Wood Wood light	contrast laquer ELITE WBL5

tipo di corrente current type	☑ alternata A.C.	☐ continua D.C.	☐ raddrizzata rectified	☐ magnete permanente permanent magnet
tipo di magnetizzazione type of magnetization	☐ longitudinale longitudinal	☑ giogo yoke	☐ bobina coil	
	☐ circolare circular	☐ puntali prods	☐ conduttore centrale central conductor	☐ di testa head shot
metodo method	☑ continuo continuous	☐ residuo residuos	☐ smagnetizzazione SI smagnetization yes	☑ smagnetizzazione NO smagnetization no
attrezzatura: equipment	Parker B300S		nr. matricola: serial number	26166
distanza : 135 mm. distance	intensità corrente: A current intensity	spire: turns	ampere-spire: ampere-turns	

esito dell'esame
examination result

Acceptable as per specification.

note
remarks

NDT Operator	QA/QC	Third Party	Client
Name: Mr. Michele Pellis 2nd and 3rd level UNI EN ISO 9712	Name:	Name:	Name:
Signature:	Signature:	Signature:	Signature:
Place/Date: Trieste, 14.10.2024	Date:	Date:	Date:

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RAPPORTO ESAMI ULTRASUONI
ULTRASONIC EXAMINATION REPORT

UT nr. 369 /24

cliente / customer: REMAZEL S.p.A.

commessa / project:

materiale esaminato / examined material: Travel Trolley Carpentry
plates thk. ≥ 20 mm

riferimenti / reference: **dwg. C09-0001-P0006 rev. C**

particolare / item: 100% surface where accessible
(pos. 1)

procedura d'esame / examination procedure: UNI EN ISO 10160
1724001010-NDT-PRO-00006

limiti di accettazione / acceptance criteria: planar discontinuities research

stato superficiale / surface condition: ☐ saldato / welded ☐ molato / ground ☑ lav. di macchina / machined ☐ forgiato / forged

temperatura / test temperature: 0-10 °C

accoppiante / coupling medium: tjlosa

☐ verniciato / painted ☐ fuso / casting ☐ sabbiato / sandblasted

apparecchiatura / equipment:

☐ Olympus 38 DL Plus ID 120486408
☐ Panametrics 36 DLP ID 992126711
☐ Panametrics Epoch III ID 01457206
☐ Panametrics Epoch IV ID 081590305
☐ Olympus OMNI-MX2 ID 102691-2681
☐ Olympus Epoch 600 ID 120459312
☐ Olympus Epoch 600 ID 120240601
☑ Olympus Epoch 600 ID 130530605

sonda / transducer	dimensioni / probe size	angolo / angle	frequenza / frequency	dB riferimento / primary ref.	correz. di trasferimento / transfer correction	dB scansione / scanning	dB totali / total dB
Krautkramer MB4S-N *sn: 53465*	Ø10 mm	0°	4 MHz	50,8	<2		50,8
IMG D8-5B *sn: 2389*	Ø10 mm	0°	4 MHz	43,7	<2		43,7

blocchi di taratura / reference blocks: IIW Reference Block

metodo di taratura / calibration mode: -

dettaglio / item detail: ---

esito dell'esame / examination result:

Acceptable as per specification.

NDT Operator	QA/QC	Third Party	Client
Name: Mr. Michele Pellis 2nd and 3rd level UNI EN ISO 9712	Name:	Name:	Name:
Signature:	Signature:	Signature:	Signature:
Place/Date: Trieste, 14.10.2024	Date:	Date:	Date:

REMAZEL

Quality System

RAPPORTO DI CONTROLLO VISIVO

VISUAL TEST REPORT

Mod.	154
Rev.	2.0

N° certificate	24-27012 - VT 4		Date	14/11/2024	Sheet	1/1

DATI GENERALI general data

CLIENTE Client	Rosetti Marino	LUOGO Place	Trieste	COMMESSA Job	24-27012	
DESCRIZIONE ESAME Test Details	Visual Inspection of welds			ORD order	17240010101 23A90A	Q.TA' Q.ty 1
DOC. DI RIFERIMENTO Reference Documents	1724001010-NDT-PRO-00006			ACCETTABILITA' Acceptance Criteria	EN ISO 5817 Lev.C	
COSTRUTTORE Manufacturer	Remazel			ITP	24-27012_ITP-001	

COMPONENTE ESAMINATO examined part

NUMERO DI FABBRICA Serial Number	P0085	COLATA Heat N.	\	MATERIALE Material	S355J2+N	DIS. Dwg	C09-0001-P0085

ESECUZIONE DEL TEST Test Carried Out	☐ PRIMA PWHT Before PWHT	☐ DOPO HT After HT	☐ PRIMA PROVA IDRAULICA Before Hydraulic Test	☐ DOPO PROVA IDRAULICA After Hydraulic Test	
SUPERFICIE Surface	☐ LAMINATA As Rolled	☐ GREZZA Rough	☐ MOLATA Ground	☐ SABBIATA Sand Blasted	☐ LAVORATA DI MACCHINA Machined
SOVRAMETALLO SALDATURA Welding Reinforcement	■ COME SALDATO As Welded	☐ LAVORATO DI MACCHINA Machined	■ MOLATO Ground	■ RACCORDATO Blended	

TECNICA Technique

METODO Method	■ DIRETTO Direct	☐ INDIRETTO Indirect	STRUMENTO Instrument	Gauge / Mirror / Endoscope

CONDIZIONI DI ILLUMINAMENTO Lighting conditions	☐ LUCE NERA Black light	■ LUCE BIANCA Light	■ NATURALE Natural	550 lux
			☐ ARTIFICIALE Artificial	

INDICAZIONI DA REGISTRARE Indications to be Recorded

Weld Nr.	WPS	Surface Condition	Dimensional	Indication	Weld Zone	Evaluation	Note
ALL	**	SC2	OK	NONE	ALL	A	\

EVALUATION: A : ACCEPTED / accettato R : REFUSED / rifiutato

SURFACE CONDITIONS:
SC1 : SANDBLASTED / sabbiata
SC2 : GRINDED / molato
SC3: BRUSHED / spazzolata

WELD ZONE: WJ : WELD JOINT zona saldatura
HAZ : HEAT AFFECTED ZONE zona termicamente alterata

INDICATION ISO 6520-1:
100 : CRACKS / cricche
5011 - 5012 : UNDERCUT / incisioni
516 : POROSITY / porosità
401 : INCOMPLETELY LACK FUSION mancanza di fusione
507 :MISALIGNMENT / sfivellamento
5013 :ROOT CONCAVITY / incisione al vertice
504 :EXCESS OF PENETRATION eccesso di penetrazione

NOTE Remarks

** 1724001010-WEL-PRO-00005

■ RISULTATI CONFORMI AI REQUISITI
Results Conforming to the Specified Requirements

☐ RISULTATI NON CONFORMI AI REQUISITI
Results Not Conforming to the Specified Requirements

DATA Date	14/11/2024	LUOGO Place	Trieste	OPERATORI Operators	Estevan Natale

II LEVEL	CLIENTE Customer	ENTE DI COLLAUDO Inspecting Authority
E. Natale 2° LIVELLO UNI EN ISO 9712 VT-MT		

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RAPPORTO ESAME MAGNETOSCOPICO

MAGNETIC PARTICLE EXAMINATION REPORT

MT nr. 445 /24

cliente customer	Remazel SpA	commessa project	C.24-27012
materiale esaminato examined material	Winch Box		
riferimenti reference	Dwg nr. C09-0001-P0085 Rev.B	particolare item	100% welds

procedura d'esame examination procedure	UNI EN ISO 17638	limiti di accettazione examination procedure	EN ISO 23278 - Lev.2	
stato superficiale surface condition	☑ saldato welded	☐ molato ground	☐ lav. di macchina machined	☐ forgiato forged
temperatura: 15-20 °C test temperature		☐ fuso casting	☐ sabbiato sandblasted	☐ verniciato painted

mezzo di rivelazione detection medium	☐ a secco dry	☑ a umido wet	black magnetic powder suspension ELITE BW2
metodo di rivelazione detection method	☑ contrasto di colore colour contrast	☐ luce di Wood Wood light	contrast laquer ELITE WBL5

tipo di corrente current type	☑ alternata A.C.	☐ continua D.C.	☐ raddrizzata rectified	☐ magnete permanente permanent magnet
tipo di magnetizzazione type of magnetization	☐ longitudinale longitudinal	☑ giogo yoke	☐ bobina coil	
	☐ circolare circular	☐ puntali prods	☐ conduttore centrale central conductor	☐ di testa head shot
metodo method	☑ continuo continuous	☐ residuo residuos	☐ smagnetizzazione SI smagnetization yes	☑ smagnetizzazione NO smagnetization no
attrezzatura: equipment	Parker B300S		nr. matricola: 26166 serial number	
distanza : 135 mm. distance	intensità corrente: A current intensity	spire: turns	ampere-spire: ampere-turns	

esito dell'esame
examination result

Acceptable as per specification.



note
remarks

NDT Operator	QA/QC	Third Party	Client
Name: **Eric Marini** 2nd level SNT-TC-1A 2nd level ISO9712	Name:	Name:	Name:
Signature:	Signature:	Signature:	Signature:
Place/Date: Trieste, 18/11/2024	Date:	Date:	Date:

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RAPPORTO ESAME MAGNETOSCOPICO

MAGNETIC PARTICLE EXAMINATION REPORT

MT nr. 443 /24

cliente customer	Remazel SpA	commessa project	C.24-27012
materiale esaminato examined material	Chassis Winch Carpentry		
riferimenti reference	Dwg nr. C09-0001-P0005	particolare item	100% welds

procedura d'esame examination procedure	UNI EN ISO 17638	limiti di accettazione examination procedure	EN ISO 23278 - Lev.2	
stato superficiale surface condition	☑ saldato welded	☐ molato ground	☐ lav. di macchina machined	☐ forgiato forged
temperatura: 15-20 °C test temperature		☐ fuso casting	☐ sabbiato sandblasted	☐ verniciato painted

mezzo di rivelazione detection medium	☐ a secco dry	☑ a umido wet	black magnetic powder suspension ELITE BW2
metodo di rivelazione detection method	☑ contrasto di colore colour contrast	☐ luce di Wood Wood light	contrast laquer ELITE WBL5

tipo di corrente current type	☑ alternata A.C.	☐ continua D.C.	☐ raddrizzata rectified	☐ magnete permanente permanent magnet
tipo di magnetizzazione type of magnetization	☐ longitudinale longitudinal	☑ giogo yoke	☐ bobina coil	
	☐ circolare circular	☐ puntali prods	☐ conduttore centrale central conductor	☐ di testa head shot
metodo method	☑ continuo continuous	☐ residuo residuos	☐ smagnetizzazione SI smagnetization yes	☑ smagnetizzazione NO smagnetization no
attrezzatura: equipment	Parker B300S		nr. matricola: 26166 serial number	
distanza : 135 mm. distance	intensità corrente: A current intensity	spire: turns	ampere-spire: ampere-turns	

esito dell'esame
examination result

Acceptable as per specification.



note
remarks

NDT Operator	QA/QC	Third Party	Client
Name: **Eric Marini** 2nd level SNT-TC-1A 2nd level ISO9712	Name:	Name:	Name:
Signature:	Signature:	Signature:	Signature:
Place/Date: Trieste, 18/11/2024	Date:	Date:	Date:

REMAZEL

Quality System

RAPPORTO DI CONTROLLO VISIVO
VISUAL TEST REPORT

Mod. 154 | Rev. 2.0

N° certificate	24-27012 - VT 3	Date	14/11/2024	Sheet	1/1

DATI GENERALI general data

CLIENTE Client	Rosetti Marino	LUOGO Place	Trieste	COMMESSA Job	24-27012
DESCRIZIONE ESAME Test Details	Visual Inspection of welds	ORD order	17240010101 23A90A	Q.TA' Q.ty	1
DOC. DI RIFERIMENTO Reference Documents	1724001010-NDT-PRO-00006	ACCETTABILITA' Acceptance Criteria	EN ISO 5817 Lev.C		
COSTRUTTORE Manufacturer	Remazel	ITP	24-27012_ITP-001		

COMPONENTE ESAMINATO examined part

NUMERO DI FABBRICA Serial Number	P0005	COLATA Heat N.	\	MATERIALE Material	S355J2+N	DIS. Dwg	C09-0001-P0005

ESECUZIONE DEL TEST Test Carried Out: ☐ PRIMA PWHT Before PWHT ☐ DOPO HT After HT ☐ PRIMA PROVA IDRAULICA Before Hydraulic Test ☐ DOPO PROVA IDRAULICA After Hydraulic Test

SUPERFICIE Surface: ☐ LAMINATA As Rolled ☐ GREZZA Rough ☐ MOLATA Ground ☐ SABBIATA Sand Blasted ☐ LAVORATA DI MACCHINA Machined

SOVRAMETALLO SALDATURA Welding Reinforcement: ■ COME SALDATO As Welded ☐ LAVORATO DI MACCHINA Machined ■ MOLATO Ground ■ RACCORDATO Blended

TECNICA Technique

METODO Method: ■ DIRETTO Direct ☐ INDIRETTO Indirect

STRUMENTO Instrument: Gauge / Mirror / Endoscope

CONDIZIONI DI ILLUMINAMENTO Lighting conditions: ☐ LUCE NERA Black light ■ LUCE BIANCA Light ■ NATURALE Natural ☐ ARTIFICIALE Artificial — 550 lux

INDICAZIONI DA REGISTRARE Indications to be Recorded

Weld Nr.	WPS	Surface Condition	Dimensional	Indication	Weld Zone	Evaluation	Note
ALL	**	SC2	OK	NONE	ALL	A	\

EVALUATION: A : ACCEPTED / accettato R : REFUSED / rifiutato

SURFACE CONDITIONS:
SC1 : SANDBLASTED / sabbiata
SC2 : GRINDED / molato
SC3: BRUSHED / spazzolata

WELD ZONE: WJ : WELD JOINT zona saldatura
HAZ : HEAT AFFECTED ZONE zona termicamente alterata

INDICATION ISO 6520-1:
100 : CRACKS / cricche
5011 - 5012 : UNDERCUT / incisioni
516 : POROSITY / porosità
401 : INCOMPLETELY LACK FUSION mancanza di fusione
507 :MISALIGNMENT / sfivellamento
5013 :ROOT CONCAVITY / incisione al vertice
504 :EXCESS OF PENETRATION eccesso di penetrazione

NOTE Remarks

** 1724001010-WEL-PRO-00005

■ RISULTATI CONFORMI AI REQUISITI
Results Conforming to the Specified Requirements

☐ RISULTATI NON CONFORMI AI REQUISITI
Results Not Conforming to the Specified Requirements

DATA Date	14/11/2024	LUOGO Place	Trieste	OPERATORI Operators	Estevan Natale

II LEVEL	CLIENTE Customer	ENTE DI COLLAUDO Inspecting Authority
E. Natale 2° LIVELLO UNI EN ISO 9712 VT-MT		

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RAPPORTO ESAMI ULTRASUONI

ULTRASONIC EXAMINATION REPORT

UT nr. 445 /24

cliente / customer: REMAZEL S.p.A.

commessa / project: 24-27012

materiale esaminato / examined material: Chassis Winch Carpentry

riferimenti / reference: **Dwg nr. C09-0001-P0005 rev.A**

particolare / item: 100% surface where accessible

procedura d'esame / examination procedure: UNI EN ISO 10160
1724001010-NDT-PRO-00006

limiti di accettazione / acceptance criteria: planar discontinuities research

stato superficiale / surface condition: ☐ saldato / welded ☐ molato / ground ☑ lav. di macchina / machined ☐ forgiato / forged

temperatura / test temperature: 10-15 °C

accoppiante / coupling medium: tjlosa

☐ verniciato / painted ☐ fuso / casting ☐ sabbiato / sandblasted

apparecchiatura / equipment:

☐ Olympus 38 DL Plus ID 120486408
☐ Panametrics 36 DLP ID 992126711
☐ Panametrics Epoch III ID 01457206
☐ Panametrics Epoch IV ID 081590305
☐ Olympus OMNI-MX2 ID 102691-2681
☐ Olympus Epoch 600 ID 120459312
☐ Olympus Epoch 600 ID 120240601
☑ Olympus Epoch 600 ID 130530605

sonda / transducer	dimensioni / probe size	angolo / angle	frequenza / frequency	dB riferimento / primary ref.	correz. di trasferimento / transfer correction	dB scansione / scanning	dB totali / total dB
Krautkramer MB4S-N *sn: 53465*	Ø10 mm	0°	4 MHz	50,8	<2		50,8
IMG D8-5B *sn: 2389*	Ø10 mm	0°	4 MHz	43,7	<2		43,7

blocchi di taratura / reference blocks: IIW Reference Block

metodo di taratura / calibration mode: -

dettaglio / item detail: nom thk 38 mm (see page 002 for details)

esito dell'esame / examination result:

Acceptable as per specification.

NDT Operator	QA/QC	Third Party	Client
Name: **Eric Marini** 2nd level SNT-TC-1A 2nd level ISO9712	Name:	Name:	Name:
Signature:	Signature:	Signature:	Signature:
Place/Date: Trieste, 18/11/2024	Date:	Date:	Date:

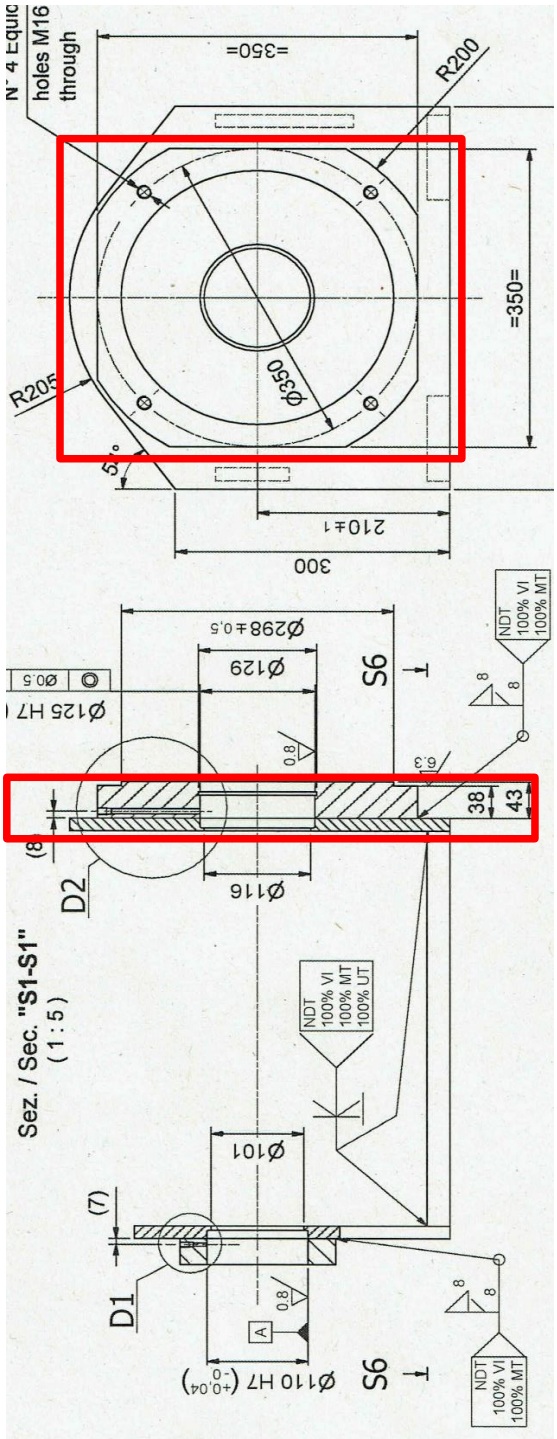
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RAPPORTO ESAMI ULTRASUONI

ULTRASONIC EXAMINATION REPORT

UT nr. 445 /24

esito dell'esame
examination result



NDT Operator	QA/QC	Third Party	Client
Name: **Eric Marini** 2nd level SNT-TC-1A 2nd level ISO9712	Name:	Name:	Name:
Signature:	Signature:	Signature:	Signature:
Place/Date: Trieste, 18/11/2024	Date:	Date:	Date:

REMAZEL ENGINEERING	DIMENSIONAL CONTROL CERTIFICATE	Certificate N°	
		DimAM002	
		Date	18/10/2024

Supplier	Rosetti Marino	**Order N°**	1724001010123A90A
Job	24-27012	**Drawing**	C09-0001-P0006 Rev. C
Project	DAVIT CRANE	**Serial N°**	/
QCP	24-27012_ITP-001	**Phase**	6.01

Nominal Dimension	Real Dimension	Instruments
560mm	560mm	Tape meter
428,5	427,5mm	Tape meter
440mm	440mm	Tape meter
Ø65mm	Ø65mm	CAL-0106
Ø65 (+1;-0)mm	Ø65mm	CAL-0106
384mm	383,8mm	CAL-0111
171,5mm	171,15mm	Checked during machining
Ø42mm (+0,003)	Ø42,03mm	Checked during machining
Ø50mm (+0,003)	Ø50,03mm	MEC-0131
Ø80mm (+0,003)	Ø80,03mm	MEC-0131

Result	Accepted	X
	Not Accepted	

Note:

Supplier	Client	Customer
REMAZEL C. Faber ☒W ☐R		MARZIO MEDERICI OBO CRASSWIND ☐ REVIEWED ☒ WITNESSED NAME: MARZIO MEDERICI DATE: 18-10-2024 SIGNATURE:

REMAZEL ENGINEERING	DIMENSIONAL CONTROL CERTIFICATE	Certificate N°	
		DimAM004	
		Date	31/10/2024

Supplier	Rosetti Marino	**Order N°**	1724001010123A90A
Job	24-27012	**Drawing**	C09-0001-P0002 Rev. E
Project	DAVIT CRANE	**Serial N°**	/
QCP	24-27012_ITP-001	**Phase**	6.01

Nominal Dimension	Real Dimension	Instruments
Ø932mm (+1;-0)	Ø932,6mm	CAL-0111
4271mm (+15;-0)	4280mm	Tape meter
Ø830mm (+1;-0)	Ø829,8mm	CAL-0111
Ø26mm	Ø26mm	CAL-0106
37,5mm	37,4mm	CAL-0106
2495mm (±1)	2495mm	Tape meter
386mm (±1)	387mm	Tape meter
625mm (±1)	626mm	Tape meter
900mm (±1)	900mm	Tape meter
900mm (±1)	900mm	Tape meter
900mm (±1)	900mm	Tape meter
457mm (±1)	457mm	Tape meter

Result	Accepted	X
	Not Accepted	

Note:

Supplier	Client	Customer
REMAZEL C. Ziber ☐W ☐R		Marzio Mederici obo CROSSWIND ☐ REVIEWED ☒ WITNESSED NAME: MARZIO MEDERICI DATE: 31-10-2024 SIGNATURE: Mederici

REMAZEL ENGINEERING	DIMENSIONAL CONTROL CERTIFICATE	Certificate N°	
		DimAM003	
		Date	18/10/2024

Supplier	Rosetti Marino	**Order N°**	1724001010123A90A
Job	24-27012	**Drawing**	C09-0001-P0001 Rev. D
Project	DAVIT CRANE	**Serial N°**	/
QCP	24-27012_ITP-001	**Phase**	6.01

Nominal Dimension	Real Dimension	Instruments
Ø830mm (+1;-0)	Ø830mm	CAL-0111
500mm (+1;-0)	500mm	CAL-0111
Ø700mm (+0;-2)	Ø698mm	CAL-0111
Ø26mm	Ø26mm	CAL-0106
Ø775mm (+1;-0)	Ø775mm	Tape meter

Result	Accepted	X
	Not Accepted	

Note:

Supplier	Client	Customer
REMAZEL C. Inder ☐W ☐R		MARZIO MEDERICI DDO CROSS WIDE ☐ REVIEWED ☒ WITNESSED NAME: MARZIO MEDERICI DATE: 18-10-2024 SIGNATURE: Mederici

REMAZEL ENGINEERING	DIMENSIONAL CONTROL CERTIFICATE	Certificate N°	
		DimAM001	
		Date	18/10/2024

Supplier	Rosetti Marino	**Order N°**	1724001010123A90A
Job	24-27012	**Drawing**	C09-0001-P0004 Rev. G
Project	DAVIT CRANE	**Serial N°**	/
QCP	24-27012_ITP-001	**Phase**	6.01

Nominal Dimension	Real Dimension	Instruments
10700mm (±2)	10698mm	Tape meter
568mm (±1)	568mm	Tape meter
Ø200mm (±1)	Ø200mm	CAL-0111
Ø736mm (±1)	Ø736mm	CAL-0111
Ø26mm	Ø26mm	CAL-0106
280mm (±1)	280mm	Tape meter
48,5mm	49,5mm	Tape meter
Ø60mm (+1/-0)	Ø60mm	CAL-0106
Ø679mm (+0/-5)	Ø679mm	Tape meter

Result	Accepted	X
	Not Accepted	

Note:

Supplier	Client	Customer
REMAZEL C. Zibet ☐W ☐R		MARZIO MEDERICI DNV GL CROSSWIND ☐ REVIEWED ☒ WITNESSED NAME: MARZIO MEDERICI DATE: 18-10-2024 SIGNATURE: Mederici

REMAZEL ENGINEERING	DIMENSIONAL CONTROL CERTIFICATE	Certificate N°	
		DimAM005	
		Date	18/11/2024

Supplier	Rosetti Marino	**Order N°**	1724001010123A90A
Job	24-27012	**Drawing**	C09-0001-P0085 Rev. A
Project	DAVIT CRANE	**Serial N°**	/
QCP	24-27012_ITP-001	**Phase**	6.01

Nominal Dimension	Real Dimension	Instruments
393mm (+1)	393mm	CAL-0105
423mm	421mm	CAL-0105
Ø65mm (±0,5)	Ø65mm	CAL-0105
Ø71mm (±0,5)	Ø70,5mm	CAL-0105
Ø273mm	Ø272,8mm	CAL-0105
Ø214mm	Ø214mm	Tape meter

Result	Accepted	X
	Not Accepted	

Note:

Supplier	Client	Customer
REMAZEL C. Taber ☐W ☐R		Marzio Mederici obo CROSSWIND ☐ REVIEWED ☒ WITNESSED NAME: MARZIO MEDERICI DATE: 18-11-2024 SIGNATURE:

REMAZEL ENGINEERING	DIMENSIONAL CONTROL CERTIFICATE	Certificate N°	
		DimAM006	
		Date	18/11/2024

Supplier	Rosetti Marino	**Order N°**	1724001010123A90A
Job	24-27012	**Drawing**	C09-0001-P0005 Rev. A
Project	DAVIT CRANE	**Serial N°**	/
QCP	24-27012_ITP-001	**Phase**	6.01

Nominal Dimension	Real Dimension	Instruments
567mm	567,4mm	CAL-0105
464mm	464mm	CAL-0105
Ø125mm (±0,04)	Ø124,9mm	CAL-0106
Ø110mm (±0,04)	Ø109,98mm	CAL-0106
Ø298mm	Ø298mm	CAL-0105
Ø101mm	Ø100,85mm	CAL-0106
VERIFICA FORATURE BULLONERIE	OK	Tape meter/CAL-0106

Result	Accepted	X
	Not Accepted	

Note:

Supplier	Client	Customer
REMAZEL C. Ziber ☐W ☐R		Marzio Mederici obo CROSSWIND ☐ REVIEWED X WITNESSED NAME: MARZIO MEDERICI DATE: 18-11-2024 SIGNATURE:

13 Painting reports

SEA METAL SRL	PAINTING REPORT Rapporto di pitturazione	M 02 Rev. 02 del 12/05/2023		
		PR:	32/2024	Date: 22/10/2024

Customer:	Remazel	Painting Procedure:	24-27012-PP-001
Project :	Davit Crane	Place of Activities:	Sea Metal
Purchase order:	240005843	Item:	C09-0001-P0004 - Boom carpentry C09-0001-P0006 - Travelling trolley carpentry

ITEM INSPECTED:

STEEL PREPARATION (ISO 8501-3 - GRADE Sa 2 1/2)	ACCEPTABLE	☑	NOT ACCEPTABLE	☐	NOT APPL.	☐	
VISUAL CHECK PRIOR TO BLASTING :	ACCEPTABLE	☑	NOT ACCEPTABLE	☐	NOT APPL.	☐	
CLEANING OF PIECE BEFORE BLASTING :	ACCEPTABLE	☑	NOT ACCEPTABLE	☐	NOT APPL.	☐	
SURFACE CLEANLINESS: (ISO 8501-1)	ACCEPTABLE	☑	NOT ACCEPTABLE	☐	NOT APPL.	☐	
SURFACE CLEANLINESS: (ISO 8502-3 RATING 2)	ACCEPTABLE	☑	NOT ACCEPTABLE	☐	NOT APPL.	☐	
ROUGHNESS : (profile : 67 µm - Medium G)	ACCEPTABLE	☑	NOT ACCEPTABLE	☐	NOT APPL.	☐	

Tape 1:	Tape 2:	Tape 3:

SALT TEST: (ISO 8502-6, ISO8502-9)	<30 mg/m²	ACCEPTABLE	☑	NOT ACCEPTABLE	☐	NOT APPL.	☐
Result 12 (mg/m²)	Result (mg/m²)	Result (mg/m²)		Result (mg/m²)			
VISUAL CHECK AFTER TO BLASTING :		ACCEPTABLE	☑	NOT ACCEPTABLE	☐	NOT APPL.	☐

EXPOSED EXTERIOR AND INTERIOR SURFACES:

FIRST LAYER

DATE : 22/10/24	HOUR : 9:00	HUMIDITY :	< 85%	60,1
TYPE OF COAT : Jotamastic 90 Alu		AIR TEMP.:	> 5°C	21,4
PAINT BATCH NUMBER BASE: 3405346-1-*-1:3		STEEL TEMP.:	MIN. DEW P. + 3 °C.	22,7
PAINT BATCH NUMBER CURING AGENT: 3463065-1-*-1:2		DEW POINT :		13,3
NDFT: 150 µm		THICKNESS RESULT :		
Used paint:		N° OF READING: 30	MIN (Range: -___/+___ of NDFT)	150
			AVERAGE (Range: -___/+___ of NDFT)	177
RESULT : ACCEPTABLE ☑ NOT ACCEPTABLE ☐			MAX (Range: -___/+___ of NDFT)	228

SECOND LAYER

DATE : 23/10/24	HOUR : 9:00	HUMIDITY :	< 85%	66,9
TYPE OF COAT : Jotamastic 90 Alu		AIR TEMP.:	> 5°C	19,5
PAINT BATCH NUMBER BASE: 3405346-1-*-1:3		STEEL TEMP.:	MIN. DEW P. +3°C.	19,6
PAINT BATCH NUMBER CURING AGENT: 3463065-1-*-1:2		DEW POINT :		13,2
NDFT: 150 µm		THICKNESS RESULT :		
Used paint:		N° OF READING: 30	MIN (Range: -___/+___ of NDFT)	300
			AVERAGE (Range: -___/+___ of NDFT)	339
RESULT : ACCEPTABLE ☑ NOT ACCEPTABLE ☐			MAX (Range: -___/+___ of NDFT)	387

THIRD LAYER

DATE : 24/10/24	HOUR : 9:30	HUMIDITY :	< 85%	65,5
TYPE OF COAT : Hardtop XP RAL 7038		AIR TEMP.:	> 5°C	19,4
PAINT BATCH NUMBER BASE: 3656202-1-*-1:3		STEEL TEMP.:	MIN. DEW P. +3°C.	19,1
PAINT BATCH NUMBER CURING AGENT: 3614977-1-*-1:2		DEW POINT :		12,8
NDFT: 60 µm		THICKNESS RESULT :		
Used paint:		N° OF READING:	MIN (Range: -___/+___ of NDFT)	334
			AVERAGE (Range: -___/+___ of NDFT)	416
RESULT : ACCEPTABLE ☑ NOT ACCEPTABLE ☐			MAX (Range: -___/+___ of NDFT)	490

FOURTH LAYER

DATE :	HOUR :	HUMIDITY :	< 85%	
TYPE OF COAT :		AIR TEMP.:	> 5°C	
PAINT BATCH NUMBER BASE:		STEEL TEMP.:	MIN. DEW P. +3°C.	
PAINT BATCH NUMBER CURING AGENT:		DEW POINT :		
NDFT: µm		THICKNESS RESULT :		
Used paint:		N° OF READING:	MIN (Range: -___/+___ of NDFT)	0
			AVERAGE (Range: -___/+___ of NDFT)	0
RESULT : ACCEPT. ☐ NOT ACCEPT. ☐ N.A. ☐			MAX (Range: -___/+___ of NDFT)	0

DUST TEST : DUST QUANTITY RATE(1÷5):1 DUST PARTICLE SIZE (1÷5):1

TEST

REMAZEL C. Faber QAW QR

NOTE:

DFT equipment : Thickness gauge Elcometer RE06311 Calibration on smooth surface (correction value=25 µm)

REMARKS:

REDATTO DA COMPILED FROM	ISPETTORE INSPECTOR	ISPETTORE INSPECTOR	CLIENTE CUSTOMER
Sea Metal S.r.l.	FROSIO Gruppo IanAc Matteo Biancolillo Frosio Certified # 12558	N°5402 Luca Tripoli Frosio Certified # 5402	ROSETTI MARINO SpA Michele Sacchi Quality Control Dept. NACE # 35 444

SEA METAL SRL	PAINTING REPORT Rapporto di pitturazione	M 02 Rev. 02 del 12/05/2023			
		PR:	31/2024	Date:	22/10/2024

Customer:	Remazel	*Painting Procedure:*	24-27012-PP-001
Project :	Davit Crane	*Place of Activities:*	Sea Metal
Purchase order:	240005843	*Item:*	C09-0001-P0001 - Pedestral

ITEM INSPECTED:

STEEL PREPARATION (ISO 8501-3 - GRADE Sa 2 1/2)	ACCEPTABLE	☑	NOT ACCEPTABLE	☐	NOT APPL.	☐	
VISUAL CHECK PRIOR TO BLASTING :	ACCEPTABLE	☑	NOT ACCEPTABLE	☐	NOT APPL.	☐	
CLEANING OF PIECE BEFORE BLASTING :	ACCEPTABLE	☑	NOT ACCEPTABLE	☐	NOT APPL.	☐	
SURFACE CLEANLINESS: (ISO 8501-1)	ACCEPTABLE	☑	NOT ACCEPTABLE	☐	NOT APPL.	☐	
SURFACE CLEANLINESS: (ISO 8502-3 RATING 2)	ACCEPTABLE	☑	NOT ACCEPTABLE	☐	NOT APPL.	☐	
ROUGHNESS : (profile : 67 µm - Medium G)	ACCEPTABLE	☑	NOT ACCEPTABLE	☐	NOT APPL.	☐	

Tape 1:	Tape 2:	Tape 3:

SALT TEST: (ISO 8502-6, ISO8502-9)	<30 mg/m²	ACCEPTABLE	☑	NOT ACCEPTABLE	☐	NOT APPL.	☐
Result 12 (mg/m²)	Result (mg/m²)	Result (mg/m²)		Result (mg/m²)			
VISUAL CHECK AFTER TO BLASTING :		ACCEPTABLE	☑	NOT ACCEPTABLE	☐	NOT APPL.	☐

EXPOSED EXTERIOR AND INTERIOR SURFACES:

FIRST LAYER

DATE : 22/10/24	HOUR : 9:00	HUMIDITY :	< 85%		60,1
TYPE OF COAT : Jotamastic 90 Alu		AIR TEMP.:	> 5°C		21,4
PAINT BATCH NUMBER BASE: 3405346-1-*-1:3		STEEL TEMP.:	MIN. DEW P. + 3 °C.		22,7
PAINT BATCH NUMBER CURING AGENT: 3463065-1-*-1:2		DEW POINT :			13,3
NDFT: 150 µm		THICKNESS RESULT :			
Used paint:		N° OF READING: 30	MIN	(Range: -___ /+ ___ of NDFT)	150
			AVERAGE	(Range: -___ /+ ___ of NDFT)	177
RESULT : ACCEPTABLE ☑ NOT ACCEPTABLE ☐			MAX	(Range: -___ /+ ___ of NDFT)	228

SECOND LAYER

DATE : HOUR :		HUMIDITY :	< 85%		
TYPE OF COAT :		AIR TEMP.:	> 5°C		
PAINT BATCH NUMBER BASE:		STEEL TEMP.:	MIN. DEW P. +3°C.		
PAINT BATCH NUMBER CURING AGENT:		DEW POINT :			
NDFT: µm		THICKNESS RESULT :			
Used paint:		N° OF READING: 30	MIN	(Range: -___ /+ ___ of NDFT)	0
			AVERAGE	(Range: -___ /+ ___ of NDFT)	0
RESULT : ACCEPTABLE ☐ NOT ACCEPTABLE ☐			MAX	(Range: -___ /+ ___ of NDFT)	0

THIRD LAYER

DATE : HOUR :		HUMIDITY :	< 85%		
TYPE OF COAT :		AIR TEMP.:	> 5°C		
PAINT BATCH NUMBER BASE:		STEEL TEMP.:	MIN. DEW P. +3°C.		
PAINT BATCH NUMBER CURING AGENT:		DEW POINT :			
NDFT: µm		THICKNESS RESULT :			
Used paint:		N° OF READING:	MIN	(Range: -___ /+ ___ of NDFT)	
			AVERAGE	(Range: -___ /+ ___ of NDFT)	
RESULT : ACCEPTABLE ☐ NOT ACCEPTABLE ☐			MAX	(Range: -___ /+ ___ of NDFT)	

FOURTH LAYER

DATE : HOUR :		HUMIDITY :	< 85%		
TYPE OF COAT :		AIR TEMP.:	> 5°C		
PAINT BATCH NUMBER BASE:		STEEL TEMP.:	MIN. DEW P. +3°C.		
PAINT BATCH NUMBER CURING AGENT:		DEW POINT :			
NDFT: µm		THICKNESS RESULT :			
Used paint:		N° OF READING:	MIN	(Range: -___ /+ ___ of NDFT)	0
			AVERAGE	(Range: -___ /+ ___ of NDFT)	0
RESULT : ACCEPT. ☐ NOT ACCEPT. ☐ N.A. ☐			MAX	(Range: -___ /+ ___ of NDFT)	0

DUST TEST : DUST QUANTITY RATE(1÷5):1 DUST PARTICLE SIZE (1÷5):1

TEST

NOTE:

REMAZEL S.r.l. per conto

DFT equipment : Thickness gauge Elcometer RE06311 Calibration on smooth surface (correction value=25 µm)

REMARKS:

REDATTO DA *COMPILED FROM*	ISPETTORE *INSPECTOR*	ISPETTORE *INSPECTOR*	CLIENTE *CUSTOMER*
Sea Metal S.r.l.	BIANCOLILLO MATTEO FROSIO Gruppo IspAC CERT. N° 12558 Matteo Biancolillo Frosio Certified # 12558	LUCA TRIPOLI FROSIO LEVEL III N°5402 Luca Tripoli Frosio Certified # 5402	ROSETTI MARINO SpA Michele Secchi Quality Control Dept. NACE # 25744

GALPERTI TECH FORGED PRODUCTS S.p.A.
Capitale Sociale € 4.000.000,00 interamente versato
Sede legale e Amministrativa:
23823 COLICO (LC) - Via Ombriano, 14
C.C.I.A.A Lecco n. 03800290136 – R.E.A. 326757
C.F. 03800290136 -P.IVA IT03800290136
Tel. 0341-930186 - Fax 0341-930252
E-mail: galptech@galptech.com - www.galperti.com

PAINTING REPORT

Certificate No.:	240413-001 p001
Revision No.:	0
Date :	21/11/2024

Main Information

Client Name:	REMAZEL ENGINEERING SPA
Client P.O.:	24004009
Supplier Ref.:	240413 Pos. 001
Customer Job:	24-27012
Drawing No.:	V41-0979-013-COMM Rev.1

Procedure

Examination Procedure:	P04 001 Rev.2
Applicable Specification:	\
Acceptance Criteria:	P04 001 Rev.2 Section 4 - SKV-V41-0979-013-R01
Customer Specification:	\

Examination Material

Item ID:	24/03784	**Quantity:**	1 pc
Product Form:	4-Points Contact Ball Bearing	**Material Type:**	42CrMo4 Q+T
Area of Test:	External surface	**Surface Condition:**	Final machining

Equipment Details / Technique

Instrument Type:	Thickness gauge for dry film thickness	**Instrument SN:**	376919
Instrument Type:	Dewpoint meter	**Instrument SN:**	WC20988
Instrument Type:	Conductivity Meter	**Instrument SN:**	1100

Surface Preparation

Surface Preparation [ISO 8501-1]				**Surface Profile [ISO 85032]**			
Requested:	SA3	**Obtained:**	SA3	**Requested:**	50 - 85 µm	**Obtained:**	Medium G [70 Avg.
Salt Contamination [ISO 8502-6/9]				**Dust Test [ISO 8502-3]**			
Requested:	≤20 mg/m2	**Obtained:**	12 mg/m2	**Requested:**	Level 2	**Obtained:**	Level 1
Blotter Test [ASTM D 4285]	Satisfactory						

Items Description / Result

Items: **240413-001 (1 pc) 4-Points Contact Ball Bearing V41-0979-013-COMM Rev.1**

Coating

Coat No.	**1st Coat**	**2nd Coat**	**3rd Coat**
Date	18/11/2024	19/11/2024	20/11/2024
Application Method	Air mix	Air mix	Air mix
Painting Name	Avantguard 750	Multi 500	Hempathane 55610
Painting Color	Grey	Ligth Grey	RAL 7038
Batch Number	043117377 (A) - 043116254 (B)	223085103 (A) - 224056096 (B)	223105735 (A) - 224025127 (B)
Dry Film Thickness Required	60 µm Min.	240 µm Min.	320 µm Min.
Dry Film Thickness Obtained (ISO 19840)	Min. 62 µm Avg. 76 µm Max. 97 µm	Min. 233 µm Avg. 262 µm Max. 298 µm	Min. 336 µm Avg. 350 µm Max. 403 µm
Air Temperature	19,2°C	16,3°C	17,5°C
Surface Temperature	19,1°C	16,1°C	17,2°C
Humidity	34,30%	39,90%	29,10%
Dew Point	3,1°C	2,5 °C	-0,7°C
Visual Check	Satisfactory	Satisfactory	Satisfactory

Operator / Inspection

Tested by:	Cusini Alex
Level:	-
Date:	21/11/2024
Verified By:	Acquistapace Thomas
Date:	21/11/2024

21-11-2024
FRANCO CORBELLINI
CSI
CROSSWIND

External Inspector: REMAZEL Caliber OW OR

GIACOMO MAZZ... NI
NACE COATING INSP... OR
LEVEL 2 CERTIFIED
CIP No. 18715

ROSETTI MARINO SpA
Michele Sacchi
Quality Control Dept.
NACE # 15846

Sign:
Date:

SEA METAL SRL	PAINTING REPORT Rapporto di pitturazione	M 02 Rev. 02 del 12/05/2023		
		PR:	32/2024	Date: 22/10/2024

Customer:	Remazel	Painting Procedure:	24-27012-PP-001
Project :	Davit Crane	Place of Activities:	Sea Metal
Purchase order:	240005843	Item:	C09-0001-P0004 - Boom carpentry C09-0001-P0006 - Travelling trolley carpentry

ITEM INSPECTED:

STEEL PREPARATION (ISO 8501-3 - GRADE Sa 2 1/2)	ACCEPTABLE	☑	NOT ACCEPTABLE	☐	NOT APPL.	☐	
VISUAL CHECK PRIOR TO BLASTING :	ACCEPTABLE	☑	NOT ACCEPTABLE	☐	NOT APPL.	☐	
CLEANING OF PIECE BEFORE BLASTING :	ACCEPTABLE	☑	NOT ACCEPTABLE	☐	NOT APPL.	☐	
SURFACE CLEANLINESS: (ISO 8501-1)	ACCEPTABLE	☑	NOT ACCEPTABLE	☐	NOT APPL.	☐	
SURFACE CLEANLINESS: (ISO 8502-3 RATING 2)	ACCEPTABLE	☑	NOT ACCEPTABLE	☐	NOT APPL.	☐	
ROUGHNESS : (profile : 67 µm - Medium G)	ACCEPTABLE	☑	NOT ACCEPTABLE	☐	NOT APPL.	☐	

Tape 1:	Tape 2:	Tape 3:

SALT TEST: (ISO 8502-6, ISO8502-9)	<30 mg/m²	ACCEPTABLE	☑	NOT ACCEPTABLE	☐	NOT APPL.	☐
Result 12 (mg/m²)	Result (mg/m²)	Result (mg/m²)		Result (mg/m²)			
VISUAL CHECK AFTER TO BLASTING :		ACCEPTABLE	☑	NOT ACCEPTABLE	☐	NOT APPL.	☐

EXPOSED EXTERIOR AND INTERIOR SURFACES:

FIRST LAYER

DATE : 22/10/24	HOUR : 9:00	HUMIDITY :	< 85%	60,1
TYPE OF COAT : Jotamastic 90 Alu		AIR TEMP.:	> 5°C	21,4
PAINT BATCH NUMBER BASE: 3405346-1-*-1:3		STEEL TEMP.:	MIN. DEW P. + 3 °C.	22,7
PAINT BATCH NUMBER CURING AGENT: 3463065-1-*-1:2		DEW POINT :		13,3
NDFT: 150 µm		THICKNESS RESULT :		
Used paint:		N° OF READING: 30	MIN (Range: -___/+___ of NDFT)	150
			AVERAGE (Range: -___/+___ of NDFT)	177
RESULT : ACCEPTABLE ☑ NOT ACCEPTABLE ☐			MAX (Range: -___/+___ of NDFT)	228

SECOND LAYER

DATE : 23/10/24	HOUR : 9:00	HUMIDITY :	< 85%	66,9
TYPE OF COAT : Jotamastic 90 Alu		AIR TEMP.:	> 5°C	19,5
PAINT BATCH NUMBER BASE: 3405346-1-*-1:3		STEEL TEMP.:	MIN. DEW P. +3°C.	19,6
PAINT BATCH NUMBER CURING AGENT: 3463065-1-*-1:2		DEW POINT :		13,2
NDFT: 150 µm		THICKNESS RESULT :		
Used paint:		N° OF READING: 30	MIN (Range: -___/+___ of NDFT)	300
			AVERAGE (Range: -___/+___ of NDFT)	339
RESULT : ACCEPTABLE ☑ NOT ACCEPTABLE ☐			MAX (Range: -___/+___ of NDFT)	387

THIRD LAYER

DATE : 24/10/24	HOUR : 9:30	HUMIDITY :	< 85%	65,5
TYPE OF COAT : Hardtop XP RAL 7038		AIR TEMP.:	> 5°C	19,4
PAINT BATCH NUMBER BASE: 3656202-1-*-1:3		STEEL TEMP.:	MIN. DEW P. +3°C.	19,1
PAINT BATCH NUMBER CURING AGENT: 3614977-1-*-1:2		DEW POINT :		12,8
NDFT: 60 µm		THICKNESS RESULT :		
Used paint:		N° OF READING:	MIN (Range: -___/+___ of NDFT)	334
			AVERAGE (Range: -___/+___ of NDFT)	416
RESULT : ACCEPTABLE ☑ NOT ACCEPTABLE ☐			MAX (Range: -___/+___ of NDFT)	490

FOURTH LAYER

DATE :	HOUR :	HUMIDITY :	< 85%	
TYPE OF COAT :		AIR TEMP.:	> 5°C	
PAINT BATCH NUMBER BASE:		STEEL TEMP.:	MIN. DEW P. +3°C.	
PAINT BATCH NUMBER CURING AGENT:		DEW POINT :		
NDFT: µm		THICKNESS RESULT :		
Used paint:		N° OF READING:	MIN (Range: -___/+___ of NDFT)	0
			AVERAGE (Range: -___/+___ of NDFT)	0
RESULT : ACCEPT. ☐ NOT ACCEPT. ☐ N.A. ☐			MAX (Range: -___/+___ of NDFT)	0

DUST TEST : DUST QUANTITY RATE(1÷5):1 DUST PARTICLE SIZE (1÷5):1

TEST

REMAZEL C. Arber QAW QR

NOTE:

DFT equipment : Thickness gauge Elcometer RE06311 Calibration on smooth surface (correction value=25 µm)

REMARKS:

REDATTO DA *COMPILED FROM*	ISPETTORE *INSPECTOR*	ISPETTORE *INSPECTOR*	CLIENTE *CUSTOMER*
Sea Metal S.r.l.	FROSIO Gruppo IanAc Matteo Biancolillo Frosio Certified # 12558	N°5402 Luca Tripoli Frosio Certified # 5402	ROSETTI MARINO SpA Michele Sacchi Quality Control Dept. NACE # 35 ######

SEA METAL SRL	PAINTING REPORT Rapporto di pitturazione	M 02 Rev. 02 del 12/05/2023			
		PR:	49/2024	Date:	22/11/2024

Customer:	Remazel	Painting Procedure:	24-27012-PP-001
Project :	Davit Crane	Place of Activities:	Sea Metal
Purchase order:	240005843	Item:	C09-0001-P0005+C09-0001-P0007+C09-0001-P0085+C09-0001-P0034+C09-0001-P0076+C09-0001-P0022+C09-0001-P0007+C09-0001-P0023+C09-0001-P0024+C09-0001-P0025+C09-0001-P0028+C09-0001-P0084+C09-0001-P0056+C09-0001-P0057+C09-0001-P0088+C09-0001-P0096

ITEM INSPECTED:

STEEL PREPARATION (ISO 8501-3 - GRADE Sa 2 1/2)	ACCEPTABLE	☑	NOT ACCEPTABLE	☐	NOT APPL.	☐	
VISUAL CHECK PRIOR TO BLASTING :	ACCEPTABLE	☑	NOT ACCEPTABLE	☐	NOT APPL.	☐	
CLEANING OF PIECE BEFORE BLASTING :	ACCEPTABLE	☑	NOT ACCEPTABLE	☐	NOT APPL.	☐	
SURFACE CLEANLINESS: (ISO 8501-1)	ACCEPTABLE	☑	NOT ACCEPTABLE	☐	NOT APPL.	☐	
SURFACE CLEANLINESS: (ISO 8502-3 RATING 2)	ACCEPTABLE	☑	NOT ACCEPTABLE	☐	NOT APPL.	☐	
ROUGHNESS : (profile : 75 µm - Medium G)	ACCEPTABLE	☑	NOT ACCEPTABLE	☐	NOT APPL.	☐	

Tape 1:	Tape 2:	Tape 3:

SALT TEST: (ISO 8502-6, ISO8502-9)	<30 mg/m²	ACCEPTABLE	☑	NOT ACCEPTABLE	☐	NOT APPL.	☐
Result 4,8 (mg/m²)	Result (mg/m²)	Result (mg/m²)		Result (mg/m²)			
VISUAL CHECK AFTER TO BLASTING :		ACCEPTABLE	☑	NOT ACCEPTABLE	☐	NOT APPL.	☐

EXPOSED EXTERIOR AND INTERIOR SURFACES:

FIRST LAYER

DATE : 22/11/24 HOUR : 9:00	HUMIDITY :	< 85%		66,2
TYPE OF COAT : Jotamastic 90 Alu	AIR TEMP.:	> 5°C		12,9
PAINT BATCH NUMBER BASE: 3674207-1-*-1:2	STEEL TEMP.:	MIN. DEW P. + 3 °C.		12,8
PAINT BATCH NUMBER CURING AGENT: 3650855-1-*-1:2	DEW POINT :			6,7
NDFT: 150 µm	THICKNESS RESULT :			
Used paint:	N° OF READING: 30	MIN	(Range: -___/+___ of NDFT)	150
		AVERAGE	(Range: -___/+___ of NDFT)	180
RESULT : ACCEPTABLE ☑ NOT ACCEPTABLE ☐		MAX	(Range: -___/+___ of NDFT)	206

SECOND LAYER

DATE : 25/11/24 HOUR : 9:00	HUMIDITY :	< 85%		67,5
TYPE OF COAT : Jotamastic 90 Alu	AIR TEMP.:	> 5°C		12,9
PAINT BATCH NUMBER BASE: 3405346-1-*-1:3	STEEL TEMP.:	MIN. DEW P. +3°C.		12,5
PAINT BATCH NUMBER CURING AGENT: 3650855-1-*-1:2	DEW POINT :			7,0
NDFT: 150 µm	THICKNESS RESULT :			
Used paint:	N° OF READING: 30	MIN	(Range: -___/+___ of NDFT)	294
		AVERAGE	(Range: -___/+___ of NDFT)	335
RESULT : ACCEPTABLE ☑ NOT ACCEPTABLE ☐		MAX	(Range: -___/+___ of NDFT)	396

THIRD LAYER

DATE : 26/11/24 HOUR : 9:30	HUMIDITY :	< 85%		68,0
TYPE OF COAT : Hardtop XP RAL 7038	AIR TEMP.:	> 5°C		13,6
PAINT BATCH NUMBER BASE: 3689831-1-*-1:2	STEEL TEMP.:	MIN. DEW P. +3°C.		13,4
PAINT BATCH NUMBER CURING AGENT: 3685294-1-*-1:2	DEW POINT :			7,9
NDFT: 60 µm	THICKNESS RESULT :			
Used paint:	N° OF READING:	MIN	(Range: -___/+___ of NDFT)	336
		AVERAGE	(Range: -___/+___ of NDFT)	400
RESULT : ACCEPTABLE ☑ NOT ACCEPTABLE ☐		MAX	(Range: -___/+___ of NDFT)	494

FOURTH LAYER

DATE : HOUR :	HUMIDITY :	< 85%		
TYPE OF COAT :	AIR TEMP.:	> 5°C		
PAINT BATCH NUMBER BASE:	STEEL TEMP.:	MIN. DEW P. +3°C.		
PAINT BATCH NUMBER CURING AGENT:	DEW POINT :			
NDFT: µm	THICKNESS RESULT :			
Used paint:	N° OF READING:	MIN	(Range: -___/+___ of NDFT)	0
		AVERAGE	(Range: -___/+___ of NDFT)	0
RESULT : ACCEPT. ☐ NOT ACCEPT. ☐ N.A. ☐		MAX	(Range: -___/+___ of NDFT)	0

DUST TEST : DUST QUANTITY RATE(1÷5):1 DUST PARTICLE SIZE (1÷5):1

TEST

NOTE:

REMAZEL G. Alber ☐W ☐R

DFT equipment : Thickness gauge Elcometer RE06311 Calibration on smooth surface (correction value=25 µm)

REMARKS:

REDATTO DA COMPILED FROM	ISPETTORE INSPECTOR	ISPETTORE INSPECTOR	CLIENTE CUSTOMER
Sea Metal S.r.l.	Data emissione 27/11/2024		ROSETTI MARINO SpA Michele Sacchi Quality Control Dept.
	Matteo Biancolillo Frosio Certified # 12558	Luca Tripoli Frosio Certified # 5402	

NACE # 35744
REVIEW 16-12-2024

SEA METAL SRL	PAINTING REPORT Rapporto di pitturazione	M 02 Rev. 02 del 12/05/2023		
		PR:	50/2024	Date: 22/11/2024

Customer:	Remazel	*Painting Procedure:*	24-27012-PP-001
Project :	Davit Crane	*Place of Activities:*	Sea Metal
Purchase order:	240005843	*Item:*	C09-0001-P0008+C09-0001-P0010+C09-0001-P0074+C09-0001-P0075+C09-0001-P0078

ITEM INSPECTED:

STEEL PREPARATION (ISO 8501-3 - GRADE Sa 2 1/2)	ACCEPTABLE	☑	NOT ACCEPTABLE	☐	NOT APPL.	☐	
VISUAL CHECK PRIOR TO BLASTING :	ACCEPTABLE	☑	NOT ACCEPTABLE	☐	NOT APPL.	☐	
CLEANING OF PIECE BEFORE BLASTING :	ACCEPTABLE	☑	NOT ACCEPTABLE	☐	NOT APPL.	☐	
SURFACE CLEANLINESS: (ISO 8501-1)	ACCEPTABLE	☑	NOT ACCEPTABLE	☐	NOT APPL.	☐	
SURFACE CLEANLINESS: (ISO 8502-3 RATING 2)	ACCEPTABLE	☑	NOT ACCEPTABLE	☐	NOT APPL.	☐	
ROUGHNESS : (profile : 75 µm - Medium G)	ACCEPTABLE	☑	NOT ACCEPTABLE	☐	NOT APPL.	☐	

Tape 1:	Tape 2:	Tape 3:

SALT TEST: (ISO 8502-6, ISO8502-9)	<30 mg/m²	ACCEPTABLE	☑	NOT ACCEPTABLE	☐	NOT APPL.	☐
Result 4,8 (mg/m²)	Result (mg/m²)	Result (mg/m²)		Result (mg/m²)			
VISUAL CHECK AFTER TO BLASTING :		ACCEPTABLE	☑	NOT ACCEPTABLE	☐	NOT APPL.	☐

EXPOSED EXTERIOR AND INTERIOR SURFACES:

FIRST LAYER

DATE : 22/11/24 HOUR : 9:00	HUMIDITY :	< 85%		66,2
TYPE OF COAT : Jotamastic 90 Alu	AIR TEMP.:	> 5°C		12,9
PAINT BATCH NUMBER BASE: 3674207-1-*-1:2	STEEL TEMP.:	MIN. DEW P. + 3 °C.		12,8
PAINT BATCH NUMBER CURING AGENT: 3650855-1-*-1:2	DEW POINT :			6,7
NDFT: 150 µm	THICKNESS RESULT :			
Used paint:	N° OF READING:	MIN	(Range: -___/+___ of NDFT)	150
RESULT : ACCEPTABLE ☑ NOT ACCEPTABLE ☐	30	AVERAGE	(Range: -___/+___ of NDFT)	180
		MAX	(Range: -___/+___ of NDFT)	206

SECOND LAYER

DATE : 25/11/24 HOUR : 9:00	HUMIDITY :	< 85%		67,5
TYPE OF COAT : Jotamastic 90 Alu	AIR TEMP.:	> 5°C		12,9
PAINT BATCH NUMBER BASE: 3405346-1-*-1:3	STEEL TEMP.:	MIN. DEW P. +3°C.		12,5
PAINT BATCH NUMBER CURING AGENT: 3650855-1-*-1:2	DEW POINT :			7,0
NDFT: 150 µm	THICKNESS RESULT :			
Used paint:	N° OF READING:	MIN	(Range: -___/+___ of NDFT)	294
RESULT : ACCEPTABLE ☑ NOT ACCEPTABLE ☐	30	AVERAGE	(Range: -___/+___ of NDFT)	335
		MAX	(Range: -___/+___ of NDFT)	396

THIRD LAYER

DATE : 26/11/24 HOUR : 9:30	HUMIDITY :	< 85%		68,0
TYPE OF COAT : Hardtop XP RAL 1023	AIR TEMP.:	> 5°C		13,6
PAINT BATCH NUMBER BASE: 3689831-1-*-1:2	STEEL TEMP.:	MIN. DEW P. +3°C.		13,4
PAINT BATCH NUMBER CURING AGENT: 3685294-1-*-1:2	DEW POINT :			7,9
NDFT: 60 µm	THICKNESS RESULT :			
Used paint:	N° OF READING:	MIN	(Range: -___/+___ of NDFT)	340
RESULT : ACCEPTABLE ☑ NOT ACCEPTABLE ☐		AVERAGE	(Range: -___/+___ of NDFT)	413
		MAX	(Range: -___/+___ of NDFT)	468

FOURTH LAYER

DATE : HOUR :	HUMIDITY :	< 85%		
TYPE OF COAT :	AIR TEMP.:	> 5°C		
PAINT BATCH NUMBER BASE:	STEEL TEMP.:	MIN. DEW P. +3°C.		
PAINT BATCH NUMBER CURING AGENT:	DEW POINT :			
NDFT: µm	THICKNESS RESULT :			
Used paint:	N° OF READING:	MIN	(Range: -___/+___ of NDFT)	0
RESULT : ACCEPT. ☐ NOT ACCEPT. ☐ N.A. ☐		AVERAGE	(Range: -___/+___ of NDFT)	0
		MAX	(Range: -___/+___ of NDFT)	0

DUST TEST : DUST QUANTITY RATE(1÷5):1 DUST PARTICLE SIZE (1÷5):1

TEST

NOTE:

DFT equipment : Thickness gauge Elcometer RE06311 Calibration on smooth surface (correction value=25 µm) ☐ W ☐ R

REMARKS:

REDATTO DA *COMPILED FROM*	ISPETTORE *INSPECTOR*	ISPETTORE *INSPECTOR*	CLIENTE *CUSTOMER*
Sea Metal S.r.l.	Data emissione: 27/11/2024		ROSETTI MARINO SpA Michele Sacchi Quality Control Dept. NACE #35744 Review 16-12-2024
Luca Tripoli Frosio Certified # 5402	Matteo Biancolillo Frosio Certified # 12558	Luca Tripoli Frosio Certified # 5402	

10 Commercial items

X-99001					
Description	**Model**	**Manufacturer**	**Q.ty**	**S/N**	**Certificate**
Hook	S319CN 5t Carbon Shank Hook	CROSBY	1	1028550	CC8-2024112700053
Wire Rope	35xK7	SIRTEF	4	654/24	18455/24
Slew bolts	HEX.HEAD SCREW	VIPA	32	V2N01586	1061/24
Translation Gearbox	G MR ICI 80 UO3A 52 B3	ROSSI	1	8425792	2763177
Lifting Gearbox	G MR 140 U03D 40,6 B3	ROSSI	1	8425678	2763176
Rotation Gearbox	ET3065/MR/208.2/6110460069 0V5	DANA	1	7017447	QCMAT31TT0
Rotation Electrical Motor	BAH 100 LB4	MGM	1	24451509	\
Hoisting Electrical Motor	BAHK2E 132 MC4	MGM	1	24451424	\
Translation Electrical Motor	BAH 90 SA	MGM	1	24451337	\
Load Cell	PRN 4000kg	PAVONE SISTEMI	4	202415225	321386

COMPANY WITH
QUALITY SYSTEM
CERTIFIED BY DNV GL
= ISO 9001 =

Crosby Europe N.V.
Leuvensebaan 51
2580 Putte (Mechelen) Belgium
www.thecrosbygroup.com

Certificate of Conformance

Certificate Number: CC8-2024112700053
Location of Issue: SIRTEF S.r.l.
Via dei Lavoratori 1, Zona Industriale di Calvignasco
Calvignasco (MI), I-20080 Italy
Phone: +39 02 90 059 273 Fax: +39 02 90 059 258

Stock No: 1028550
Description of Gear: S319CN 5t Carbon Shank Hook (JC)
Working Load Limit: 5t | Max. Allowed Proof Load: 10t
t indicates metric tons
Comments: 5:1 Design Factor.
Note: Meets the requirements of ASME B30.10 - Hooks
Has not been contaminated by Mercury or Asbestos in the manufacturing process.
Number of Pieces: 1 Hook: 5WB
PICs are based on visual observation
Certificate based on item being the Crosby product described above.

Mentioned products are in conformity to the Crosby literature available at the time of manufacture. We hereby certify that the above described material was manufactured and processed in a manner compatible to meeting the specified load ratings when used under normal and proper applications. This product at the time of manufacture does not contain any ozone-depleting substances.

This product at the time of manufacture does not exceed the threshold for any of the hazardous listed chemicals in Appendix 1 of MEPC.269(68) 2015 Guidelines.

For Product Delivered To: REMAZEL Engineering S.p.A.
Viale Bianca Maria 25
MILANO (MI) 20122

Supplier (Distributor) Order Number: **4125**
Customer (User) Order Number: **24005969**

Date: November 27, 2024
Date of Issuance

Signature: Lillemor Hjalmefjord
Lillemor Hjalmefjord, Quality Assurance

Robbie x CROSSWIND
27/11/24 R

Crosby CERT PRO

Scanned image of original Material Chemistry Report for

Hook of S319CN 5t Carbon Shank Hook (JC) with PIC: 5WB and Heat #: 58037678

THIS MATERIAL CERTIFICATE DOCUMENT MEETS THE REQUIREMENT OF INSPECTION CERTIFICATE "TYPE 3.1" PER EN 10204

KREHER STEEL COMPANY, LLC.

CROSBY-LEBUS MFG.
HOT ROLLED ROUNDS PCS 1035
1.8750 X 17.5000"
PART NO. 1506693

PO/Rel P065328

I hereby certify that this data is correct as contained in the records of this company.
I hereby certify that no mercury came in contact with or no weld repair was done to this product while in our possession.
Attn:

Certificate of Mill Test Results

SO 1 -330644-001 22Feb19 Pg 1/1

CERTIFIED MATERIAL TEST REPORT

Page 1/1

GERDAU

US-ML-MIDLOTHIAN
300 WARD ROAD
MIDLOTHIAN, TX 76065
USA

CUSTOMER SHIP TO	CUSTOMER BILL TO
SPECIAL METALS INC 6406 S EASTERN AVE OKLAHOMA CITY,OK 73149-5134 USA	KREHER STEEL CO LLC 1550 N 25TH AVE MELROSE PARK,IL 60160-1801 USA

GRADE	SHAPE / SIZE	DOCUMENT ID:
1035RAF	Round Bar / 1 7/8"	0000504562

LENGTH	WEIGHT	HEAT / BATCH
23'02"	41,325 LB	58037678/04

SALES ORDER	CUSTOMER MATERIAL N°
7356230/000010	B HOT

SPECIFICATION / DATE or REVISION
ASTM A29-16
ASTM A576-90B(2012)

CUSTOMER PURCHASE ORDER NUMBER	BILL OF LADING	DATE
56385	1327-0000314670	03/12/2019

CHEMICAL COMPOSITION

C %	Mn %	P %	S %	Si %	Cu %	Ni %	Cr %	Mo %	Sn %	V %	Nb %	Al %
0.36	0.71	0.009	0.009	0.26	0.22	0.08	0.13	0.009	0.004	0.002	0.000	0.033

CHEMICAL COMPOSITION.

Ti %	B %
0.001	0.0006

GEOMETRIC CHARACTERISTICS
R:R
153

METALLURGICAL CHARACTERISTICS

FinsGr	E381 S	E381 R	E381-C	E45M-C S	E45M-C O
OK	1	1	1	0	0

HARDENABILITY
DI A255
Inch
1.12

COMMENTS / NOTES

CG-L-3

The above figures are certified chemical and physical test records as contained in the permanent records of company. We certify that these data are correct and in compliance with specified requirements. This material, including the billets, was melted and manufactured in the USA. CMTR complies with EN 10204 3.1.

BHASKAR YALAMANCHILI
QUALITY DIRECTOR
Phone: (409) 267-1071 Email: Bhaskar.Yalamanchili@gerdau.com

WADE LUMPKINS
QUALITY ASSURANCE MGR
Phone: 972-779-3118 Email: Wade.Lumpkins@gerdau.com

Doc No. 1-

Joshua x CROSSWIND
27/11/24

QUALITY CONTROL

RAPPORTO DI PROVA N. *Test Report No.*	24/1886RP01	DATA *Date*	22/11/2024	CAMPIONE N. *Sample No.*	---	PAGINA *Page*	1	DI *of*	3

Laboratory of Medolago, Via Roma 79 - 24030 Medolago (BG) t.+39 035 901473 e-mail:info@qualitycontrolgroup.com website: www.qualitycontrolgroup.com

ORDINE / *Order* 2617
Data ordine / Order date 19/11/2024

RIFERIMENTO / *Reference* *3977/BM*
Data riferimento / Reference date *15/11/2024*

DATA DI RICEZIONE *Reception date* 20/11/2024

CLIENTE / Customer

SIRTEF S.r.l.
Via dei Lavoratori, 1 – Zona Industriale
20080 Calvignasco (MI)

DATA DI ACCETTAZIONE *Acceptance date* 20/11/2024

OGGETTO 100% Controllo UT e MT
Subject *100% UT & MT examination*

ELENCO DELLE PROVE / List of tests	Metodo / *Method*	Saggio / *Test*	Pagina / *Sheet*
Controllo mediante ultrasuoni *Ultrasonic examination*	EN 10228.3	-	2
Controllo magnetoscopico *Magnetic particle examination*	EN 10228.1	-	3
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-

Alessandro Donadoni Vice Direttore Tecnico / Technical Deputy Manager

La firma digitale o la firma autografa sul rapporto certifica la sua validità. L'originalità del rapporto è garantita dalla tracciabilità nel sistema PEC utilizzata per la sua consegna al cliente / *The digital or hand-written signature on report certifies its validity. The originality of the relationship is guaranteed by the traceability of the PEC system used for delivery to customer.*
La regola decisionale utilizzata dal laboratorio quando fornisce dichiarazioni di conformità a norme o specifiche è riportata nel sito web www.qualitycontrolgroup.com / *The decision rule used by the laboratory when providing declarations of compliance with standards or specifications is shown in www.qualitycontrolgroup.com website.*
Il campionamento è effettuato dal cliente; i risultati delle prove si riferiscono al campione così come ricevuto / *Sampling is carried out by the customer; test results refer to the sample as received.*
Il laboratorio è responsabile di ogni informazione riportata nel presente rapporto di prova ad eccezione delle informazioni fornite dal cliente rispetto alle quali declina ogni responsabilità / *The laboratory is responsible for any information reported in this report except for the information provided by the customer with the respect to which it disclaims any responsibility.*

CARATTERISTICHE DEL CAMPIONE DICHIARATE DAL CLIENTE / Features of sample declared by customer

	Descrizione *Description*	Dimensioni *Dimension*	Fornitore *Supplier*	Colata/Lotto *Heat/Lot*	Certificato *Certificate*	Data *Date*
Parent material	-	-	-	-	-	-

Other features
No.1 CROSBY SHANK HOOK S 319-C
SWL 5 T. S.N.1028550
SIRTEF JOB: 4125

Il presente rapporto di prova riguarda esclusivamente il campione esaminato, non può essere riprodotto neanche parzialmente senza l'autorizzazione del Laboratorio ed è conservato in copia conforme all'originale nell'archivio del Laboratorio. I tempi di conservazione dei rapporti, dei documenti e delle parti dei saggi e delle provette sono riportate nel sito web www.qualitycontrolgroup.com / *This test report only concerns the examined sample, it can not be even partially reproduced without the authorization of the Laboratory and his certified copy is stored in the original in the archive of the Laboratory. The storage times of reports, documents and parts of the sample and the test piece are shown in www.qualitycontrolgroup.com website.*

Tutte le prove riportate nelle pagine seguenti sono state eseguite presso SIRTEF S.r.l.
All tests reported in the following pages were carried out at SIRTEF S.r.l.

Robbi x CROSSWIND
27/11/24

Ente di Collaudo / Surveyor Ente di Collaudo / Surveyor

Laboratory of Medolago, Via Roma 79 - 24030 Medolago (BG) t.+39 035 901473 e-mail:info@qualitycontrolgroup.com website: www.qualitycontrolgroup.com

ESAME MEDIANTE ULTRASUONI
ULTRASONIC EXAMINATION

Specifica di riferimento *Reference standard*	-
Criterio di accettabilità *Acceptance criteria*	EN 10228.3 cl.3
Stadio di lavorazione *Working step*	FINITO / FINISHED
Condizioni superficiali *Surface conditions*	GRILLO/GREEN PIN MOLATO (Grinded) PERNO/PIN VERNICIATO (painted)

Strumento utilizzato */ Instrument used*

Costruttore/Manufacture	Tipo/Type	Nr.Serie/SN	Ident Q.C.
GE TECHN.	USM GO	10010308	SA 135

Blocco di riferimento *Reference block*

☒ IIW V1 ☐ IIW V2

Riflettore di riferimento *Reference reflector*

☐ BW Amp. 80% ☒ FBH 3 mm Amp. 80% ☐ SDH 2.5 mm Amp. 80% ☒ Intaglio Notch Tipo type ret Profondità Depth 5 %sp. %Thk Amp. 80%

Accoppiante / ***Couplant***

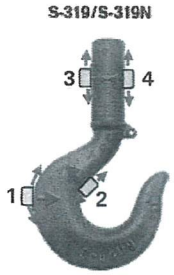
☐ Acqua / Water ☐ Glicerina / Glycerin ☒ Gel ☐ Cellulosa / Tylose

Sonde utilizzate, posizione di scansione / ***Search units used and scanning position***

Costruttore *Manufacturer*	Tipo *Type*	Dimensioni *Dimensions*	Numero di serie *Serial Number*	Tipo e lunghezza cavo *Type and length of cable*	1	2	3	4	5	6	7
S&T	SDUT 4P3,5x10	Ø10	160123	Coaxiale L= 2000 mm	X	X	X	X			

La tabella soprastante fa riferimento alle posizioni di scansione indicate nello schizzo sotto / The above matrix referes to the scanning position number showed on the sketch below

Schizzo posizioni di scansione / Scanning position sketch



Fabbro x Cantiere
27/11/24 R

Regolazione Strumenti / Instruments setting

Sonda *Search unit*	SDUT 4P3,5x10	Sonda *Search unit*	Sonda *Search unit*
Pos. di scansione nr. *Scanning position No.*	1-2-3-4	Pos. di scansione nr. *Scanning position No.*	Pos. di scansione nr. *Scanning position No.*
Scala / *Range*	120	Scala / *Range*	Scala / *Range*
Ritardo / *Delay*	10164 µs	Ritardo / *Delay*	Ritardo / *Delay*
Guadagno / *Gain*	59,1 dB	Guadagno / *Gain*	Guadagno / *Gain*
Rip. Imp. / *PRF*	500 Hz	Rip. Imp. / *PRF*	Rip. Imp. / *PRF*
Damping	1000 Ohm	Damping	Damping
Soglia / *Reject*	0	Soglia / *Reject*	Soglia / *Reject*
Banda / *Band*	4 Mhz	Banda / *Band*	Banda / *Band*

RISULTATI/*Result* L'esame NON ha evidenziato indicazioni rilevanti / *Examination has not shown relevant indication*

Dichiarazione di conformità
La superficie esaminata risulta conforme ai requisiti previsti dalle norme di accettabilità summenzionate
Statement of Conformity
The examined surface comply with the requirements of the acceptability standards mentioned above

Data inizio prova *Test start date*	Data fine prova *Test end date*	Tecnico qualificato *Qualified technician*	Apparecchiatura *Equipment*
21/11/2024	21/11/2024	Cortinovis Andrea Liv.2 - ISQ9712 IIºLiv. SNT-TC-1A RT - MT - UT	---

Ente di Collaudo / Surveyor | Ente di Collaudo / Surveyor

Laboratory of Medolago, Via Roma 79 - 24030 Medolago (BG) t.+39 035 901473 e-mail:info@qualitycontrolgroup.com website: www.qualitycontrolgroup.com

ESAME MAGNETOSCOPICO - UNI EN 10228.1

MAGNETIC PARTICLE INSPECTION - UNI EN 10228.1

Specifica di riferimento *Reference standard*	------
Criterio di accettabilità *Acceptance criteria*	UNI EN 10228.1 Lev.3
Stadio di lavorazione *Working step*	FINITO / FINISHED
Condizioni superficiali *Surface conditions*	GRILLO/GREEN PIN MOLATO (Grinded) - PERNO/PIN VERNICIATO (painted)

TECNICA / *TECHNIQUE*

	■ Giogo *Yoke*	□ Puntali *Prods*	□ Bobina *Coil*	□ Contatto diretto *Direct contact*	□ Condut. centrale *Central conductor*
Tipo di corrente *Current type*	■ CA AC □ CC DC	□ CA AC □ CC DC	□ CA AC □ CC DC	□ CA AC □ CC DC	□ CA AC □ CC DC
Intensità *Intensity*	Non applicabile *Not applicable*	A	A-spire *A-turns*	A	A
Strumento *Equipment*	TWIST YOKE				
Nr. di serie *Serial number*	SA104				
Dimensioni *Size*	Distanza poli *Pole spacing* 180 mm	Distanza puntali *Prod spacing* mm	Diametro bobina *Coil diameter* 350 mm		
Altro *Other*	Verificato potere di sollevamento a *Lifting power verified at* 4,5 Kg				

RIVELATORE *MEDIUM*		□ Secco *Dry*	■ Umido *Wet*		
Produttore *Manufacturer*	NDT ITALIANA	**Tipo** *Type*	FW1 (batch 160218s)	**Colore** *Colour*	NERO
Strumento di illuminazione / *Lighting equipment*	Bulb Lamp				
Intensità di luce sulla superficie / *Light intensity on the surface*	≥1100 Lux				

ALTRI STRUMENTI UTILIZZATI / *OTHER USED EQUIPMENTS*

	Produttore / *Manufacturer*	**Tipo** / *Type*	**Nr. di serie** / *Serial nr.*
Indicatore / *Field indicator*	NDT Italiana	INDICATORE DI CAMPO OTTOGONALE	1009113 (SA169)
Luxmetro/Radiometro / *Radiometer*	Delta Ohm	Delta Ohm HD2302.0	16001682 (SA136)

☒ CONFORME *Conform* ☐ NON CONFORME *Not Conform*

Discontinuità rilevate / *Detected discontinuities:* Nessuna discontinuità rilevata / *absence of surface discontinuities*

NOTE: Magnetismo residuo zero
residual magnetism zero

Risultato / ***results*** ***CONFORME*** / ***conform***

Data inizio prova / *Test start date* **21/11/2024** Data fine prova / *Test end date* **21/11/2024** Tecnico qualificato / *Qualified technician* **Cortinovis Andrea** *Liv.2 - ISO9712 / Liv. SNT-TC-1A RT - MT - UT* Apparecchiatura / *Equipment* ---

FINE RAPPORTO / *END REPORT*

Ente di Collaudo / Surveyor

Ente di Collaudo / Surveyor

CROSSWIND

27/11/24

Certificate of Conformity

SIRTEF s.r.l.
20080 Calvignasco (MI) - Via dei Lavoratori, 1

Dichiarazione di conformità CE in accordo al D.Lgs 17/2010 e alla direttiva 2006/42/CE
Declaration EC of conformity according to D.Lgs 17/2010 and directive 2006/42/EC

Calvignasco,	17-12-24
Certificato / Certificate	20643/24
DdT / Document Num.	4408/BM
Ordine / Purchase Order	24007371

Cliente / Customer
REMAZEL Engineering Spa
Via Carlo Ottavio Cornaggia, 10
20123 MILANO (MI)

QUANTITÀ / QUANTITY	m.	107
BOBINA / REEL	N.	1331
DIAMETRO NOMINALE / NOMINAL DIAMETER	mm.	10,000
MASSA NOMINALE/ NOMINAL WEIGHT	kg/mt	0,490
RIVESTIMENTO / COATING		GALVANIZED LUBRICATED
PREFORMAZIONE / PREFORMED		NO
FORMAZIONE / CONSTRUCTION		VEROTOP
AVVOLGIMENTO / TYPE OF LAY		RHLL
RESISTENZA DEI FILI / TENSILE STRENGTH	N/mmq	1.960,000
CARICO DI ROTTURA MINIMO / M.B.L.*	kN	95,400
NORMA RIFERIMENTO / STANDARD		EN 12385-4 / EN 13411-4

NOTE / REMARKS POS 1 Cod. 002-0011-C1956 CSS 299 AT ONE END ONLY

*M.B.L.: Minimum Breaking Load

I Prodotti forniti sono marcati in accordo alle normative tecniche di riferimento.
The products supplied are marked according to the reference technical standards.

DICHIARAZIONE CE DI CONFORMITÀ / CE DECLARATION OF CONFORMITY

Si dichiara che il materiale descritto risponde ed è conforme alla vigente Direttiva Comunitaria Macchine 2006/42/CE. Si segnala inoltre che non ne è consentito un utilizzo diverso da quello indicato nelle istruzioni di assemblaggio ed utilizzo consultabili al sito internet www.sirtef.it. Il fascicolo tecnico è disponibile presso la nostra sede.
We declare under our sole responsibility that the product to which this declaration relates is in conformity with the regulation of 2006/42/CE. It is a precondition to put it into service that the instructions for use has been read and understood. Instructions for use available on our site www.sirtef.it for your convenience. The relevant technical documentation is available upon request.

Questo prodotto al momento della manifattura non eccede le soglie massime di nessuna delle sostanze chimiche pericolose contenute nel documento MEPC.269(68) 2015 Appendice 1
This product at the time of manufacture does not exceed the threshold for any of the hazardous listed chemicals in Appendix 1 of MEPC.269(68) 2015 Guidelines.

SIRTEF s.r.l
General Manager
Dott. M. Martucci

Member of CISQ Federation RINA CERTIFIED MANAGEMENT SYSTEM ISO 9001

Si dichiara inoltre che SIRTEF S.r.l. opera in conformità ai requisiti del proprio sistema di qualità Aziendale, realizzato in accordo alla normativa EN ISO 9001-2015 di riferimento.
We also declare that SIRTEF S.r.l. operates in compliance with the requirements of its corporate quality system, created in accordance with the reference standard EN ISO 9001-2015

INSPECTION CERTIFICATE 3.1

This certificate is issued in accordance with: EN 10204 3.1
Certificato emesso in accordo a: EN 10204 3.1

SIRTEF

Client / Cliente:

REMAZEL ENGINEERING
Via Caboto, 26
34147 TRIESTE (TS)

Spett.
REMAZEL Engineering Spa
Via Carlo Ottavio Cornaggia, 10
20123 MILANO (MI)

No. 20643/24	Data: 17/12/2024

Descrizione / Description	POS 1 Cod. 002-0011-C1956 CSS 299 AT ONE END ONLY
Specifiche Cliente / Customer specification	POS 1 Cod. 002-0011-C1956

Ordine Num./ PO No.	24007371
DDT / delivery note	4408/BM

Bobina No.	**1331**
Reel No.	

Articolo / Article	HFAZD10RALLA
Diametro Nominale / Nominal Diameter	mm 10
Peso al metro / Weight per meter	Kg/m 0,490
Finitura filo elementare / surface Finish of wire	GALVANIZED LUBRICATED
Lubrificazione / Lubrication	A4
Formazione / Construction	VEROTOP
Preformazione / Preforming	NO
Avvolgimento / Type of lay	RHLL
Materiale fili / Wire Material	EN 10264-2
Resistenza dei fili / Rope grade	N/mmq 1960
Carico di rottura Minimo / Min. Breaking Load	kN 95,400
Gruppo RCN / RCN class	

Specifiche di fornitura / Supply specification	
Lunghezza Fune / Rope length	107
Applicazioni / application	CSS 299 AT ONE END ONLY ID. CD0991
Efficienza terminazione / termination efficiency	Testa fusa / Socketing = 100 % of/di MBF
	Pressatura / swaging = 90 % of/di MBF

Extra / Extra requirement	
Carico di rottura effettivo / Actual breaking load	kN
Diametro effettivo / Actual diameter	mm 10,40
Marcature aggiuntive / additional Marking	SIRTEF 20643/24-1

SIRTEF s.r.l
General Manager
Dott. M. Martucci

Via dei Lavoratori, 1
20080 Calvignasco (MI) - Zona Industriale
Tel.: 0290059273 (6 linee ric. aut.) - Telefax 0290059258
Filiale di Roma: Via Libero Leonardi, 4 - 00173 ROMA - Tel. 06266098 - Fax. 062677606
Filiale di Udine: Via G. D'Annunzio, 9/8 - Loc. Crosada - 33050 S.Maria La Longa (UD)
Tel. 0432.685022 - Fax. 0432685033

verope
rely on

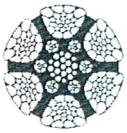
Certificate

Sirtef Srl
Zona Industriale
Via dei Lavoratori 1
IT-20080 Calvignasco

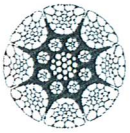
Ship-to:
Sirtef Srl
Zona Industriale
Via dei Lavoratori 1
IT-20080 Calvignasco

Your Reference: P.O.N.19.736
Our Reference: AB36404
Invoice No: 48046

Zug, 09.03.18

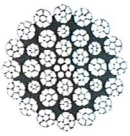


Serial No: 328966
N° Série, Serie-Nr., Numéro de serie, Numero di lotto



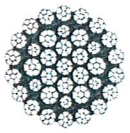
Reel No: 3100-5
N° bobine, Rollen Nr., Bobina numéro, Bobina numero

Product: Verotop, 10mm, galv. 1960, RHLL
Produit, Produkt, Producto, Articolo

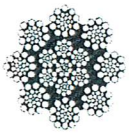


Construction:
Construction, Konstruktion, Construcción, Costruzione

Your Article No.: AAZWT3710D
Votre numéro d'article, Ihre Artikel Nr., Su número de articulo, Vostro codice articolo

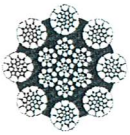


Length: 3'000 M
Longueur, Länge, Longitud, Lunghezza



Minimum Breaking Load: 95.4 kN
Charge de rupture minimale, Mindest Bruchkraft, Carga mínima de rotura, Carico minimo di rottura

Calculated Breaking Load: 113.6 kN
Charge de rupture calculée, Rechnerische Bruchkraft, Carga calculada de rotura, Carico di rottura calcolato



Actual Breaking Load: 97.3 kN
Charge de rupture à l'essai, Effektive Bruchkraft, Carga de rotura actual, Carico di rottura effettivo

Wgt per m: 0.490 kg
Poids métrique, Gewicht pro Meter, Peso por metro, Peso al metro



Test Date: 21.12.17
Date d'essai, Test Datum, Fecha de la prueba, Data collaudo

Production Reference:
Référence de production, Produktions-Referenz, Referencia de producción, Riferimento di produzione

Remarks: Ends: fused and tapered
Actual diam: 10.31mm
Remarques, Bemerkungen, Observaciones, Commenti

CE

The certificate was issued in accordance with DIN EN 10204 3.1
Ce certificat est établi conformément la norme DIN EN 10204 3.1
Dieses Zertifikat wurde erstellt aufgrund der Bestimmungen von DIN EN 10204 3.1
Este certificado fué expedido en concordancia con la norma DIN EN 10204 3.1
Questo certificado è stato emesso in accordo alla norma DIN EN 10204 3.1

verope
St. Antons Gasse 4a
CH-6300 Zug ZG
Switzerland
Tel: +41 41 72 80 880

Signature
Pierre Verreet
CEO

KISWIRE
25, Hamansandan 4-gil, Gunbuk-myeon, Haman-gun, Gyeongsangnam-do, 52061, Korea
TEL:+82-55-583-0475 FAX:+82-55-585-0475 www.kiswire.com

INVOICE NO. CW-7122/10 DATE *Jan. 10, 2018*

MILL TEST CERTIFICATE

THIS IS TO CERTIFY THAT THE MATERIAL DESCRIBED BELOW WAS MANUFACTURED IN ACCORDANCE WITH KISWIRE LTD SPECIFICATION AND APPLICABLE SECTIONS OF BUYER SPEC (1960 N/sq.mm)

TO MESSRS VEROPE AG

MATERIAL DESCRIPTION VEROTOP (GALVANIZED)

3000 M X 1 REEL

EX NO. CW-7122/10

ORDER NO. 3100 REEL NO. 5 SAMPLING NO. 5

DIAMETER OF ROPE 10.00 mm TYPE OF CORE

ACTUAL DIAMETER 10.30 - 10.36 mm

SPECIFIED BREAKING LOAD 95.4 kN SAMPLE BROKE AT 97.3 kN

WT. OF ZINC COATING OF OUTER WIRE MIN. 68.000 g/㎡

ROPE LAY RHLL LAY LENGTH 64.68 mm

LUBRICATION A-4

Tested following ASTM A 931

CHEMICAL ANALYSIS OF WIRE ROD

CHARGE NO.	C X 100	Si X 100	Mn X 100	P X 1000	S X 1000
M47485	83	19	49	13	4

DATE OF SAMPLE TEST *Dec. 21, 2017*

Kang . S . H

Approved by Q.C Manager S.H.KANG
KISWIRE LTD., KOREA

ABS KR NK. G.Lloyd's DNV L.R BV

Declaration of compliance with the order

EN 10204 Type 2.1

ROPEBLOCK

Certificate no. : **C00-33887**

General information

Customer	: Sirtef S.R.L.	Ropeblock sales order no.	: 225062
Purchase order no.	: 29991		
P.O. date	: Nov-2022		
Quantity	: 10		

Ropeblock Product information

Ropeblock article code : CSS 299.GAL

Description : Galvanised closed spelter socket, quenched and tempered cast steel, no. 299.
For wire rope ø14-16mm (9/16"-5/8"). MBL 25 mT.

Description	Quantity	Heat No. / Marking	Remarks
Closed spelter socket	9	CD0991	
Closed spelter socket	1	CD1085	

We hereby certify that:

The above mentioned product is in accordance with the requirements of the sales order confirmation

EC:

The undersigned certifies on behalf of his company, that the above mentioned product is correct and that the intended hoisting equipment or application continued can be declared according the regulations of the Machine Directive2006/42/EC, appendix II-A or II-B, after assembly. Products must not be put in service until the final application has been declared in conformity with the provisions in the2006/42/EC directive.

Reference standards, used (partly or as whole) where applicable and considered state of the art:

- EN 13001, 13135, 13411, 818, 1677, 13889
- ISO 4301, 4308, 8087, 3189, 9927, 17558
- NEN 3318, NEN 3320, 3508, 3305, 2729
- Standards and rules as mentioned in the contract and/ or drawings.
- DIN 15400, 15401, 15402, 15018, 15020, 15061, 15063, 82017
- FEM 1.001, 5.004
- US Fed. Spec. RR-S550D, RR-C-271

Signed for and on behalf of Ropeblock B.V. / The Netherlands

Name: G. Boevenbrink / Quality Manager

Date: 09-Jan-2023

Inspection Certificate

EN 10204 - 3.1

ROPEBLOCK

Description	Material	Heat No. / Marking
CSS 299	A352 Gr.LCC	CD0991

Mechanical Properties

Heat No. / Marking	R_m (Tensile strength) (N/mm²)	R_e (Yield) (N/mm²)	A (Elongation) (%)	Z (Reduction of area) (%)	Impact test (ISO V)		Hardness (HB)
					T (°C)	(J)	
CD0991	575	345	28	57	-40	56-58-57	157

Chemical Analysis

Heat No. / Marking	C %	Si %	Mn %	S %	P %	Ni %	Cr %	Mo %	Cu %	Va %	Nb %
CD0991	0,19	0,453	1,2	0,021	0,011	0,108	0,029	0,008	0,239	0,002	

Remarks

MT/UT: Satisfactory, free of internal cracks/ seperations which may effect utilization.

We hereby certify that:

- The reported values are strictly in accordance with the original mill certificates.

Signed for and on behalf of Ropeblock B.V. / The Netherlands

Name: G.Boevenbrink / Quality Manage

Date: 27-9-2022

4.811/6

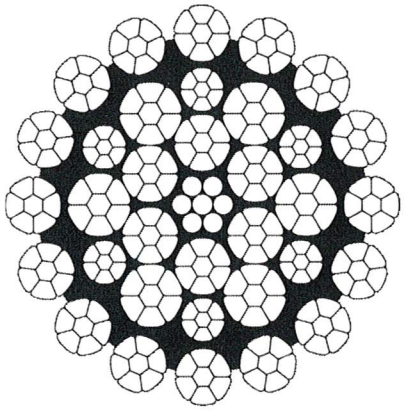
SIRTEF UNI EN ISO 9001:2015 with Rina Service Certificates n° 666/97/S	TRADE OF STEEL WIRE ROPES, FIBRE BELTS AND ROPES, ALLOY STEEL ACCESSORIES, H.R. CHAINS. PRODUCTION OF STEEL WIRE SLINGS AND WEBBING SLINGS. LIFTING MATERIALS TESTING AND INSPECTION. TRAINING COURSES DEDICATED TO THE USE AND MAINTENANCE OF ROPES AND LIFTING ACCESSORIES Web site: https://www.sirtef.it		Nr Document **16/R/2025**
	FUNI DI ACCIAIO: CERTIFICATO DI PROVA Steel Wire Rope: Test Certificate		Foglio - Sheet
	Module Nr: QA/200	date: 27/06/2023 Rev 00	**1 - 1**

CLIENTE Customer	REMAZEL Engineering S.p.A.	COMMESSA SIRTEF Sirtef Job	4875
ORDINE CLIENTE Customer Order	24007371	NUMERO DI PRATICA ENTE TERZO Third party file no.	-

DESCRIZIONE Description	Cod. 002-0011-C1956 Nr. 1 Galvanized steel wire rope VEROTOP D. 10 mm. res. 1960 N/mm² RHLL MBL 95,4 kN with CSS 299 (Batch: **CD0991**) at one end, other end free. L=107 m.

DATI DELLA FUNE
Rope data

BOBINA Reel	1331
DIAMETRO NOMINALE Nominal diameter	10 mm.
FINITURA FILO ELEMENTARE Surface finish of wire	ZINCATA LUBRIFICATA / Galvanized lubricated
LUBRIFICAZIONE Lubrication	A4
FORMAZIONE Construction	Verotop (class 35xK7)
PREFORMAZIONE Preforming	NON PREFORMATA / Not preformed
AVVOLGIMENTO Type of Lay	PARALLELO DESTRO / RHLL
MATERIALE FILI Wire material	EN 10264-2
RESISTENZA DEI FILI Rope grade	1960 N/mm²
CARICO DI ROTTURA MINIMO Minimum breaking load	95,4 kN
CERT. DEL PRODUTTORE Manufacturer certificate	VEROPE N.328966 reel n.3100-5 dated 06.10.2017



MARCATURE Marking	SIRTEF CE 20643/24

DATI RILEVATI - Recorded data

DIAMETRO RILEVATO (1/10 M.B.L.) Actual diameter (1/10 M.B.L.)	10,2 mm.
CARICO DI ROTTURA EFFETTIVO Actual breaking strenght	107,2 kN

STRUMENTI UTILIZZATI – Instrument used

STRUMENTO Intrument	BANCO PROVA MPT 01 Test bench MPT 01	CALIBRO DIGITALE CA 01 Digital caliper CA 01	BINDELLA METRICA BM 01 Rule BM 01
CERT. TARATURA Calibration cert.	TMT 42984 dated 16/01/2025	Calibration card January 2025	Initial calibration

NOTE Remark	

ESITO DELLE PROVE – Test outcome

☒ CONFORME - COMPLIANT	☐ NON CONFORME – NON-COMPLIANT

DATA Date	RESPONSABILE C.Q. Quality Manager	ISPETTORI Inspector
28/01/2025	SIRTEF S.r.l. BERTOLOTTI Albert Quality Control	Fabio x CROSSWIND 28/1/25

Il presente documento è di proprietà esclusiva della ditta SIRTEF S.r.l. Tale documento non può essere modificato in nessuna sua parte né può essere usato diversamente per lo scopo per cui è stato creato senza permesso scritto della ditta stessa.
This document is the exclusive property of SIRTEF S.r.l. This document cannot be modified in any part nor can it be used otherwise for the purpose for which it was created without the written permission of the company itself.

verope
rely on

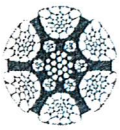
Certificate

Sirtef Srl
Zona Industriale
Via dei Lavoratori 1
IT-20080 Calvignasco

Ship-to:
Sirtef Srl
Zona Industriale
Via dei Lavoratori 1
IT-20080 Calvignasco

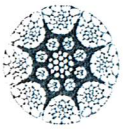
Your Reference: P.O.N.19.736
Our Reference: AB36404
Invoice No: 48046

Zug, 09.03.18



Serial No: 328966
N° Série, Serie-Nr., Numéro de serie, Numero di lotto

Reel No: 3100-5
N° bobine, Rollen Nr., Bobina numéro, Bobina numero



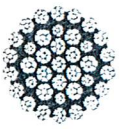
Product: Verotop, 10mm, galv. 1960, RHLL
Produit, Produkt, Producto, Articolo

Construction:
Construction, Konstruktion, Construcción, Costruzione



Your Article No.: AAZWT3710D
Votre numéro d'article, Ihre Artikel Nr., Su número de articulo, Vostro codice articolo

Length: 3'000 M
Longueur, Länge, Longitud, Lunghezza



Minimum Breaking Load: 95.4 kN
Charge de rupture minimale, Mindest Bruchkraft, Carga mínima de rotura, Carico minimo di rottura

Calculated Breaking Load: 113.6 kN
Charge de rupture calculée, Rechnerische Bruchkraft, Carga calculada de rotura, Carico di rottura calcolato



Actual Breaking Load: 97.3 kN
Charge de rupture à l'essai, Effektive Bruchkraft, Carga de rotura actual, Carico di rottura effettivo

Wgt per m: 0.490 kg
Poids métrique, Gewicht pro Meter, Peso por metro, Peso al metro



Test Date: 21.12.17
Date d'essai, Test Datum, Fecha de la prueba, Data collaudo

Production Reference:
Référence de production, Produktions-Referenz, Referencia de producción, Riferimento di produzione

Remarks: Ends: fused and tapered
Actual diam: 10.31mm
Remarques, Bemerkungen, Observaciones, Commenti

CE

The certificate was issued in accordance with DIN EN 10204 3.1
Ce certificat est établi conformément la norme DIN EN 10204 3.1
Dieses Zertifikat wurde erstellt aufgrund der Bestimmungen von DIN EN 10204 3.1
Este certificado fué expedido en concordancia con la norma DIN EN 10204 3.1
Questo certificado è stato emesso in accordo alla norma DIN EN 10204 3.1

verope
St. Antons Gasse 4a
CH-6300 Zug ZG
Switzerland
Tel: +41 41 72 80 880

Signature
Pierre Verreet
CEO

TRUE COPY
OF THE ORIGINAL
SIRTEF S.r.l.

28/1/25 R

KISWIRE
25, Hamansandan 4-gil, Gunbuk-myeon, Haman-gun, Gyeongsangnam-do, 52061, Korea
TEL:+82-55-583-0475 FAX:+82-55-585-0475 www.kiswire.com

INVOICE NO. CW-7122/10 DATE *Jan. 10, 2018*

MILL TEST CERTIFICATE

THIS IS TO CERTIFY THAT THE MATERIAL DESCRIBED BELOW WAS MANUFACTURED IN ACCORDANCE WITH KISWIRE LTD SPECIFICATION AND APPLICABLE SECTIONS OF BUYER SPEC (1960 N/sq.mm)

TO MESSRS VEROPE AG

MATERIAL DESCRIPTION VEROTOP (GALVANIZED)

3000 M X 1 REEL

EX NO. CW-7122/10

ORDER NO. 3100 REEL NO. 5 SAMPLING NO. 5

DIAMETER OF ROPE 10.00 mm TYPE OF CORE

ACTUAL DIAMETER 10.30 - 10.36 mm

SPECIFIED BREAKING LOAD 95.4 kN SAMPLE BROKE AT 97.3 kN

WT. OF ZINC COATING OF OUTER WIRE MIN. 68.000 g/㎡

ROPE LAY RHLL LAY LENGTH 64.68 mm

LUBRICATION A-4

Tested following ASTM A 931

CHEMICAL ANALYSIS OF WIRE ROD

CHARGE NO.	C X 100	Si X 100	Mn X 100	P X 1000	S X 1000
M47485	83	19	49	13	4

DATE OF SAMPLE TEST *Dec. 21, 2017*

Kang . S . H

Approved by Q.C Manager S.H.KANG
KISWIRE LTD., KOREA

ABS KR NK. G.Lloyd's DNV L.R BV

Rotor x Crosswind
28/1/25 R

Declaration of compliance with the order

EN 10204 Type 2.1

ROPEBLOCK

Certificate no. : **C00-33887**

General information

Customer	: Sirtef S.R.L.	Ropeblock sales order no.	: 225062
Purchase order no.	: 29991		
P.O. date	: Nov-2022		
Quantity	: 10		

Ropeblock Product information

Ropeblock article code : CSS 299.GAL

Description : Galvanised closed spelter socket, quenched and tempered cast steel, no 299.
For wire rope ø14-16mm (9/16"-5/8"). MBL 25 mT.

Description	Quantity	Heat No. / Marking	Remarks
Closed spelter socket	9	CD0991	
Closed spelter socket	1	CD1085	

We hereby certify that:

The above mentioned product is in accordance with the requirements of the sales order confirmation

EC:

The undersigned certifies on behalf of his company, that the above mentioned product is correct and that the intended hoisting equipment or application continued can be declared according the regulations of the Machine Directive2006/42/EC, appendix II-A or II-B, after assembly. Products must not be put in service until the final application has been declared in conformity with the provisions in the2006/42/EC directive.

Reference standards, used (partly or as whole) where applicable and considered state of the art:

- EN 13001, 13135, 13411, 818, 1677, 13889
- ISO 4301, 4308, 8087, 3189, 9927, 17558
- NEN 3318, NEN 3320, 3508, 3305, 2729
- Standards and rules as mentioned in the contract and/ or drawings.
- DIN 15400, 15401, 15402, 15018, 15020, 15061, 15063, 82017
- FEM 1.001, 5.004
- US Fed. Spec. RR-S550D, RR-C-271

fobbn x CROSSWIND
28/1/25 R

TRUE COPY
OF THE ORIGINAL
SIRTEF S.r.l.

Signed for and on behalf of Ropeblock B.V. / The Netherlands

Name: G. Boevenbrink / Quality Manager

Date: 09-Jan-2023

Inspection Certificate

EN 10204 - 3.1

ROPEBLOCK

Description	Material	Heat No. / Marking
CSS 299	A352 Gr.LCC	CD0991

Mechanical Properties

Heat No. / Marking	R_m (Tensile strength) (N/mm²)	R_e (Yield) (N/mm²)	A (Elongation) (%)	Z (Reduction of area) (%)	Impact test (ISO V) T (°C)	Impact test (ISO V) (J)	Hardness (HB)
CD0991	575	345	28	57	-40	56-58-57	157

Chemical Analysis

Heat No. / Marking	C %	Si %	Mn %	S %	P %	Ni %	Cr %	Mo %	Cu %	Va %	Nb %
CD0991	0,19	0,453	1,2	0,021	0,011	0,108	0,029	0,008	0,239	0,002	

Remarks

MT/UT: Satisfactory, free of internal cracks/ seperations which may effect utilization.

We hereby certify that:

- The reported values are strictly in accordance with the original mill certificates.

Signed for and on behalf of Ropeblock B.V. / The Netherlands

Name: G.Boevenbrink / Quality Manage

Date: 27-9-2022

Robax CROSSWIND
28/1/25 R

4.811/6

DNV·GL ISO 9001

Certificate of Conformity

SIRTEF s.r.l.
20080 Calvignasco (MI) - Via dei Lavoratori, 1

Dichiarazione di conformità CE in accordo al D.Lgs 17/2010 e alla direttiva 2006/42/CE
Declaration EC of conformity according to D.Lgs 17/2010 and directive 2006/42/EC

Calvignasco,	17-12-24
Certificato / Certificate	20643/24
DdT / Document Num.	4408/BM
Ordine / Purchase Order	24007371

Cliente / Customer
REMAZEL Engineering Spa
Via Carlo Ottavio Cornaggia, 10
20123 MILANO (MI)

QUANTITÀ / QUANTITY	m.	107
BOBINA / REEL	N.	1331
DIAMETRO NOMINALE / NOMINAL DIAMETER	mm.	10,000
MASSA NOMINALE/ NOMINAL WEIGHT	kg/mt	0,490
RIVESTIMENTO / COATING		ZINCATA LUBRIFICATA / GALVANIZED LUBRICATED
PREFORMAZIONE / PREFORMED		NO
FORMAZIONE / CONSTRUCTION		VEROTOP
AVVOLGIMENTO / TYPE OF LAY		PARALLELO DESTRO / RHLL
RESISTENZA DEI FILI / TENSILE STRENGTH	N/mmq	1.960,000
CARICO DI ROTTURA MINIMO / M.B.L.*	kN	95,400
NORMA RIFERIMENTO / STANDARD		EN 12385-4 / EN 13411-4

NOTE / REMARKS

Cod. 002-0011-C1956
Nr. 1 Galvanized steel wire rope VEROTOP D. 10 mm. res. 1960 N/mm2 RHLL MBL 95,4 kN with CSS 299 (Batch: CD0991) at one end, other end free. L=107 m.

VEROPE CERTIFICATE No. 328966 reel n.3100-5 dated 06.10.2017

*M.B.L.: Minimum Breaking Load

I Prodotti forniti sono marcati in accordo alle normative tecniche di riferimento.
The products supplied are marked according to the reference technical standards.

DICHIARAZIONE CE DI CONFORMITÀ / CE DECLARATION OF CONFORMITY

Si dichiara che il materiale descritto risponde ed è conforme alla vigente Direttiva Comunitaria Macchine 2006/42/CE. Si segnala inoltre che non ne è consentito un utilizzo diverso da quello indicato nelle istruzioni di assemblaggio ed utilizzo consultabili al sito internet www.sirtef.it. Il fascicolo tecnico è disponibile presso la nostra sede.
We declare under our sole responsibility that the product to which this declaration relates is in conformity with the regulation of 2006/42/CE. It is a precondition to put it into service that the instructions for use has been read and understood. Instructions for use available on our site www.sirtef.it for your convenience. The relevant technical documentation is available upon request.

Questo prodotto al momento della manifattura non eccede le soglie massime di nessuna delle sostanze chimiche pericolose contenute nel documento MEPC.269(68) 2015 Appendice 1
This product at the time of manufacture does not exceed the threshold for any of the hazardous listed chemicals in Appendix 1 of MEPC.269(68) 2015 Guidelines.

SIRTEF s.r.l
General Manager
Dott. M. Martucci

Robb x CROSSWIND
28/1/25

Si dichiara inoltre che SIRTEF S.r.l. opera in conformità ai requisiti del proprio sistema di qualità Aziendale, realizzato in accordo alla normativa EN ISO 9001-2015 di riferimento.
We also declare that SIRTEF S.r.l. operates in compliance with the requirements of its corporate quality system, created in accordance with the reference standard EN ISO 9001-2015

BOLLETTINO DI COLLAUDO INTERNO N. 103/18 DEL 09-03-18

BOBINA	1331			
LUNGHEZZA	Mt. 3.000,000			
DIAMETRO NOMINALE	mm. 10,000			
DIAMETRO RILEVATO SU BOBINA	mm. 10,400			
DIAMETRO RILEVATO AD 1/10 C.R	mm.			
PESO NOMINALE	Kg/Mt			
PESO EFFETTIVO	Kg/Mt			
FORMAZIONE	VEROTOP 35X7 ANTIGIREVOLE / NON ROTATING			
AVVOLGIMENTO	PARALLELO DESTRO			
ZINCATA	SI			
GRADO ZINCATURA	B			
COMPATTATA	SI			
RESISTENZA UNITARIA	1.960			
DIAMETRO FILI ELEMENTARE	mm.			
CARICO DI ROTTURA MINIMO	9.727,938	KG	95,400	KN
CARICO DI ROTTURA EFFETTIVO	9.921,681	KG	97,300	KN
CARICO DI ROTTURA ADDIZIONALE		KG		KN
RILEVATO DA	Produttore			
PROVE ESEGUITE	Rottura			
ESITO				
FORNITORE	Verope AG			
NUMERO CERTIFICATO FORNITORE	N.328966 reel n.3100-5 del 06.10.2017			

Il Responsabile
di Laboratorio
G.F. CALAMITA

Il Responsabile
Garanzia Qualità
A. BERTOLOTTI

TRASDUTTORI MISURE TARATURE

T.M.T. s.r.l.
Via Reano, 5
10040 RIVALTA DI TORINO (TO)
Tel. 011 90 91 004 - E-mail: info@tmt-tarature.it

Centro di Taratura LAT 017
Calibration Centre
Laboratorio Accreditato di Taratura
Accredited Calibration Laboratory

ACCREDIA L'ENTE ITALIANO DI ACCREDITAMENTO

LAT 017
Membro degli Accordi di Mutuo Riconoscimento EA, IAF, e ILAC
Signatory of EA, IAF and ILAC Mutual Recognition Agreements

CERTIFICATO DI TARATURA LAT 017 N. 42984
Certificate of Calibration

- data di emissione / *date of issue*: 2025/01/16
- cliente / *customer*: **SIRTEF s.r.l.**
  Zona Industriale - Via dei Lavoratori, 1
  20080 CALVIGNASCO (MI)
- destinatario / *receiver*: **SIRTEF s.r.l.**
  Zona Industriale - Via dei Lavoratori, 1
  20080 CALVIGNASCO (MI)

Il presente certificato di taratura è emesso in base all'accreditamento LAT 017 rilasciato in accordo ai decreti attuativi della legge n.273/1991 che ha istituito il Sistema Nazionale di Taratura (SNT). ACCREDIA attesta le capacità di misura e di taratura, le competenze metrologiche del Centro e la riferibilità delle tarature eseguite ai campioni nazionali e internazionali delle unità di misura del Sistema Internazionale delle Unità (SI).
Questo certificato non può essere riprodotto in modo parziale, salvo espressa autorizzazione scritta da parte del Centro.

This certificate of calibration is issued in compliance with the accreditation LAT 017 granted according to decrees connected with Italian law No. 273/1991 which has established the National Calibration System. ACCREDIA attests the calibration and measurement capability, metrological competence of the Centre and the traceability of calibration results to the national and international standards of the International System of Units (SI).
This certificate may not be partially reproduced, except with the prior written permission of the issuing Centre.

Si riferisce a
Referring to

- oggetto / *item*	MACCHINA DI PROVA MATERIALI
- costruttore / *manufacturer*	VENETA FUNI
- modello / *model*	BP150
- matricola / *serial number*	MT113
- data di ricevimento oggetto / *date of receipt of item*	//
- data delle misure / *date of measurements*	2025/01/16
- registro di laboratorio / *laboratory reference*	M09 pag. 281 ÷ 284

I risultati di misura riportati nel presente Certificato sono stati ottenuti applicando le procedure di taratura citate alla pagina seguente, dove sono specificati anche i campioni o gli strumenti che garantiscono la catena di riferibilità del Centro e i rispettivi certificati di taratura in corso di validità. Essi si riferiscono esclusivamente all'oggetto in taratura e sono validi nel momento e nelle condizioni di taratura, salvo diversamente specificato.
The measurement results reported in this Certificate were obtained following the calibration procedures given in the following page, where the reference standards or instruments are indicated which guarantee the traceability chain of the laboratory, and the related calibration certificates in the course of validity are indicated as well. They relate only to the calibrated item and they are valid for the time and conditions of calibration, unless otherwise specified.

Le incertezze di misura dichiarate in questo documento sono state determinate conformemente alla Guida ISO/IEC 98 e al documento EA-4/02. Solitamente sono espresse come incertezza estesa ottenuta moltiplicando l'incertezza tipo per il fattore di copertura k corrispondente ad un livello di fiducia di circa il 95 %. Normalmente tale fattore k vale 2.
The measurement uncertainties stated in this document have been determined according to the ISO/IEC Guide 98 and to EA-4/02. Usually, they have been estimated as expanded uncertainty obtained multiplaying the standard uncertainty by the coverage factor k corresponding to a confidence level of about 95 %. Normally, this factor k is 2.

Direzione Tecnica
Approving Officer
M.Vattasso

CERTIFICATO DI TARATURA LAT 017 N. 42984
Certificate of Calibration

I risultati di misura riportati nel presente Certificato sono stati ottenuti applicando le procedure N.
The measurement results reported in this certificate were obtained following procedures No.
PF/2 rev.5 (UNI EN ISO 7500-1/2018)

Strumenti/campioni che garantiscono la catena della riferibilità del Centro;
Instruments or measurement standards which guarantee the traceability chain of the Centre
BVK CT1

Estremi dei certificati di taratura di tali campioni e l'Ente che li ha emessi;
Relevant calibration certificates of those standards with the issuing Body;
24-0199-02 (I.N.RI.M. / CIPM MRA) 22-0704-04 (I.N.RI.M.)

Luogo di taratura: *Site of calibration:* effettuata presso il destinatario indicato a pagina 1

IMPIANTO DI PROVA:

Costruttore VENETA FUNI **Tipo** BP150 **Matricola** MT113

CARATTERISTICHE:

Portata 1500 kN
Principio di funzionamento elettro-idraulico
Per prove a trazione ad asse orizzontale

MISURATORE : dinamometro TMT tipo T/S serie n.AQG portata 1500 kN

INDICATORE : numerico dell'amplificatore-condizionatore TMT tipo DM20000-F20 serie n.SFF

CLASSIFICAZIONE secondo NORMA UNI EN ISO 7500-1 [§ 7 tab.2]**:**

SCALA 1500 kN (*)
Classe 0,5 per forze da 200 kN a 1000 kN
Il segnale di calibrazione è risultato nel corso della verifica corrispondente a 1132,4 kN

SCALA 1000 kN
Classe 0,5 per forze ≥ 100 kN
Il segnale di calibrazione è risultato nel corso della verifica corrispondente a 779,6 kN

SCALA 400 kN
Classe 0,5 per forze ≥ 40 kN
Il segnale di calibrazione è risultato nel corso della verifica corrispondente a 305,9 kN

SCALA 100 kN
Classe 2 per forze ≥ 5 kN
Classe 1 per forze ≥ 10 kN
Classe 0,5 per forze ≥ 20 kN
Il segnale di calibrazione è risultato nel corso della verifica corrispondente a 77,75 kN

(*) il controllo della scala 1500 kN è stata fatta fino alla forza massima di 1000 kN come concordato in fase d'ordine

Nei controlli preliminari è stata fatta l'ispezione generale dell'impianto di prova; non sono state riscontrate anomalie

I valori riportati nel certificato sono quelli rilevati nella condizione "come trovato"

il relatore
M. Brunetto

28/1/25

CERTIFICATO DI TARATURA LAT 017 N. 42984
Certificate of Calibration

Tabella 1

MACCHINA DI PROVA MATERIALI VENETA FUNI **Serie n.** MT113 **Portata** 1500 kN

MISURATORE: dinamometro TMT tipo T/S serie n.AQG portata 1500 kN

INDICATORE: condizionatore TMT tipo DM20000-F20 serie n.SFF

Scala 1500 kN **1 divisione =** 200 N **Risoluzione** (r) 200 N

CONTROLLO A : TRAZIONE **Validità del controllo:** TRAZIONE

Forza indicata F_i [kN]	Forza misurata [kN]			Media forze misurate $\overline{F}_{123}$ [kN]	Incertezza U * [%]	Errore relativo [%]	
	Ciclo 1 F_1	Ciclo 2 F_2	Ciclo 3 F_3			ripetibilità b	accuratezza q
200	200,15	200,09	200,38	200,21	0,16	0,14	-0,10
400	400,30	400,06	400,42	400,26	0,12	0,09	-0,06
600	600,35	600,12	600,54	600,34	0,11	0,07	-0,06
800	799,61	799,52	799,77	799,63	0,10	0,03	0,05
1000	998,6	998,5	998,8	998,6	0,10	0,03	0,14
	Errore relativo dello zero f_0 [%]						
	0,00	0,02	0,00				

Risoluzione relativa (a) ≤ 0,10 %	**Temperatura** (9 ±1) °C	**Tecnico** MB

CLASSIFICAZIONE SECONDO NORMA UNI EN ISO 7500-1 [§ 7 tab.2] **- CLASSE** 0,5

segnale di calibrazione = 1132,4 kN

28/1/15

* U incertezza estesa di taratura (k=2) relativa alla media delle forze misurate determinata secondo le indicazioni riportate nell'allegato C della norma UNI EN ISO 7500-1

DINAMOMETRI CAMPIONI UTILIZZATI

Costruttore	Matricola n°	Portata [kN]	Certificato N°	Scadenza Cert.	Classe
T.M.T.	BVK	1000	24-0199-02 (INRIM / CIPM MRA)	26/04/2026	0,5/1

41851

CERTIFICATO DI TARATURA LAT 017 N. 42984
Certificate of Calibration

Tabella 2

MACCHINA DI PROVA MATERIALI VENETA FUNI **Serie n.** MT113 **Portata** 1500 kN

MISURATORE: dinamometro TMT tipo T/S serie n.AQG portata 1500 kN

INDICATORE: condizionatore TMT tipo DM20000-F20 serie n.SFF

Scala 1000 kN **1 divisione =** 200 N **Risoluzione** (r) 200 N

CONTROLLO A : TRAZIONE **Validità del controllo:** TRAZIONE

Forza indicata F_i [kN]	Forza misurata [kN]			Media forze misurate $\overline{F}_{123}$ [kN]	Incertezza U * [%]	Errore relativo [%]	
	Ciclo 1 F_1	Ciclo 2 F_2	Ciclo 3 F_3			ripetibilità b	accuratezza q
100	100,36	100,08	100,29	100,24	0,25	0,28	-0,24
200	200,36	200,24	200,20	200,27	0,14	0,08	-0,13
400	400,38	400,17	400,25	400,27	0,11	0,05	-0,07
600	600,32	599,85	600,05	600,07	0,11	0,08	-0,01
800	799,45	799,62	799,55	799,54	0,10	0,02	0,06
1000	998,9	998,3	998,9	998,7	0,11	0,06	0,13
	Errore relativo dello zero f_0 [%]						
	0,00	0,00	0,00				

Risoluzione relativa (a) ≤ 0,20 %	**Temperatura** (9 ±1) °C	**Tecnico** MB

CLASSIFICAZIONE SECONDO NORMA UNI EN ISO 7500-1 [§ 7 tab.2] **- CLASSE** vedere pag.2

segnale di calibrazione = 779,6 kN

fdh x CROSSWIND
28/1/25 R

* U incertezza estesa di taratura (k=2) relativa alla media delle forze misurate determinata secondo le indicazioni riportate nell'allegato C della norma UNI EN ISO 7500-1

DINAMOMETRI CAMPIONI UTILIZZATI

Costruttore	Matricola n°	Portata [kN]	Certificato N°	Scadenza Cert.	Classe
T.M.T.	BVK	1000	24-0199-02 (INRIM / CIPM MRA)	26/04/2026	0,5/1

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CERTIFICATO DI TARATURA LAT 017 N. 42984
Certificate of Calibration

Tabella 3

MACCHINA DI PROVA MATERIALI VENETA FUNI **Serie n.** MT113 **Portata** 1500 kN

MISURATORE: dinamometro TMT tipo T/S serie n.AQG portata 1500 kN

INDICATORE: condizionatore TMT tipo DM20000-F20 serie n.SFF

Scala 400 kN **1 divisione =** 100 N **Risoluzione** (r) 100 N

CONTROLLO A : TRAZIONE **Validità del controllo:** TRAZIONE

Forza indicata F_i [kN]	Forza misurata [kN] Ciclo 1 F_1	Ciclo 2 F_2	Ciclo 3 F_3	Media forze misurate $\overline{F}_{123}$ [kN]	Incertezza U * [%]	Errore relativo [%] ripetibilità b	accuratezza q
40	39,845	39,986	39,997	39,943	0,33	0,38	0,14
80	79,833	80,003	80,087	79,974	0,24	0,32	0,03
80	80,019	79,819	79,844	79,894	0,21	0,25	0,13
160	159,90	159,66	159,76	159,77	0,14	0,15	0,14
240	239,53	239,63	239,62	239,59	0,11	0,04	0,17
320	319,54	319,40	319,43	319,46	0,11	0,04	0,17
400	399,32	399,36	399,23	399,30	0,10	0,03	0,17
	Errore relativo dello zero f_0 [%]						
	0,03	0,00	0,00				

Risoluzione relativa (a) ≤ 0,25 % **Temperatura** (9 ±1) °C **Tecnico** MB

CLASSIFICAZIONE SECONDO NORMA UNI EN ISO 7500-1 [§ 7 tab.2] **- CLASSE** vedere pag.2

segnale di calibrazione = 305,9 kN

28/1/25

* U incertezza estesa di taratura (k=2) relativa alla media delle forze misurate determinata secondo le indicazioni riportate nell'allegato C della norma UNI EN ISO 7500-1

DINAMOMETRI CAMPIONI UTILIZZATI

Costruttore	Matricola n°	Portata [kN]	Certificato N°	Scadenza Cert.	Classe
TMT T.M.T.	BGI BVK	100 1000	190-2024 (T.M.T. / ACCREDIA LAT 017) 24-0199-02 (INRIM / CIPM MRA)	17/11/2026 26/04/2026	0,5 0,5/1

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CERTIFICATO DI TARATURA LAT 017 N. 42984
Certificate of Calibration

Tabella 4

MACCHINA DI PROVA MATERIALI VENETA FUNI **Serie n.** MT113 **Portata** 1500 kN

MISURATORE: dinamometro TMT tipo T/S serie n.AQG portata 1500 kN

INDICATORE: condizionatore TMT tipo DM20000-F20 serie n.SFF

Scala 100 kN **1 divisione =** 50 N **Risoluzione** (r) 50 N

CONTROLLO A : TRAZIONE **Validità del controllo:** TRAZIONE

Forza indicata F_i [kN]	Forza misurata [kN] Ciclo 1 F_1	Ciclo 2 F_2	Ciclo 3 F_3	Media forze misurate $\overline{F}_{123}$ [kN]	Incertezza U * [%]	Errore relativo [%] ripetibilità b	accuratezza q
5	4,9532	4,9876	4,9481	4,9630	0,96	0,80	0,75
10	9,911	9,938	9,916	9,922	0,45	0,27	0,79
20	19,963	19,956	19,981	19,967	0,24	0,13	0,17
40	39,947	39,951	39,962	39,953	0,14	0,04	0,12
60	59,951	59,943	59,982	59,959	0,13	0,07	0,07
80	79,937	79,903	79,971	79,937	0,12	0,09	0,08
100	99,89	99,90	99,96	99,92	0,12	0,07	0,08
	Errore relativo dello zero f_0 [%]						
	0,00	0,05	0,00				

Risoluzione relativa (a) ≤ 1,00 %	**Temperatura** (9 ±1) °C	**Tecnico** MB

CLASSIFICAZIONE SECONDO NORMA UNI EN ISO 7500-1 [§ 7 tab.2] **- CLASSE** vedere pag.2

segnale di calibrazione = 77,75 kN

Roberto + CROSSWIND
28/1/25

* U incertezza estesa di taratura (k=2) relativa alla media delle forze misurate determinata secondo le indicazioni riportate nell'allegato C della norma UNI EN ISO 7500-1

DINAMOMETRI CAMPIONI UTILIZZATI

Costruttore	Matricola n°	Portata [kN]	Certificato N°	Scadenza Cert.	Classe
TMT	BGI	100	190-2024 (T.M.T. / ACCREDIA LAT 017)	17/11/2026	0,5

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SIRTEF s.r.l.

SCHEDA TARATURA STRUMENTO	DOC. QA 11A Rev.0

TIPO STRUMENTO **Calibro digitale**	PROCEDURA DI TARATURA **SP 002**
MATRICOLA **CA 01 (SERIALE: 2102912)**	VERIFICA **Mesi 12**
CAMPO DI MISURA **0-100 mm.**	VERIFICATO IL **14.01.2025**
REPARTO **Laboratorio Collaudi**	PROSSIMA VERIFICA **14.01.2026**
NORMATIVA	FIRMA C.Q.
STRUMENTO UTILIZZATO PER LA TARATURA **Blocchetti pianparalleli BJ 01 (SERIALE 302214), certificato mec control s.r.l. nr.48789**	
NOTE	

QUOTA NOMINALE mm.	VALORE NOMINALE mm.	TOLLERANZA INFERIORE AMMESSA mm.	TOLLERANZA SUPERIORE AMMESSA mm.	MISURATO mm.	IDONEO	DATA E FIRMA VERIFICATORE
1,03	1,03	5/100	5/100	1,03	SI	
1,60	1,60	5/100	5/100	1,60	SI	
2,00	2,00	5/100	5/100	2,00	SI	
3,00	3,00	5/100	5/100	3,00	SI	
5,00	5,00	5/100	5/100	5,00	SI	
7,00	7,00	5/100	5/100	7,00	SI	
9,00	9,00	5/100	5/100	9,00	SI	
12,00	12,00	5/100	5/100	12,00	SI	
15,00	15,00	5/100	5/100	15,00	SI	
16,00	16,00	5/100	5/100	16,00	SI	
19,00	19,00	5/100	5/100	19,00	SI	
23,00	23,00	5/100	5/100	22,99	SI	
25,00	25,00	5/100	5/100	24,99	SI	
50,00	50,00	5/100	5/100	49,99	SI	
75,00	75,00	5/100	5/100	74,99	SI	
100,00	100,00	5/100	5/100	99,99	SI	

Robbi x CROSSWIND
28/1/25 R

VIPA S.p.A.
via Cantonazzo 20/22
42047 Rolo -RE-
Tel: +39(0)522 658900
Fax: +39(0)522 015338
E-mail: info@vipaspa.it
Website: www.vipaspa.it

By VIPA buy better

UNI EN ISO 9001:2015 CERTIFIED

CERTIFICATO DI COLLAUDO/ EN 10204 Cert.n° 1061/24

INSPECTION CERTIFICATE

(vers. 3.1)

Cliente / Customer : **VITERIE BAL.BI SRL**

Si certifica che il/i prodotto/i sotto indicato/i consegnato/i dalla ditta VIPA S.p.A. con DDT n° CF324-040859 del 04/11/24 è conforme alle norme UNI, DIN, ISO, EN riportate. E' stato adottato un piano di campionamento conforme alla ANSI/ASME B18. 18. 2M. Sono state effettuate le prove dimensionali e le tolleranze riscontrate sono conformi alla normativa UNI EN ISO 898-1:2013. Rientrano altresì in detta normativa i materiali ed i trattamenti superficiali relativi.
We certify that the product we delivered along with our transport document n° CF324-040859 dated 04/11/24 is tested and suits the Standards UNI, ISO, DIN, EN indicated.
We have made all dimensional tests on the lot we produced, tolerances we measured are conform to the norm UNI EN ISO 898-1:2013. Steel and surface treatments comply the above mentioned standards.

Descrizione / *Description* : **VITE TESTA ESAGONALE / HEX. HEAD SCREW UNI 5739**
Classe / *Class of material* : **10.9**
Misura / *Size* : **M24x140**
Trattamento / *Surface treatment* : **GREZZO / PLAIN**
Lotto / *Lot* : **V2N01586**
Marcatura / *Marking* : ◊◊

In particolare l'acciaio impiegato rientra nella seguente composizione / *The steel used has given the following analysis*

C	*0.2188 %*	**S**	*0.0081 %*
P	*0.0115 %*	**B**	*0.0016 %*
Mn	*0.804 %*	**Si**	*0.203 %*
Cr	*1.01 %*	**Ti**	*0.0283 %*
Ni	*0.017 %*	**Cu**	*0.016 %*

Le prove meccaniche eseguite hanno dato i seguenti valori /
Mechanical tests made on the products included into following additional test

			Prescritti Nominal	**Verificati** Inspection
Carico di rottura / *Tensile Ultimate Load*	N	Min.	367000	**393402 – 393489**
Durezza a cuore / *Core Hardness*	HRC	Min.	32	**35 – 36**
		Max.	39	

Rolo, lì 09/12/2024

VIPA Spa
Quality System Manager
Vilson Poppi

Rossi	DICHIARAZIONE DI CONFORMITà *COMPLIANCE DECLARATION* UNI EN 10204, ref. 3.1	**F1.83** Rev. 3 del 08/10/22 Data rapporto: *Report date:* **14/10/2024**

Cliente: *Customer:*	**RAMAZEL ENGINEERING**	Ordine vendita: *Sales Order:*	**24037173-2**	Q.tà lotto: *Batch Q.ty:*	**1**
Cod. prodotto: *Product code:*	**R000308177**	Seriale o Item *Serial or Item:*	**8425792**		
WA: *Work Assembly:*	**2763177**	Descrizione Prodotto: *Product description:*	**G MR ICI 80 UO3A 52 B3**		

COLLAUDI STANDARD ESEGUITI ***PERFORMED STANDARD TESTS***	Docum. Rifer. *Ref. Docum.*	Conf.	Non Conf.	N.A.	Note / Notes
Controllo funzionamento generale *General operation check*	FPP1.I.4 FPP1.I.15	✓			
Test di tenuta con aria, statico *Air leakage test, static*	FPP1.I.102	✓			
Verifica visiva della tenuta dinamica olio *Visual check of the dinamic oil seal*	FPP1.I.15	✓			
Rapporto di trasmissione con rilievo di n1 e n2 *Trasmission ratio with n1 & n2 measurement*	FPP1.I.15	✓			

General notes	Emesso da: Issued by:	**G.Mongelli**

Rossi	DICHIARAZIONE DI CONFORMITà *COMPLIANCE DECLARATION* UNI EN 10204, ref. 3.1	**F1.83** Rev. 3 del 08/10/22 Data rapporto: *Report date:* **10/09/2024**

Cliente: *Customer:*	**RAMAZEL ENGINEERING**	Ordine vendita: *Sales Order:*	**24037173-1**	Q.tà lotto: *Batch Q.ty:*	**1**
Cod. prodotto: *Product code:*	**R000308176**	Seriale o Item *Serial or Item:*	**8425678**		
WA: *Work Assembly:*	**2763176**	Descrizione Prodotto: *Product description:*	**G MR ICI 140 UO3D 40,6 B3**		

COLLAUDI STANDARD ESEGUITI ***PERFORMED STANDARD TESTS***	Docum. Rifer. *Ref. Docum.*	Conf.	Non Conf.	N.A.	Note / Notes
Controllo funzionamento generale *General operation check*	FPP1.I.4 FPP1.I.15	✓			
Test di tenuta con aria, statico *Air leakage test, static*	FPP1.I.102	✓			
Verifica visiva della tenuta dinamica olio *Visual check of the dinamic oil seal*	FPP1.I.15	✓			
Rapporto di trasmissione con rilievo di n1 e n2 *Trasmission ratio with n1 & n2 measurement*	FPP1.I.15	✓			

General notes	Emesso da: Issued by:	**G.Mongelli**

ATTESTATO DI CONFORMITA' - EN 10204 - 2.1

DECLARATION OF COMPLIANCE - EN 10204 - 2.1 / ATTESTATION DE CONFORMITE - EN 10204 - 2.1 / WERKSBESCHEINIGUNG - EN 10204 - 2.1 / CERTIFICADO DE CONFORMIDAD - EN 10204 - 2.1 / CONFORMITEITSATTEST - EN 10204 - 2.1 / ДЕКЛАРАЦИЯ О СООТВЕТСТВИИ- EN 10204 - 2.1 合格证明- EN 10204 - 2.1

Customer:	**43840 REMAZEL ENGINEERING SPA**		Quantity: **1**
Order line:	**50533327**	**10**	**ZOG**
Customer PO:	**24004219 DEL**		
Ship to:	**219934, REMAZEL ENGINEERING S.P.A.**		
ARTICLE CODE:	**B2045232**		
DESCRIPTION:	**ET3065/MR/208.2/61104600690 V5**		

SERIAL NUMBERS: 07017447

Dana Motion Systems Italia s.r.l dichiara sotto la propria responsabilità, sulla base dei risultati ottenuti dai test standard di verifica effettuati sui prodotti costruiti con gli stessi materiali e con lo stesso metodo di produzione, che i prodotti specificati sopra, sono conformi alle prescrizioni dell'ordine ed alle regole tecniche corrispondenti ai regolamenti ufficiali.

Dana Motion Systems Italia s.r.l under its own responsibility, based on results of its standard tests aimed to verify products manufactured using the same materials and production method, declares that the products hereabove specified fully comply with order prescriptions and with all technical norms corresponding to official regulations.

La Sté Dana Motion Systems Italia s.r.l déclare sous son entière et seule responsabilité, sur la base des résultats obtenus suite aux tests standard de contrôle effectués sur les produits fabriqués à partir des mêmes matériaux et des mêmes procédés de fabrication, que les produits spécifiés précédentement sont conformes aux prescriptions de la commande et aux standards techniques des réglementations officielles.

Dana Motion Systems Italia s.r.l erklärt hiermit vollverntworltlich, auf der Grund der erzielten Ergebnisse der Standard-Prüftests, welche mitgleichen materialen und mit der selben Produktionmethode hergestellten Produkte durchgefuhrt wurden, dass das vorgenannte Produkt den auftragsmassigen Vorschriften, sowie den technischnen Vorschriften der entsprechenden technischen Regeln entspricht.

Dana Motion Systems Italia s.r.l declara bajo su propia responsabilidad, sobre la base de los resultados obtenidos de los ensayos standard de verificación efectuados en los productos fabricados con los mismos materiales y con el mismo método de producción, que los productos ante especificados cumplen las prescripciones del pedido y las reglas técnicas correspondientes a los reglamentos oficiales.

Dana Motion Systems Italia s.r.l. verklaart onder eigen verantwoordelijkheid,alleen op basis van de behaalde resultaten volgendestandaard tests van de controle op producten die zijn vervaardigd uit hetzelfde materiaal en dezelfde fabricageprocessen, dat de hierboven vermelde producten voldoen aan de eisen van de bestelling en technische normen van de officiële regelgeving.

Reggio Emilia,

30.07.2024

DIRETTORE DI PRODUZIONE
MANUFACTURING DIRECTOR
DIRECTEUR DE PRODUCTION
PRODUKTIONSLEITERS
DIRECTOR DE PRODUCCIÓN

Fracchioni Claudio

Dana Motion Systems Italia S.r.l.
Via Luciano Brevini, 1/A
42124 REGGIO EMILIA - ITALY
Tel. +39 0522 9281 Fax +39 0522 928200
www.brevini.com

RAPPORTO DI PROVA - EN 10204 - 2.2
TEST REPORT - EN 10204 - 2.2

CLIENTE: *CUSTOMER :*	**REMAZEL ENGINEERING SPA**	**CONFERMA D'ORDINE - RIGA:** *ORDER CONFIRMATION - LINE:*	**50533327 ZOG**
ORDINE CLIENTE: *CUSTOMER ORDER:*	**24004219 DEL**	**DESTINAZIONE FINALE:** *SHIP TO:*	**REMAZEL ENGINEERING S.P.A.**
CODICE ARTICOLO: *ARTICLE CODE:*	**B2045232**	**QUANTITA':** *QUANTITY:*	**1**
DESCRIZIONE ARTICOLO : *DESCRIPTION CODE:*	**ET3065/MR/208.2/61104600690 V5**	**ORDINE DI PRODUZIONE:** *MANUFACTURING ORDER:*	**11427171**

MATRICOLE : *SERIAL NUMBERS:*	**07017447**

La Dana Motion Systems Italia s.r.l dichiara sotto la propria responsabilità, sulla base dei risultati ottenuti dai test standard di verifica effettuati sui prodotti costruiti con gli stessi materiali e con lo stesso metodo di produzione, che i prodotti specificati sopra, sono conformi alle prescrizioni dell'ordine ed alle regole tecniche corrispondenti ai regolamenti ufficiali.

Dana Motion Systems Italia s.r.l under its own responsibility, based on results of its standard tests aimed to verify products manufactured using the same materials and production method, declares that the products hereabove specified fully comply with order prescriptions and with all technical norms corresponding to official regulations.

Sono stati eseguiti i seguenti test standard non specifici:
The following non-specific inspection tests were performed:

DESCRIZIONE DEI TEST *TEST DESCRIPTION*	**RISULTATO** *RESULTS*
Prova di tenuta secondo SP001 *Seal Test according to SP001*	Approvato *Approved*
Prova di rotazione a vuoto secondo SP001 *Rotation with no load according to SP001*	Approvato *Approved*
Prova del senso di rotazione secondo SP001 *Free rotation test according to SP001*	Approvato *Approved*
Verifica verniciatura/protettivo secondo SP017 *Paint/protective check according to SP017*	Approvato *Approved*

Quando applicabile:
Where applicable:

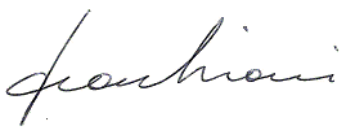
Prova di apertura e tenuta freno secondo SP001 *Brake engagement and seal test according to SP001*	Approvato *Approved*
Verifica livello olio *Oil level check*	Approvato *Approved*

Reggio Emilia

30.07.2024

DIRETTORE DI PRODUZIONE
MANUFACTURING DIRECTOR
DIRECTEUR DE PRODUCTION
PRODUKTIONSLEITERS
DIRECTOR DE PRODUCCIÓN

Fracchioni Claudio



Dana Motion Systems Italia S.r.l.
Via Luciano Brevini, 1/A
42124 REGGIO EMILIA - ITALY
Tel. +39 0522 9281 Fax +39 0522 928200
www.brevini.com

M.G.M. motori elettrici S.p.A.

Head Office and Production:
S.R. 435 Lucchese Km. 31
51034 - Serravalle Pistoiese, Italy
Tel. +39 (0573) 91511
Fax +39 (0573) 518138
http: //www.mgmrestop.com
E-mail: mgm@mgmrestop.com

Dichiarazione di Conformità UE

Il costruttore:

M.G.M. motori elettrici S.p.A.
S.R. 435 Lucchese Km. 31
51034 - Serravalle Pistoiese (PT) **-** ITALY

sotto la propria esclusiva responsabilità, dichiara che i motori asincroni trifase e autofrenanti appartenenti alle tipologie sotto indicate:

BM / BMX 56÷280
BMBM / BMBMX 71÷315
BA / BAH / BAX / BAHX 71÷315
SM / SMX 56÷315
SMR / BAR / BMR 56÷132

(lettere addizionali che se presenti indicano la presenza di opzioni o varianti: **D**: motore doppia velocità con collegamento Dalhander, **DA:**motore doppia velocità con due avvolgimenti separati, **E**: Encoder, **SV**: servoventilazione radiale, **AV**:servoventilazione assiale, **PV**:volano, **P**:rotore P, **K**:disco K, **F**:doppio disco freno, **G**:carcassa in ghisa, **A**:carcassa in alluminio, **S**:senza ventola di raffreddamento)

sono conformi alle seguenti direttive:

2014/35/EU "Bassa tensione"
2014/30/EU "Compatibilità elettromagnetica"
2009/125/EC "Ecodesign"– Regolamento **(UE) 2019/1781** e successive modifiche
(solo per i motori serie SMX-BAX-BMX-BAHX con potenza nominale 0,12kW≤P<0,75kW e classe di efficenza almeno IE2 e con potenza nominale P ≥0,75 kW con classe di efficenza almeno IE3)
2011/65/UE 'Rohs' e successive modifiche

e sono conformi alle seguenti norme:

EN 60034-1:2010, EN 60034-1:2010/AC:2010; EN IEC 63000:2018;
EN 60034-5:2001, EN 60034-5:2001/A1:2007; EN 60034-30-1:2014; EN 60034-2-1:2014

Informazioni aggiuntive:
L'installazione e la manutenzione del motore devono essere realizzate in conformità a quanto indicato sul manuale d'uso e manutenzione e sulla norma EN 60204 "Equipaggiamento elettrico delle macchine".
Le prescrizioni di compatibilità elettromagnetica (norma EN 60034-1) si applicano ai motori forniti direttamente all'utente finale (per i motori autofrenanti con freno DC può essere richiesto un filtro opzionale, Vi preghiamo di contattarci per maggiori informazioni). I motori destinati ad essere incorporati come componenti in un macchinario il cui involucro ed assemblaggio finale influenzino le emissioni EMC sono soggetti a norme EMC relative al prodotto finale

Luogo e data di rilascio: Serravalle Pistoiese - ITALIA, 01/07/2021

Il Responsabile della Qualità
Ing. Francesco Ghieri



M.G.M. motori elettrici S.p.A.

Head Office and Production:
S.R. 435 Lucchese Km. 31
51034 - Serravalle Pistoiese, Italy
Tel. +39 (0573) 91511
Fax +39 (0573) 518138
http: //www.mgmrestop.com
E-mail: mgm@mgmrestop.com

EU Declaration of Conformity

The Manufacturer:

M.G.M. motori elettrici S.p.A.
S.R. 435 Lucchese Km. 31
51034 Serravalle Pistoiese (PT) – ITALY

under the sole own responsibility, hereby declares that the three phase asynchronous motors and the brake motors belonging to the following series:

BM / BMX 56÷280
BMBM / BMBMX 71÷315
BA / BAH / BAX / BAHX 71÷315
SM / SMX 56÷315
SMR / BAR / BMR 56÷132

(additional letters in the motor type code can be added and they identify versions or options eventually installed: **D**:double speed motor with Dalhander connection, **DA:**double speed motor with two separete windings, **E**:Encoder, **SV**:radial forced ventilation, **AV**:axial forced ventilation, **PV**:flywheel, **P**:P rotor, **K**:K brake disk, **F**:double brake disk, **G**:cast iron motor housing, **A**:die cast aluminum housing, **S**:without cooling fan)

comply with the provisions of the following Union harmonisation legislations:

2014/35/EU "Low voltage"
2014/30/EU "Electromagnetic compatibility"
2009/125/EC "Ecodesign"- Commission Regulation (**EU) 2019/1781** and following amendments.
(only for motors belonging to SMX-BAX-BMX-BAHX series with rated power 0,12kW≤P<0,75kW and at least IE2 efficiency level and with rated power P ≥0,75 kW and at least IE3 efficiency level).
2011/65/EU "Rohs" and following amendments

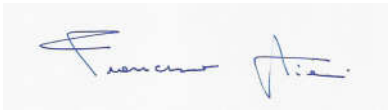
and are in conformity with the following standards:

EN 60034-1:2010, EN 60034-1:2010/AC:2010; EN IEC 63000:2018;
EN 60034-5:2001, EN 60034-5:2001/A1:2007; EN 60034-30-1:2014; EN 60034-2-1:2014

Additional information:
The motor installation and its maintenance must be realised in conformity with the requirements stated in the use and maintenance booklet and with the EN 60 204 "Electrical Equipment of Industrial Machines" standard.
The Electromagnetic compatibility (EMC) requirements (standard EN 60034-1) apply to motors that are supplied directly to the end-user (for brake motors with DC brake an optional filter could be required. Please contact us for further information).
Motors that are intended for incorporation as components in a machinery, where the enclosure and assembly will affect the EMC emissions, are covered by the EMC standard that relates to the final product.

Place and date of issue: Serravalle Pistoiese, 01/07/2021

Eng. Francesco Ghieri
Quality Manager



Made in Germany

ABNAHMEPRÜFZEUGNIS EN 10204
INSPECTION CERTIFICATE ACCORDING TO 3.1
CERTIFICAT DE RECEPTION

Deutsche Edelstahlwerke

Hersteller / Manufacteur / Producteur	Deutsche Edelstahlwerke Specialty Steel GmbH & Co. KG D-57012 SIEGEN
Uns. Auftr.-Nr. / Order-No. / Notre Com. No.	1937569
Besteller / Customer / Client	Swiss Steel Italia Srl
Bestell_Nr. / Order-No. / Commande No.	2058037449

SWISS STEEL ITALIA SRL

VIA PRIVATA BERETTA 7
IT-24030-MEDOLAGO

zertifiziert nach: DIN EN ISO 9001
IATF 16949
ISO 14001
DGR 2014/68/EU
PED 2014/68/EU

Zeugnisnr. 380530 / Seite Page / Page 1 / 4

Werkstoff / Quality / Nuance	1.4542 / X5CRNICUNB16-4 TYPE 630 SUS630
Gießverfahren / Casting process / Procédé de coulée	Strangguss Continuous casting Coulée Continue
Erschmelzungsart / Melting Furnance / Mode de fusion	Elektrostahl Electric-arc-furnace steel Acier électrique

Vertriebstext / Product / Produit	Stabstahl aus nichtrostendem Stahl Acidur 4542, X5CRNICUNB16-4, 1.4542, TYPE 630 / SUS630 gewalzt, abgeschreckt, gerichtet, geschält

weitere Anforderungen vorhanden, siehe Zusatztexte

Schmelzen-Nr. Cast No./Coulée No.	Proben-Nr. Test N./Eprouv.N.	Fertigungsauftrag Lot no./Lot fabr.	Pos. Item/Poste	Abmessung Dimensions/Dimensions mm	Stückzahl Quantity / Nombre	Gewicht Weight / Masse KG	Stempel Abnahmebeauftragter Inspector's stamp
115552	540205	540205	001	40,00 +0,250/-0,000 RD		3834	WA

Schmelzen-Nr. Cast No/Coulée No	% C	% SI	% MN	% P	% S	% CR	% MO	% NI	% V	% W	% CO	% CU	% N	% AL	% NB	% TA	% TA+NB
115552	0,023	0,32	0,64	0,018	< 0,001	15,18	0,170	4,49	0,050	0,02	0,041	3,14	0,0220	< 0,002	0,210	< 0,005	0,210

Proben-Nr. Test No. Eprouv.N.	Ref. Zust	Probenabm. Samp.Dim. Dim.d'epr.	Problg. Spec.Pos. Pos.d'epr	Zugversuch Tensile test / Essai de traction								Kerbschlagversuch Impact test / Essai de résilience					Härteprüfung Hardness Dureté	
				Temp °C	RP0,2 MPA	RP1,0 MPA	RM MPA	A5 %	A2" %	Z %		°C	JOULE	JOULE	JOULE			
540205	R01	12.50 mm	L	23	1162	1227	1231	14.5	19.4	60		23	161	164	165	DIN EN ISO 148-1 Charpy-V	332HB	
		12.47 mm	L	23	811	1012	1107	12.0		40		23	105	89	123	DIN EN ISO 148-1 Charpy-V		

Schmelze wurde VOD behandelt.
Max. 38 HRC
H1025/P1070
H1025/P1070
100% RISSGEPRUEFT OHNE BEANSTANDUNG

100% SURFACE CRACK TEST WITHOUT INDICATION

Das Zeugnis wurde maschinell erstellt und ist gemäß EN 10204 ohne Unterschrift rechtsverbindlich.
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Ce certificat a été établ sur systéme informatique et est valable selon EN 10204 sans signature.

Tel: 0271/808-3918
Fax: 0271/808-2521
Email: daniel.pohl@dew-stahl.com

Datum: 01.04.2022
Pohl
(Abnahmebeauftragter/ Inspector)

Made in Germany

ABNAHMEPRÜFZEUGNIS — EN 10204
INSPECTION CERTIFICATE ACCORDING TO — 3.1
CERTIFICAT DE RECEPTION

Deutsche Edelstahlwerke

Zeugnisnr. 380530 / Seite Page / Page 2 / 4

Besteller / Customer / Client	Swiss Steel Italia Srl	Bestell Nr. / Order-No. / Commande No.	2058037449
Hersteller / Manufacteur / Producteur	Deutsche Edelstahlwerke Specialty Steel GmbH & Co. KG D-57012 SIEGEN	Uns. Auftr.-Nr. / Order-No. / Notre Com. No.	1937569/001
		Proben-Nr. / Test N. / Eprouv.N.	540205

CONTROLE A FISSURE DE 100% SANS DETECTION
Die Lieferung wurde 100 % US-geprüft nach EN 10308 Typ 1a, Tab.2, Qk.4: ohne Beanstandung.
Delivery 100 % US-checked acc. to EN 10308 Typ 1a, Tab.2, Qk.4: satisfactory.
Livraison controlé par 100 % ultrasons selon EN 10308 Typ 1a, Tab.2, Qk.4: satisfaisant.
entspricht auch/also corresponding to/correspond
aussi a: EN 10228-3, Typ 1a, Tab.5, Kl.4/ASTM
A 388/ASME SA 388
Material ist frei von Quecksilberverunreinigungen.
MATERIAL IS FREE FROM MERCURY CONTAMINATION
CWH:
Produit exampt de mercure.
am Material wurde nicht reparaturgeschweißt
no weld repair
Absence de réparation par soudure sur la matière.
MASS UND OBERFLAECHENKONTROLLE: KEINE BEANSTANDUNG
DIMENSIONS AND SURFACE INSPECTION: SATISFACTORY

DIMENSIONS ET SURFACE CONTROLE: SATISFAISANTS
WIR BESTAETIGEN, DASS DIESE LIEFERUNG DEN SCHRIFTLICHEN
VEREINBARUNGEN BEI DER BESTELLUNG ENTSPRICHT
We confirm the production of your order is according to the written
agreement of our order acknowledgement
Nous certifions que la livraison est conforme aux accords
complémentaires par écrit convenus à la commande.
DAS MATERIAL IST FREI VON RADIOAKTIVITÄT
(<0,1Bq/g bezogen auf Co-60).

Herstellland: Deutschland
THE PRODUCT IS FREE FROM RADIOACTIVITY.
(<0,1Bq/g based on Co-60).

Location of production: Germany
LE MATÉRIEL N`EST PAS RADIOACTIF
(<0,1Bq/g basé sur Co-60).

Pays de production: Allemagne
PRUEF. AUF WERKSTOFFIDENTITAET:100% SPEKTROSKOP.OB
TEST TO VERIFY QUAL.:100% SPECTROSC. WITHOUT INDIC.

CONTROLE D'IDENTITE:100% SPECTROS. PAS D'OBJECTION
weitere Anforderungen:
gemäß
EN 10088-3 12-2014 +AT

Das Zeugnis wurde maschinell erstellt und ist gemäß EN 10204 ohne Unterschrift rechtsverbindlich.
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Tel: 0271/808-3918
Fax: 0271/808-2521
Email: daniel.pohl@dew-stahl.com

Datum: 01.04.2022
Pohl
(Abnahmebeauftragter/ Inspector)

Made in Germany

ABNAHMEPRÜFZEUGNIS
INSPECTION CERTIFICATE ACCORDING TO
CERTIFICAT DE RECEPTION

EN 10204
3.1

Deutsche Edelstahlwerke

Zeugnisnr. 380530 /
Seite
Page / Page
3 / 4

Besteller
Customer
Client
Swiss Steel Italia Srl

Bestell Nr.
Order-No.
Commande No.
2058037449

Hersteller
Manufacteur
Producteur
Deutsche Edelstahlwerke Specialty Steel GmbH & Co. KG
D-57012 SIEGEN

Uns. Auftr.-Nr.
Order-No.
Notre Com. No.
1937569/001

Proben-Nr.
Test N.
Eprouv.N.
540205

EN 10088-5 07-2009
ASTM A564M-19A 09-2019 Condition A
ASME BPVC S.2 P.A SA-564M 07-2019
ASTM F899 12-2012
Analyse gemäß
JIS G 4303 09-2012

---

bar steel made of stainless steel
Acidur 4542, X5CRNICUNB16-4, 1.4542,
TYPE 630 / SUS630
hot rolled, quenched, straightened,
peeled
according to
EN 10088-3 12-2014 +AT
EN 10088-5 07-2009
ASTM A564M-19A 09-2019 Condition A
ASME BPVC S.2 P.A SA-564M 07-2019
ASTM F899 12-2012
analysis acc. to
JIS G 4303 09-2012

---

barre en acier inoxydable
Acidur 4542, X5CRNICUNB16-4, 1.4542,
TYPE 630 / SUS630
laminé, hypertrempe, dressé, écroûté
selon
EN 10088-3 12-2014 +AT
EN 10088-5 07-2009
ASTM A564M-19A 09-2019 Condition A
ASME BPVC S.2 P.A SA-564M 07-2019
ASTM F899 12-2012
analyse suivant
JIS G 4303 09-2012

VERFORMUNGSGRAD / HOT FORMING RATIO: 52:1

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ABNAHMEPRÜFZEUGNIS
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CERTIFICAT DE RECEPTION

EN 10204
3.1

Deutsche Edelstahlwerke

Zeugnisnr. 380530 / Seite Page / Page 4 / 4

Besteller **Customer** **Client**	Swiss Steel Italia Srl	**Bestell Nr.** **Order-No.** **Commande No.**	2058037449
Hersteller **Manufacteur** **Producteur**	Deutsche Edelstahlwerke Specialty Steel GmbH & Co. KG D-57012 SIEGEN	**Uns. Auftr.-Nr.** **Order-No.** **Notre Com. No.**	1937569/001
		Proben-Nr. **Test N.** **Eprouv.N.**	540205

CE

22

0432-CPR-00150-01/02

Deutsche Edelstahlwerke
Specialty Steel GmbH & Co. KG
Auestrasse 4
Witten

1.4542 1X - EN 10088-5

warmgewalzter Stab, rund, geschält
aus korrossionsbest. Stahl
Stahlbauwerken, Metall-/Beton-
Verbundbauwerken, Hochbauten
und Ingenieurbauwerken

Leistungserklärung (LE) 1.4542 1X

Die Leistungserklärung (LE) ist zu finden unter: www.dew-stahl.com/1.4542 1X

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Datum: 01.04.2022
Pohl
(Abnahmebeauftragter/ Inspector)

PAVONESISTEMI

Pesatura Elettronica Industriale dal 1963
Via Tiberio Bianchi 11/13/15 - 20863 CONCOREZZO (MB)
Tel. +39 039 9162656 - Email pavone@pavonesistemi.com

Member of CISQ Federation
RINA CERTIFIED MANAGEMENT SYSTEM ISO 9001

Destinatario 108889
REMAZEL ENGINEERING SPA
VIA CARLO OTTAVIO CORNAGGIA 10
20123 MILANO (MI)

Destinazione merce
REMAZEL ENGINEERING
VIA CABOTO 26
34147 TRIESTE (TS)

DOCUMENTO DI TRASPORTO (DPR 472 DEL 14/08/96)	N. 3178	Data 22/11/2024	Cod. Fornitore	Pag. 1

Articolo	Descrizione	UM		
	Saldo vs. ordine 24005940 18-10-24			
APCP0080	Cella di carico a perno modello PRN in acciaio inox. Portata 4000 kg Fornita con certificato di calibrazione	nr	√	2,00
	Acconto vs. ordine 24006389 08-11-24			
PSDA0014	Limitatore di carico digitale modello LC 200 per trasduttori estensimetrici. Risoluzione interna 24 bit.	nr	√	4,00

PAVONE SISTEMI S.r.
RENO0498957
Remazel 24007761
DATA R 26/11/2024

REMAZEL ENGINEERING S.p.A.
RIC. IL 26 NOV 2024
C. SC. Firma
Per accettazione U. L. di Trieste
CON RISERVA DI CONTROLLO

Causale del Trasporto		Data e Ora inizio Trasporto
VENDITA		
Colli: 01 / Peso: 3	Aspetto dei beni: [ ] SCATOLA DI CARTONE [ ] BANCALE [ ] A VISTA	Firma del Conducente
Vettore: DHL EXPRESS SRL	Spedizione: MEZZO CORRIERE Resa: PORTO ASSEGNATO	Firma del Destinatario Firma Vettore

CERTIFICATO DI CALIBRAZIONE DI CELLA DI CARICO N. 321386
Load cell certificate of calibration

MODELLO	Model	PRN 4000	
N. DI SERIE	Serial N.	202415225	
PORTATA NOMINALE	Capacity	4000,00	kg
SENSIBILITA' NOMINALE	Nom. sensitivity	1,0000	mV/V
COMPENSAZIONE IN TEMP	Temp compensated	-10 ÷ +50	°C
ALIMENTAZIONE	Supply	2,00 ÷ 15,00	Vcc
ISOLAMENTO	Insulation	> 5000	MOhm
RESISTENZA INGRESSO	Input resistance	701	Ohm
RESISTENZA USCITA	Output resistance	702	Ohm
SEGNALE DI ZERO	Zero signal	-0,0041	mV/V

CURVA DI RISPOSTA
Response curve

%	CARICO Load kg	USCITA Output mV/V
0	0,00	0,0000
50	2000,00	0,4989
100	4000,00	0,9992

CODICE COLORI
Colour code

SCHERMO NON COLLEG. AL CORPO CELLA
Screen non connected to load cell

BIANCO	White	- SEGNALE	Signal
VERDE	Green	+ SEGNALE	Signal
NERO	Black	- ALIM.	Supply
ROSSO	Red	+ ALIM.	Supply
MARRONE	Brown	- RIFER	Refer.
BLU	Blue	+ RIFER.	Refer.

TEMPERATURA DI PROVA	Test temperature	20 °C
MODO DI PROVA	Test mode	COMPRESSIONE
MATERIALE	Material	ACCIAIO INOX 17-4-PH
DISEGNO N.	Drawing N.	C.322

NOTE

DATA Date 23/10/2024 OPERATORE Operator LB

CERTIFICATO DI CALIBRAZIONE DI CELLA DI CARICO N. 321385
Load cell certificate of calibration

MODELLO	Model	PRN 4000	
N. DI SERIE	Serial N.	202415224	
PORTATA NOMINALE	Capacity	4000,00	kg
SENSIBILITA' NOMINALE	Nom. sensitivity	1,0000	mV/V
COMPENSAZIONE IN TEMP	Temp compensated	-10 ÷ +50	°C
ALIMENTAZIONE	Supply	2,00 ÷ 15,00	Vcc
ISOLAMENTO	Insulation	> 5000	MOhm
RESISTENZA INGRESSO	Input resistance	702	Ohm
RESISTENZA USCITA	Output resistance	703	Ohm
SEGNALE DI ZERO	Zero signal	0,0012	mV/V

CURVA DI RISPOSTA
Response curve

%	CARICO Load kg	USCITA Output mV/V
0	0,00	0,0000
50	2000,00	0,4999
100	4000,00	0,9990

CODICE COLORI
Colour code

SCHERMO NON COLLEG. AL CORPO CELLA
Screen non connected to load cell

BIANCO	White	- SEGNALE	Signal
VERDE	Green	+ SEGNALE	Signal
NERO	Black	- ALIM.	Supply
ROSSO	Red	+ ALIM.	Supply
MARRONE	Brown	- RIFER	Refer.
BLU	Blue	+ RIFER.	Refer.

TEMPERATURA DI PROVA	Test temperature	20 °C
MODO DI PROVA	Test mode	COMPRESSIONE
MATERIALE	Material	ACCIAIO INOX 17-4-PH
DISEGNO N.	Drawing N.	C.322

NOTE

DATA Date 23/10/2024 OPERATORE Operator LB

Base Load Power Hub (BLPH)

MASTER

DAVIT CRANE
FAT PROCEDURE

Document Number: 1724001010-QC-PRO-00008

Document Class: 2

LINARI STEFANO
Rosetti Marino
16/12/2024

REMAZEL ENGINEERING S.p.A.
Soc. soggetta all'attività di direzione
e coordinamento di FINCANTIERI S.p.A
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ROSETTI MARINO

1	NO COMMENTS - APPROVED - WORK MAY PROCEED
2	MINOR COMMENTS - REVISE AND RESUBMIT - WORK MAY PROCEED
3	MAJOR COMMENTS – REJECTED – DO NOT PROCEED
4	APPROVAL NOT REQUIRED

NOTE: Approval doesn't relieve the supplier from mandatory compliance with contractual documents and specifications. Comments made do not imply acceptance of any cost or delivery impact.

Sign	Date
M. Di Scipio	29/11/2024

Rev.	Date	Description	Prepared	Reviewed	Approved
02	26/11/2024	Accepted for Construction (AFC)	IZ	MP	MT
01	08/11/2024	Issue for Review (IFR)	IZ	MP	MT
00	01/10/2024	Issue for Review (IFR)	IZ	MP	MT

REMAZEL ENGINEERING

MARZIO MEDERICI ob. CROSSWIND
☒ REVIEWED ☐ WITNESSED
NAME: MARZIO MEDERICI
DATE: 16/12/2024
SIGNATURE:

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File: 1724001010-QC-PRO-00008.docx

Revision / Change Log

Rev.	Description
00	Issue for Review (IFR)
01	Issue for Review (IFR)
02	Accepted for Construction (AFC)

HOLDS LIST

No.	Description
1	
2	
3	
4	

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1 INTRODUCTION

1.1 PROJECT OVERVIEW

Crosswind, a Shell and Eneco joint venture, was awarded the tender to develop the offshore Hollandse Kust Noord (HKN) wind farm, located 18.5km off the coast of Netherlands near the town of Egmond aan Zee. The consortium plans to have HKN operational in 2023 with an installed capacity of 759MW generating at least 3.3TWh per year. This is sufficient renewable power to supply more than 1 million Dutch households with green electricity.

Offshore wind farms produce intermittent electricity and balancing these dips and peaks and integrating this electricity into the national energy system requires new technologies. For this reason, the offshore wind farm will include several new technologies that could be implemented at full-scale in the future. The new technologies being explored include a floating solar park, a short-duration battery storage as well as long-term storage via green hydrogen produced by water electrolysis and subsequently consumed in a fuel cell. The combination of these individual measures, herein referred to as the Base Load Power Hub (BLPH) will ensure a continuous power supply regardless of the wind situation.

1.1.1 Project Location

The Hollandse Kust Noord (HKN) wind farm is located 18.5km off the coast of the Netherlands near the town of Egmond aan Zee.



Figure 1 HOLLANDSE KUST NOORD WIND PARK Location Map



Figure 2 - Wind Park Details

The wind farm will consist of No. 69 x 11.5MW wind turbine generators each to be installed on a dedicated monopile structure. A 70th monopile located on coordinates E 590719.1, N 5841602.3 is reserved for installing the platform accommodating the BLPH. The monopile structure was designed and installed by Van Oord Offshore Wind (VooW) and therefore not part of the BLPH scope.

1.1.2 Project Concept

All components included in the BLPH will be integrated onshore on a topsides and installed in an offshore location within the boundaries of the HKN wind farm. At its simplest, the BLPH will store energy during periods of high electricity generation from renewable sources (a wind turbine generator and the floating solar PV farm) and release it during periods of low generation. In practice. It is expected that the energy stored will supplement generation from renewable sources to ensure that at least 1.0MW of power is exported to the electrical grid regardless of wind/solar availability.

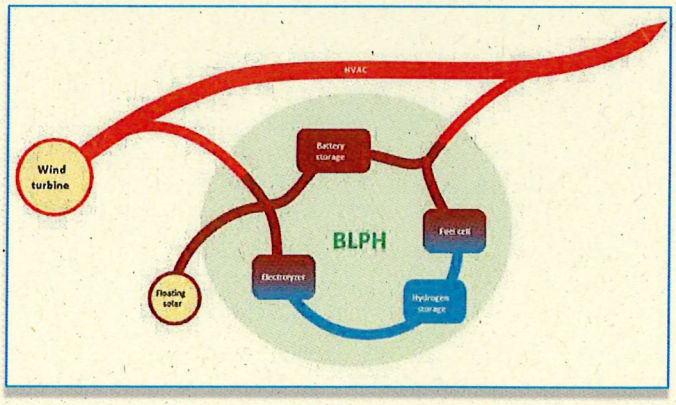


Figure 3 – BLPH Concept

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Electricity in the BLPH will be stored in the form of electrons in a battery energy storage system (BESS) as well as converted into green hydrogen via water electrolysis. When the power output from the connecting wind turbine drops to below 1 MWe, the BLPH will return its stored energy to supplement the remaining power output. This will be by discharging the BESS, while stored hydrogen will be converted back into electricity using a fuel cell to extend the discharge duration.

The purpose of the BLPH s to function as a testbed for the integration of energy storage technologies with renewable generation. It is expected that equipment installed on the BLPH will operate as Normally Unmanned Installation for at least two (2) years with no or minimal maintenance and it will have its own independent control room with the ability to communicate with Crosswind's control room.

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2 DOCUMENT SCOPE

The purpose of the document is to draw up a procedure suitable for verifying all the functions of the crane, its safety devices, and its structural strength

2.1 REFERENCES

Doc. No.	Description
1724001010-MAC-DA-00009	CRANE GENERAL ARRANGEMENT DRAWINGS AND DATA SHEETS AND LOAD CHART-DAVIT CRANE
1724001010-MAC-DG-00012	WIRING DIAGRAM -DAVIT CRANE
123A90-DDL-MAC-SP-50034	Technical Specification for DAVIT CRANE

Table 1 - Reference Documents

2.2 DEFINITIONS AND ABBREVIATIONS

COMPANY or Client (CPY):	Crosswind
CONTRACTOR (CTR):	ROSETTI MARINO S.p.A.
PROJECT:	HOLLANDSE KUST NOORD WIND PARK Project
MANUFACTURER:	REMAZEL ENGINEERING

Table 2 - Definitions and Abbreviations

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3 FAT PROCEDURE

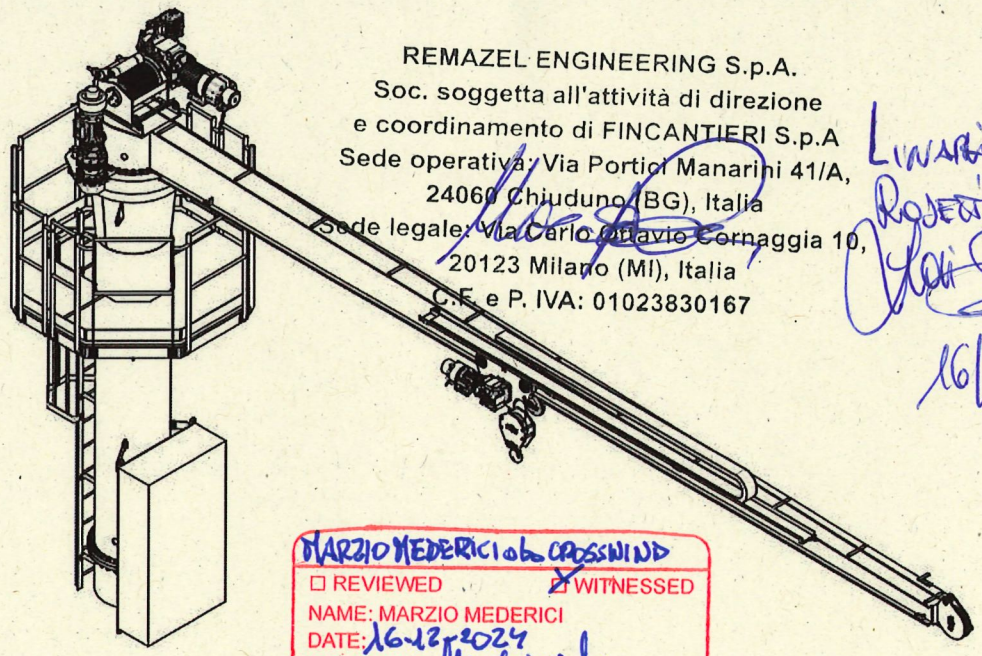
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BASE LOAD POWER HUB (BLPH) DAVIT CRANE C09-0001

JOB 24-27012

FACTORY ACCEPTANCE TEST (FAT) PROCEDURE



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LIVIANI STEFANO
ROSETTI MARINO
16/12/2024

MARZIO MEDERICI obo CROSSWIND
☐ REVIEWED ☑ WITNESSED
NAME: MARZIO MEDERICI
DATE: 16-12-2024
SIGNATURE: Mederici

Rev.	Modify description	Issue	Approval	Date
02	Revision based on client comments	MPU	MTO	26/11/2024
01	Revision based on client comments	MPU	MTO	08/11/2024
00	First issue	IZA	MTO	30/09/2024

Signatures area

SUMMARY OF REVISION

Rev.	Date	Revised chapters	Revision description	Reason for revision
00	30/09/2024	All	First Issue	For approval
01	07/11/2024	All	Revision based on client comments	For approval
02	26/11/2024	All	Revision based on client comments	For approval

Signatures area

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Signatures area

1 Scope

The scope of this document is to define the tests that will be performed for the following customer and project:

Customer	Hull/Project	Company
ROSETTI MARINO	HOLLANDSE KUST NOORD WIND PARK Project	CROSSWIND

2 Definition and abbreviations

FAT	Factory Acceptance Test
CL	Rosetti Marino – Customer
RMZ	Remazel
SWL	Safety Working Load
PL	Proof Load
HKN	Hollandse Kust Noord
HSE	Health, Safety and Environment
CW	Clockwise
CCW	Counter-Clockwise
AOPS	Automatic Overload Protection System
MOPS	Manual Overload Protection System
DAF	Dynamic Amplification Factor

3 Documents reference

The last available revision of the documents below will be at disposal before the start of the FAT procedure.

REF.	DOCUMENT	REMAZEL CODE	ROSETTI MARINO CODE
[1]	CRANE GENERAL ARRANGEMENT DRAWINGS	24-27012-GA-001	1724001010-MAC-DA-00009
[2]	WIRING DIAGRAM incl JB TERMINALS	24-27012-WD-001	1724001010-MAC-LIS-00014
[3]	I/O LIST	24-27012-IOL-001	1724001010-MAC-DG-00012
[4]	HOOK ASSEMBLY	C09-0001-A0007	

Signatures area

4 Introduction

The "Attendees" are people involved during the test.

Attendees	Name	Title	Signature
REMAZEL	MARCO PUZZER	PROJECT MANAGER	
REMAZEL			
ROSETTI MARINO	STEFANO LINARI	SQL	
ROSETTI MARINO	MICHELE SACCHI	QC Painting	
CROSSWIND	MARZIO MEDERICI	INSPECTOR	
CROSSWIND			

5 Tests to be performed

1. Dimensional control
2. Check of decals and nameplates
3. Electrical board checks
4. Electrical test power supply
5. Power up procedure
6. Power up stop circuit procedure
7. Crane readiness check
8. Traslation, hoisting and slewing limit switch
9. MOPS testing
10. Load test at 3.5t and 1t
11. Blackout test at 3.5t and 1t
12. Emergency operation at 3.5t and 1t
13. Movement and speed checks at 3.5t and 1t
14. Overload device 110% of 3.5t and 1t
15. AOPS testing 140% of 3.5t and 1t
16. Overload test 3.5t and 1t
17. Final check of the crane
18. Electrical test on motors

Signatures area

6 Equipment main characteristics

Below the main characteristic of the BLHP Davit Crane.

TECHNICAL DATA			
Type		DAVIT CRANE	
Customer TAG		X-99001	
General assembly	Drawing	C09-0001-A0002	
DESIGN CRITERIA		DNV-ST-0378	
Category of crane		Offshore crane	
Ambient working temperature (min/max)	°C	-8°C to +25°C	
Wind speed at davit crane[1]	m/s	Operative: 24 Out of service: 44	
Crane static inclination angle heel/trim	deg	List / Trim = 0° / 0°	
MECHANISMS CLASSIFICATION			
According to European Federation of Handling Industries FEM - 1.001 (10.1998)-Rules for design of hoisting appliances.	Equipment	A4	
	Mechanism	M4	
HOISTING			
General data			
Boom height from deck	m	4.85	
Deck height from sea level	m	30.13	
Max cargo lift	SWL	3.5 ton @ 5m	1.0 ton @ 10m
Significant wave height	Hs	1.5	
Hoisting 1st speed	m/min	3.75	
Hoisting 2nd speed	m/min	15	
Minimum Outreach	m	1.5	
Maximum Outreach	m	10	
Maximum hook stroke	m	40	
Personnel handling		NO	
AOPS		YES	
MOPS		YES	
Hook trolley (radial movement)			
1st speed	m/min	2	
2nd speed	m/min	8	
Slewing			
Slewing 1st speed	rpm	0. 5	
Slewing 2nd speed	rpm	1	
Slewing range angle (continuous)	deg	+/-90°	
Electric motors			
Installed power (N. of motors x unitary power)	kW	1 x 15 for winch 1 x 4 for slewing 2 x1.5 for trolley and auxiliaries	

[1] Wind conditions have been considered as per DNV-ST-0378 Appendix A, Table A-2 to be more conservative.

Signatures area

7 Equipment Data and Testing Loads

Below the main characteristics tested during FAT.

Items	Q.ty	Crane RMZ TAG (S/N)	ROSETTI MARINO TAG	SWL
BLPH DAVIT CRANE	1	4366	X-99001	3.5t @ 5m / 1.0t @ 10m

Overload test (static)	Overload device alarm	AOPS Testing	MOPS Testing
5.3t @ 5m / 1.7t @ 10m	110% of SWL 3.85t @ 5m / 1.1t @ 10m	140% of SWL 4.9t @ 5m / 1.4t @10m	0.5t @ any outreach

8 Safety check

As soon as entering in the workshop and test bench area, as first, please check that all safety measure has been taken:

ID	Step/Test	Result	
8.1	Check all people involved wear proper PPE (protective shoes, hard hat, glasses, safety gloves, high visibility jacket)	OK	NOT OK
8.2	All persons involved in the test have received all information on the safety instructions to be given during test	OK	NOT OK
8.3	Check that the test area is identified, delimited, clean from residues or other clutter	OK	NOT OK
8.4	Check the workshop layout and identify emergency exits.	OK	NOT OK

9 Measurement instruments

Below the list of the tool and instruments used during the FAT with the related serial numbers and the relevant information.

Instrument	Maker	Serial Number	Remazel ID number	Calibration		
				Cert. No.	Issue Date	Expire Date
Dynamometer 9t	Dini Argeo Srl	0722200887	DNM-0015	2795/24	04/03/2024	04/03/2025
Voltage tester	Hioki	020431607	NDT-0036	2793/24	04/03/2024	04/03/2025
Insulation tester	Hioki	020504304	NDT-0037	2794/24	04/03/2024	04/03/2025
Rib	Stanley	34-296	NDT-0039	REM.815552	24/04/2024	24/04/2025
Current clamp meter	HT Italia	66401785	PZA-0016	1038-2022-9	06/05/2022	06/05/2025

Signatures area

10 Preliminary controls

Before testing the crane, personnel must execute the following controls:

10.1	INTERNAL TEST REPORT REVIEW				
10.1.1	Review of mechanical checks		OK	NOT OK	see Internal Mech. check attached
10.1.2	Review of functional tests		OK	NOT OK	see attached internal test procedure
10.2	**DIMENSIONAL CONTROL**				
ID	**Test**	**Expected value**	**Result**		**Notes**
10.2.1	Verify the distance from the center of the fixed pedestal to the hook with the trolley in first position (absolute minimum outreach)	1.5m (+50mm/-0mm)	OK	NOT OK	
10.2.2	Verify the distance from the center of the fixed pedestal to the hook with the trolley in second position (maximum outreach 3.5t)	5.0m (+50mm/-0mm)	OK	NOT OK	
10.2.3	Verify the distance from the center of the fixed pedestal to the hook with the trolley in third position (absolute maximum outreach)	10.0m (+50mm/-0mm)	OK	NOT OK	
10.3	**CHECK OF DECALS AND NAMEPLATES**				
ID	**Test**	**Expected value**	**Result**		**Notes**
10.3.1	RMZ decal fitted to crane	N/A	OK	NOT OK	
10.3.2	SWL decal fitted to crane	N/A	OK	NOT OK	
10.3.3	RMZ nameplate fitted to crane. Check it is legible and undamaged	N/A	OK	NOT OK	
10.3.4	Hazard warning decals fitted to, or adjacent to, electrical components	N/A	OK	NOT OK	
10.4	**ELECTRICAL BOARD CHECKS**				
ID	**Test**	**Expected value**	**Result**		**Notes**
10.4.1	Check for earth bonding between control panel enclosure / backplate and door	N/A	OK	NOT OK	see attached internal test proc.
10.4.2	Visual and dimensional check	N/A	OK	NOT OK	
10.4.3	Dielectric test	N/A	OK	NOT OK	see attached internal test proc.
10.4.4	Insulation test	N/A	OK	NOT OK	"
10.5	**ELECTRICAL TEST POWER SUPPLY**				
ID	**Test**	**Expected value**	**Result**		**Notes**
10.5.1	Crane to be connected to power supply	N/A	OK	NOT OK	

Signatures area

10.5.2	Measurement of the voltage on the main switch	400V ±10% at 50Hz	OK	NOT OK	
10.6	**POWER UP PROCEDURE**				
ID	**Test**	**Expected value**	**Result**		**Notes**
10.6.1	Rotate the main switch from O position to I position	L1, L2 and L3 lights are on	OK	NOT OK	
10.7	**POWER UP STOP CIRCUIT PROCEDURE**				
ID	**Test**	**Expected value**	**Result**		**Notes**
10.7.1	Press RESET button on the electrical cabinet door	RESET blue blinking light turns off	OK	NOT OK	
10.7.2	Press EMERGENCY STOP button on electrical cabinet door	RESET light turns on	OK	NOT OK	
10.7.3	Press manouver buttons	Crane does not move	OK	NOT OK	
10.7.4	Release EMERGENCY STOP button on electrical cabinet door	RESET light starts blinking	OK	NOT OK	
10.7.5	Press manouver buttons	Crane does not move	OK	NOT OK	
10.7.6	Press RESET button on the electrical cabinet door	RESET blue blinking light turns off and crane is ready to start	OK	NOT OK	
10.7.7	Press manouver buttons (hoisting or traslation)	Crane does move	OK	NOT OK	
10.8	**CRANE READINESS CHECK**				
ID	**Test**	**Expected value**	**Result**		**Notes**
10.8.1	Remove slewing locking pin	Pin engaged light turns off	OK	NOT OK	
10.8.2	Check that either 1t or 3.5t light is on	N/A	OK	NOT OK	
10.9	**TRASLATION, HOISTING and SLEWING LIMIT SWITCH (no load)**				
ID	**Test**	**Expected value**	**Result**		**Notes**
10.9.1	Simulate 3.5t on hook and test the traslation forward limit switch	Trolley in second position	OK	NOT OK	
10.9.2	Remove the simulation of 3.5t and test the traslation forward limit switch	Trolley in third position	OK	NOT OK	
10.9.3	Test the traslation backward limit switch	Trolley in first position	OK	NOT OK	
10.9.4	Test the CW rotation limit switch	Boom +90°	OK	NOT OK	
10.9.5	Test the CCW rotation limit switch	Boom -90°	OK	NOT OK	
10.9.6	Test the hoisting up limit switch, verify clearance between hook center and pavement	Hook up, 4.0m	OK	NOT OK	
10.9.7	Test the hoisting down limit switch, verify 40m of rope are out and at least 3 dead coils are left on the winch	Hook down, 40m	OK	NOT OK	

see attached automatic test proc. load FAT has been done only with

Signatures area

10.9.8	Hoist up the hook and verify engagement of anti-to-block system	Anti-to-block system engages correctly	OK	NOT OK	

Signatures area

11 Testing

11.1	MOPS TESTING				
ID	**Test**	**Expected value**	**Result**		**Notes**
11.1.1	With no load, push the MOPS switch, start the 5 minutes timer and manually pull the hook down. Leave the MOPS switch in position for 5 minutes.	After 5 minutes the hook can still be pulled down, MOPS is functioning correctly	OK	NOT OK	
11.1.2	Apply 0.5t on the hook, turn off the power supply to the crane and operate the MOPS switch	The winch will release the load and the MOPS alarm will sound	OK	NOT OK	
11.1.3	Repeat the test for 3 times	UPS is expected to last for the whole duration of the tests	OK	NOT OK	
11.2	**LOAD TEST (SWL 3.5t) at outreach = 5m**				
ID	**Test**	**Expected value**	**Result**		**Notes**
11.2.1	Hoist about 2m up the SWL	Verify load force of 3.5t has been applied	OK	NOT OK	
11.2.2	Traslate the trolley about 1m forward	Verify movement forward under load	OK	NOT OK	
11.2.3	Traslate the trolley about 1m backward	Verify movement backward under load	OK	NOT OK	
11.3	**BLACKOUT TEST (SWL 3.5t) at outreach = 5m**				
ID	**Test**	**Expected value**	**Result**		**Notes**
11.3,.1	Lift the nominal load (3.5t) with the winch, disconnect the main power line (blackout simulation).	The load will remain motionless due to the negative brake action of the winch	OK	NOT OK	See internal test procedure
11.4	**EMERGENCY OPERATION (SWL 3.5t) at outreach = 5m**				
ID	**Test**	**Expected value**	**Result**		**Notes**
11.4.1	With the nominal load (3.5t) hanged, act the levers on the hoisting motors to de-activate the brakes	The load can be lowered	OK	NOT OK	
11.4.2	With the nominal load (3.5t) hanged, act the levers on the slewing motors to de-activate the brakes and move the crane	Crane can rotate	OK	NOT OK	

Signatures area

11.5	MOVEMENT AND SPEED CHECKS (SWL 3.5t) at outreach = 5m				
ID	**Test**	**Expected value**	**Result**		**Notes**
11.5.1	With 3.5t on the hook, time how long it takes to lift the load through 1m in first speed Note, do not time from a starting start.	~~4.5~~ 3.75 m/min ± 5%	(OK)	NOT OK	16 sec.
11.5.2	With 3.5t on the hook, time how long it takes to lift the load through 1m in second speed Note, do not time from a starting start.	15 m/min. ± 5%	(OK)	NOT OK	without load 6.3 sec.
11.5.3	With 3.5t on the hook, rotate the boom clockwise 90° and time it. If necessary, repeat the operation by rotating the boom counter-clockwise.	0,5 rpm ± 5%	(OK)	NOT OK	
11.5.4	With 3.5t on the hook, move the trolley in first speed and time it	2 m/min ± 5%	(OK)	NOT OK	
11.5.5	With 3.5t on the hook, move the trolley in second speed and time it	8 m/min ± 5%	(OK)	NOT OK	
11.5.6	Check the current intensity during hoisting	< /= motor nominal current	27.3 A		
11.5.7	Check the current intensity during slewing	< /= motor nominal current	4.20 A		
11.5.8	Check the current intensity during traslation	< /= motor nominal current	2 A		
11.6	**OVERLOAD DEVICE (110% of NOMINAL LOAD 3.5t = 3.85t) at outreach = 5m**				
ID	**Test**	**Expected value**	**Result**		**Notes**
11.6.1	Apply on the hook 3.85t and try to lift with the winch only	The winch will not lift the load and the OVERLOAD alarm will sound	(OK)	NOT OK	Sound ok
11.7	**AOPS TESTING (140% of NOMINAL LOAD 3.5t = 4.9t) at outreach = 5m**				
ID	**Test**	**Expected value**	**Result**		**Notes**
11.7.1	From deck level, apply 4.9t on the hook, check that the load is still.	The AOPS is disabled so the winch will not release the load.	(OK)	NOT OK	
11.7.2	Simulate off-board position, apply 4.9t on the hook, check that the load is lowering	The AOPS is enabled so the winch will release the load.	(OK)	NOT OK	
11.8	**OVERLOAD TEST (1.25x0,75xDAFxSWL 3.5t) – (DAF=Dynamic Amplification Factor) at outreach = 5m**				
ID	**Test**	**Expected value**	**Result**		**Notes**
11.8.1	Apply on the hook 5.3t (1.25x0.75x1.6x3.5t) without using the winch. Leave for 5 minutes	Load is supported for 5 minutes. No visible damage to the crane.	(OK)	NOT OK	

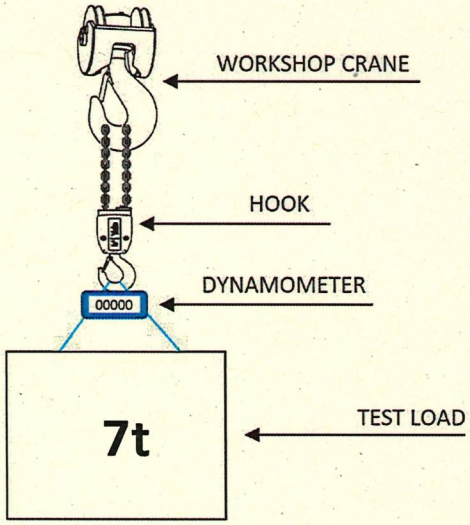
Signatures area

11.9	LOAD TEST (SWL 1t) at outreach = 10m				
ID	Test	Expected value	Result		Notes
11.9.1	Hoist about 2m up the SWL	Verify load force of 1t has been applied	OK	NOT OK	
11.9.2	Traslate the trolley about 1m forward	Verify movement forward under load	OK	NOT OK	
11.9.3	Traslate the trolley about 1m backward	Verify movement backward under load	OK	NOT OK	
11.10	**OVERLOAD DEVICE (110% of NOMINAL LOAD 1t = 1.1t) at outreach = 10m**				
ID	Test	Expected value	Result		Notes
11.10.1	Apply on the hook ~~1t~~ 1.1t and try to lift with the winch only	The winch will not lift the load and the OVERLOAD alarm will sound	OK	NOT OK	

11.11	AOPS TESTING (140% of NOMINAL LOAD 1t = 1.4t) at outreach = 10m				
ID	Test	Expected value	Result		Notes
11.11.1	From deck level, apply ~~1t~~ 1.4t on the hook, check that the load is still.	The AOPS is disabled so the winch will not release the load.	OK	NOT OK	
11.11.2	Simulate off-board position, apply ~~1t~~ 1.4t on the hook, check that the load is lowering	The AOPS is enabled so the winch will release the load.	OK	NOT OK	be inverted test procedure
11.12	**OVERLOAD TEST (1.25x0,75xDAFxSWL 1t) at outreach = 10m**				
ID	Test	Expected value	Result		Notes
11.12.1	Apply on the hook 1.7t (1.25x0.75x1.8x1t) without using the winch. Leave for 5 minutes	Load is supported for 5 minutes. No visible damage to the crane.	OK	NOT OK	
11.13	**FINAL CHECK OF THE CRANE**				
ID	Test	Expected value	Result		Notes
11.13.1	Visual check the components of the davit after testing to ensure the crane is in good condition and fit to operate	Crane is in good state	OK	NOT OK	

Signatures area

11.14	ELECTRICAL TEST ON MOTORS				
ID	Test	Expected value	Result		Notes
11.14.1	Perform dielectric test on motors for 60"	2000V	OK	NOT OK	see internal test procedure
11.14.2	Perform electric insulation test on motors	> 10 Mohm	OK	NOT OK	
11.15	**HOOK TEST (2xSWL)**				
ID	Test	Expected value	Result		Notes
11.15.1	Hang 7t on the hook for 60" (hook will be tested disassembled from the crane)	Hook supports the load and is in a good state after the test	OK	NOT OK	see attached certificate



Signatures area .

12 Punch List

ITEM	PUNCH POINT DESCRIPTION	PUNCH POINT SOLUTION	COMPANY IN CHARGE OF RESOLVING	PERSON RESPONSIBLE FOR THE SOLUTION
4366	WIRE Rope installed wrong dimention (11mm) to be Replace with 10 mm	WIRE Rope To be Replace	Remazel	Quality / Workshop
4366	JB cabling To be fix inside	cable to be dress	Remazel	Quality / Workshop
4366	Label for panel and JB to be installed	labels to be installed	Remazel	Quality / Workshop
4366	Main data plate to be installed	label to be installed	Remazel	Quality / Workshop

20/12/24 All points closed by involved parties, see e-mail dated 20/12/2024 Object ROSETTI MARINO P.O. 1724001010 DAVIT CRANE/24-27012/TOUCH POINT

REMAZEL
C. Ziber
☐W ☐R
20/12/24

Signatures area

SIGNATURE FOR APPROVAL					
	REMAZEL	ROSETTI MARINO	ROSETTI MARINO	CROSSWIND	CROSSWIND
Name	MARCO PUZZER	STEFANO LINARI	MICHELE SACCHI	MARZIO MEDERICI	
Signature					
Position	PROJECT MANAGER	SQL	QC COATING	INSPECTOR	
Date	16/12/2024	16/12/2024	16-12-2024	16/12/2024	

Signatures area


SWL 1 t
SWL 3.5 t | 5m
LeciTrailer


CO1-JB-0002


REMAZEL
ENGINEERING
SERIAL N°
YEAR
MAIN VOLTAGE (V)
AUX. VOLTAGE (V)
POWER (kW)
RATED CURRENT (A)
FREQUENCY (Hz)
PROTECTION RATING (IP)
C01-EP-0001
JB-200E3


80E1

1.Scope

In this section we are going to respond to the crs' comments.
the reply to the comment is included in the corresponding bookmark,
when the comment reference is not present as a bookmark, check the answer directly in the crs.

Comment Response Sheet Hollandse Kust Noord

CRS document name / Aconex unique number: 1724001010-QC-DB-00004-EQUIPMENT MANUFACTURER RECORD BOOK -DAVIT CRANE (REMAZEL) CRS	
Reviewed Document(s) / Aconex unique number(s): ROSMA-INN-BPH-CER-00023 03 1724001010-QC-DB-00004-EQUIPMENT MANUFACTURER RECORD BOOK - DAVIT CRANE (REMAZEL)	
Reference Document(s) / Aconex unique numbers(s):	
Interface information:	
Remarks on transmittal:	
Document review status (by Engineer / Engineer's Assistant(s)):	**CODE 2 - MINOR COMMENTS**

No.	Reference	Comment	Comment made by	Comment status
1.	Part 1 Design Dossier	Installation, Operating & Maintenance Manual 1724001 010-MAC-MAN-0001 Rev 02, the revision held by Crosswind is Rev 03. Correct, rev.03 of Intallation,Operating& Maintenance manual was approved after the 1724001010-QC-DB-00004-EQUIPMENT MANUFACTURER RECORD BOOK -DAVIT CRANE was issued. Noted, revised.	AGI	OPEN
2.	Part 2 Certification Dossier	Weld Map Traveling Trolley DWG C09-0001-P0006 Rev A, is this the current revision as Material Certification List (Page 535) details this should be REVISION C Revision C of the drawing has no impact on welding book	AGI	OPEN
3.	Part 2 Certification Dossier	Weld Map BOOM DWG C09-0001-P0004 Rev A, is this the current revision as Material Certification List (Page 256) details this should be REVISION D Revision D of the drawing has no impact on welding book	AGI	OPEN
4.	Part 2 Certification Dossier	Weld Book Fixed Column DWG C09-0001-P0002 Rev D (Page 349), the GA DWG details this should be E Revision E of the drawing has no impact on welding book	AGI	OPEN
5.	Part 2 Certification Dossier	Pedestal Certification List details certificate 16624400805 has a Heat/Plate No. 441908. The certification list details additional mechanical testing 240902, where are these records These are typo mystake made when compiling the traceability list: they are the supplier's internal item codes.	AGI	OPEN

Comment Response Sheet Hollandse Kust Noord

No.	Reference	Comment	Comment made by	Comment status
6.	Part 2 Certification Dossier	MARCEGAGLIA Pedestal Certification List details certificate 16624563335 has a Heat/Plate No. 2461219. The certification list details additional mechanical testing 240896, where are these records These are typo mystake made when compiling the traceability list: they are the supplier's internal item codes.	AGI	OPEN
7.	Part 2 Certification Dossier	MARCEGAGLIA Pedestal Certification List details certificate 16624421397 has a Heat/Plate No. 442151. The certification list details additional mechanical testing 240905, where are these records These are typo mystake made when compiling the traceability list: they are the supplier's internal item codes.	AGI	OPEN
8.	Part 2 Certification Dossier	MARCEGAGLIA Pedestal Certification List details certificate 16624421397 has a Heat/Plate No. 442151. The certification list details additional mechanical testing 240906, 204908, 240910,240911, 240912 and 240913 where are these records These are typo mystake made when compiling the traceability list: they are the supplier's internal item codes.	AGI	OPEN
9.	Part 2 Certification Dossier	ACCIAIERIA ARVEDI Pedestal Certification List details certificate 664290 has a Heat/Plate No. 122771. The certification list details additional mechanical testing 240900, 204899, 240914,240916 and 240917 where are these records These are typo mystake made when compiling the traceability list: they are the supplier's internal item codes.	AGI	OPEN
10.	Part 2 Certification Dossier	GABRIELLI Pedestal Certification List details certificate 5394/3016 has a Heat/Plate No. 565503. The certification list details additional mechanical testing 240899 and 240915 where are these records These are typo mystake made when compiling the traceability list: they are the supplier's internal item codes.	AGI	OPEN
11.	Part 2 Certification Dossier	Pedestal Certification List details that GABRIELLI certificate 5394/3016 and ACCIAIERIA ARVEDI certificate 664290 both have additional mechanical testing 240899 – HOW CAN THIS BE??? These are typo mystake made when compiling the traceability list: they are the supplier's internal item codes.	AGI	OPEN
12.	Part 2 Certification Dossie	FABBRICA ITALIANO LAMIERE srl Pedestal Certification List details certificate 2400000042290 has a Heat/Plate No. 322347. The certification list details additional mechanical testing 240918 and 240919 where are these records These are typo mystake made when compiling the traceability list: they are the supplier's internal item codes.	AGI	OPEN
13.	Part 2 Certification Dossier	FABBRICA ITALIANO LAMIERE srl Pedestal Certification List details certificate 2400000005205 has a Heat/Plate No. 316829 – WHERE ARE THESE MATERIAL CERTIFICATES	AGI	OPEN

Comment Response Sheet Hollandse Kust Noord

No.	Reference	Comment	Comment made by	Comment status
		Records on page 603		
14.	Part 2 Certification Dossier	FABBRICA ITALIANO LAMIERE srl Pedestal Certification List details certificate 2400000005205 has a Heat/Plate No. 316829 – where is UT Report 267 referenced for this material Noted, added	AGI	OPEN
15.	Part 2 Certification Dossier	FABBRICA ITALIANO LAMIERE srl Pedestal Certification List details certificate 2400000005205 has a Heat/Plate No. 316829 – where is the additional mechanical testing 240898 referenced for this material These are typo mystake made when compiling the traceability list: they are the supplier's internal item codes.	AGI	OPEN
16.	Part 2 Certification Dossier	COSME Winch Box Certification section is missing the following Material Certificates: - Cert 24066181/Colata 3300962 – Quality control level c3 applicable, not subject to Quality control plan - Cert 627031/Colata STAD49 - Noted, added	AGI	OPEN
17.	Part 2 Certification Dossier	Pin/Shaft/Pulley/Wheel Certification List is missing the following 3.1 material certificates: - Roller Bearing Swivels – Cert 429339/1/Heat 480592 - Trolley Pinion M=6 Z=13 – Cert 4883/Heat 220602441 Please see Page 689,690,691	AGI	OPEN
18.	Part 2 Certification Dossier	Pin/Shaft/Pulley/Wheel Certification List is missing the following 3.1 material certificates: - Ø279*35 – Cert 1154/4/Heat 1240905 - Ø127*30 – Cert 1253/3/Heat 1241244 Please refer to Winch box certification List page 644	AGI	OPEN
19.	Part 2 Certification Dossier	Page 654 Certification List (DWG C09-0001-P0013, C09-0001-P0014, C09-0001-P0016, C09-0001-P0037 and C09-0001-P0040) would benefit from a Description and ITP reference Noted, added	AGI	OPEN
20.	Part 2 Certification Dossier	Page 689 Certification List (DWG C09-0001-P0050, C09-0001-P0038 and C09-0001-P0083) would benefit from a Description and ITP reference Noted, added	AGI	OPEN
21.	Part 2 Certification Dossier	Page 689 Certification List (DWG C09-0001-P0050, C09-0001-P0038 and C09-0001-P0083) details that Additional Testing was carried out by TRATTAMENTO, where are these records? Noted, added	AGI	OPEN
22.	Part 2 NDE Colum	ANTARES CONTROL NDE reports do not reference a recognised drawing or any Material Heats	AGI	OPEN

No.	Reference	Comment	Comment made by	Comment status
		Dwg as per Sidertaglio WeldingBook page 348. This NDE report refer to the welds indicated in the page 349 of the WB. Heat number as per Certification List C09-0001-P0002 at page 567		
23.	Part 2 NDE	ANTARES CONTROL NDE reports do not reference a recognised drawing or any Material Heats= Dwg as per Sidertaglio WeldingBook page 348. This NDE report refer to the welds indicated in the page 349 of the WB. Heat number as per Certification List C09-0001-P0002 at page 567	AGI	OPEN
24.	Part 2 NDE	SGP Testing BOOM NDE Reports reference DWG C09-0001-P0004 Rev E, the Weld Map (Page 256) references DWG C09-0001-P0004 Rev A and the Material Certification List references DWG C09-0001-P0004 Rev D. This MRB would benefit from including the current revision of the DRAWINGS Noted, the revision is linked to minor changes. No impact on the documents cited above.	AGI	OPEN
25.	Part 2 NDE	SGP Testing TROLLEY NDE Reports reference DWG C09-0001-P0006 Rev C, the Weld Map (Page 256) references DWG C09-0001-P0006 Rev A and the Material Certification List references DWG C09-0001-P0004 Rev C. This MRB would benefit from including the current revision of the DRAWINGS Noted, the revision is linked to minor changes. No impact on the documents cited above.	AGI	OPEN
26.	Part 2 NDE	SGP Testing Winch Box NDE Reports reference DWG C09-0001-P0085 and no revision status Noted,revised	AGI	OPEN
27.	Part 2 NDE	SGP Testing WINCH NDE Reports reference DWG C09-0001-P0006 Rev A, the Dimensional Control Certificate (Page 726) references DWG C09-0001-P0006 Rev C and the Weld Map (Page 260) references DWG C09-0001-P0006 Rev A. This MRB would benefit from including the current revision of the DRAWINGS Noted, the revision is linked to minor changes. No impact on the documents cited above	AGI	OPEN
28.	Part 2 NDE	SGP Testing Winch Box NDE MPI Reports reference DWG C09-0001-P0006 and no revision status C09-0001-P0006 refer to Travelling Trolley and has the revision drawing	AGI	OPEN
29.	Part 2 NDE	Please provide ANTARES CONTROL NDE operator qualifications for Davide Righetto Noted, added	AGI	OPEN
30.	Part 2 NDE	Please provide GALPERTI NDE operator qualifications for Simone Tengattini Noted, added	AGI	OPEN
31.	Part 2 NDE	Please provide SIDERTAGLIO LAMIERE S.R.L. NDE operator qualifications for Alessandro Callegari Noted, added	AGI	OPEN

Comment Response Sheet Hollandse Kust Noord

No.	Reference	Comment	Comment made by	Comment status
32.	Part 2 NDE	Please provide COGNE ACCIAI SPECIALI S.P.A. NDE operator qualifications for Simone Nadalin and Marco Baisotti Noted, will be added , request for documentation forwarded to supplier	AGI	OPEN
33.	Part 2 Dimensional Reports	Dimensional Report DimAM006 references DWG C09-0001-P0006 Rev C, is this the correct revision as the Weld Map details Rev A and the Manufacturer Record Book (Page 531) details Rev D Noted, the revision is linked to minor changes. No impact on the documents cited above	AGI	OPEN
34.	Part 2 Dimensional Reports	Dimensional Report DimAM001 references DWG C09-0001-P0004 Rev G, is this the correct revision as the Weld Map details Rev A and the Manufacturer Record Book (Page 527) details Rev C, SGP Testing NDE reports detail Rev E and the Certification List (Page 535) details Rev D Noted, the revision is linked to minor changes. No impact on the documents cited above	AGI	OPEN
35.	Part 2 Commercial Items - HOOK	The Crosby Hook Certificate of Conformity is only supported by a Mill Certificate which contains only chemistry and cannot be considered supplied in accordance with EN 10204 : 3.1 Pages 741 Crosby certifies that the characteristics of the material are in accordance with those of the reference standard	AGI	OPEN
36.	Part 2 Commercial Items - HOOK	Presumably the Crosby Hook was subject to Heat Treatment and mechanical testing, include these records Added Test report and Datasheet with reference about tratements	AGI	OPEN
37.	Part 2 Commercial Items - HOOK	The material certification in this section comprises of a round bar Mill Cert, the Inspection & Test Plan details there should be Forgings, Plates and Round Bar material certificates. It is a forged hook, the ITP section refers the possible checks depending on the type of base material, in this case the check was done according EN 10228.1 and 3	AGI	OPEN
38.	Part 2 Commercial Items - HOOK	The Inspection & Test Plan details there should be material traceability through a certification list, include this	AGI	OPEN
39.	Part 2 Commercial Items - HOOK	The Inspection & Test Plan details there should be a CE Declaration and should be marked as such, where is this documentation For this type of hook, since it is a lifting component that cannot be used individually, the CE marking is not foreseen, but must be covered by the certification of the assembly or machine. As a result, neither we nor Crosby can affix the CE marking to the component. The only solution is to integrate it into the machine certification. I cannot propose alternatives, as this is the expected practice for this type of product.	AGI	OPEN
40.	Part 2 Commercial Items - HOOK	The Inspection & Test Plan details there should be a dimensional report, include this and any relevant drawing. Added	AGI	OPEN

Comment Response Sheet Hollandse Kust Noord

No.	Reference	Comment	Comment made by	Comment status
41.	Part 2 Commercial Items - HOOK	Presumably the Crosby Hook comes with a Type Approval Certificate, include this Not applicable no type approval certification was required	AGI	OPEN
42.	Part 2 Commercial Items - HOOK	Does the Crosby Hook come with the Optional Safety Latch, not clear from the certification and records The Hook was supplied with a safety lock	AGI	OPEN
43.	Part 2 Commercial Items - HOOK	Include NDE Operator qualification for Andrea Cortinovis Noted, added	AGI	OPEN
44.	Part 2 Commercial Items – Wire Rope & Socket	The Inspection & Test Plan details there should be a Certificate of Test & Thorough Examination of the wire rope, this is generally performed by a IVA/IVB/NOBO - where is this report At page 751	AGI	OPEN
45.	Part 2 Commercial Items – Translation Gearbox	The Translation Gearbox Declaration of Conformity details it is in accordance with EN 10204 : 3.1, provide the necessary records to support this At page 766 + comment 46	AGI	OPEN
46.	Part 2 Commercial Items – Translation Gearbox	The Inspection & Test Plan details that the Chemical Analysis & Mechanical properties will be provided for the gearbox Torque Items, where is this certification Noted, added	AGI	OPEN
47.	Part 2 Commercial Items – Translation Gearbox	This section would benefit from a drawing, include Noted, added	AGI	OPEN
48.	Part 2 Commercial Items – Lifting Gearbox	The Lifting Gearbox Declaration of Conformity details it is in accordance with EN 10204 : 3.1, provide the necessary records to support this Noted, added	AGI	OPEN
49.	Part 2 Commercial Items – Lifting Gearbox	The Inspection & Test Plan details that the Chemical Analysis & Mechanical properties will be provided for the gearbox Torque Items, where is this certification Noted, added refer to comment 48	AGI	OPEN
50.	Part 2 Commercial Items – Lifting Gearbox	This section would benefit from a drawing, include Noted, added	AGI	OPEN
51.	Part 2 Commercial Items – Rotation Gearbox	The Rotation Gearbox Declaration of Conformity details it is in accordance with EN 10204 : 2.2, provide the necessary records to support this Noted, added	AGI	OPEN
52.	Part 2 Commercial Items – Rotation Gearbox	This section would benefit from a drawing, include Noted,Added	AGI	OPEN
53.	Part 2 Commercial Items – Rotation Gearbox	The Inspection & Test Plan details that the Chemical Analysis & Mechanical properties will be provided for the gearbox Torque Items, where is this certification	AGI	OPEN

Comment Response Sheet Hollandse Kust Noord

No.	Reference	Comment	Comment made by	Comment status
		Noted, added – refer to comment 51		
54.	Part 2 Commercial Items – Rotation Gearbox	The Inspection & Test Plan details that all Gearboxes are in accordance with 3.1, why is this one 2.2 Noted, added refer to comment 51	AGI	OPEN
55.	Part 2 Commercial Items – Electric Motor	The Electric Motor CE Declaration & Declaration of Conformity do not advise if the motor is ATEX compliant, all equipment to be used in Hazardous areas are to be supplied with ATEX certification Not applicabile as per Email , it was defined as a safe area and not an ATEX zone	AGI	OPEN
56.	Part 2 Commercial Items – Load Cell	The Inspection & Test Plan details that NDE reports will be include, where are these Please refer to 3.1 certificate page 772	AGI	OPEN
57.	Part 2 Commercial Items – Load Cell	The Inspection & Test Plan details that Dimensional reports will be include, where are these The request for the dimensional certificate of the cell is made by us to the supplier to ensure that it is supplied in compliance and does not have problems during assembly.	AGI	OPEN
58.	Part 2 Commercial Items – Frequency Converters	Where is the CE Declaration and Declaration of Conformity Noted, added	AGI	OPEN
59.	Part 2 – Section 13 Paint Reports	Section 6 of the Inspection & Test Plan details the following will have Paint Reports: - Boom (Verified) - Trolley (Verified) - Pedestal Verified) - Column (Missing)added - Slew Bearing (Missing)page 735 - Pulley (Missing) typo reported twice code C09-0001-P0007, corrected page 963 - Drum (Missing) page 738 - Shoulder (Missing) page 738	AGI	OPEN
60.				
61.				

CERTIFICATO DI CONTROLLO ULTRASONORO
ULTRASONIC INSPECTION CERTIFICATE

Controlli effettuati su lamiera ante-taglio
Checks carried out on pre-cutting Steel Plate

Cliente / Customer	Vs Ordine / Order
SIDERTAGLIO LAMIERE S.R.L.	

Documento Nr / Document No
267
25/03/2024

Dimensioni / Dimension	Cod. Interno / Code
12080X2460	**25729**
Colata / Heat No	Cert. Nr. / Cert. No
.	

Spessore / Thik
20

Materiale / Material	Oggetto / Object
S355J2+N	**Steel plate**
Stadio di Lavorazione / Working step	Particolare / Detail
As conditions of supply	
Posizione di controllo / Scanning position	Condizioni Superficiali / Surface condition
100x100	**As rolled**

Specifica di rif. / Specification Ref.	Classe accettabilità / Acceptance criterie
EN 10160	**S2E3**
Apparecchio Tipo / Instrument model	Mezzo accoppiamento /
GILARDONI RDG 450	**Water**
Blocco Campione / Reference Block	Perdite di trasferimento / Transfre lossee
V1	

Taratura sensibilità d'esame / Sensibility range test
Flat bottomed holes Ø 5 mm

TRASDUTTORI search units	ONDE waves	TIPO type	FREQUENZA	SEZIONE (mm) size (mm)	ANGOLO angle	DIAMETRO diameter	FABBRICANTE manufacturer
	LONGIT	**D25/4**	**4MHz**			**Ø25**	**IMG**

IDENTIFICAZIONE identification	AREA / TRATTO Area/section	TIPO DISCONT. discontinuity	AMPIEZZA amplitude	LUNGHEZZA length	PROFONDITA' depth	NOTE remark	RISULTATO examination result

Risultato dell'esame	X	**Satisfactory / Conforme**
Examination result		**Unsatisfactory / NON Conforme**

Emesso da
Esaminatore

SIDERTAGLIO LAMIERE s.r.l.
Alessandro Callegari
UNI EN ISO 9712:2012 level II
Cert. Nr. DTG-END-A00562-14

Ispettore Cliente / Ente terzo	Controllo qualità

Sidertaglio Lamiere srl

Taglio plasma
Ossitaglio
fino a 500mm

TAGLIO E COMMERCIO DI LAMIERE
Via dell'Agricoltura 8/D - 36040 Meledo di Sarego (VI) - Tel. 0444 823059
Fax Amm. 0444 823364 - Uff. Tec. 0444 823201 - Email: info@sidertaglio.com - Web: www.sidertaglio.com
Reg. Imp. VI 33000/1996 - R.E.A. 236444 - Cod. Fisc. e P.IVA 02510610245

A02

CERTIFICATO DI CONTROLLO 3.1 / INSPECTION CERTIFICATE 3.1 - EN 10204:2004

A04/A05

METINVEST

METINVEST TRAMETAL SPA

A01

Società per azioni con socio unico soggetta a direzione e coordinamento di Metinvest B.V
Registered office: Via XII Ottobre 1, 5° piano - 16121 Genova, Italy
Phone +39 010 5762911 - Fax +39 010 5762990
Works: Via E. Fermi, 44 - 33058 San Giorgio di Nogaro UD, Italy
Phone +39 0431 629989 - Fax +39 0431 629985
Cap. Soc. Euro 300.120.000,00 i.v.
C.F., P.IVA e Iscr. Reg. Imp. GE 05956630965 - REA 437720/GE
http://trametal.metinvestholding.com

(A) PROCESSO DI ELABORAZIONE / STEELMAKING PROCESS: E = ELECTRIC ; BO = BASIC OXYGEN
(B) STATO DI FORNITURA / DELIVERY CONDITION: AR = GREZZO DI LAMINAZIONE / AS ROLLED ;
N* = LAMINAZIONE A TEMPERATURA CONTROLLATA / NORMALIZING ROLLING ;
N = NORMALIZZATO / NORMALIZED at 910°C, 1,5 min/mm ; ARIA CALMA / STILL AIR;
R = RICOTTO / ANNEALED;
N+R = NORMALIZZATO + RINVENUTO / NORMALIZED + TEMPERED
(C) TRATTAMENTO TERMICO DEL CAMPIONE / HEAT TREATMENT OF SAMPLE:
N = 910°C, 1,5 min/mm ; ARIA CALMA / STILL AIR
R = 650°C, 1,5 min/mm ; ARIA CALMA / STILL AIR
(D) Ceq_1 = C + Mn/6 ; Ceq_2 = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15 ;
Pcm = C + Si/30 + (Mn + Cu + Cr)/20 + NI/60 + Mo/15 + V/10 + B*5
(1) POSIZIONE / LOCATION: 1 = TESTA / TOP ; 2 = PIEDE / BOTTOM
(2) POSIZIONE / LOCATION: C = CUORE / 1/2 THICKNESS ; P = PELLE / SURFACE ; D = 1/4 SPESSORE / THICKNESS
(3) DIREZIONE / DIRECTION: L = LONGITUDINALE / LONGITUDINAL ; T = TRASVERSALE / TRANSVERSE
(4) FORMA DEL PROVINO / SHAPE OF TEST PIECE: P = PRISMATICO / PRISMATIC ; C = CILINDRICO / CYLINDRICAL
(5) ESITO PROVA DI PIEGA / RESULT: OK = COMPLYING ; NO = NOT COMPLYING

A03 N° Certificato / Certificate no.: 627031

Z02 Data / Date: 28/10/2024

A08 N° Ordine Trametal / Works order: 32405089

A07 N° Ordine cliente / Customer's order: 193

DDT: BOL 32420896

del / date: 25/10/2024

Pratica / File no.:

del / date:

B01/B02/B03

Prodotto / Product: Lamiere / Hot rolled plates

Qualità / Steel grade: S355J2+N

Normativa / Specification: EN10025-2:2019

A06 Cliente / Customer

COSME GROUP SRL

Via dei platani 15/2
33050 SANTA MARIA LA LONGA 33050 IT

UD ITALIA

B06 Marcatura di prodotto / Marking of the product

LAMIERA/ORDINE/N° INFORNAMENTO/DIMENSIONI/QUALITÀ/MARCHIO DEL PRODUTTORE
PLATE/ORDER/INTERNAL N°/DIMENSIONS/STEEL GRADE/MANUFACTURER'S MARK

B07 ITEM	B07 LAMIERA PLATE	B07 N° INFORN. INTERNAL NUMBER	B09/B11 DIMENSIONI [mm] DIMENSIONS	B12 MASSA TEORICA [t] THEORICAL WEIGHT	B07 LOTTO BATCH NO.	C70 PROCESSO ELAB. (A) STEELMAKING PROCESS	B04 STATO FORNITURA LAMIERA (B) DELIVERY CONDITION	C00 CAMPIONE SAMPLE	B05 TRATT. CAMPIONE (C) HEAT TREATMENT	C00 CAMPIONE PWHT SAMPLE	B05 PWHT BEGINNING TEMPERATURE °C	B05 PWHT TEMPERATURA INIZIO °C	B05 PWHT HEATING RATE °C/h	B05 PWHT VELOCITA' RISCALDO	B05 PWHT TEMPERATURE TREATMENT °C	B05 PWHT TEMPERATURA TRATTAMENTO	B05 PWHT HOLDING TIME	B05 PWHT PERMANENZA Min	B05 PWHT COOLING RATE °C/h	B05 PWHT VELOCITA' RAFFREDDAMENTO	B05 PWHT END TEMPERATURE °C	B05 PWHT TEMPERATURA FINE	B05 PWHT N° CICLI / CYCLES	C00 CAMPIONE Q+T SAMPLE	B05 Q+T TEMPERATURE TEMPERATURA (Q) °C	B05 Q+T HOLDING TIME PERMANENZA (Q) Min	B05 Q+T COOLING RAFFREDDAMENTO	B05 Q+T TEMPERATURE TEMPERATURA (T) °C	B05 Q+T HOLDING TIME PERMANENZA (T) Min	B05 Q+T COOLING RAFFREDDAMENTO
3	STAD490209A	1982187	10.00X3000X12000	2,83	801905	BO	N*	[ZH736]																						

C71/C92 COMPOSIZIONE CHIMICA DI COLATA / HEAT CHEMICAL ANALYSIS

B07 COLATA HEAT	C71 C %	C72 Mn %	C73 Si %	C74 P %	C75 S %	C76 Cu %	C77 Ni %	C78 Cr %	C79 Mo %	C80 Al %	C81 V %	C82 Nb %	C83 Ti %	C84 Sn %	C85 Ca %	C86 N %	C87 B %	C88 H %	C89 Ceq1 % (D)	C90 Ceq2 % (D)	C91 Pcm % (D)
S355J2+N Min 0.00 - 30.00																					
S355J2+N Max 0.00 - 30.00	0,20	1,60	0,55	0,025	0,025	0,550														0,45	
STAD49	0,15	1,40	0,19	0,016	0,003	0,010	0,010	0,020	<0.005	0,038	0,002	0,003	0,002	<0.005	0,0000	0,0025	0,0002	0,0000	0,38	0,39	0,23

C00 CAMPIONE SAMPLE	C01 SPESSORE LAMIERA PLATE THICKNESS	C01 POSIZIONE (1) LOCATION	PROVA DI TRAZIONE TENSILE TEST: C01 POSIZIONE (2) LOCATION	C02 DIREZIONE (3) ORIENTATION	C03 TEMPERATURA [°C] TEST TEMPERATURE	C11 ReH [Mpa] YIELD STRENGTH	C12 Rm [Mpa] TENSILE STRENGTH	ReH/Rm	C13 A% ELONGATION	C14 Rp 0.2 [Mpa] PROOF/YIELD STRENGTH	C10 FORMA PROVINO (4) SHAPE OF TEST PIECE	PROVA DI RESILIENZA IMPACT TEST - CHARPY V-NOTCH TEST: C41 LARGHEZZA [mm] WIDTH	C02 DIREZIONE (3) ORIENTATION	C03 TEMPERATURA [°C] TEST TEMPERATURE	C01 POSIZIONE (2) LOCATION	C42 SINGOLI VALORI [J] INDIVIDUAL VALUES	C43 MEDIA [J] MEAN VALUE	PROVA DI PIEGA BEND TEST: C02 DIREZIONE (3) ORIENTATION	C51 MANDRINO MANDREL	C52 ANGOLO [°] ANGLE	C50 ESITO (5) RESULT	PROVA DI DUREZZA HARDNESS TEST: C01 POSIZIONE (2) LOCATION	C30 METODO TEST METHOD	C31 SINGOLI VALORI INDIVIDUAL VALUES	C32 MEDIA MEAN VALUE	PROVA DI STRIZIONE Z% TEST: C53 Z% SINGOLI VALORI Z% INDIVIDUAL VALUES	C54 Z% VALORE MEDIO Z% MEAN VALUE
S355J2+N Min 0.00 - 16.00					20	355	470		20,0																			
S355J2+N Max 0.00 - 16.00					20		630																					
S355J2+N Min 6.00 - 999.00													L	-20			27											
ZH736	8,00	2	P	T	20	393	524	0,75	32,1		P	7,50	L	-20	P	118 98 83	100											

C10

UNI EN ISO 6892-1:2020 / UNI EN ISO 148-1:2016

Z01						
ITEM		**TOLLERANZA DI SPESSORE TOLERANCE ON THICKNESS**	**TOLLERANZE DI LARGHEZZA TOLERANCE ON WIDTH**	**TOLLERANZE DI LUNGHEZZA TOLERANCE ON LENGTH**	**CONDIZIONI SUPERFICIALI SURFACE FINISH**	**PLANARITÀ FLATNESS**
3		EN 10029 CL.A	-0+100 MM	-0+200 MM	EN 10163/2 CL A1	EN 10029 CL. N

CERTIFICHIAMO che le lamiere elencate sono conformi alla prescrizione dell'ordine, che i controlli della marcatura, dell'aspetto superficiale e dimensionale hanno dato esito positivo.
WE CERTIFY that the above mentioned plates are consistent with the order prescriptions: marking, inspection and measurement without objection.
DICHIARIAMO CHE LE LAMIERE SONO STATE CONTROLLATE IN ACCORDO ALLA NORMATIVA VIGENTE E CHE LE RADIAZIONI IONIZZANTI NON ECCEDONO IL VALORE DEL FONDO NATURALE.
WE DECLARE THAT THE PLATES WERE CONTROLLED ACCORDING TO STANDARD AND RADIATION DO NOT EXCEED THE NATURAL RADIATION.

Z06		
Z07	**Z03 ENTE COLLAUDO / INSPECTION BODY**	**Z02**
	TIMBRO DELL'ISPETTORE STAMP OF THE INSPECTION REPRESENTATIVE	METINVEST TRAMETAL S.p.a/ F. Andrian CQ Manager

DDT. 3614 DEL 12/11/2024 VS. ORDINE 2400610 DEL 28/10/2024

COSME GROUP SRL
VIA DEI PLATANI, 138
33050 SANTA MARIA LA LONGA (UD)
Tel. 0432 801333 - Fax 0432 801991
P.IVA - C.F. - R.I. di Udine 02815120304
www.cosmegroup.it e-mail: info@cosmegroup.it

DICHIARAZIONE DI CONFORMITÀ

CERTIFICATO N. 180/2024 **DEL** 20/11/2024

CLIENTE CELOTTI ROBERTO & C. SRL

N.DDT E DATA 6133 DEL 21/11/2024

DESCRIZIONE

CODICE C09-0001-P0050

MATERIALE **QUANTITÀ** N.1

TRATTAMENTO E CARATTERISTICHE RICHIESTE

42NICRMO4 TAF HRC 54 0/+5

TRATTAMENTO ESEGUITO E CARATTERISTICHE RISCONTRATE

TAF HRC 57

FIRMA
T.T.G. S.r.l.
Via A. Moro, 24/26
25033 COLOGNE (Brescia)
Partita IVA 02150740989
R.E.A. 424201

NDT OPERATOR QUALIFICATION CERTIFICATE

No. **24TO00050CE1/RC**

Operator	**RIGHETTO DAVIDE**		
Born in	**VICENZA (VI)**	on	**16/11/1988**
Employed by	**ANTARES CONTROL DI RIGHETTO DAVIDE**		
Located in	**Grumolo Delle Abbadesse (VI)**		

this is to certify that the non destructive test operator is qualified by examinations at the level 2 according to ISO 9712:2021 standard and to RINA Rule RC/C 14

in the method:

ULTRASONIC

for the following industrial sectors:

PRE AND IN-SERVICE TESTING (s)

This certificate is valid from	**4 February 2024**	to	**3 February 2029**
Issued at	**GENOVA**	on	**4 February 2024**

The above mentioned Operator is approved for the Method and Level specified, according to Par. 3.1.3 of Annex I 2014/68/EU Directive (CEN/TR 15589 Route A)

Filippo Lago
(Italy Industrial & Personnel Certification Services Director)

Operator

This certificate consist of 1 page

ACCREDIA
L'ENTE ITALIANO DI ACCREDITAMENTO

PRS N° 066 C

Signatory of EA, IAF and ILAC Mutual Recognition Agreements

RINA Services S.p.A.
RTPO 2014/68/EU Directive, Art. 20
Via Corsica 12 - 16128 Genova

CERTIFICATO DI QUALIFICA DI OPERATORE PER CND

N. **24TO00050CE1/RC**

Operatore	**RIGHETTO DAVIDE**		
Nato a	**VICENZA (VI)**	il	**16/11/1988**
Impiegato presso	**ANTARES CONTROL DI RIGHETTO DAVIDE**		
Con sede in	**Grumolo Delle Abbadesse (VI)**		

si certifica che, a seguito degli esami sostenuti, l'operatore addetto alle prove non distruttive è qualificato al livello 2 in conformità alla norma ISO 9712:2021 ed al Regolamento RINA RC/C 14

nel metodo:

ULTRASONORO

per i seguenti settori industriali:

PROVA PRE-SERVIZIO E IN SERVIZIO (s)

Il presente certificato è valido dal	**4 Febbraio 2024**	fino al	**3 Febbraio 2029**
Rilasciato a	**GENOVA**	il	**4 Febbraio 2024**

Il suddetto Operatore è approvato per Metodo e Livello specificati in accordo al Par. 3.1.3 Allegato I della Direttiva 2014/68/UE (CEN/TR 15589 Route A)

Filippo Lago
(Italy Industrial & Personnel Certification Services Director)

Operatore

Questo certificato è composto di 1 pagina

ACCREDIA
L'ENTE ITALIANO DI ACCREDITAMENTO
PRS N° 066 C
Membro degli Accordi di Mutuo Riconoscimento EA, IAF e ILAC

RINA Services S.p.A.
RTPO 2014/68/EU Directive, Art. 20
Via Corsica 12 - 16128 Genova



PRS N° 076C

Membro degli Accordi di Mutuo Riconoscimento EA, IAF e ILAC
Signatory of EA, IAF and ILAC mutual Recognition Agreements

PROVE NON DISTRUTTIVE: Certificato di Qualifica Operatore
NON-DESTRUCTIVE TESTING: Operator Qualification Certificate

N° IND-23-01472-R

Si certifica la qualifica in Prove Non Distruttive al Livello 2
It certifies the qualification for Non-Destructive Testing at the level 2

Titolare del certificato / *Certificate holder*
Simone Tengattini (ID # 1842)

Nato a / *born in*: Bellano (CO) Italy

Il / *on*: 31 Mar 1991

Per il metodo / *For the method*
Visual Testing (VT)

Per i settori / *For the sectors*
Pre- and in-service testing which includes manufacturing

Il presente certificato viene rilasciato in conformità alla Norma UNI EN ISO 9712:2012 e Regolamento Bureau Veritas IT-IND-REG-01_NDT.IND
This certificate is issued according to UNI EN ISO 9712:2012 and Bureau Veritas Rule IT-IND-REG-01_NDT.IND

Data ultima revisione / *Date last revision*: ----------

Emesso / *Issued*: 16 May 2023

Valido dal / *Valid from*: 16 May 2023

Scadenza / *Expiry date*: 15 May 2028

Firma titolare del certificato
Signature of certificate holder

Responsabile Tecnico di Schema
NDT Scheme Chief
Luca Rossi

to check the certificate: https://bvchecker.revo.network

© BUREAU VERITAS ITALIA S.p.A. Viale Monza, 347, 20126 Milano



PRS N° 076C

Membro degli Accordi di Mutuo Riconoscimento EA, IAF e ILAC
Signatory of EA, IAF and ILAC mutual Recognition Agreements

PROVE NON DISTRUTTIVE: Certificato di Qualifica Operatore
NON-DESTRUCTIVE TESTING: Operator Qualification Certificate

N° IND-23-01473-R

Si certifica la qualifica in Prove Non Distruttive al Livello 2
It certifies the qualification for Non-Destructive Testing at the level 2

Titolare del certificato / *Certificate holder*
Simone Tengattini (ID # 1842)

Nato a / *born in*: Bellano (CO) Italy

Il / *on*: 31 Mar 1991

Per il metodo / *For the method*
Penetrant Testing (PT)

APPROVAZIONE PER ESECUZIONE DI PROVE NON DISTRUTTIVE secondo l'Allegato I paragrafo 3.1.3 della direttiva attrezzature a pressione 2014/68/UE PED (CEN/TR 15589 Route A)
APPROVAL FOR EXECUTION OF NON-DESTRUCTIVE TESTING as per Annex I paragraph 3.1.3 of pressure equipment directive 2014/68/UE PED (CEN/TR 15589 Route A)

Per i settori / *For the sectors*
Pre- and in-service testing which includes manufacturing

Il presente certificato viene rilasciato in conformità alla Norma UNI EN ISO 9712:2012 e Regolamento Bureau Veritas IT-IND-REG-01_NDT.IND
This certificate is issued according to UNI EN ISO 9712:2012 and Bureau Veritas Rule IT-IND-REG-01_NDT.IND

Data ultima revisione / *Date last revision*: ----------

Emesso / *Issued*: 16 May 2023

Valido dal / *Valid from*: 16 May 2023

Scadenza / *Expiry date*: 15 May 2028

Firma titolare del certificato
Signature of certificate holder

Responsabile Tecnico di Schema
NDT Scheme Chief
Luca Rossi

to check the certificate: https://bvchecker.revo.network

© BUREAU VERITAS ITALIA S.p.A. Viale Monza, 347, 20126 Milano



PRS N° 076C

Membro degli Accordi di Mutuo Riconoscimento EA, IAF e ILAC
Signatory of EA, IAF and ILAC mutual Recognition Agreements

PROVE NON DISTRUTTIVE: Certificato di Qualifica Operatore
NON-DESTRUCTIVE TESTING: Operator Qualification Certificate

N° IND-23-01474-R

Si certifica la qualifica in Prove Non Distruttive al Livello 2
It certifies the qualification for Non-Destructive Testing at the level 2

Titolare del certificato / *Certificate holder*
Simone Tengattini (ID # 1842)

Nato a / *born in*: Bellano (CO) Italy

Il / *on*: 31 Mar 1991

Per il metodo / *For the method*
Magnetic Testing (MT)

Per i settori / *For the sectors*
Pre- and in-service testing which includes manufacturing

Il presente certificato viene rilasciato in conformità alla Norma UNI EN ISO 9712:2012 e Regolamento Bureau Veritas IT-IND-REG-01_NDT.IND
This certificate is issued according to UNI EN ISO 9712:2012 and Bureau Veritas Rule IT-IND-REG-01_NDT.IND

Data ultima revisione / *Date last revision*: ----------

Emesso / *Issued*: 16 May 2023

Valido dal / *Valid from*: 16 May 2023

Scadenza / *Expiry date*: 15 May 2028

Firma titolare del certificato
Signature of certificate holder

Responsabile Tecnico di Schema
NDT Scheme Chief
Luca Rossi

to check the certificate: https://bvchecker.revo.network

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PRS N° 076C

Membro degli Accordi di Mutuo Riconoscimento EA, IAF e ILAC
Signatory of EA, IAF and ILAC mutual Recognition Agreements

PROVE NON DISTRUTTIVE: Certificato di Qualifica Operatore
NON-DESTRUCTIVE TESTING: Operator Qualification Certificate

N° IND-23-02492-R

Si certifica la qualifica in Prove Non Distruttive al Livello 2
It certifies the qualification for Non-Destructive Testing at the level 2

Titolare del certificato / *Certificate holder*
Simone Tengattini (ID # 1842)

Nato a / *born in*: Bellano (CO) Italy

Il / *on*: 31 Mar 1991

Per il metodo / *For the method*
Ultrasonic Testing (UT)

Per i settori / *For the sectors*
Pre- and in-service testing which includes manufacturing

Il presente certificato viene rilasciato in conformità alla Norma UNI EN ISO 9712:2012 e Regolamento Bureau Veritas IT-IND-REG-01_NDT.IND
This certificate is issued according to UNI EN ISO 9712:2012 and Bureau Veritas Rule IT-IND-REG-01_NDT.IND

Data ultima revisione / *Date last revision*: ----------

Emesso / *Issued*: 26 Jun 2023

Valido dal / *Valid from*: 26 Jun 2023

Scadenza / *Expiry date*: 25 Jun 2028

Firma titolare del certificato
Signature of certificate holder

Responsabile Tecnico di Schema
NDT Scheme Chief
Luca Rossi

to check the certificate: https://bvchecker.revo.network

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IWELD
ORGANISMO DI CERTIFICAZIONE

NDT OPERATOR QUALIFICATION CERTIFICATE

Certificato di qualifica operatore per CND

ACCREDIA
L'ENTE ITALIANO DI ACCREDITAMENTO

PRS N° 0090 C

Membro degli Accordi di Mutuo Riconoscimento EA, IAF e ILAC

Signatory of EA, IAF and ILAC Mutual Recognition Agreements

CERTIFICATE No *Certificato N.* **IW0506-CND-003** Rev. **1**



Operator *Operatore* **CALLEGARI ALESSANDRO**

Date and place of birth *Data e luogo di nascita* **04.03.1983 ARZIGNANO (VI–I)**

Examining body name and address *Nome e indirizzo dell'Ente Esaminante:* **INTERNATIONAL WELD S.R.L. VIA DIVIGLIO, 243 int. 2 – 36030 CALDOGNO (VI)**

Is certified according to *È certificato in conformità* **UNI EN ISO 9712: 2022**

For the level *Per il livello* **2**

For the method *Per il metodo* **Ultrasonic Testing (UT)**

For the industrial sectors *Per i settori industriali* **Manufacturing (m)**

For the product sectors *Per i settori di prodotto* **Wrought products (wp)**

Limitations to the certification (if applicable) *Limitazione nell'applicazione (se applicabile)* -

This certificate is issued according to International Weld's rule RG-14
Il presente certificato è rilasciato in conformità al regolamento di International Weld RG-14

Date of validity *Data di inizio validità* **08.10.2014***

Date of issue *Data di rilascio* **10.12.2024**

Valid until *Valido fino* **07.10.2029**

Certification Body
Organismo di Certificazione

IWELD ORGANISMO DI CERTIFICAZIONE

Firmato digitalmente da:
BENOZZATO CATERINA
Firmato il 10/12/2024 14:27
Seriale Certificato: 3706513
Valido dal 04/07/2024 al 04/07/2027
InfoCamere Qualified Electronic Signature CA

The certified person
La persona certificata

Employer authorizing
Autorizzazione del datore di lavoro

* *Recertification performed from certificate n° IW0506-CND-003 R.0 issued by INTERNATIONAL WELD S.R.L*

MD 03.02-02 R.6

IWELD
ORGANISMO DI CERTIFICAZIONE

Caldogno, lì 10 dicembre 2024

Alla c.a. Sig. Alessandro Callegari

Spett.le
SIDERTAGLIO LAMIERE S.R.L.
Via Agricoltura, 9
36040 Sarego (VI)

Off. Rif. Convenzione S.S.S.&C. S.R.L.

OGGETTO: **Certificazione del personale addetto ai controlli non distruttivi**

Con riferimento a quanto in oggetto, abbiamo il piacere di trasmetterVi la documentazione di certificazione in seguito elencata.
Le modalità di convalida della documentazione (timbro e firma) sono riportate in tabella.

N° documento	Tipo Certificato	Firma Convalida
IW0506-CND-003 R.1	ISO 9712	Datore di Lavoro & Personale Addetto

A disposizione per ulteriori chiarimenti e in attesa di un Vs. gradito riscontro, porgiamo distinti saluti.

INTERNATIONAL WELD S.R.L.
Rappresentante Legale
Caterina Benozzato
Caterina Benozzato

CICPND
CENTRO ITALIANO
DI COORDINAMENTO
PER LE PROVE NON DISTRUTTIVE

Via C. Pisacane, 46
20025 Legnano (MI)
PEC: info@pec.cicpnd.it
C.F. e P.I. 09510020150

ACCREDIA
L'ENTE ITALIANO DI ACCREDITAMENTO
PRS N° 012C
Membro degli Accordi di Mutuo Riconoscimento EA, IAF e ILAC
Signatory of EA, IAF and ILAC Mutual Recognition Agreement

CERTIFICATO DI LIVELLO 2
LEVEL 2 CERTIFICATE

N° 32040/PND/C

Si certifica la qualificazione per esami in Prove Non Distruttive al **LIVELLO 2**
*This is to certify qualification by examinations in Non-Destructive Testing at the **LEVEL 2***

di / of

Nadalin Angelo Simone

nato a / *born in* **Carmagnola (TO)**

il / *on* **22 febbraio 1974**

per il metodo / *for the method:*

Ultrasuoni (UT)

per i settori / *for the sectors:*

Collaudo pre e in servizio che comprende la fabbricazione

(c; f; w; t; wp; p)

Il presente certificato viene rilasciato in conformità alla Norma UNI EN ISO 9712:2012.
This certificate is issued according to UNI EN ISO 9712:2012.

Firma persona certificata
Signature of certificate holder



Direttore Generale
General Manager

Reggiani Michael
M. Reggiani

Data Delibera: 26/10/2022
Approval Date

Data Scadenza: 11/10/2027 R
Expiry Date

AIPnD

CICPND
CENTRO ITALIANO
DI COORDINAMENTO
PER LE PROVE NON DISTRUTTIVE

Via C. Pisacane, 46
20025 Legnano (MI)
PEC: info@pec.cicpnd.it
C.F. e P.I. 09510020150

ACCREDIA
PRS N° 012C

CERTIFICATO DI LIVELLO 2
LEVEL 2 CERTIFICATE

N° 32347/PND/C

Si certifica la qualificazione per esami in Prove Non Distruttive al **LIVELLO 2**
*This is to certify qualification by examinations in Non-Destructive Testing at the **LEVEL 2***

di / of

Nadalin Angelo Simone

nato a / *born in* **Carmagnola (TO)**

il / *on* **22 febbraio 1974**

per il metodo / *for the method:*

Magnetoscopia (MT)

per i settori / *for the sectors:*

Collaudo pre e in servizio che comprende la fabbricazione

(c; f; w; t; wp; p)

Il presente certificato viene rilasciato in conformità alla Norma UNI EN ISO 9712:2012.
This certificate is issued according to UNI EN ISO 9712:2012.

Firma persona certificata
Signature of certificate holder

Direttore Generale
General Manager

M. Reggiani

Data Delibera: 28/02/2023
Approval Date

Data Scadenza: 26/01/2028 R
Expiry Date

AIPnD

CICPND
CENTRO ITALIANO
DI COORDINAMENTO
PER LE PROVE NON DISTRUTTIVE

Via C. Pisacane, 46
20025 Legnano (MI)
PEC: info@pec.cicpnd.it
C.F. e P.I. 09510020150

ACCREDIA
L'ENTE ITALIANO DI ACCREDITAMENTO
PRS N° 012C
Membro degli Accordi di Mutuo Riconoscimento EA, IAF e ILAC
Signatory of EA, IAF and ILAC Mutual Recognition Agreement

CERTIFICATO DI LIVELLO 2
LEVEL 2 CERTIFICATE

N° 37589/PND/C

Si certifica la qualificazione per esami in Prove Non Distruttive al **LIVELLO 2**
*This is to certify qualification by examinations in Non-Destructive Testing at the **LEVEL 2***

di / of

Nadalin Angelo Simone

nato a / *born in* **Carmagnola (TO)**

il / *on* **22 febbraio 1974**

per il metodo / *for the method:*

Correnti Indotte (ET)

per i settori / *for the sectors:*

Fabbricazione

(c; f; w; t; wp; p)

Il presente certificato viene rilasciato in conformità alla Norma UNI EN ISO 9712:2012.
This certificate is issued according to UNI EN ISO 9712:2012.

Firma persona certificata
Signature of certificate holder

Direttore Generale
General Manager

M. Reggiani

Data Delibera: 11/07/2023
Approval Date

Data Scadenza: 11/07/2028 C
Expiry Date

AIPnD

QUALIFICAZIONE PER ESAMI E PER ESAMI E TITOLI DEL PERSONALE CHE ESEGUE CONTROLLI E COLLAUDI AINTIMISCUGLIO/SPETTROTEST
(in accordo con la norma PR-QPE.SPT)

CERTIFICATO DI QUALIFICAZIONE

COGNOME E NOME:	SETTORE PRODUTTIVO:
NADALIN Angelo Simone	**CND (Unità Operativa)**

ADDESTRAMENTO TEORICO-PRATICO

Addestramento teorico		Addetramento pratico (affiancamento)	
Richiesto (ore)	Effettuato (ore)	Richiesto (ore)	Effettuato (ore)
4	7	20	20

N.B: • L'addestramento teorico è riportato sul registro didattico e delle presenze del 07e 09/03/2022 e del 01/02/2022

• L'affiancamento pratico è registrato sul mod. ADD-D Rev.7.

ESITO ESAME DI QUALIFICAZIONE

TIPO DI PROVA	VALUTAZIONE	
	RICHIESTA	OTTENUTA
Prova fisica	Idoneità	02/03/2022
Prova teorica	17 (*)	19
Prova pratica	Individuazione di n° 5 marche	Individ. correttamente: 329 S 1- 329S – F316L – 316T 1 – F304L1.

(*) Numero minimo di risposte esatte alle 20 domande del questionario.

Firma esaminatori

QUALIFICAZIONE

Considerati l'addestramento teorico-pratico e l'esito positivo dell'esame di qualificazione si certifica che il suddetto operatore è qualificato, in accordo con la norma PR-QPE.SPT, per l'esecuzione dei controlli e collaudi antimiscuglio/spettrotest.

Data della qualificazione 06/07/2022

Data scadenza qualificazione 05/07/2027

Firma QUA QPP RESP

Firma GDQ RESP

Firma QUA DIR

(mod. SPT_B rev. 2)

Cogne Acciai Speciali	**Certificato per Esame della Vista del personale addetto ai CND in campo aeronautico** *Certificate for Eye Examination of personnel involved in Aerospace NDT*	In accordo con PR-QPE.NDA In agreement with PR-QPE.NDA

Nome del Candidato *Candidate Name*	NADALIN ANGELO SIMONE				
Livello di Certificazione *Certification Level*	☐ Trainee ☐ 1 ☐ 2 ☐ 3	Metodi CND *NDT methods*	☐ PT ☐ MT ☒ UT ☐ RT	☒	Iniziale- *Initial* Periodica -*Periodic*

Requisiti Standard secondo Pratica Scritta *Standard requirements according to Written Practice*		**Risultato** *Result*		
Visione da vicino *Near vision*	Occhio sinistro *Left eye*	☐ Idoneo a Jaeger 1 a 30,5 cm senza mezzi correttivi *Able on Jaeger 1 at 30,5cm without vision correction means*	☒ Idoneo a Jaeger 1 a 30,5 cm con mezzi correttivi *Able on Jaeger 1 at 30,5cm with vision correction means*	☐ Non Idoneo *Not Able*
	Occhio destro *Right eye*	☐ Idoneo a Jaeger 1 a 30,5 cm senza mezzi correttivi Able on Jaeger 1 at 30,5cm without vision correction means	☒ Idoneo a Jaeger 1 a 30,5 cm con mezzi correttivi Able on Jaeger 1 at 30,5cm with vision correction means	☐ Non Idoneo Not Able
Percezione Cromatica *Colors perception*		☒ Test CAS superato *CAS test passed*	☐ Incertezze al Test CAS *Hesitation on CAS test*	
Note *Notes*				
Data *Date* 16.10.2023		Inf. Wollinger Nome e firma dell'esaminatore Name and signature of examine		Firma del candidato Candidate *signature*

Valutazioni del Livello 3 Responsabile
Evaluation of Responsible Level 3

☐ Idoneo senza mezzi correttivi - *Able without correction media*
☒ Idoneo con mezzi correttivi - *Able with correction media*
☐ Idoneo con limitazioni (vedi sotto) - Able with limitation (see below)
☐ NON IDONEO - UNABLE

Limitazioni Restrictions	/

16.10.2023 Data Date	COGNE ACCIAI SPECIALI s.p.a. Via Paravera n° 16 11100 AOSTA Nome e firma del Livello 3 Responsabile *Name and signature of Responsible Level 3*	Firma del candidato *Candidate signature*

Date: 10/9/2025

To: Ricacardo Ghidoni – Quality Assurance, Sirtef s.r.l.
Subject: S319CN 5t Carbon Shank Hook (JC) PIC 5WB, Heat #58037678 - Mechanical Test Certificate

This memo contains the Mechanical Test report for the material used to make the above item (page 2). At the moment we cannot automatically generate this document from our CertPro software that you would typically use to obtain certificates. We must seek some internal technical support for it to configure the documents in this specific case.

Respectfully,

Scott Eyman
Sr. Director, Quality and Manufacturing Technology
Lifting & Rigging Hardware

Classification: ASTM Class CG (521-11) or F (668-09)

Exceptions:

Element Materials Technology
3100 North Hemlock Circle
Broken Arrow, OK
74012-1115 USA

P 918 258 6066
F 918 258 1154
T 800 982 8378
info.brokenarrow@element.com
element.com

Laboratory Report - EAR-Controlled Data

Attn: Aliecia Callison
The Crosby Group LLC - Longview
2414 Crosby Way
LONGVIEW, TX 75602 US

Report No: B20040463
Date Reported: 4/27/2020
P.O. No: Element - CL114934

Material:

Description: (2) Test Samples / Lebus# 500-S / Grade: Carbon / Die# 1069 / PIC: 5WB / HK SHK CBN CR HK 5.00TN / Heat# 58037678

Room Temperature Tensile Testing ASTM A370-19e1 / ASTM E8/E8M-16a, Longitudinal at 4/5 Radius, As Received

Diameter, Initial, in	Tensile Strength, psi	Yield (0.2% Offset), psi	Elongation After Fracture (4D), %	Reduction of Area, %	Location of Fracture
0.251	100100	67800	30	67	Inside Middle Half of Gage

Hardness Test ASTM E18-18a/ASTM A370-19e1, As Received

Testing Location, Hardness: Surface

Sample ID	Results
1	92 HRBW

This document contains technical data whose export and reexport/ retransfer may be subject to control by the U.S. Department of Commerce under the Export Administration Act and the Export Administration Regulations. The Department of Commerce's prior written approval may be required for the export or re-export/retransfer of such technical data to any foreign person, foreign entity or foreign organization whether in the United States or abroad.

Approved by:

Doug Kooken
Operations Manager

S-319/S-319N



- The most complete line of shank marked hooks. Available 3/4 to 300 metric tons.
- Hook Identification code marked into each hook.
- All carbon and alloy hooks are quenched and tempered.
- Quenched & Tempered.
- Available in carbon steel, alloy steel, and bronze.
- Proper design, careful forging, and precision controlled quench and tempering give maximum strength without excessive weight and bulk.
- Every Crosby Shank Hook has a pre-drilled cam which can be equipped with a latch. Simply purchase the Crosby latch assemblies. Even years after the purchase of the original hook, latch assemblies can be added.
- Type Approval Certification in accordance with ABS 2016 Steel Vessels and ABS Guide for Certification on Cranes available. Certificates available when requested at time of order and may include additional charges.

APPLICATION AND WARNING INFORMATION
SECTION 17

S-319 / S-319N Shank Hook

Working Load Limit (t)			Hook ID Code	Shank Hooks Stock No.			Shank Length ‡	Weight Each (lb)	Rep. Latch Kits		
Carbon	Alloy	Bronze		Carbon S-319C S-319CN	Alloy S-319A S-319AN	Bronze S-319BN			S-4320 Stock No.	PL Stock No.	SS-4055 Stock No.
0.75	1	.5	†D	1028505	1028701	1028900	Std.	.50	1096325	-	-
1	1.5	.6	†F	1028514	1028710	1028909	Std.	.75	1096374	-	-
1.5	2	1	†G	1028523	1028723	1028918	Std.	1.00	1096421	-	-
2	3	1.4	†H	1028532	1028732	1028927	Std.	1.82	1096468	-	-
3	5	2	†I	1028541	1028741	1028936	Std.	3.69	1096515	1092000	-
5	7	3.5	†J	1028550	1028750	1028945	Std.	7.25	1096562	1092001	-
7.5	11	5	†K	1028563	1028765	1028954	Std.	13.4	1096609	1092002	-
10	15	6.5	†L	1028590	1028792	1028981	Std.	21.9	1096657	1092003	-
15	22	10	†N	1028599	1028801	1028990	Std.	38.4	1096704	1092004	-
20	30	-	O	1024386	1024803	-	Std.	72	-	1093716	1090161
20	30	-	O	1024402	1024821	-	Long	85	-	1093716	1090161
25	37	-	P	1024420	1024849	-	Std.	134	-	1093717	1090189
25	37	-	P	1024448	1024867	-	Long	172	-	1093717	1090189
30	45	-	S	1024466	1024885	-	Std.	182	-	1093718	1090189
30	45	-	S	1024484	1024901	-	Long	214	-	1093718	1090189
40	60	-	T	1024509	1024929	-	Std.	268	-	1093719	1090205
40	60	-	T	1024545	1024965	-	Long	312	-	1093719	1090205
50	75	-	U	1024563	1024983	-	Std.	390	-	1093720	-
50	75	-	U	1024581	1025009	-	Long	426	-	1093720	-
-	100	-	W	-	1025027	-	Std.	610	-	1093721	-
-	100	-	W	-	1025045	-	Long	675	-	1093721	-
-	150	-	X	-	1025063	-	Std.	735	-	1093721	-
-	200	-	Y	-	1025081	-	Std.	1020	-	1093723	-

Maximum allowable Proof Load is 2 Times Working Load Limit. All carbon hooks designed with a 5:1 design factor. All alloy hooks 1 through 22t designed with a 4.5:1 design factor. All alloy hooks 30t and larger designed with a 4:1 design factor. All bronze hooks designed with a 4:1 design factor. †New 319N style hook. ‡See column "Y" on following page for actual length.

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REMAZEL

CERTIFICATION LIST

Certificate Nr.: 001/24

Date: 22/11/2024

Final Customer:	Order Customer:	Object:	Description:	Quantity:	Inspection and Test Plan (ITP):	Our job:
Rosetti Marino	24005969	HOOK	CROSBY HOOK	1		24-27012

MATERIAL

Drawing	Pos.	Q.ty	Description	Material	Certificates 3.1	Order	Heat/Plate ID	Additional Mechanical Test	UT Certificates	Nesting
1028550		1	Carbon shank Hook	S319CN	330644-001	24005969	5803767804	/	24/1886RP01	/

SIRTEF UNI EN ISO 9001:2015 with Rina Service Certificates n° 666/97/S	TRADE OF STEEL WIRE ROPES, FIBRE BELTS AND ROPES, ALLOY STEEL ACCESSORIES, H.R. CHAINS. PRODUCTION OF STEEL WIRE SLINGS AND WEBBING SLINGS. LIFTING MATERIALS TESTING AND INSPECTION. TRAINING COURSES DEDICATED TO THE USE AND MAINTENANCE OF ROPES AND LIFTING ACCESSORIES Web site: https://www.sirtef.it	Nr Document **191/M/2025**
	CERTIFICATO DI CONTROLLO VISIVO-DIMENSIONALE Visual-Dimensional Inspection Certificate	Foglio - Sheet
	Module Nr: QA/100 | date: 27/06/2023 | Rev 00	**1 - 1**

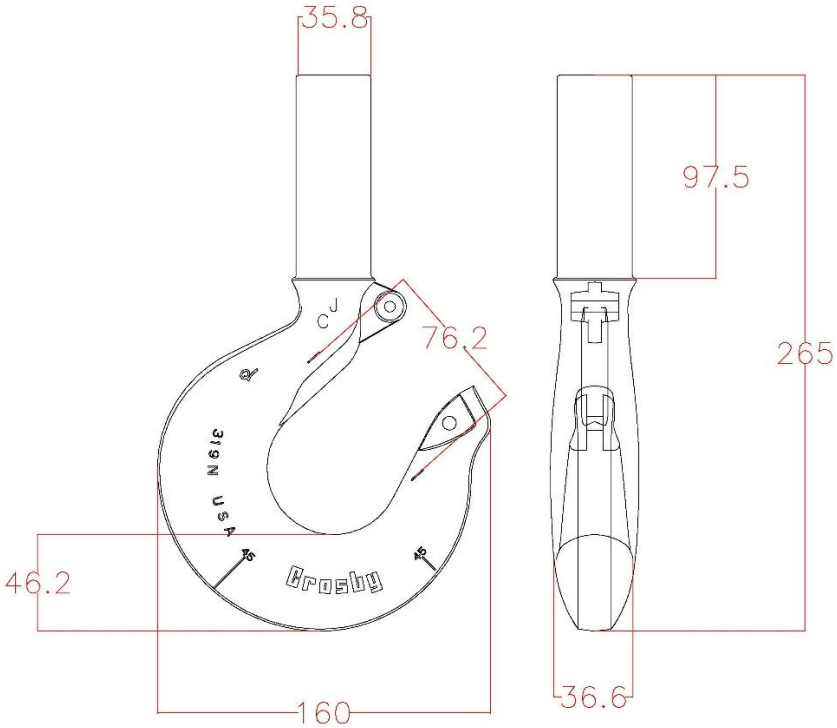
Oggetto del controllo Control object	**CROSBY S319CN 5t Carbon Shank Hook (JC) S.N. 1028550 PIC: 5WB**	N° Serie - Serial Number BATCH: 5WB	N° Disegno - Nr DWG -
Cliente Costumer:	**REMAZEL ENGINEERING S.p.A.**	N° Costumer Inspection/Test Plan	N° Commessa Cliente Nr Job Costumer
Ordine Cliente Customer Order	**4125**	-	**-**
Condizioni superficiali Surface condition	**RAW**		

Distanza visione Vision distance	**600 mm.**	Angolo di Visione Viewing angle	**30°**	Illuminazione Min Light	**350 - 500 Lux**	Metodo di Prova Type test	**Diretto**

ESAME VISIVO visual inspection	☒ CONFORME (acceptable) ☐ NON CONFORME (not acceptable)	ESAME DIMENSIONALE dimensional examination	☒ CONFORME (acceptable) ☐ NON CONFORME (not acceptable)

STRUMENTI UTILIZZATI – Instrument used			
STRUMENTO Intrument	CALIBRO DIGITALE CA 04 Digital caliper CA 04	METRO A NASTRO Measuring tape	
CERT. TARATURA Calibration cert.	Calibration card dated 31/07/2025	Initial calibration	

DISEGNO - DRAWING



NOTE:

ESITO DELL'ESAME - Examination results

☒ ACCETTABILE - ACCEPTABLE	☐ NON ACCETTABILE – NOT ACCETTABILE

DATA Date	RESPONSABILE C.Q. Quality Manager	OPERATORE SIRTEF Sirtef Operator	ISPETTORI Inspector
27/11/2024		SIRTEF S.r.l. Calamita G.Franco II° Livello PND	

Il presente documento è di proprietà esclusiva della ditta SIRTEF S.r.l. Tale documento non può essere modificato in nessuna sua parte né può essere usato diversamente per lo scopo per cui è stato creato senza permesso scritto della ditta stessa.
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Quality Control Group S.r.l.
Via Roma, 79
24030 Medolago (BG)
+39 035 901473

NDE QUALIFICATION CERTIFICATE

Certificato di qualifica PnD

Web site: www.qualitycontrolgroup.com; e-mail: info@qualitycontrolgroup.com

We certify that
Si certifica che

CORTINOVIS ANDREA

SURNAME / NAME

Birth date / Data di nascita: 10/01/1998

Birth place / Luogo di nascita: Merate (LC)

In accordance to the requirements of our Written Practice nr. PR 03.02 rev. 7 which satisfies the ASNT Recommended Practice SNT-TC-1A 2020 edition and ASME BPV Code Ed.2023 is recertified the qualification to

Level / Livello: II

Method / Metodo: MT

Technique / Tecnica: Manual Pulse echo

Limitation / Limitazioni: None

Certification date / Data della certificazione: 25/03/2024

Expiring date / Data di scadenza: 24/03/2029

This certificate is based on

School graduation: High level school — obtained on year: 2017

Training satisfactorily performed on: 2022 to 2023 — for a total hours: 345

Initial experience duration of: 12 months

Examination performed on: 25/03/2024

with a composite grade of: 94.2%

Lastest Re-examination performed on: -

with a composite grade of: -

Evidence of continuing satisfactory technical performance from: 2022 to actual

Latest Technical Performance Evaluation satisfactorily performed on: 18/02/2024

Visual acuity verified on: 08/01/2024

The level III evaluator
Il livello III valutatore

CICPnD C.E. 017 Quality Control

BERTOLINI LUCA
EN ISO 9712 liv. 3
Metodi MT-PT-RT-UT-VT

QUALITY CONTROL GROUP S.r.l.

The General Manager
Il Direttore Generale

QUALITY CONTROL GROUP S.r.l.

Quality Control Group S.r.l.
Via Roma, 79
24030 Medolago (BG)
+39 035 901473

NDE QUALIFICATION CERTIFICATE

Certificato di qualifica PnD

Web site: www.qualitycontrolgroup.com; e-mail: info@qualitycontrolgroup.com

We certify that
Si certifica che

CORTINOVIS ANDREA

SURNAME / NAME

Birth date / Data di nascita: 10/01/1998
Birth place / Luogo di nascita: Merate (LC)

In accordance to the requirements of our Written Practice nr. PR 03.02 rev. 7 which satisfies the ASNT Recommended Practice SNT-TC-1A 2020 edition and ASME BPV Code Ed.2023 is recertified the qualification to

Level / Livello: II
Method / Metodo: UT
Technique / Tecnica: Manual Pulse echo

Limitation / Limitazioni: None

Certification date / Data della certificazione: 25/03/2024
Expiring date / Data di scadenza: 24/03/2029

This certificate is based on
School graduation: High level school — obtained on year: 2017
Training satisfactorily performed on: 2021 to 2023 — for a total hours: 1200
Initial experience duration of: 24 months

Examination performed on: 25/03/2024
with a composite grade of: 90.0%
Lastest Re-examination performed on: -
with a composite grade of: -
Evidence of continuing satisfactory technical performance from: 2021 to actual
Latest Technical Performance Evaluation satisfactorily performed on: 18/02/2024
Visual acuity verified on: 08/01/2024

The level III evaluator
Il livello III valutatore

CICPnD C.E. 017
Quality Control
BERTOLINI LUCA
EN ISO 9712 liv. 3
Metodi MT-PT-RT-UT-VT
QUALITY CONTROL GROUP S.r.l.

The General Manager
Il Direttore Generale

QUALITY CONTROL GROUP S.r.l.

CICPND
CENTRO ITALIANO
DI COORDINAMENTO
PER LE PROVE NON DISTRUTTIVE

Via C. Pisacane, 46
20025 Legnano (MI)
PEC: info@pec.cicpnd.it
C.F. e P.I. 09510020150

ACCREDIA
L'ENTE ITALIANO DI ACCREDITAMENTO
PRS N° 012C
Membro degli Accordi di Mutuo Riconoscimento EA, IAF e ILAC
Signatory of EA, IAF and ILAC Mutual Recognition Agreement

CERTIFICATO DI LIVELLO 2
LEVEL 2 CERTIFICATE

N° 38447/PND/C

Si certifica la qualificazione per esami in Prove Non Distruttive al **LIVELLO 2**
*This is to certify qualification by examinations in Non-Destructive Testing at the **LEVEL 2***

di / of

Cortinovis Andrea

nato a / *born in* **Merate (LC)**

il / *on* **10 gennaio 1998**

per il metodo / *for the method:*

Ultrasuoni (UT)

per i settori / *for the sectors:*

Collaudi pre e in servizio che comprendono la fabbricazione

(c; f; w; t; wp)

Il presente certificato viene rilasciato in conformità alla Norma UNI EN ISO 9712:2022.
This certificate is issued according to UNI EN ISO 9712:2022.

Direttore Generale
General Manager

Reggiani Michael
M. Reggiani

Data Delibera: 08/04/2024
Approval Date

Data Scadenza: 08/04/2029 C
Expiry Date

Approvazione per l'esecuzione di prove non distruttive secondo l'Allegato I paragrafo 3.1.3 della **Direttiva attrezzature in pressione 2014/68/UE/PED** (CEM/TR 15589 Route A).

AIPnD

CICPND
CENTRO ITALIANO
DI COORDINAMENTO
PER LE PROVE NON DISTRUTTIVE

Via C. Pisacane, 46
20025 Legnano (MI)
PEC: info@pec.cicpnd.it
C.F. e P.I. 09510020150

ACCREDIA
L'ENTE ITALIANO DI ACCREDITAMENTO
PRS N° 012C
Membro degli Accordi di Mutuo Riconoscimento EA, IAF e ILAC
Signatory of EA, IAF and ILAC Mutual Recognition Agreement

CERTIFICATO DI LIVELLO 2
LEVEL 2 CERTIFICATE

N° 38448/PND/C

Si certifica la qualificazione per esami in Prove Non Distruttive al **LIVELLO 2**
*This is to certify qualification by examinations in Non-Destructive Testing at the **LEVEL 2***

di / of

Cortinovis Andrea

nato a / *born in* **Merate (LC)**

il / *on* **10 gennaio 1998**

per il metodo / *for the method:*

Magnetoscopia (MT)

per i settori / *for the sectors:*

Collaudi pre e in servizio che comprendono la fabbricazione

(c; f; w; t; wp)

Il presente certificato viene rilasciato in conformità alla Norma UNI EN ISO 9712:2022.
This certificate is issued according to UNI EN ISO 9712:2022.

Direttore Generale
General Manager

Reggiani Michael
M. Reggiani

Data Delibera: 08/04/2024
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Approvazione per l'esecuzione di prove non distruttive secondo l'Allegato I paragrafo 3.1.3 della **Direttiva attrezzature in pressione 2014/68/UE/PED** (CEM/TR 15589 Route A).

AIPnD

CENTRO ITALIANO ACCIAI SRL
GRUPPO ACCIAIERIE VENETE SPA

CERTIFICATO DI COLLAUDO – MILL'S TEST CERTIFICATE

EN 10204 3.1

N° 5714

DATE: 27/09/2022

Centro Italiano Acciai s.r.l C.S. € 270.000 i.v. C.F. 01321520288 P.IVA 02356350369
R.E.A. di MO n. 284827 Reg. Imprese di MO n. 158694 Meccanografico MO 027779
Sede Legale 41122 MODENA Via Pietro Cavalli, 35 - Italy Tel. 059 283235
Società assoggettata a direzione e coordinamento da parte di Acciaierie Venete Spa
Azienda con sistema di gestione per la qualità certificato da IGQ secondo ISO 9001

CLIENTE – CUSTOMER – CLIENT – KUNDE
103545 - ROSSI SPA
VIA EMILIA OVEST N. 915/A
41100 MODENA (MO)

ORDINE CLIENTE - PURCHASE ORDER – COMMANDE CLIENT - KUNDENAUFTRAG
715021 DEL 23/09/2022

ORDINE - ORDER – COMMANDE - AUFTRAG
C1068244 / 10

ARTICOLO (ACCIAIO)- ITEM (STEEL) - ITEM (ACIER) - ARTIKEL (STAHL)

PROFILO - PROFILE – PROFIL - ABMESSUNG: **TONDO mm. 35 (h9 - EN ISO 286-2)**

STATO DI FORNITURA- DELIVERY CONDITION – CONDITION DE LIVRAISON – LIEFERZUSTAND: **RICOTTO LAVORABILE**

STATO DI ESECUZIONE - STATE OF EXECUTION – ETAT DE L'ÉXECUTION - AUSFÜHRUNG: **PELATO RULLATO**

LOTTO - REFERENCE – REFERENCE - REFERENZEN	COLATA – HEAT - COULEE - SCHMELZE	MARCA ACCIAIO – STEEL GRADE - MARQUE ACIER - STAHLGÜTE
060660	**286772**	**16MnCr5**

NORMA - SPECIFICATION – NORME - NORM: **EN ISO 683-3:2018**

PESO - WEIGHT – POIDS - GEWICHT (Kg)	COLLI - ITEMS – COLIS - KOLLI (Nr)	DDT - DELIVERY NOTE – BON DE LIVRAISON - LIEFERSCHEIN	BLUMO - BLOOM – BLOOM - KNÜPPEL	RIDUZIONE - REDUCTION – REDUCTION - UMFORMUNGSGRAD
1181	**1**	**C002303** **27/09/2022**	**200**	**29.2**

ACCIAIO DA FORNO ELETTRICO - CONTINUOUS CASTING ELECTRIC STEEL - ACIER ELABORE AU FOUR ELECTRIQUE - ELEKTRO-LICHTBOGENOFEN STAHL

COMPOSIZIONE CHIMICA (%) - CHEMICAL COMPOSITION (%) - COMPOSITION CHIMIQUE (%) - CHEMISCHE ZUSAMMENSETZUNG (%)

C	Si	Mn	P	S	Cu	Cr	Ni	Sn	Al	As	Mo
0.1720	0.2330	1.2150	0.0140	0.0200	0.2000	1.0660	0.1470	0.0080	0.0290	0.0050	0.0390

V	Ti	Nb	Ca
0.0070	0.0080	0.0020	0.0007

ANALISI GAS - GAS ANALYSIS - ANALYSE GAZ - GAS ANALYSE
H_2= 1.4 (ppm) | O_2= (ppm) | N_2= (ppm)

D.I. (ASTM A255)

THE PRODUCT COMPLIES WITH THE REQUIREMENTS OF THE EUROPEAN DIRECTIVE 2000/53/EC

RADIOACTIVITY MEETS SPECIFICATION 96/29/EURATOM

CARATTERISTICHE MECCANICHE - MECHANICAL PROPERTIES – CARACTERISTIQUES MECANIQUES-MECHANISCHE EIGENSCHAFTEN

TRAZIONE-TENSILE TESTING-TRACTION-ZUGVERSUCH – **EN ISO 6892-1**

RESILIENZA - IMPACT TEST - RESILIENCE - ZÄHIGKEIT – **EN ISO 148-1**

DUREZZA - HARDNESS - DURETE - HÄRTE – **EN ISO 6506-1**

PROVINO - SAMPLE – EPROUVETTE - MUSTER	mm	STATO - CONDITION – ETAT - ZUSTAND	TRATTAMENTO TERMICO - HEAT TREATMENT – TRAITMENT TERMIQUE - WÄRMEBEHANDLUNG			Rm MPa	Re MPa	A %	Z %	TIPO - TYPE - TYPE - ART	KU °C	KU J	KU J	Mean J	HB		
COLATA - HEAT – COULEE-SCHMELZE	11	TEMPRA E DISTENSIONE	880°C	OLIO	180°C	1332	1066	11	40	20	34	34	34	34			
VALORI ALLO STATO DI FORNITURA - VALUES IN DELIVERY CONDITION - WERTE IM LIEFERZUSTAND ▶															164		

TEMPRABILITA' - HARDENABILITY – TREMPABILITE - HÄRTBARKEIT – **EN ISO 642**

MM	1.5	3	5	7	9	11	13	15	20	25	30	35	40	45	50
HRC	44.7	43.6	42.1	39.4	35.8	33.1	31.2	30.3	28.4	27.3	25.9	25.3	24.7	24.4	23.6

GRANO - GRAIN – GRAIN - KORNGRÖSSE – **EN ISO 643**

AUSTENITICO **7** - **8**

INCLUSIONI NON METALLICHE - NON METALLIC INCLUSIONS - INCLUSIONS NON METALLIQUES - NICHTMETALLISCHE EINSCHLÜSSE – **UNI 3244/80 (M)**

A (SS)		B (OA)		C (OS)		D (OG)	
Thin	Heavy	Thin	Heavy	Thin	Heavy	Thin	Heavy
2.0	**1.0**	**1.5**	**1.0**	**0.0**	**0.0**	**1.0**	**1.0**

DIN 50602 (K)

K 3 *(OXIDE)* = **8**
K *(SULFIDE)* =
K *(TOTAL)* =

MACRO - MACROETCHING – MACRO - MAKRO ÄTZUNG

MACROINCLUSIONI - MACROINCLUSIONS – MACRO INCLUSIONS - MAKRO EINSCHLÜSSE

DIFETTI INTERNI – CORE DEFECTS – DEFAUTS CORE – KERNFEHLER: **EN 10308 CL.4**

CONTROLLO ANTIMESCOLAMENTO - ANTIMIXING CONTROL – CONTROLE ANTIMELANGE - VERWECHSLUNGSPRÜFUNG: **100%**

ENTI COLLAUDATORI - INSPECTION AUTHORITIES – SERVICE D'ESSAI - ABNAHMEBEHÖRDE

NOTE – NOTES – NOTES - ANMERKUNGEN

VS ORDINE 715021
COD.ART.3010144-X

CONTROLLO QUALITA' - QUALITY CONTROL - CONTROLE QUALITE - QUALITÄTSTELLE

SERVIZIO QUALITA' CENTRO ITALIANO ACCIAI SRL

COPIA CONFORME ALL'ORIGINALE DEPOSITATO PRESSO CENTRO ITALIANO ACCIAI S.R.L. *RIPORTA TUTTI I DATI ORIGINALI DEL CERTIFICATO DI COLLAUDO DEL PRODUTTORE DELL'ACCIAIO*

TEMPRASUD S.R.L.
TRATTAMENTI TERMICI

Rapporto di Collaudo

Commessa **202300720** 0.1

Data Collaudo **22/02/2023**

Cliente **000625 ROSSI S.p.A. Divisione Epicicloidali** DDT Cliente **43001515** Del **17-gen-23**

Num Disegno **RC91021346** **1021346 PIGNONE CIL 2,267/** Materiale **16MnCr5**

Pezzi **1300** Peso **551,2** Numero Lotto

Colata Indice Rev. Carica Impianto

Numero Carica **230.000.784** Sistema **LLF1** Ciclo **606**

Trattamento **Cementazione tempra e rinvenimento 0,6 mm**

Risultato del Collaudo

Collaudatore **GIULIANO GENOVA**

Caratteristiche Richieste	Zona Rilievo	UM	Da	A	Strumento
DUREZZA SUPERF.		**HRC**	**59,00**	**61,00**	
PENETRAZ.EFFIC.		**mm**	**0,50**	**0,70**	

Caratteristiche Rilevate	Zona Rilievo	UM	Da	A	Strumento
DUREZZA SUPERF.		**HRC**	**60,00**	**60,50**	**5**
PENETRAZ.EFFIC.		**mm**	**0,66**	**0,66**	**2**

PROVINO N° 762
ESEGUITO CICLO DI TRATTAMENTO DI CEMENTAZIONE TEMPRA E RINVENIMENTO
ESEGUITO COLLAUDO SU PARTICOLARE DISEGNO RC91021346
ESEGUITO COLLAUDO IN SCALA HRA CON CONVERSIONE IN SCALA HRC

Strumento	Descrizione	Marca	Modello	Matricola
2	**Microdurometro affri J**	**AFFRI**	**Wiki 200 JS1**	**74353**
5	**Durometro TWIN 1**	**ERNST**	**TWINX**	**0012/2017**

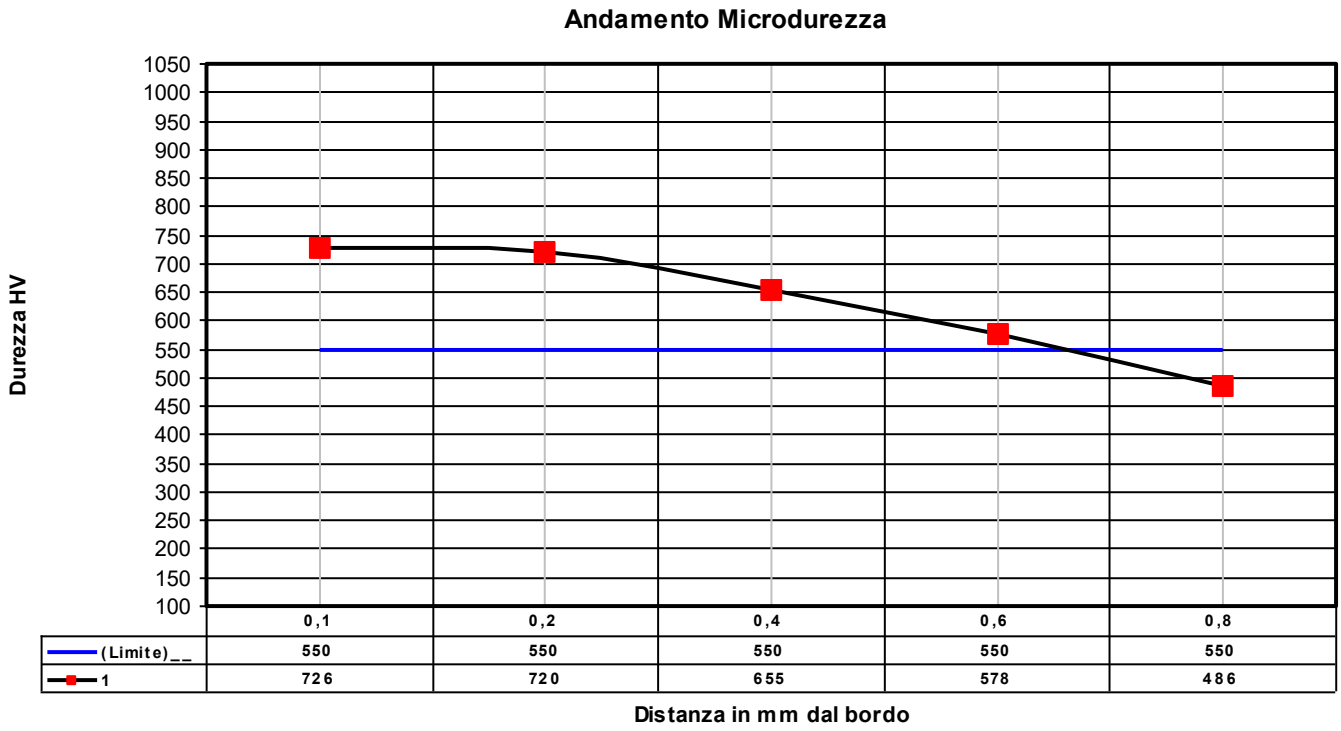
Eseguito collaudo di tipo 3.1 in ottemperanza alla norma UNI EN ISO 10204

Esito: **Conforme** Collaudatore: **GIULIANO GENOVA**

TEMPRASUD
TRATTAMENTI TERMICI

Diagramma Andamento Microdurezza

Commessa **2023/00720.0.1**



Tenaris

INSPECTION CERTIFICATE
CERTIFICATO DI COLLAUDO
(UNI EN 10204 3.1 / ISO 10474 3.1)

Number / Numero:	Page / Pagina:
03-24-04888	**1 / 5**
Date / Data: **June 12, 2024**	

Dalmine S.p.A. – Arcore plant
Via Achille Grandi, 100
20862 Arcore (MB) – Italy
+39 039 66 50 1 tel
+39 039 60 13 539 fax

Customer / Cliente: **ROSSI S.P.A.**	Customer´s Order Item / Rifer. Ordine Cliente - I	Customer´s Reference / Posizione Cliente:	Manufacturer´s Works Order N° / Conferma-Posizione:
	805872 OA	**2/3091042**	**3241217/002**

Manufacture Process / Processo di fabbricazione:	Product Type / Tipo di prodotto:	Surface / Superficie:
NORMALIZED NON RADDRIZZATI **NORMALIZZATI NON RADDRIZZATI**	**SEAMLESS PIPES HOT FINISHED FOR MECHANICAL APPLICATIONS (WITH EXTRA REQUIREM** **TUBI S.S. FINITI A CALDO PER APPLICAZIONI MECCANICHE (CON RICHIESTE SUPPLEMENTA**	**BARE** **GREZZI**

Standard or Specification / Norme o specifica:	Steel Grade / Grado dell'Acciaio:	Ends / Estremità:
ACCORDING TO EN 10297/1 TQC 61377 REV.1.3 **NORMA EN 10297/1 E TQC 61377 REV.1.3**	**STEEL E 355** **ACCIAIO E 355**	**SQUARE CUT** **LISCI ALLE ESTREMITA'**

Dimensions / Dimensioni:	Schedule / Schedula:	Length / Lunghezza:	Quantity / Quantità: **48Pcs/Pz**	Nominal Weight / Peso nominale:
ø2.374" O.D. x .559" W.T.	.	**13.287 ft ÷ 22.966 ft**	**844'03" ft 9193,2 lb**	**10.86 lb/ft**
ø60.30mm O.D. x 14.20mm W.T.	.	**4050 mm ÷ 7000 mm**	**257.34 mt 4170 kg**	**16.16 Kg/m**

DELIVERY NOTES / AVVISI DI SPEDIZIONE

Delivery Notes Avvisi di spedizione	Delivery Notes Avvisi di spedizione
Job Number: 0031380810 / 000020 Shipping note: 0106345054 - 12/06/2024 Address: VIA EMILIA OVEST 915/A	Town: 41123 MODENA Country: Italy

TENSILE TEST / PROVA DI TRAZIONE

Heat N° Colata N°	Sample N° Prova N°	Lot N° Lotto N°	Specimen condition Condizioni della provetta				Specimen dimensions Dimensioni della provetta		Test temp Temp. di prova	Y.S. **OffSet 0.2%** Min: **370.00** Max: **--**	U.T.S. Req. Min: **540.00** Max: **700.00**	Elongation / Allungamento Lo **5D = 5.65√So**			
			Ls	Sc	Type Tipo	Ori	Size Dimensioni	Area Area						Min.	Obt.
							mm	**mm2**	**°C**	**MPa**	**MPa**	**cal.**	**mm**	%	%
941018	C8771	1	B	AM	Cs	L	10.03	79.00	+20	469.00	677.00	5D	50.0	19.0%	22.5%

AM: As manufactured / Come fabbricato	Lo: Initial length / Lunghezza iniziale	Obt: Obtained / Ottenuto	U.T.S: Ultimate Tensile Strength / Rottura
B: Body / Corpo	Ls: Location of sample / Ubicazione provetta	Ori: Orientation / Orientamento	Y.S: Yield Strength / Snervamento
Cs: Cylindrical specimen / Cilindrica	Max: Maximum / Massimo	Req: Required / Richiesto	
L: Longitudinal / Longitudinale	Min: Minimum / Minimo	Sc: Specimen condition / Condizioni Provetta	

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Page / Pagina: **2 / 5**

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Manufacture Process / Processo di fabbricazione: **NORMALIZED NON RADDRIZZATI** **NORMALIZZATI NON RADDRIZZATI**	Product Type / Tipo di prodotto: **SEAMLESS PIPES HOT FINISHED FOR MECHANICAL APPLICATIONS (WITH EXTRA REQUIREM** **TUBI S.S. FINITI A CALDO PER APPLICAZIONI MECCANICHE (CON RICHIESTE SUPPLEMENTA**		Surface / Superficie: **BARE** **GREZZI**
Standard or Specification / Norme o specifica: **ACCORDING TO EN 10297/1 TQC 61377 REV.1.3** **NORMA EN 10297/1 E TQC 61377 REV.1.3**		Steel Grade / Grado dell'Acciaio: **STEEL E 355** **ACCIAIO E 355**	Ends / Estremità: **SQUARE CUT** **LISCI ALLE ESTREMITA'**
Dimensions / Dimensioni: **ø2.374" O.D. x .559" W.T.** **ø60.30mm O.D. x 14.20mm W.T.**	Schedule / Schedula: . .	Length / Lunghezza: **13.287 ft ÷ 22.966 ft** **4050 mm ÷ 7000 mm**	Quantity / Quantità: **48Pcs/Pz** **844'03" ft 9193,2 lb** **257.34 mt 4170 kg**	Nominal Weight / Peso nominale: **10.86 lb/ft** **16.16 Kg/m**

CHEMICAL COMPOSITION / COMPOSIZIONE CHIMICA

		Composition % / Composizione %													
		X 100									X 1000				
		C	Mn	Si	Ni	Cr	Mo	V	Cu	F1	P	S	Al	Ti	Nb
	H Max	**22**	**170**	**50**	**40**	**30**	**8**	**15**	**30**	**20**	**30**	**35**	**--**	**50**	**70**
	Min	**16**	**130**	**10**	**--**	**--**	**--**	**8**	**--**	**--**	**--**	**--**	**10**	**--**	**--**
Heat N°	P Max	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Colata N°	Min	--	--	--	--	--	--	--	--	--	--	--	--	--	--
941018	H	19	150	22	18	18	7	13	20	15.3	12	2	29	2	23

F1: (Nb+V)
H: Heat / Colata
Max: Maximum / Massimo
Min: Minimum / Minimo
P: Product / Prodotto

IMPACT TEST / PROVA DI RESILIENZA

Type/Tipo: **KCV** | Orientation/Direzione: **L** | Unit / Unità: **JOULE**
Position/Posizione: | Temp: **- 20** Unit/Unità: **°C** | Ind.Min.Req: **27** Req.Min.Avg: **--**

Heat N° / Colata N°	Sample N° / Prova N°	Zone / Zona	Lot N° / Lotto N°	Ls	Sc	Size / Dimensioni **mm**	Results / Risultato 1	2	3	Avg.
941018	C8771	outside	1	B	AM	10 x 10.00	64.0	71.0	53.0	63.0

AM: As manufactured / Come fabbricato
Avg: Average / Media
B: Body / Corpo
Ind. Min. Req: Individual Minimum Required / Minimo singolo richiesto
L: Longitudinal / Longitudinale
Ls: Location of sample / Ubicazione provetta
Req. Min. Avg: Required minimum average / Minima media richiesta
Sc: Specimen condition / Condizioni Provetta
Temp: Temperature / Temperatura

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Standard or Specification / Norme o specifica: **ACCORDING TO EN 10297/1 TQC 61377 REV.1.3** **NORMA EN 10297/1 E TQC 61377 REV.1.3**		Steel Grade / Grado dell'Acciaio: **STEEL E 355** **ACCIAIO E 355**	Ends / Estremità: **SQUARE CUT** **LISCI ALLE ESTREMITA'**
Dimensions / Dimensioni: **ø2.374" O.D. x .559" W.T.** **ø60.30mm O.D. x 14.20mm W.T.**	Schedule / Schedula: . .	Length / Lunghezza: **13.287 ft ÷ 22.966 ft** **4050 mm ÷ 7000 mm**	Quantity / Quantità: **48Pcs/Pz** **844'03" ft 9193,2 lb** **257.34 mt 4170 kg**	Nominal Weight / Peso nominale: **10.86 lb/ft** **16.16 Kg/m**

SUPPLEMENTARY INFORMATION / INFORMAZIONI SUPPLEMENTARIE

STANDARD EDITIONS
EDIZIONI NORME

Standard:EN 10297-1 Year:2003	Norma:EN 10297-1 Anno:2003

Supplementary Information
Informazioni supplementari

Heat	Pz	Mt	Kg	Colata	Pz	Mt	Kg
941018-001	48	257,34	4170	941018-001	48	257,34	4170

Supplementary Information
Informazioni supplementari

WE HEREBY DECLARE THAT ALL PIPES HAVE BEEN SPECTROSCOPICALLY CHECKED, NO DISCREPANCY HAVE BEEN FOUND ALL PIPES HAVE BEEN TESTED BY ELECTROMAGNETIC TEST - FLUX LEACKAGE - INSTEAD OF HYDROSTATIC TEST WITH SATISFACTORY RESULT ACCORDING TO SPEC. EN 10246-5.LEVEL F4 ALL PIPES HAVE BEEN NORMALIZED AT 900°C FOR 15 MINS. AND COOLED IN STILL AIR . SEAMLESS HOT FINISHED PIPES VISUAL AND DIMENSIONAL CONTROL HAS BEEN CARRIED OUT WITH SATISFACTORY RESULT STEEL IS FULLY KILLED AND PRODUCED BY ELECTRIC FURNACE TO A FINE GRAIN PRACTICE THE PRODUCT SUPPLIED IS IN COMPLIANCE WITH THE REQUIREMENTS OF THE ORDER. MANUFACTURED BY TENARIS DALMINE NO WELD REPAIR, MERCURY AND RADIATION FREE Tenaris IT identification number for MTC: 59u#R%&p	SI DICHIARA CHE TUTTI I TUBI SONO STATI SOTTOPOSTI AL CONTROLLO DELL'ACCIAIO MEDIANTE SPETTROANALIZZATORE,DALL'ESAME NON SONO EMERSE MESCOLANZE DI MATERIALE TUTTI I TUBI SONO STATI SOTTOPOSTI A CONTROLLO ELETTROMAGNETICO - FLUSSO DISPERSO - IN SOSTITUZIONE DELLA PROVA IDRAULICA CON ESITO SODDISFACENTE IN ACCORDO ALLA SPEC. EN 10246-5.LEVEL F4 I TUBI SONO STATI NORMALIZZATI A 900°C PER 15 MIN. E RAFFREDDATI IN ARIA CALMA TUBI SENZA SALDATURA FINITI A CALDO IL CONTROLLO VISIVO E DIMENSIONALE HA DATO ESITO SODDISFACENTE L'ACCIAIO E' DI TIPO CALMATO, A GRANO FINE, PRODOTTO AL FORNO ELETTRICO IL MATERIALE FORNITO E' IN ACCORDO AI REQUISITI DELL'ORDINE. FABBRICATO DA TENARIS DALMINE NON RIPARATO MEDIANTE SALDATURA, ESENTE DA MERCURIO E RADIAZIONI Numero Identificativo Tenaris IT per MTC: 59u#R%&p

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MARKING / MARCATURA

Marking / Marcatura	
STENCILING _T 60,30 X 14,20 TAM MT EN10297 E 355 HEAT:_COLATA NR _NR . LEGEND _T = TENARIS Logo _COLATA = Heat Number _NR = Pipe/Tube identifier .	VERNICIATURA _T 60,30 X 14,20 TAM MT EN10297 E 355 HEAT:_COLATA NR _NR . LEGENDA _T = Logo TENARIS _COLATA = Numero di colata _NR = Identificativo numerico del tubo .
PUNCHING _T MT E 355 S QD . LEGEND _T = TENARIS Logo	PUNZONATURA _T MT E 355 S QD . LEGENDA _T = Logo TENARIS

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ø60.30mm O.D. x 14.20mm W.T.	.	**4050 mm ÷ 7000 mm**	**257.34 mt 4170 kg**	**16.16 Kg/m**

The product certified herein has been manufactured, sampled, tested and inspected in accordance with the stated specifications and has been found to meet the requirements.
This certificate is not a declaration of origin nor may it be used as a declaration of origin.

Il prodotto qui certificato è stato fabbricato, provato, testato e controllato in conformità alle specifiche indicate ed è risultato conforme ai requisiti. Questo certificato non è una dichiarazione d'origine e non può essere utilizzato come tale

CUSTOMER . THIRD PARTY

INSPECTION COMPANY
COMPAGNIA D'ISPEZIONE

TENARIS QUALITY DEPARTMENT SIGNATURE

QUALITY CERTIFICATION DEPT.
UFFICIO CERTIFICAZIONE QUALITA'
STURNIOLO Domenico

CHIEF OF QUALITY CERTIFICATION DEPT.
RESPONSABILE DELL'UFFICIO CERTIFICAZIONE QUALITA'
MASTRANDREA Rocco

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CENTRO ITALIANO ACCIAI SRL
GRUPPO ACCIAIERIE VENETE SPA

CERTIFICATO DI COLLAUDO – MILL'S TEST CERTIFICATE

EN 10204 3.1

N° 4503

DATE: 25/07/2022

Centro Italiano Acciai s.r.l C.S. € 270.000 i.v. C.F. 01321520288 P.IVA 02356350369
R.E.A. di MO n. 284827 Reg. Imprese di MO n. 158694 Meccanografico MO 027779
Sede Legale 41122 MODENA Via Pietro Cavalli, 35 - Italy Tel. 059 283235
Società assoggettata a direzione e coordinamento da parte di Acciaierie Venete Spa
Azienda con sistema di gestione per la qualità certificato da IGQ secondo ISO 9001

CLIENTE – CUSTOMER – CLIENT – KUNDE

103545 - ROSSI SPA
VIA EMILIA OVEST N. 915/A
41100 MODENA (MO)

ORDINE CLIENTE - PURCHASE ORDER – COMMANDE CLIENT - KUNDENAUFTRAG: 703882 DEL 21/07/2022

ORDINE - ORDER – COMMANDE - AUFTRAG: C1067446 / 10

ARTICOLO (ACCIAIO)- ITEM (STEEL) - ITEM (ACIER) - ARTIKEL (STAHL)

PROFILO - PROFILE – PROFIL - ABMESSUNG: **TONDO mm. 73 (EN 10060 - PRECISION)**

STATO DI FORNITURA- DELIVERY CONDITION – CONDITION DE LIVRAISON – LIEFERZUSTAND: **RICOTTO LAVORABILE**

STATO DI ESECUZIONE - STATE OF EXECUTION – ETAT DE L'ÉXECUTION - AUSFÜHRUNG: **LAMINATO**

LOTTO - REFERENCE – REFERENCE - REFERENZEN	COLATA – HEAT - COULEE - SCHMELZE	MARCA ACCIAIO – STEEL GRADE - MARQUE ACIER - STAHLGÜTE
059755	**285562**	**16MnCr5**

NORMA - SPECIFICATION – NORME - NORM: **EN ISO 683-3:2018**

PESO - WEIGHT – POIDS - GEWICHT (Kg)	COLLI - ITEMS – COLIS - KOLLI (Nr)	DDT - DELIVERY NOTE – BON DE LIVRAISON - LIEFERSCHEIN	BLUMO - BLOOM – BLOOM - KNÜPPEL	RIDUZIONE - REDUCTION – REDUCTION - UMFORMUNGSGRAD
2604	**2**	**C001849** 25/07/2022	● **200**	**7.5**

ACCIAIO DA FORNO ELETTRICO - CONTINUOUS CASTING ELECTRIC STEEL - ACIER ELABORE AU FOUR ELECTRIQUE - ELEKTRO-LICHTBOGENOFEN STAHL

COMPOSIZIONE CHIMICA (%) - CHEMICAL COMPOSITION (%) - COMPOSITION CHIMIQUE (%) - CHEMISCHE ZUSAMMENSETZUNG (%)

C	Si	Mn	P	S	Cu	Cr	Ni	Sn	Al	As	Mo
0.1610	0.2390	1.2420	0.0150	0.0230	0.2250	1.0510	0.1340	0.0120	0.0230	0.0050	0.0300

V	Nb
0.0060	0.0050

ANALISI GAS - GAS ANALYSIS - ANALYSE GAZ - GAS ANALYSE

$H_2^=$ **1.4** (ppm) | $O_2^=$ (ppm) | $N_2^=$ (ppm)

D.I. (ASTM A255) **2,14 inch** - **54,36 mm**

THE PRODUCT COMPLIES WITH THE REQUIREMENTS OF THE EUROPEAN DIRECTIVE 2000/53/EC

RADIOACTIVITY MEETS SPECIFICATION 96/29/EURATOM

CARATTERISTICHE MECCANICHE - MECHANICAL PROPERTIES – CARACTERISTIQUES MECANIQUES-MECHANISCHE EIGENSCHAFTEN

TRAZIONE-TENSILE TESTING-TRACTION-ZUGVERSUCH – **EN ISO 6892-1**

RESILIENZA - IMPACT TEST - RESILIENCE - ZÄHIGKEIT – **EN ISO 148-1**

DUREZZA - HARDNESS - DURETE - HÄRTE – **EN ISO 6506-1**

PROVINO - SAMPLE – EPROUVETTE - MUSTER	mm	STATO - CONDITION – ETAT - ZUSTAND	TRATTAMENTO TERMICO - HEAT TREATMENT – TRAITMENT TERMIQUE - WÄRMEBEHANDLUNG			Rm MPa	Re MPa	A %	Z %	TIPO - TYPE - TYPE - ART	KU °C	KU J	KU J	Mean J	HB		
COLATA - HEAT – COULEE-SCHMELZE	11	TEMPRA E DISTENSIONE	880°C	OLIO	180°C	1320	1122	12	42	20	35	36	36	36			
VALORI ALLO STATO DI FORNITURA - VALUES IN DELIVERY CONDITION - WERTE IM LIEFERZUSTAND ▶															160		

TEMPRABILITA' - HARDENABILITY – TREMPABILITE - HÄRTBARKEIT – **EN ISO 642**

MM	1.5	3	5	7	9	11	13	15	20	25	30	35	40	45	50
HRC	42.2	41.6	37.5	33.5	31.2	28.8	27.2	26.5	24.1	23.2	22.6	21.7	21.2	20.1	19.2

GRANO - GRAIN – GRAIN - KORNGRÖSSE: **EN ISO 643** **AUSTENITICO** **7 - 8**

INCLUSIONI NON METALLICHE - NON METALLIC INCLUSIONS - INCLUSIONS NON METALLIQUES - NICHTMETALLISCHE EINSCHLÜSSE

A (SS)		B (OA)		C (OS)		D (OG)	
Thin	Heavy	Thin	Heavy	Thin	Heavy	Thin	Heavy

DIN 50602 (K)

K **4** *(OXIDE)* = **6**
K *(SULFIDE)* =
K *(TOTAL)* =

MACRO - MACROETCHING – MACRO - MAKRO ÄTZUNG

MACROINCLUSIONI - MACROINCLUSIONS – MACRO INCLUSIONS - MAKRO EINSCHLÜSSE

DIFETTI INTERNI – CORE DEFECTS – DEFAUTS CORE – KERNFEHLER: **EN 10308 CL.3**

DIFETTI SUPERF. - SURFACE DEFECTS – DEFAUTS DE SURFACE – OBERFLÄCHENFEHLER: **EN 10221 B**

CONTROLLO ANTIMESCOLAMENTO - ANTIMIXING CONTROL – CONTROLE ANTIMELANGE - VERWECHSLUNGSPRÜFUNG: **100%**

ENTI COLLAUDATORI - INSPECTION AUTHORITIES – SERVICE D'ESSAI - ABNAHMEBEHÖRDE

NOTE – NOTES – NOTES - ANMERKUNGEN

vs ordine 703882
cod art 3011023

CONTROLLO QUALITA' - QUALITY CONTROL - CONTROLE QUALITE - QUALITÄTSTELLE

SERVIZIO QUALITA' – CENTRO ITALIANO ACCIAI SRL

COPIA CONFORME ALL'ORIGINALE DEPOSITATO PRESSO CENTRO ITALIANO ACCIAI S.R.L. *RIPORTA TUTTI I DATI ORIGINALI DEL CERTIFICATO DI COLLAUDO DEL PRODUTTORE DELL'ACCIAIO*

TEMPRASUD
Advanced heat treatment solutions

Rapporto di Collaudo / Test Report

Nr.Certificato/Certificate Number	Data Collaudo/Test Date	Nr.Provino/Sample
202306557	13/06/2023	2577

CLIENTE/CUSTOMER	NUMERO LOTTO/BATCH NUMBER	CICLO/CYCLE
000625 ROSSI S.p.A. Divisione Epicicloidali		
DISEGNO/PART NUMBER	**MATERIALE/MATERIAL**	**COLATA/CASTING**
RC91054105 RUOTA CIL. 5.36D/2	**16MnCr5**	

DDT CLIENTE/DELIVERY NOTE	DATA DDT/D.N. DATE	CARICA//CHARGE N.	PESO TOTALE/TOTAL WEIGHT	PEZZI TOTALI/TOTAL PIECES	IND. REVIS.	CONTROLLO/CHECK PLAN
43016063	**22/05/2023**	**230.002.899**	**275,04**	**955**		

Risultato del Collaudo / Test's Result

Caratteristiche Richieste / Requested Features

DUREZZA SUPERF.	***SURFACE HARDENESS***		Da/From	**59,00**	A/To	**61,00**	**HRC**
PENETRAZ.EFFIC.	***CHD***		Da/From	**0,25**	A/To	**0,40**	**mm**

Caratteristiche Rilevate / Detected Features

DUREZZA SUPERF.	***SURFACE HARDENESS***		Da/From	**60,00**	A/To	**60,50**	**HRC**
PENETRAZ.EFFIC.	***CHD***	**1**	Da/From	**0,30**	A/To	**0,30**	**mm**

Trattamento Termico e Lavorazioni Eseguite/Performed Heat Treatment and Operations

ACCETTAZIONE MATERIALE	ACCEPTANCE MATERIAL
PREPARAZIONE CARICA	ASSEMBLY
CEMENTAZIONE E TEMPRA	CARBURAZING AND QUENCHING
LAVAGGIO	WASHING
RINVENIMENTO	TEMPERING
COLLAUDO	TEST
SABBIATURA	SANDBLASTING
OLIATURA E IMBALLAGGIO	
PRONTA CONSEGNA	PROMPT DELIVERY

Note / Notes

ESEGUITO CICLO DI TRATTAMENTO DI CEMENTAZIONE TEMPRA E RINVENIMENTO
ESEGUITO COLLAUDO SU PARTICOLARE DISEGNO RC91054105
ESEGUITO COLLAUDO IN SCALA HR15N CON CONVERSIONE IN SCALA HRC
EFFETTUATO DUREZZA A CUORE SUL PEZZO: 39,3 HRC

Eseguito collaudo di tipo 3.1 in ottemperanza alla norma UNI EN ISO 10204

Esito/Result: Conforme/Conforms ✓ Deroga concessa dal cliente / Waived by the client ☐

Collaudatore/Tester: **GIULIANO GENOVA**

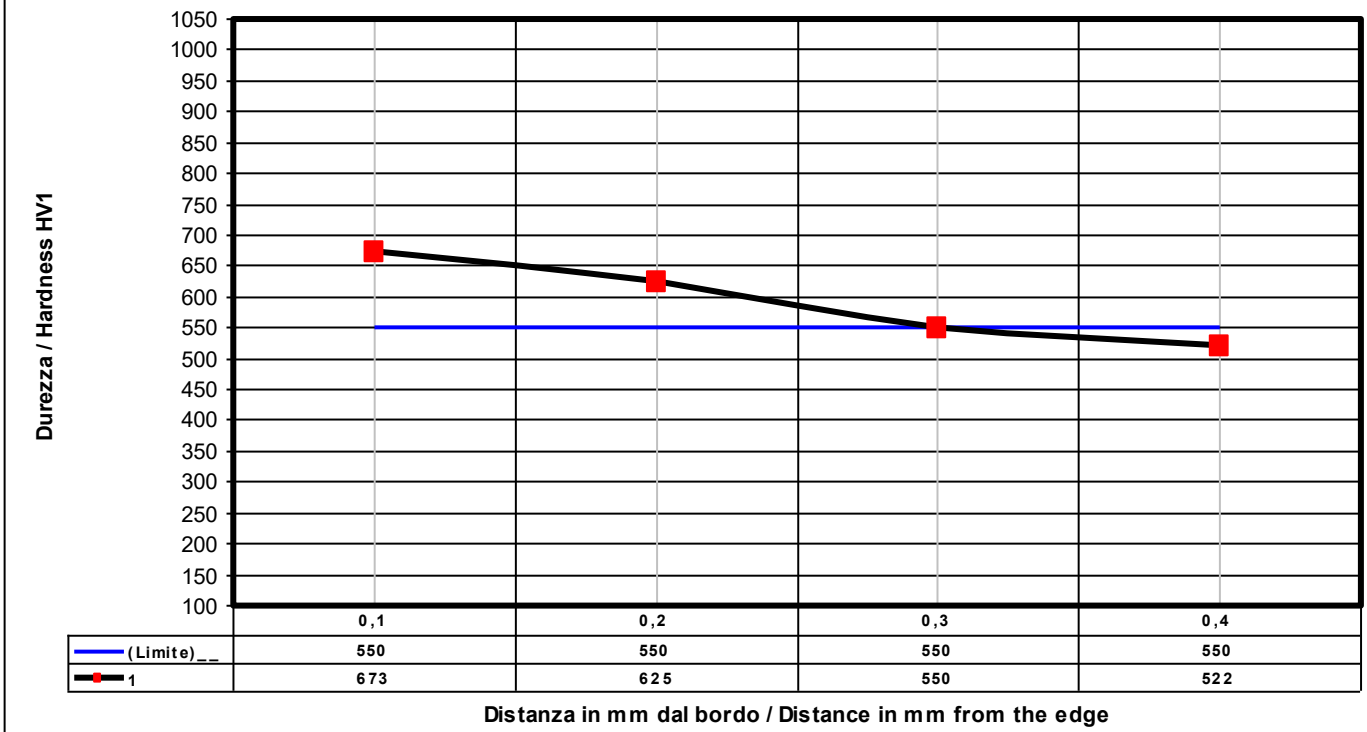
TEMPRASUD
Advanced heat treatment solutions

Grafico Profondità
Chart Depth

Commessa / work order **2023/06557**

Cliente/Customer ROSSI S.p.A. Divisione Epicicloidali

Disegno/Part Number **RC91054105 - 1054105 RUOTA CIL. 5.36D/2**



	0,1	0,2	0,3	0,4
(Limite)__	550	550	550	550
1	673	625	550	522

INTERACCIAI
Acciai Speciali

INTERACCIAI S.p.A.
Sede Legale e Amministrativa
Via Pasteur, 2 - 42122 Reggio Emilia - ITALY
Tel.() 39 0522 556800 Fax () 39 0522 557519
http://www.interacciai.it
e-mail: info@interacciai.it
e-mail: amministrazione@interacciai.it
pec: amministrazione@pec.interacciai.it

CAP.SOC. € 2.500.000,00 i.v.
C.Fisc. – P.Iva – N. ISCR. R.I. 00283270353
R.E.A. di Reggio Emilia n.113556
VAT CODE IT 00283270353

Filiali con deposito

ANCONA	BARI	BOLOGNA	BRESCIA	MILANO	MODENA	PIACENZA	REGGIO E.	ROMA	SIENA	TORINO	S.PONSO	TREVISO	VERONA
0731/60452	080/5324378	0542/670000	030/9759065	02/2544161	059/333033	0523/524321	0522/927013	0774/354474	0577/931909	011/8975963	0124/360748	0422/446700	045/8510680

CERTIFICATO DI COLLAUDO

conforme all'originale conservato presso nostra sede
TEST CERTIFICATE
corresponding to the original kept in our head office
CERTIFICAT D'ESSAI
conforme à l'original conserve au siego
WERKPRUFZEUGNIS
entsprechend dem'In unserem siz aufbewahrlen original

UNI EN 10204/2005 3.1 DI RIFERIMENTO

Cliente:

ROSSI S.P.A.
VIA EMILIA OVEST 915/A
41123 MODENA MO

Il prodotto relativo a questo documento è conforme alle prescrizioni contrattuali / The product describes in this document is in according to the Customer's

ACCIAIO -STEEL - ACIER - STAHL	22514123140	Quantità/Weight	CERTIFICATO N°	Rif Norma
20MnCrS5 +A RUL TD	140	623,00	2945249	ISO 683-3

COLATA - HEAT - COULEE - SCHMELZE	N. C. INTERNA	Ordine Cliente/Order	RIF. NS. DDT	DEL
23 203543	P213942	689335 OA DEL 18/05/2022	BA01573	30/05/2022

COMPOSIZIONE CHIMICA % - CHEMICAL ANALYSIS % - COMPOSITION CHIMIQUE % - CHEMISCHE ZUSAMMENSETZUNG %

C	Si	Mn	P	S	Cr	Ni	Mo	Cu	Sn	Al
0,20	**0,27**	**1,22**	**0,009**	**0,025**	**1,14**	**0,10**	**0,01**	**0,17**	**0,010**	**0,024**

Ti	V	Pb	B	Ca	N	O2 ppm	H2 ppm	Nb	C.E.
0,005	**0,003**		**0,0008**	**0,0013**	**0,008**	**0,001**			**0,65**

CARATTERISTICHE MECCANICHE - MECHANICAL PROPERTIES - CARATTERISTIQUES MECANIQUES - MECHANISCHE EIGENSCHAFTEN

Di riferimento / Di prodotto	Trattamento termico del provino / Heat treatment / Traitement termique / Warmebehandlung	Grano / Grain size / Dim. grain / Korngrosse	Temp. prova di Resilienza / Temp. impact test / Temp. essai resilience / Temp. kerbschlagsprobe
	Temprato e Disteso	6	**25**

PRELIEVO TEST ESSAI PRUFUNG	Diametro	Sezione	Rp02 MPa	Rm MPa	A %	Z %	HBW	KV Joule			Kcu Joule
			1168	**1370**	**12**	**39**	**192**	**51**	**50**	**53**	

PROVA JOMINY - JOMINY - TEST - ESSAI JOMINY - STIRNABSCHRECKVERSUCH

mm A	1.5	3	5	7	9	11	13	15	20	25	30	35	40	45	50
HRC	**46**	**46**	**44**	**41**	**38**	**36**	**33**	**31**	**30**	**29**	**27**	**26**	**25**		

Durezza superficiale HRc Surface hardness Min.	Max.	**Profondità di tempra mm** Hardening depth Min.	Max.	**Durezza profondità Di tempra** Hardness HRc

Bandosità Band structure	**Micropurezza** Micropurity K4=23	**Tasso di Riduzione** Reduction ratio

IN CONFORMITA' PUR 1 7 rev.0

Note - notes:

INTERACCIAI S.p.A.

TEMPRASUD S.R.L.
TRATTAMENTI TERMICI

Rapporto di Collaudo

Commessa **202303242** 0.1

Data Collaudo **18/03/2023**

Cliente **000625 ROSSI S.p.A. Divisione Epicicloidali** DDT Cliente **43007896** Del **09-mar-23**

Num Disegno **RC91051649** **1051649 RUOTA CIL. 5.127A/** Materiale **16NiCr4**

Pezzi **368** Peso **1008,32** Numero Lotto

Colata Indice Rev. Carica Impianto **230315012**

Numero Carica **230.001.270** Sistema **LLF6** Ciclo **606**

Trattamento **Cementazione tempra e rinvenimento 0,6 mm**

Risultato del Collaudo

Collaudatore **JONATAN DE LEO**

Caratteristiche Richieste	Zona Rilievo	UM	Da	A	Strumento
DUREZZA SUPERF.		**HRC**	**59,00**	**61,00**	
PENETRAZ.EFFIC.		**mm**	**0,50**	**0,70**	

Caratteristiche Rilevate	Zona Rilievo	UM	Da	A	Strumento
DUREZZA SUPERF.		**HRC**	**59,90**	**60,20**	**4**
PENETRAZ.EFFIC.		**mm**	**0,67**	**0,67**	**2**

PROVINO N° 1181
ESEGUITO CICLO DI TRATTAMENTO DI CEMENTAZIONE TEMPRA E RINVENIMENTO
ESEGUITO COLLAUDO SU PARTICOLARE DISEGNO RC91051649

Strumento	Descrizione	Marca	Modello	Matricola
2	**Microdurometro affri J**	**AFFRI**	**Wiki 200 JS1**	**74353**
4	**Durometro TWIN 2**	**ERNST**	**TWIN 2**	**47/1999**

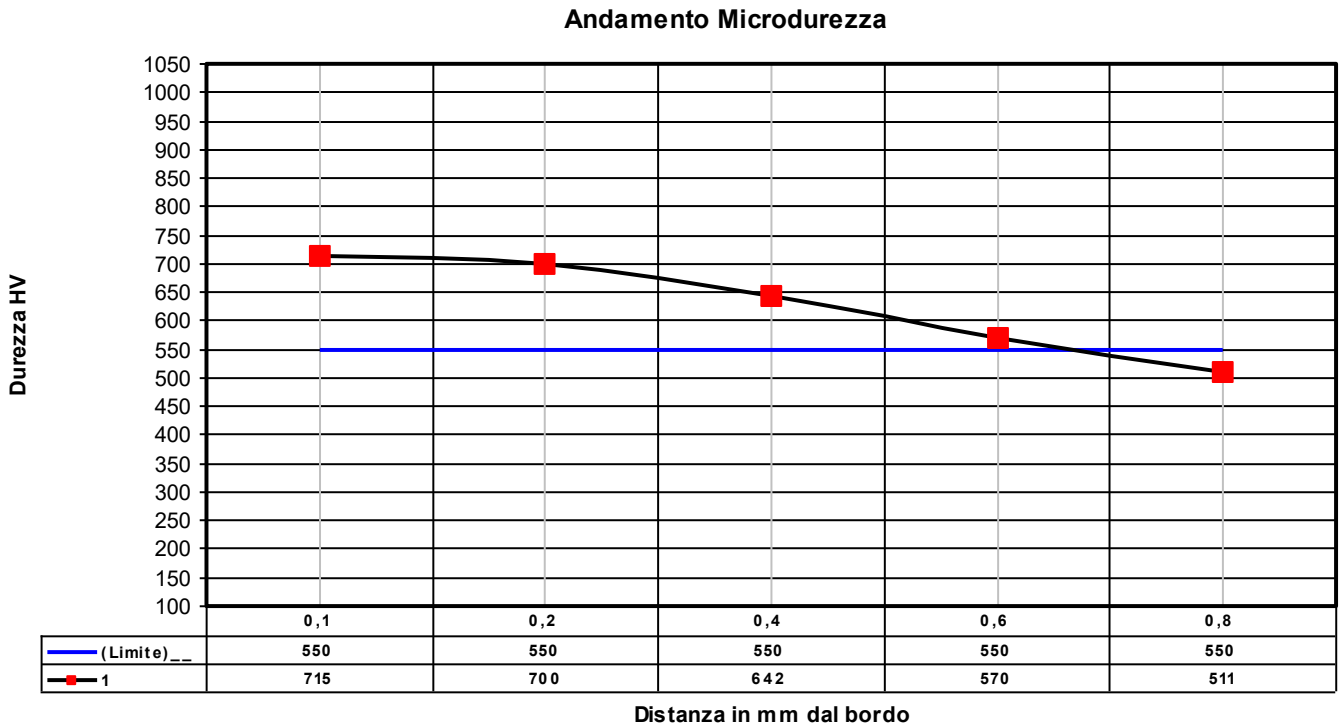
Eseguito collaudo di tipo 3.1 in ottemperanza alla norma UNI EN ISO 10204

Esito: **Conforme** Collaudatore: **JONATAN DE LEO**

TEMPRASUD
TRATTAMENTI TERMICI

Diagramma Andamento Microdurezza

Commessa **2023/03242.0.1**



FONDERIA GHIRLANDINA S.P.A.
41122 MODENA - ITALY
Via della Tecnica, 72
Tel. (+39) 059/283427 - 281535
Fax (+39) 059/280808
E-mail:fonderiaghirlandina@fonderiaghirlandina.com
www.fonderiaghirlandina.com

Certificato di Conformità

Certificate of Conformity

EN 10204 3.1

N°CERTIFICATO/ *Certificate* **2402379 del 16/09/2024**

Cliente / Customer
ROSSI S.P.A.

Ordine N° / Order N°
833676 OA

Particolare / Part
10.326 **CARCASSA**

Disegno / Drawing
10.326

Materiale / Material
GJL200 UNI-EN 1561

Specifica / Specification

Quantità / Quantity
623

Commessa / Work Order
C000051-2400859-0010

Origine

Composizione Chimica / Chemical Composition (%)

Data colata	C	Cr	Cu	Mn	P	S	Si	Sn	Ni	Al						
18G24	3,276	0,031	0,049	0,581	0,075	0,038	1,640	0,020	0,025	0,001						

Trazione (N/mm2)

Prove meccaniche / *Mechanical test* **(HB)**

Durezze su pezzi controllati

203	203	207	207	207	203	203	203
207	207	207	207				

Note

Si certifica che il materiale in oggetto è conforme all'Ordine, Disegno e Norme Applicabili
We cerify that the above mentioned materials are in accordance with the Order , Drawing and RefferingStandards

Rif. DDT N°: **2401123 del 16/09/2024**

Controllo Qualità / Quality Control
Piccinini Luca

SEAH Besteel
522, Oehang-ro, Gunsan-si,
Jeollabuk-do, Korea (573-711)

MATERIAL CERTIFICATE

ACCORDING TO EN10204:2004, Type 3.1

TEL : +82-(0)63-460-8573(Repres.)
+82-(0)63-460-8285(QA)
+82-(0)63-460-8470(Technology Service)
FAX : +82-(0)63-460-8423

Date	: 2019-07-31	Specification	: KS D 3754 : 2013	Size	(mm) :	105	
Cert. No.	: 201907-011019	Steel Grade	: SCM420H	Length	(mm) :	7,000	
Customer	:	Shape of Product	: Round Bar	Weight	(kg) :	7,710	
Heat No.	: B52287	Delivery Condition	: As Rolled	Quantity	(pcs) :	16	
Serial-No.	:	Melting Process	: EAF-LF-VD(RH)-CC				

Chemical Composition (wt. %)

Inspection Items		C	Si	Mn	P	S	Cu	Ni	Cr	Mo
		× 100	× 100	× 100	× 1000	× 1000	× 100	× 100	× 100	× 100
Spec.	Min.	17	15	55					85	15
	Max.	23	35	90	30	30	30	25	125	35
Result		22	24	81	17	10	10	7	110	15

Inspection Items		Tensile Test				Charpy Impact Test						Product Hardness			Ultrasonic Test	Surface Inspection
						Type										
Spec.	Min.															
	Max.															
Result															GOOD	GOOD

Inspection Items		Gas Analysis(ppm)			Austenite Grain Size	Macro Structure				Macro Streak Flaw			Decarburized Layer
													DM-T
Spec.	Min.												
	Max.												
Result													

Inspection Item		Nonmetallic Inclusion														Reduction Ratio
Spec.	Min.															
	Max.															
Result																

Inspection Items		Hardenability(End Quenching Method) HRC, mm, ASTM A255														
		1.5	3	5	7	9	11	13	15	20	25	30	35	40	45	50
Spec.	Min.	40	39	35	31	28	25	24	23	20	20					
	Max.	48	48	47	44	42	39	37	35	33	31	30	30	29	29	28
Result		45	45	43	38	34	31	30	29	27	25	24	23	22	22	21

Bundle	Quantity(pcs)	Weight(kg)

<<Remark>>

We hereby certify that the material described herein has been made in accordance with the rules of the contract.
Our quality system is certified in accordance with IATF 16949:2016 / ISO 9001:2015 by KSA

Certified by

Manager of Quality Assurance Dept.

TEL:(04)24060036
FAX:(04)24069985

無放射性污染暨品質證明

（出廠證明書）
TEST CERTIFICATE

豐興鋼鐵股份有限公司
FENG HSIN STEEL CO., LTD.

OFFICE： 臺中市后里區甲后路一段998號
No. 998, Sec. 1, Jiahou Rd., Houli Dist.,
Taichung City 421, Taiwan(R.O.C)
TEL : (04)25565101
FAX : (04)25566955

客戶名稱 CUSTOMER NAME				證明書編號 CERTIFICATE NO.	2103B1358-001
規格名稱 SPEC.	JIS G4052 SCM420H FT	產品名稱 PRODUCT	HOT ROLLED STRAIGHT ROUND BAR 熱軋直棒鋼	交運日期 SHIPPING DATE	2021/03/18-2021/03/18
				證明書列印日期 CERTIFICATE DATE	2021/05/24

尺寸及規格MATERIAL DESCRIP.				爐號	拉力試驗TENSILE			硬度	化學成分(%)CHEMICAL ANALYSIS																秤量單編號
直徑 DIA. (mm)	長度 LEN. (m)	數量 QTY (bdl.)	重量 WEIGHT (kgs)	HEAT No.	降伏YP N/mm²	抗拉TS N/mm²	伸長率 EL(%)	HARD-NESS	C	Si	Mn	P	S	Ni	Cr	Mo	CU		Al				B				SHIPPING NO.
									X100			X1000		X100					X1000				X10000		X100		
								HRB	17 23	15 35	55 95	30 MAX	30 MAX	25 MAX	85 125	15 30	30 MAX										
32	6	3	5,940	385820	479	688	16.2	94.70	20	25	81	12	4	5	104	15	11		29								2DA318017
34	6	3	5,857	385820	423	665	21.9	96.20	20	25	81	12	4	5	104	15	11		29								2DA318017

TOTAL: 6 BUNDLES 11,797 kgs.

REMARK：

QC-09-11

※茲證明本表所列產品，均依材料規格製造及試驗並符合規格之要求
WE HEREBY CERTIFY THAT THE MATERIAL DESCRIBED HEREIN HAS BEEN MANUFACTURED AND TESTED WITH SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIREMENT OF THE ABOVE MATERIAL SPECIFICATION.

冶金研發處處長
MANAGER
METALLURGICAL R&D DEP.

郭志毅

NO.980 #001
0424936988
28/04/2022 14:15

亞格齒輪企業股份有限公司

YAGER GEAR

Yager Gear Enterprise Co.,Ltd.

熱處理報告

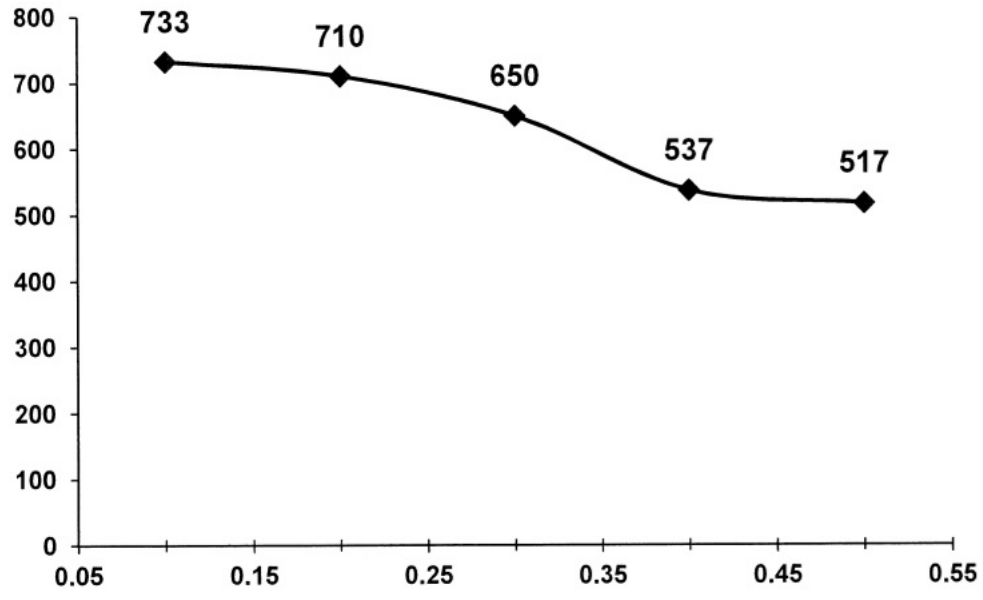
Process Approval Report - Hardness

客戶名稱: CLIENTS NAME:	臻裕	產品編號: CLIENTS PARTS NAME:	16.90	熱處理方法 HEAT TREATMENT METHOD	
檢驗日期: INSPECT DATE	2022/12/7	材質 MATERIAL	SCM420H		高週波 HIGH FREQUENCY

項目 ITEMS	要求規格 REQUEST SPECIFICATION	檢驗結果 TEST RESULTS		
			V	氣體滲碳 GAS CARBURIZING
表面硬度 SURFACE HARDNESS	HV 660 - HV 740	HV 733		滲碳氮化 CARBONTRIDING
滲碳深度 CARBURIZED DEPTH	0.25-0.4mm	0.39 mm		調質 HEAT REFINING
芯部硬度 CORE HARDNESS	HV 340 - HV 440	HV 342		正常化 NORMALIZING
荷重 LONDING	1000gf			退火 ANNEALING
滲碳深度基準 CARBURIZED DEPTH BENCHMARK	550			氮化 NITRIDING

硬度分佈曲線圖

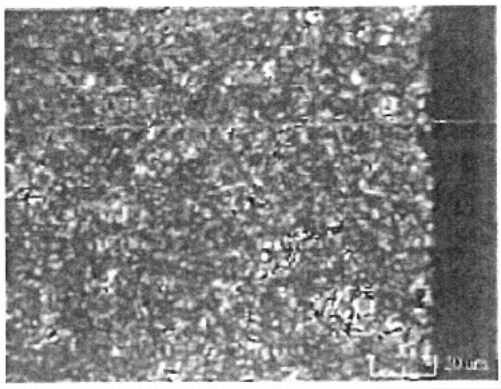
HARDENABILITY CURVE



	mm	HV	HRC
1	0.1	733	61.5
2	0.2	710	60.6
3	0.3	650	57.8
4	0.4	537	51.5
5	0.5	517	50.3
6	0.1	342	34.6

金相組織(倍率X500)

PHOTO OF STRUCTURE



審核 APPROVAL

蘇文標

檢驗者 INSPECTOR

蘇文標

亞格齒輪企業股份有限公司

YAGER GEAR

Yager Gear Enterprise Co.,Ltd.

熱處理報告

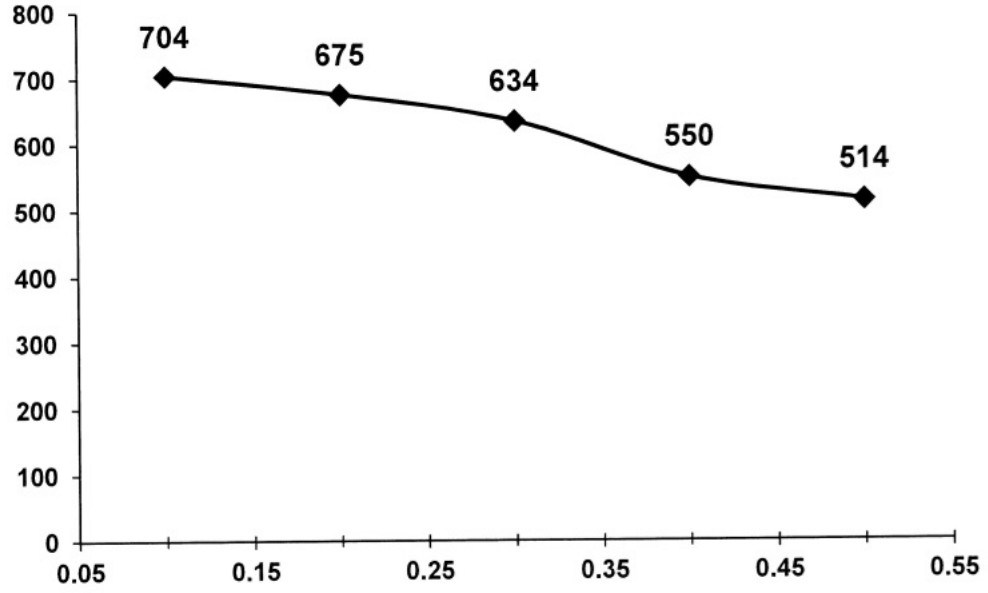
Process Approval Report - Hardness

客戶名稱: CLIENTS NAME:	臻裕	產品編號: CLIENTS PARTS NAME:	12.180	熱處理方法 HEAT TREATMENT METHOD	
檢驗日期: INSPECT DATE	2022/10/4	材質 MATERIAL	SCM420H		高週波 HIGH FREQUENCY

項目 ITEMS	要求規格 REQUEST SPECIFICATION	檢驗結果 TEST RESULTS		
表面硬度 SURFACE HARDNESS	HV 660 - HV 740	HV 704		滲碳氮化 CARBONTRIDING
滲碳深度 CARBURIZED DEPTH	0.25-0.4mm	0.40 mm		調質 HEAT REFINING
芯部硬度 CORE HARDNESS	HV 340 - HV 440	HV 358		正常化 NORMALIZING
荷重 LONDING	1000gf			退火 ANNEALING
滲碳深度基準 CARBURIZED DEPTH BENCHMARK	550			氮化 NITRIDING

硬度分佈曲線圖

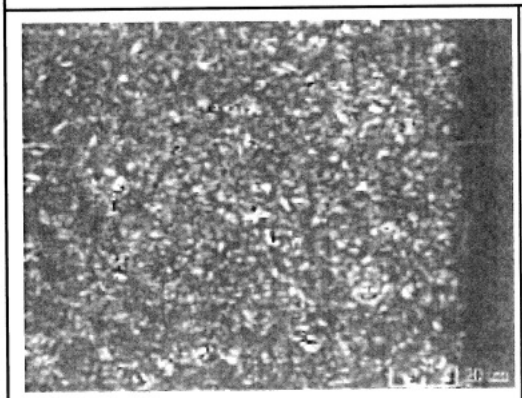
HARDENABILITY CURVE



	mm	HV	HRC
1	0.1	704	60.3
2	0.2	675	59.1
3	0.3	634	57.1
4	0.4	550	52.4
5	0.5	514	50.1
6	0.1	358	36.5

金相組織(倍率X500)

PHOTO OF STRUCTURE



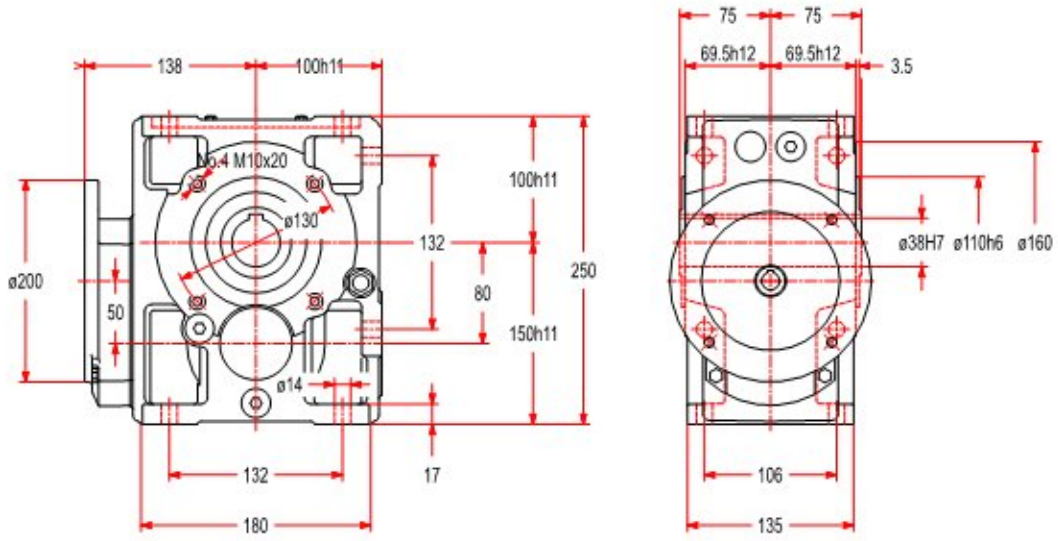
審核 APPROVAL

蘇文標

檢驗者 INSPECTOR

蘇文標

Dimensioni principali [mm] (per accessori, vedere pag. seguenti)



Informazione

Vite UNI 5737: M 12 x 40

Viti UNI 5588: M 12

Affidabilità prodotto, considerazioni sull'applicazione
Il cliente è responsabile della corretta selezione e applicazione del prodotto in vista dei propri fabbisogni industriali e/o commerciali, salvo il caso in cui l'utilizzo non sia stato raccomandato da personale tecnico qualificato Rossi, dopo opportuna formazione sul tipo di applicazione del cliente. In questo caso tutti i dati necessari richiesti per la selezione devono essere comunicati esattamente e per iscritto dal cliente, indicati in sede di ordine e confermati da Rossi. Il cliente è sempre responsabile della sicurezza delle applicazioni di prodotto. Ogni possibile cura è stata adottata nella stesura del presente catalogo al fine di assicurare l'accuratezza delle informazioni contenute in questa pubblicazione, tuttavia Rossi non può assumere alcuna responsabilità per eventuali errori, omissioni o dati non aggiornati. A causa della costante evoluzione dello stato dell'arte, Rossi si riserva il diritto di apportare modifiche in qualsiasi momento alle pubblcazioni. La responsabilità della selezione del prodotto è del cliente, salvo diversi accordi legalmente formalizzati per iscritto e sottoscritti dalle parti.

CENTRO ITALIANO ACCIAI SRL
GRUPPO ACCIAIERIE VENETE SPA

CERTIFICATO DI COLLAUDO – MILL'S TEST CERTIFICATE

EN 10204 3.1

N° 5322

DATE: 11/09/2023

Centro Italiano Acciai s.r.l C.S. € 1.350.000 i.v. C.F. 01321520288 P.IVA 02356350369
R.E.A. di MO n. 284827 Reg. Imprese di MO n. 158694 Meccanografico MO 027779
Sede Legale 41122 MODENA Via Pietro Cavalli, 35 - Italy Tel. 059 283235
Società assoggettata a direzione e coordinamento da parte di Acciaierie Venete Spa
Azienda con sistema di gestione per la qualità certificato da IGQ secondo ISO 9001

CLIENTE – CUSTOMER – CLIENT – KUNDE
103545 - ROSSI SPA
VIA EMILIA OVEST N. 915/A
41100 MODENA (MO)

ORDINE CLIENTE - PURCHASE ORDER – COMMANDE CLIENT - KUNDENAUFTRAG
776797 DEL 02/08/2023

ORDINE - ORDER – COMMANDE - AUFTRAG
C1073466 / 10

ARTICOLO (ACCIAIO)- ITEM (STEEL) - ITEM (ACIER) - ARTIKEL (STAHL)

PROFILO - PROFILE – PROFIL - ABMESSUNG: **TONDO mm. 60 (h11 - EN ISO 286-2)**

STATO DI FORNITURA- DELIVERY CONDITION – CONDITION DE LIVRAISON – LIEFERZUSTAND: **RICOTTO LAVORABILE**

STATO DI ESECUZIONE - STATE OF EXECUTION – ETAT DE L'ÉXECUTION - AUSFÜHRUNG: **PELATO RULLATO**

LOTTO - REFERENCE – REFERENCE - REFERENZEN	COLATA – HEAT - COULEE - SCHMELZE	MARCA ACCIAIO – STEEL GRADE - MARQUE ACIER - STAHLGÜTE
062208	**297533**	**18NiCrMo5**

NORMA - SPECIFICATION – NORME - NORM

PESO - WEIGHT – POIDS - GEWICHT (Kg): **3132**
COLLI - ITEMS – COLIS - KOLLI (Nr): **3**
DDT - DELIVERY NOTE – BON DE LIVRAISON - LIEFERSCHEIN: **C002076** **11/09/2023**
BLUMO - BLOOM – BLOOM - KNÜPPEL: ● **200**
RIDUZIONE - REDUCTION – REDUCTION - UMFORMUNGSGRAD: **10.1**

ACCIAIO DA FORNO ELETTRICO - CONTINUOUS CASTING ELECTRIC STEEL - ACIER ELABORE AU FOUR ELECTRIQUE - ELEKTRO-LICHTBOGENOFEN STAHL

COMPOSIZIONE CHIMICA (%) - CHEMICAL COMPOSITION (%) - COMPOSITION CHIMIQUE (%) - CHEMISCHE ZUSAMMENSETZUNG (%)

C	Si	Mn	P	S	Cu	Cr	Ni	Sn	Al	As	Mo
0.1840	0.2140	0.8280	0.0100	0.0280	0.1930	0.9420	1.2970	0.0100	0.0240	0.0060	0.1840

V	Ti	Nb	Ca
0.0060	0.0100	0.0040	0.0006

ANALISI GAS - GAS ANALYSIS - ANALYSE GAZ - GAS ANALYSE
H_2= 1.4 (ppm) | O_2= (ppm) | N_2= (ppm)

D.I. (ASTM A255)

THE PRODUCT COMPLIES WITH THE REQUIREMENTS OF THE EUROPEAN DIRECTIVE 2000/53/EC

RADIOACTIVITY MEETS SPECIFICATION 96/29/EURATOM

CARATTERISTICHE MECCANICHE - MECHANICAL PROPERTIES – CARACTERISTIQUES MECANIQUES-MECHANISCHE EIGENSCHAFTEN

TRAZIONE-TENSILE TESTING-TRACTION-ZUGVERSUCH – **EN ISO 6892-1**

RESILIENZA - IMPACT TEST - RESILIENCE - ZÄHIGKEIT – **EN ISO 148-1**

DUREZZA - HARDNESS - DURETE - HÄRTE – **EN ISO 6506-1**

PROVINO - SAMPLE – EPROUVETTE - MUSTER	mm	STATO - CONDITION – ETAT - ZUSTAND	TRATTAMENTO TERMICO - HEAT TREATMENT – TRAITMENT TERMIQUE - WÄRMEBEHANDLUNG			Rm MPa	Re MPa	A %	Z %	TIPO - TYPE - TYPE - ART	KU °C	KU J	KU J	Mean J	HB		
COLATA - HEAT – COULEE-SCHMELZE	11	TEMPRA E DISTENSIONE	850°C	OLIO	180°C	1420	1179	12	42		20	36	36	38	37			
VALORI ALLO STATO DI FORNITURA - VALUES IN DELIVERY CONDITION - WERTE IM LIEFERZUSTAND ▶																	176	

TEMPRABILITA' - HARDENABILITY – TREMPABILITE - HÄRTBARKEIT – **EN ISO 642**

MM	1.5	3	5	7	9	11	13	15	20	25	30	35	40	
HRC	45.3	44.8	44.4	42.9	40.3	37.8	36.1	33.9	31.6	30.2	29.1	28.4	27.5	

GRANO - GRAIN – GRAIN - KORNGRÖSSE – **EN ISO 643**: **AUSTENITICO** **6 - 8**

INCLUSIONI NON METALLICHE - NON METALLIC INCLUSIONS - INCLUSIONS NON METALLIQUES - NICHTMETALLISCHE EINSCHLÜSSE – **UNI 3244/80 (M)**

A (SS)		B (OA)		C (OS)		D (OG)		DS
Thin	Heavy	Thin	Heavy	Thin	Heavy	Thin	Heavy	
2.0	1.0	2.0	1.0	0.0	0.0	1.0	0.5	1.0

DIN 50602 (K)
K 3 *(OXIDE)* = 12
K *(SULFIDE)* =
K *(TOTAL)* =

MACRO - MACROETCHING – MACRO - MAKRO ÄTZUNG

MACROINCLUSIONI - MACROINCLUSIONS – MACRO INCLUSIONS - MAKRO EINSCHLÜSSE

DIFETTI INTERNI – CORE DEFECTS – DEFAUTS CORE – KERNFEHLER: **EN 10308 CL.4**

CONTROLLO ANTIMESCOLAMENTO - ANTIMIXING CONTROL – CONTROLE ANTIMELANGE - VERWECHSLUNGSPRÜFUNG: **100%**

ENTI COLLAUDATORI - INSPECTION AUTHORITIES – SERVICE D'ESSAI - ABNAHMEBEHÖRDE

NOTE – NOTES – NOTES - ANMERKUNGEN

CONTROLLO QUALITA' - QUALITY CONTROL - CONTROLE QUALITE - QUALITÄTSTELLE

SERVIZIO QUALITA' CENTRO ITALIANO ACCIAI SRL

COPIA CONFORME ALL'ORIGINALE DEPOSITATO PRESSO CENTRO ITALIANO ACCIAI S.R.L. *RIPORTA TUTTI I DATI ORIGINALI DEL CERTIFICATO DI COLLAUDO DEL PRODUTTORE DELL'ACCIAIO*

DATI DEL CARICATORE / LUOGO DI CARICO

T.T.S.
Trattamenti Termici Speciali
divisione della F G GRUPPO S.P.A.
Via Mascagni n.6 - 42048 Rubiera (RE)
Partita IVA e Codice Fiscale n.05764390018
TEL. 0522/626444 FAX 0522/628678 Email:tts@fg-gruppo.it
Capitale Sociale €1.032.000 i.v. Reg.Imprese di Torino 2647/89
Sede Legale: 10134 Torino (To) - Via Tunisi n.70

DICHIARAZIONE DI CONFORMITA'

NUMERO BC001178 *DATA* 14/06/2024

Mod. FT 005

Rif. PG 08

CLIENTE / CUSTOMER

ROSSI SPA

VIA EMILIA OVEST 915/A
41123 MODENA MO

INDIRIZZO CONSEGNA / DELIVERY ADDRESS

STABILIMENTO

VIA STRADELLO BAGNESI
41121 GANACETO MO

pag. 1	Cod.cliente	Partita Iva/Cod.Fiscale	Cod.fornitore
	1 3576	IT 01855520365	

Vs.DDT/Your DN	Disegno/Part Number		Materiale/Material	Specifica/Specific	Lavorazione/Heat Treatment	Durezza/Hardness	Profond/Case Dept	Pz/Qt	Kg
44016739 05/06/24 LDP: 11-6802	2.773/4,5	RC00034761 Rocchetto	18NiCrMo5 -M.8R	ord.774369	CMT+DIST +S	HRc = 59-61 HRc = 59-60	1,4-1,8 1,5mm	10	306
44016739 05/06/24 LDP: 11-6805	2.1107/2,81-80	RC00079429 Rocchetto	. -M.5R	ord.820322	PROT2Z+CMT+CORIN+RAD.10	HRc 59-61 HRc=59-60/cod=34-36	0,85-1,15 0,90mm da Be	15	225
44016873 06/06/24 LDP: 110-1931	2.843/4,45	RC00045315 Rocchetto	. -M.4R	ord.828644	CMT+DIST +S	HRc= 59-61 HRc= 59-60	0,75-1,05 0,85mm da Be	150	300
44016978 07/06/24 LDP: 19-2150	2.716/3,08-55	RC00016329 Rocchetto	18NiCrMo5 -M.4R	ord.822316	PROT2Z+CMT+CORIN+RAD.10	HRc= 59-61 HRc= 59-60	0,75-1,05 0,85mm da Be	10	45
44016978 07/06/24 LDP: 13-2555 / 11-6802	2.773/4,07	RC00034760 Rocchetto	18NiCrMo5 -M.8R	ord.798403	CMT+DIST +S	HRc= 59-61 HRc= 59-60	1,4-1,8 1,5mm	30	970
	I-C03	CONTENITORE PICCOLO (Rossi)						2	
	I-C01	CONTENITORE GRANDE (Rossi)						3	

Note

La seconda riga di ogni voce porta i valori di collaudo. La F G GRUPPO S.p.A., certifica sotto la propria responsabilita' che, a parte quanto indicato nelle NOTE, i controlli di processo ed i controlli finali sono stati eseguiti conformemente al proprio MGSQ. Le caratteristiche ottenute sono conformi alle descrizioni richieste ai vostri requisiti / specifica / disegni applicabili.
The F G GRUPPO S.p.A., hereby certify, a part the deviations quoted in the square below as 'NOTES', that the whole of the heats treatments described above are conform to the specifications, drawings and order relative thereto and the goods have been inspected and tested in accordance with the conditions andrequirements of the order.

F G Gruppo S.p.A
P.IVA 05764390018
QUALITY MANAGER
MARCO RADDI RE

FIRMA/SIGNATURE .....

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INSPECTION CERTIFICATE
CERTIFICATO DI COLLAUDO
(UNI EN 10204 3.1 / ISO 10474 3.1)

Number / Numero: **03-23-06425**
Page / Pagina: **1 / 5**
Date / Data: **May 25, 2023**

Dalmine S.p.A. – Arcore plant
Via Achille Grandi, 100
20862 Arcore (MB) – Italy
+39 039 66 50 1 tel
+39 039 60 13 539 fax

Customer / Cliente: **ROSSI S.P.A.**	Customer´s Order Item / Rifer. Ordine Cliente - I: **744655 OA**	Customer´s Reference / Posizione Cliente: **2/3091036**	Manufacturer´s Works Order N° / Conferma-Posizione: **3241039/002**
Manufacture Process / Processo di fabbricazione: **NORMALIZED NON RADDRIZZATI** **NORMALIZZATI NON RADDRIZZATI**	Product Type / Tipo di prodotto: **SEAMLESS PIPES HOT FINISHED FOR MECHANICAL APPLICATIONS (WITH EXTRA REQUIREM** **TUBI S.S. FINITI A CALDO PER APPLICAZIONI MECCANICHE (CON RICHIESTE SUPPLEMENTA**		Surface / Superficie: **BARE** **GREZZI**
Standard or Specification / Norme o specifica: **ACCORDING TO EN 10297/1 TQC 61377 REV.1.3** **NORMA EN 10297/1 E TQC 61377 REV.1.3**		Steel Grade / Grado dell'Acciaio: **STEEL E 355** **ACCIAIO E 355**	Ends / Estremità: **SQUARE CUT** **LISCI ALLE ESTREMITA'**
Dimensions / Dimensioni: **ø4.000" O.D. x .787" W.T.** **ø101.60mm O.D. x 20.00mm W.T**	Schedule / Schedula: . .	Length / Lunghezza: **13.287 ft ÷ 22.966 ft** **4050 mm ÷ 7000 mm**	Quantity / Quantità: **17Pcs/Pz** **327'02" ft 8866,9 lb** **99.73 mt 4022 kg**	Nominal Weight / Peso nominale: **27.07 lb/ft** **40.29 Kg/m**

DELIVERY NOTES / AVVISI DI SPEDIZIONE

Delivery Notes / Avvisi di spedizione	Delivery Notes / Avvisi di spedizione
Job Number: 0031353410 / 000020 Shipping note: 0104841964 - 24/05/2023 Address: VIA EMILIA OVEST 915/A	Town: 41123 MODENA Country: Italy

TENSILE TEST / PROVA DI TRAZIONE

Heat N° / Colata N°	Sample N° / Prova N°	Lot N° / Lotto N°	Specimen condition / Condizioni della provetta				Specimen dimensions / Dimensioni della provetta		Test temp / Temp. di prova	Y.S. OffSet 0.2% Min: 370.00 Max: --	U.T.S. Req. Min: 540.00 Max: 700.00	Elongation / Allungamento			
			Ls	Sc	Type / Tipo	Ori	Size / Dimensioni	Area / Area				Lo 5D = 5.65√So	Min.	Min.	Obt.
							mm	mm2	°C	MPa	MPa	cal.	mm	%	%
932023	B8846	6	B	AM	Cs	L	9.93	77.40	+20	466.00	650.00	5D	50.0	19.0%	25.5%

AM: As manufactured / Come fabbricato
B: Body / Corpo
Cs: Cylindrical specimen / Cilindrica
L: Longitudinal / Longitudinale
Lo: Initial length / Lunghezza iniziale
Ls: Location of sample / Ubicazione provetta
Max: Maximum / Massimo
Min: Minimum / Minimo
Obt: Obtained / Ottenuto
Ori: Orientation / Orientamento
Req: Required / Richiesto
Sc: Specimen condition / Condizioni Provetta
U.T.S: Ultimate Tensile Strength / Rottura
Y.S: Yield Strength / Snervamento

This certificate is issued by a computerized system and it is valid with electronic signature. On the original certificate the trade-mark green colored "Tenaris" is stamped. In case the owner of the original certificate would release a copy of it, he must attest its conformity to the original one taking upon himself the responsibility for any unlawful or not allowed use. Any alteration and/or falsification will be subjected to the law.

Questo certificato è emesso da un sistema computerizzato ed è valido con firma elettronica. Il certificato originale riporta il marchio "Tenaris" in colore verde. Il possessore dell'originale, qualora rilasci copia, deve attestarne a suo nome la conformità all'originale, assumendosi ogni responsabilità per usi illeciti o non Qualunque alterazione e/o falsificazione sarà perseguita a norma di legge.

INSPECTION CERTIFICATE
CERTIFICATO DI COLLAUDO
(UNI EN 10204 3.1 / ISO 10474 3.1)

Number / Numero: **03-23-06425**

Page / Pagina: **2 / 5**

Date / Data: **May 25, 2023**

Dalmine S.p.A. – Arcore plant
Via Achille Grandi, 100
20862 Arcore (MB) – Italy
+39 039 66 50 1 tel
+39 039 60 13 539 fax

Customer / Cliente: **ROSSI S.P.A.**	Customer´s Order Item / Rifer. Ordine Cliente - I: **744655 OA**	Customer´s Reference / Posizione Cliente: **2/3091036**	Manufacturer´s Works Order N° / Conferma-Posizione: **3241039/002**
Manufacture Process / Processo di fabbricazione: **NORMALIZED NON RADDRIZZATI** **NORMALIZZATI NON RADDRIZZATI**	Product Type / Tipo di prodotto: **SEAMLESS PIPES HOT FINISHED FOR MECHANICAL APPLICATIONS (WITH EXTRA REQUIREM** **TUBI S.S. FINITI A CALDO PER APPLICAZIONI MECCANICHE (CON RICHIESTE SUPPLEMENTA**		Surface / Superficie: **BARE** **GREZZI**
Standard or Specification / Norme o specifica: **ACCORDING TO EN 10297/1 TQC 61377 REV.1.3** **NORMA EN 10297/1 E TQC 61377 REV.1.3**		Steel Grade / Grado dell'Acciaio: **STEEL E 355** **ACCIAIO E 355**	Ends / Estremità: **SQUARE CUT** **LISCI ALLE ESTREMITA'**
Dimensions / Dimensioni: **ø4.000" O.D. x .787" W.T.** **ø101.60mm O.D. x 20.00mm W.T**	Schedule / Schedula: . .	Length / Lunghezza: **13.287 ft ÷ 22.966 ft** **4050 mm ÷ 7000 mm**	Quantity / Quantità: **17Pcs/Pz** **327'02" ft 8866,9 lb** **99.73 mt 4022 kg**	Nominal Weight / Peso nominale: **27.07 lb/ft** **40.29 Kg/m**

CHEMICAL COMPOSITION / COMPOSIZIONE CHIMICA

		Composition % / Composizione %													
		X 100									X 1000				
		C	Mn	Si	Ni	Cr	Mo	V	Cu	F1	P	S	Al	Ti	Nb
	H Max	**22**	**170**	**50**	**40**	**30**	**8**	**15**	**30**	**20**	**30**	**35**	**--**	**50**	**70**
	Min	**16**	**130**	**10**	**--**	**--**	**--**	**8**	**--**	**--**	**--**	**--**	**10**	**--**	**--**
Heat N°	P Max	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Colata N°	Min	--	--	--	--	--	--	--	--	--	--	--	--	--	--
932023	H	19	149	23	14	13	5	13	19	15.2	11	2	28	2	22

F1: (Nb+V)
H: Heat / Colata
Max: Maximum / Massimo
Min: Minimum / Minimo
P: Product / Prodotto

IMPACT TEST / PROVA DI RESILIENZA

Type/Tipo: **KCV** | Orientation/Direzione: **L** | Unit / Unità: **JOULE**
Position/Posizione: | Temp: **- 20** Unit/Unità: **°C** | Ind.Min.Req: **27** Req.Min.Avg: **--**

Heat N° / Colata N°	Sample N° / Prova N°	Zone / Zona	Lot N° / Lotto N°	Ls	Sc	Size / Dimensioni mm	Results / Risultato 1	2	3	Avg.
932023	B8846	outside	6	B	AM	10 x 10.00	133.0	133.0	130.0	132.0

AM: As manufactured / Come fabbricato
Avg: Average / Media
B: Body / Corpo
Ind. Min. Req: Individual Minimum Required / Minimo singolo richiesto
L: Longitudinal / Longitudinale
Ls: Location of sample / Ubicazione provetta
Req. Min. Avg: Required minimum average / Minima media richiesta
Sc: Specimen condition / Condizioni Provetta
Temp: Temperature / Temperatura

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INSPECTION CERTIFICATE
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(UNI EN 10204 3.1 / ISO 10474 3.1)

Number / Numero: **03-23-06425**

Page / Pagina: **3 / 5**

Date / Data: **May 25, 2023**

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Customer / Cliente: **ROSSI S.P.A.**	Customer´s Order Item / Rifer. Ordine Cliente - I: **744655 OA**	Customer´s Reference / Posizione Cliente: **2/3091036**	Manufacturer´s Works Order N° / Conferma-Posizione: **3241039/002**
Manufacture Process / Processo di fabbricazione: **NORMALIZED NON RADDRIZZATI** **NORMALIZZATI NON RADDRIZZATI**	Product Type / Tipo di prodotto: **SEAMLESS PIPES HOT FINISHED FOR MECHANICAL APPLICATIONS (WITH EXTRA REQUIREM** **TUBI S.S. FINITI A CALDO PER APPLICAZIONI MECCANICHE (CON RICHIESTE SUPPLEMENTA**		Surface / Superficie: **BARE** **GREZZI**
Standard or Specification / Norme o specifica: **ACCORDING TO EN 10297/1 TQC 61377 REV.1.3** **NORMA EN 10297/1 E TQC 61377 REV.1.3**		Steel Grade / Grado dell'Acciaio: **STEEL E 355** **ACCIAIO E 355**	Ends / Estremità: **SQUARE CUT** **LISCI ALLE ESTREMITA'**
Dimensions / Dimensioni: **ø4.000" O.D. x .787" W.T.** **ø101.60mm O.D. x 20.00mm W.T**	Schedule / Schedula: . .	Length / Lunghezza: **13.287 ft ÷ 22.966 ft** **4050 mm ÷ 7000 mm**	Quantity / Quantità: **17Pcs/Pz** **327'02" ft 8866,9 lb** **99.73 mt 4022 kg**	Nominal Weight / Peso nominale: **27.07 lb/ft** **40.29 Kg/m**

SUPPLEMENTARY INFORMATION / INFORMAZIONI SUPPLEMENTARIE

STANDARD EDITIONS
EDIZIONI NORME

Standard:EN 10297-1 Year:2003	Norma:EN 10297-1 Anno:2003

Supplementary Information
Informazioni supplementari

Heat	Pz	Mt	Kg	Colata	Pz	Mt	Kg
932023-006	17	99,73	4022	932023-006	17	99,73	4022

Supplementary Information
Informazioni supplementari

WE HEREBY DECLARE THAT ALL PIPES HAVE BEEN SPECTROSCOPICALLY CHECKED, NO DISCREPANCY HAVE BEEN FOUND ALL PIPES HAVE BEEN TESTED BY ELECTROMAGNETIC TEST - FLUX LEACKAGE - ACCORDING TO SPEC.EN 10246-5.LEVEL F4, INSTEAD OF HYDROSTATIC TEST, WITH SATISFACTORY RESULT. ALL PIPES HAVE BEEN NORMALIZED AT 900°C FOR 20 MINS. AND COOLED IN STILL AIR . SEAMLESS HOT FINISHED PIPES VISUAL AND DIMENSIONAL CONTROL HAS BEEN CARRIED OUT WITH SATISFACTORY RESULT STEEL IS FULLY KILLED AND PRODUCED BY ELECTRIC FURNACE TO A FINE GRAIN PRACTICE THE PRODUCT SUPPLIED IS IN COMPLIANCE WITH THE REQUIREMENTS OF THE ORDER. MANUFACTURED BY TENARIS DALMINE NO WELD REPAIR, MERCURY AND RADIATION FREE Tenaris IT identification number for MTC: 59Ss*4fp	SI DICHIARA CHE TUTTI I TUBI SONO STATI SOTTOPOSTI AL CONTROLLO DELL'ACCIAIO MEDIANTE SPETTROANALIZZATORE, DALL'ESAME NON SONO EMERSE MESCOLANZE DI MATERIALE TUTTI I TUBI SONO STATI SOTTOPOSTI A CONTROLLO ELETTROMAGNETICO - FLUSSO DISPERSO - IN ACCORDO ALLA SPEC.EN 10246-5.LEVEL F4 IN SOSTITUZIONE DELLA PROVA IDRAULICA, CON ESITO SODDISFACENTE. I TUBI SONO STATI NORMALIZZATI A 900°C PER 20 MIN. E RAFFREDDATI IN ARIA CALMA TUBI SENZA SALDATURA FINITI A CALDO IL CONTROLLO VISIVO E DIMENSIONALE HA DATO ESITO SODDISFACENTE L'ACCIAIO E' DI TIPO CALMATO, A GRANO FINE, PRODOTTO AL FORNO ELETTRICO IL MATERIALE FORNITO E' IN ACCORDO AI REQUISITI DELL'ORDINE. FABBRICATO DA TENARIS DALMINE NON RIPARATO MEDIANTE SALDATURA, ESENTE DA MERCURIO E RADIAZIONI Numero Identificativo Tenaris IT per MTC: 59Ss*4fp

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INSPECTION CERTIFICATE
CERTIFICATO DI COLLAUDO
(UNI EN 10204 3.1 / ISO 10474 3.1)

Number / Numero: **03-23-06425**

Page / Pagina: **4 / 5**

Date / Data: **May 25, 2023**

Dalmine S.p.A. – Arcore plant
Via Achille Grandi, 100
20862 Arcore (MB) – Italy
+39 039 66 50 1 tel
+39 039 60 13 539 fax

Customer / Cliente: **ROSSI S.P.A.**	Customer´s Order Item / Rifer. Ordine Cliente - I	Customer´s Reference / Posizione Cliente:	Manufacturer´s Works Order N° / Conferma-Posizione:
	744655 OA	**2/3091036**	**3241039/002**

Manufacture Process / Processo di fabbricazione:	Product Type / Tipo di prodotto:	Surface / Superficie:
NORMALIZED NON RADDRIZZATI **NORMALIZZATI NON RADDRIZZATI**	**SEAMLESS PIPES HOT FINISHED FOR MECHANICAL APPLICATIONS (WITH EXTRA REQUIREM** **TUBI S.S. FINITI A CALDO PER APPLICAZIONI MECCANICHE (CON RICHIESTE SUPPLEMENTA**	**BARE** **GREZZI**

Standard or Specification / Norme o specifica:	Steel Grade / Grado dell'Acciaio:	Ends / Estremità:
ACCORDING TO EN 10297/1 TQC 61377 REV.1.3 **NORMA EN 10297/1 E TQC 61377 REV.1.3**	**STEEL E 355** **ACCIAIO E 355**	**SQUARE CUT** **LISCI ALLE ESTREMITA'**

Dimensions / Dimensioni:	Schedule / Schedula:	Length / Lunghezza:	Quantity / Quantità: **17Pcs/Pz**	Nominal Weight / Peso nominale:
ø4.000" O.D. x .787" W.T.	.	**13.287 ft ÷ 22.966 ft**	**327'02" ft** **8866,9 lb**	**27.07 lb/ft**
ø101.60mm O.D. x 20.00mm W.T	.	**4050 mm ÷ 7000 mm**	**99.73 mt** **4022 kg**	**40.29 Kg/m**

MARKING / MARCATURA

Marking Marcatura	
STENCILING _T 101,60 X 20,00 TAM MT EN10297 E 355 HEAT:_COLATA NR _NR . LEGEND _T = TENARIS Logo _COLATA = Heat Number _NR = Pipe/Tube identifier .	VERNICIATURA _T 101,60 X 20,00 TAM MT EN10297 E 355 HEAT:_COLATA NR _NR . LEGENDA _T = Logo TENARIS _COLATA = Numero di colata _NR = Identificativo numerico del tubo .
PUNCHING _T MT E 355 S QD . LEGEND _T = TENARIS Logo	PUNZONATURA _T MT E 355 S QD . LEGENDA _T = Logo TENARIS

This certificate is issued by a computerized system and it is valid with electronic signature. On the original certificate the trade-mark green colored "Tenaris" is stamped. In case the owner of the original certificate would release a copy of it, he must attest its conformity to the original one taking upon himself the responsibility for any unlawful or not allowed use. Any alteration and/or falsification will be subjected to the law.

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INSPECTION CERTIFICATE
CERTIFICATO DI COLLAUDO
(UNI EN 10204 3.1 / ISO 10474 3.1)

Number / Numero: **03-23-06425**

Page / Pagina: **5 / 5**

Date / Data: **May 25, 2023**

Dalmine S.p.A. – Arcore plant
Via Achille Grandi, 100
20862 Arcore (MB) – Italy
+39 039 66 50 1 tel
+39 039 60 13 539 fax

Customer / Cliente: **ROSSI S.P.A.**	Customer´s Order Item / Rifer. Ordine Cliente - I: **744655 OA**	Customer´s Reference / Posizione Cliente: **2/3091036**	Manufacturer´s Works Order N° / Conferma-Posizione: **3241039/002**
Manufacture Process / Processo di fabbricazione: **NORMALIZED NON RADDRIZZATI** **NORMALIZZATI NON RADDRIZZATI**	Product Type / Tipo di prodotto: **SEAMLESS PIPES HOT FINISHED FOR MECHANICAL APPLICATIONS (WITH EXTRA REQUIREM** **TUBI S.S. FINITI A CALDO PER APPLICAZIONI MECCANICHE (CON RICHIESTE SUPPLEMENTA**		Surface / Superficie: **BARE** **GREZZI**
Standard or Specification / Norme o specifica: **ACCORDING TO EN 10297/1 TQC 61377 REV.1.3** **NORMA EN 10297/1 E TQC 61377 REV.1.3**		Steel Grade / Grado dell'Acciaio: **STEEL E 355** **ACCIAIO E 355**	Ends / Estremità: **SQUARE CUT** **LISCI ALLE ESTREMITA'**

Dimensions / Dimensioni:	Schedule / Schedula:	Length / Lunghezza:	Quantity / Quantità: **17Pcs/Pz**	Nominal Weight / Peso nominale:
ø4.000" O.D. x .787" W.T.	.	**13.287 ft ÷ 22.966 ft**	**327'02" ft 8866,9 lb**	**27.07 lb/ft**
ø101.60mm O.D. x 20.00mm W.T	.	**4050 mm ÷ 7000 mm**	**99.73 mt 4022 kg**	**40.29 Kg/m**

The product certified herein has been manufactured, sampled, tested and inspected in accordance with the stated specifications and has been found to meet the requirements.
This certificate is not a declaration of origin nor may it be used as a declaration of origin.

Il prodotto qui certificato è stato fabbricato, provato, testato e controllato in conformità alle specifiche indicate ed è risultato conforme ai requisiti. Questo certificato non è una dichiarazione d'origine e non può essere utilizzato come tale

CUSTOMER . THIRD PARTY

INSPECTION COMPANY
COMPAGNIA D'ISPEZIONE

TENARIS QUALITY DEPARTMENT SIGNATURE

QUALITY CERTIFICATION DEPT.
UFFICIO CERTIFICAZIONE QUALITA'
STURNIOLO Domenico

CHIEF OF QUALITY CERTIFICATION DEPT.
RESPONSABILE DELL'UFFICIO CERTIFICAZIONE QUALITA'
MASTRANDREA Rocco

This certificate is issued by a computerized system and it is valid with electronic signature. On the original certificate the trade-mark green colored "Tenaris" is stamped. In case the owner of the original certificate would release a copy of it, he must attest its conformity to the original one taking upon himself the responsibility for any unlawful or not allowed use. Any alteration and/or falsification will be subjected to the law.

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INTERACCIAI
Acciai Speciali

INTERACCIAI S.p.A.
Sede Legale e Amministrativa
Via Pasteur, 2 - 42122 Reggio Emilia - ITALY
Tel.() 39 0522 556800 Fax () 39 0522 557519
http://www.interacciai.it
e-mail: info@interacciai.it
e-mail: amministrazione@interacciai.it
pec: amministrazione@pec.interacciai.it

CAP.SOC. € 2.500.000,00 i.v.
C.Fisc. – P.Iva – N. ISCR. R.I. 00283270353
R.E.A. di Reggio Emilia n.113556
VAT CODE IT 00283270353

Filiali con deposito

ANCONA	BARI	BOLOGNA	BRESCIA	MILANO	MODENA	PIACENZA	REGGIO E.	ROMA	SIENA	TORINO	S.PONSO	TREVISO	VERONA
0731/60452	080/5324378	0542/670000	030/9759065	02/2544161	059/333033	0523/524321	0522/927013	0774/354474	0577/931909	011/8975963	0124/360748	0422/446700	045/8510680

CERTIFICATO DI COLLAUDO

conforme all'originale conservato presso nostra sede
TEST CERTIFICATE
corresponding to the original kept in our head office
CERTIFICAT D'ESSAI
conforme à l'original conserve au siego
WERKPRUFZEUGNIS
entsprechend dem'In unserem siz aufbewahrlen original

UNI EN 10204/2005 3.1 DI RIFERIMENTO

Cliente:

ROSSI S.P.A.
VIA EMILIA OVEST 915/A
41123 MODENA MO

Il prodotto relativo a questo documento è conforme alle prescrizioni contrattuali / The product describes in this document is in according to the Customer's

ACCIAIO -STEEL - ACIER - STAHL	22514123115	Quantità/Weight	CERTIFICATO N°	Rif Norma
20MnCrS5 +A RUL TD	115	1298,00	3214906	ISO 683-3

COLATA - HEAT - COULEE - SCHMELZE	N. C. INTERNA	Ordine Cliente/Order	RIF. NS. DDT	DEL
23/38166	P236447	802621 del 16/01/2024	BA00198	24/01/2024

COMPOSIZIONE CHIMICA % - CHEMICAL ANALYSIS % - COMPOSITION CHIMIQUE % - CHEMISCHE ZUSAMMENSETZUNG %

C	Si	Mn	P	S	Cr	Ni	Mo	Cu	Sn	Al
0,19	**0,27**	**1,27**	**0,010**	**0,026**	**1,17**	**0,07**	**0,01**	**0,15**	**0,009**	**0,027**

Ti	V	Pb	B	Ca	N	O2 ppm	H2 ppm	Nb	C.E.
0,007	**0,002**		**0,0003**	**0,001**	**0,0102**	**17,00**	**2,00**	**0,003**	**0,65**

CARATTERISTICHE MECCANICHE - MECHANICAL PROPERTIES - CARATTERISTIQUES MECANIQUES - MECHANISCHE EIGENSCHAFTEN

Di riferimento / Di prodotto	Trattamento termico del provino / Heat treatment / Traitement termique / Warmebehandlung	Grano / Grain size / Dim. grain / Korngrosse	Temp. prova di Resilienza / Temp. impact test / Temp. essai resilience / Temp. kerbschlagsprobe
	Temprato e Disteso	6	**20**

PRELIEVO TEST ESSAI PRUFUNG	Diametro	Sezione	Rp02 MPa	Rm MPa	A %	Z %	HBW	KV Joule			Kcu Joule
			1329	**1445**	**11.8**	**48.8**	**176**				

PROVA JOMINY - JOMINY - TEST - ESSAI JOMINY - STIRNABSCHRECKVERSUCH

mm A	1.5	3	5	7	9	11	13	15	20	25	30	35	40	45	50
HRC	**46**	**46**	**44**	**42**	**39**	**37**	**36**	**34**	**32**	**30**	**29**	**28**	**27**		

Durezza superficiale HRc Surface hardness Min. Max.	**Profondità di tempra mm** Hardening depth Min. Max.	**Durezza profondità Di tempra** Hardness HRc

Bandosità Band structure	**Micropurezza** Micropurity K4=14,0	**Tasso di Riduzione** Reduction ratio

Controllo radioattività -Radioactivity test-Radioaktivitäskontrolle-contrôle de radioactivité: RADIOACTIVITY max 0,1 Bq/g

Controllo antimescolamento 100% -anti-mixing test 100%-Anti Mischungskontrolle-contrôle anti mélange: YES

IN CONFORMITA' PUR 1 7 rev.0
I VALORI DELLE PROVE MECCANICHE SI INTENDONO SU PROVINO DI COLATA TRATTATO TERMICAMENTE COME SUESPOSTO.
IL VALORE DELLA DUREZZA HBW SI INTENDE DI PRODOTTO.

Note - notes:

INTERACCIAI S.p.A.

TEMPRASUD
Advanced heat treatment solutions

Rapporto di Collaudo / Test Report

Nr.Certificato/Certificate Number	Data Collaudo/Test Date	Nr.Provino/Sample
202402312	29/02/2024	1123

CLIENTE/CUSTOMER	NUMERO LOTTO/BATCH NUMBER	CICLO/CYCLE
000625 ROSSI S.p.A. Divisione Epicicloidali	**02702780**	
DISEGNO/PART NUMBER	MATERIALE/MATERIAL	COLATA/CASTING
RC91050305 1050305 RUOTA 5,42/2,02	**16NiCr4**	

DDT CLIENTE/DELIVERY NOTE	DATA DDT/D.N. DATE	CARICA//CHARGE N.	PESO TOTALE/TOTAL WEIGHT	PEZZI TOTALI/TOTAL PIECES	IND. REVIS.	CONTROLLO/CHECK PLAN
44005582	**22/02/2024**	**240.001.338**	**622**	**500**		

Risultato del Collaudo / Test's Result

Caratteristiche Richieste / Requested Features

DUREZZA SUPERF.	***SURFACE HARDENESS***		Da/From	**59,00**	A/To	**61,00**	**HRC**
PENETRAZ.EFFIC.	***CHD***		Da/From	**0,30**	A/To	**0,50**	**mm**

Caratteristiche Rilevate / Detected Features

DUREZZA SUPERF.	***SURFACE HARDENESS***		Da/From	**59,80**	A/To	**60,30**	**HRC**
PENETRAZ.EFFIC.	***CHD***	**1**	Da/From	**0,36**	A/To	**0,36**	**mm**

Trattamento Termico e Lavorazioni Eseguite/Performed Heat Treatment and Operations

ACCETTAZIONE MATERIALE	ACCEPTANCE MATERIAL
PREPARAZIONE CARICA	ASSEMBLY
CEMENTAZIONE E TEMPRA	CARBURAZING AND QUENCHING
LAVAGGIO	WASHING
RINVENIMENTO	TEMPERING
COLLAUDO	TEST
SABBIATURA	SANDBLASTING
OLIATURA E IMBALLAGGIO	Oilng and Washing
PRONTA CONSEGNA	Ready to delivery

Note / Notes

PROVINO N° 1123
ESEGUITO CICLO DI TRATTAMENTO DI CEMENTAZIONE TEMPRA E RINVENIMENTO
ESEGUITO COLLAUDO SU PARTICOLARE DISEGNO RC91050305

Eseguito collaudo di tipo 3.1 in ottemperanza alla norma UNI EN ISO 10204

Esito/Result: Conforme/Conforms ✓ Deroga concessa dal cliente / Waived by the client ☐

Collaudatore/Tester: **JONATAN DE LEO**

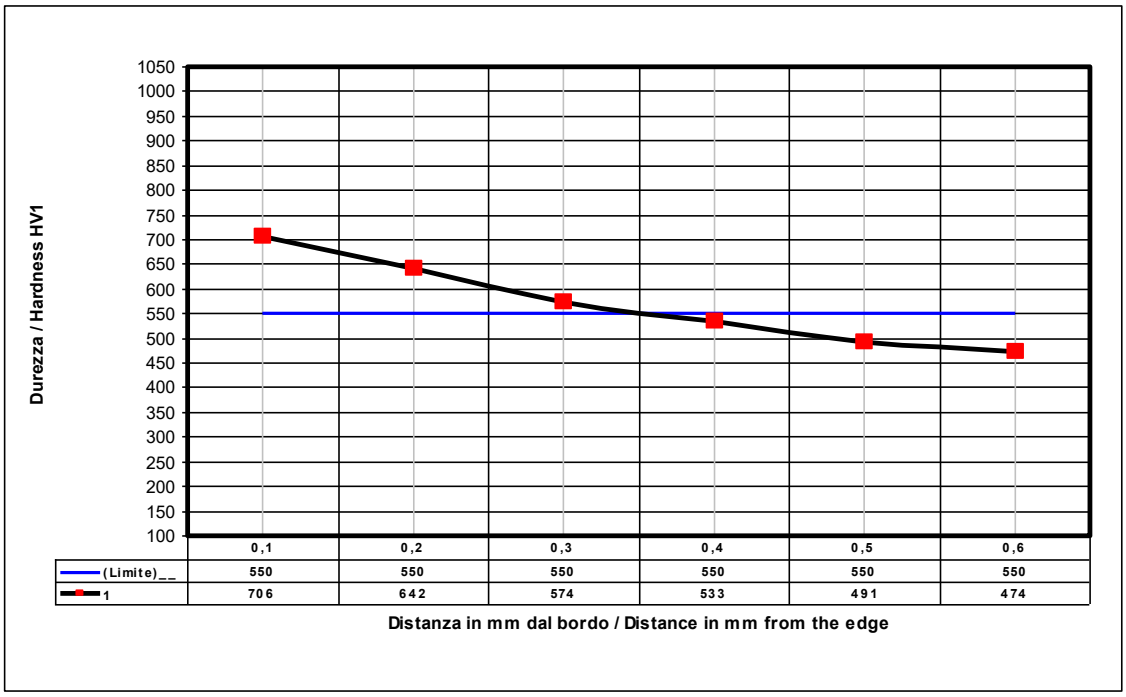
TEMPRASUD
Advanced heat treatment solutions

Grafico Profondità
Chart Depth

Commessa / work order **2024/02312**

Cliente/Customer ROSSI S.p.A. Divisione Epicicloidali

Disegno/Part Number **RC91050305 - 1050305 RUOTA 5,42/2,02**



	0,1	0,2	0,3	0,4	0,5	0,6
(Limite)__	550	550	550	550	550	550
1	706	642	574	533	491	474

ACCIAIERIE VENETE SPA

CERTIFICATO DI COLLAUDO – MILL'S TEST CERTIFICATE
CERTIFICAT D'ESSAI – ABNAHMEPRÜFZEUGNIS
EN 10204 3.1

N° 568141

DATE: 15/03/2022

Acciaierie Venete Spa C.S. € 63.000.000,00 i.v C.F. e P.IVA 00224180281
R.I di Trento 00224180281 V.A.T. N° IT 00224180281
Sede Legale: 38051 Borgo Valsugana (TN) Via Puisle, 4 - Italy
Direzione/Amministrazione: 35127 Padova Z.I. Sud - Riviera Francia, 9 - Italy Tel. 049 828.28.20 (r.a.)
Azienda con sistema di gestione per la qualità certificato da IGQ secondo ISO 9001 e IATF 16949

CLIENTE / CUSTOMER / CLIENT / KUNDE
100755 - DATA STEFANO SRL
FRAZIONE CROSI 59
10084 FORNO CANAVESE (TO)

ORDINE CLIENTE - PURCHASE ORDER / COMMANDE CLIENT - KUNDENAUFTRAG: 058/21

ORDINE - ORDER / COMMANDE - AUFTRAG: 129864 / 70

ARTICOLO (ACCIAIO) - ITEM (STEEL) - ITEM (ACIER) - ARTIKEL (STAHL)

PROFILO - PROFILE / PROFIL - ABMESSUNG: TONDO 120 mm

STATO DI FORNITURA - DELIVERY CONDITION / CONDITION DE LIVRAISON – LIEFERZUSTAND: RICOTTO

STATO DI ESECUZIONE - STATE OF EXECUTION / ETAT DE L'ÉXECUTION - AUSFÜHRUNG: LAMINATO RULLATO

COLATA - HEAT - COULEE - SCHMELZE: 286823

MARCA ACCIAIO - STEEL GRADE - MARQUE ACIER - STAHLGÜTE: 20MNCR5 +HH

NORMA - SPECIFICATION - NORME - NORM: BREVINI SP046-03 REV05+(T.A. VENETE-BREVINI REV.1)

PESO - WEIGHT / POIDS - GEWICHT (Kg): 12460

COLLI - ITEMS / COLIS - KOLLI (Nr): 14

DDT - DELIVERY NOTE / BON DE LIVRAISON - LIEFERSCHEIN: A1004261 24/03/2022

BLUMO - BLOOM / BLOOM - KNÜPPEL: 350 mm

RIDUZIONE - REDUCTION / REDUCTION - UMFORMUNGSGRAD: 8.5

STAB. SPEDIZIONE: PADOVA (Riviera Francia)

COMPOSIZIONE CHIMICA (%) - CHEMICAL COMPOSITION (%) - COMPOSITION CHIMIQUE (%) - CHEMISCHE ZUSAMMENSETZUNG (%)

C	Si	Mn	P	S	Cu	Cr	Ni	Sn	Al	As	Mo
0.1940	0.2140	1.1910	0.0130	0.0250	0.2320	1.2220	0.1450	0.0110	0.0210	0.0070	0.0340

V	Ti	Nb	Ca
0.0070	0.0070	0.0010	0.0007

ANALISI GAS - GAS ANALYSIS - ANALYSE GAZ - GAS ANALYSE

H_2=	O_2=	N_2=	
1.5 (ppm)	14 (ppm)	90 (ppm)	0.0090 (%)

D.I. (ASTM A255) 2,77inch - 70,48mm

FUSIONE: FORNO ELETTRICO (EAF) - ELABORAZIONE FUORI FORNO: AFFINAZIONE (LF) - COLAGGIO: COLATA CONTINUA (CC)

CARATTERISTICHE MECCANICHE - MECHANICAL PROPERTIES / CARACTERISTIQUES MECANIQUES-MECHANISCHE EIGENSCHAFTEN

PROVINO - SAMPLE / EPROUVETTE - MUSTER	mm	STATO - CONDITION / ETAT - ZUSTAND	TRATTAMENTO TERMICO - HEAT TREATMENT / TRAITMENT TERMIQUE - WÄRMEBEHANDLUNG			TRAZIONE - TENSILE TESTING-TRACTION-ZUGVERSUCH EN ISO 6892-1 Rm MPa	Re MPa	A %	Z %	RESILIENZA - IMPACT TEST - RESILIENCE - ZÄHIGKEIT EN ISO 148-1 TIPO - TYPE - TYPE - ART	KU			Mean	DUREZZA - HARDNESS - DURETE - HÄRTE
										°C	J	J	J	J	
COLATA - HEAT / COULEE-SCHMELZE	11	TEMPRA E DISTENSIONE	880°C	OLIO	180°C	1312	1171	11	39	20	33	33	36	34	
VALORI ALLO STATO DI FORNITURA - VALUES IN DELIVERY CONDITION - WERTE IM LIEFERZUSTAND ▶															

THE PRODUCT COMPLIES WITH THE REQUIREMENTS OF THE EUROPEAN DIRECTIVE 2000/53/EC

RADIOACTIVITY MEETS SPECIFICATION 2013/59/EURATOM

TEMPRABILITA' - HARDENABILITY / TREMPABILITE - HÄRTBARKEIT — EN ISO 642

MM	1.5	3	5	7	9	11	13	15	20	25	30	35	40	45	50
HRC	46.2	45.5	44.4	42.1	38.7	36.2	34.7	33.2	31.5	29.7	29.1	28.4	27.7	27.0	26.6

GRANO - GRAIN / GRAIN - KORNGRÖSSE: EN ISO 643 — AUSTENITICO — 7 - 8

INCLUSIONI NON METALLICHE - NON METALLIC INCLUSIONS - INCLUSIONS NON METALLIQUES - NICHTMETALLISCHE EINSCHLÜSSE

A (SS)		B (OA)		C (OS)		D (OG)	
Thin	Heavy	Thin	Heavy	Thin	Heavy	Thin	Heavy

UNI 3244/80 (K)

K 4 *(OXIDE)* = 7

K *(SULFIDE)* =

K *(TOTAL)* =

MACRO - MACROETCHING / MACRO - MAKRO ÄTZUNG

MACROINCLUSIONI - MACROINCLUSIONS / MACRO INCLUSIONS - MAKRO EINSCHLÜSSE

DIFETTI INTERNI – CORE DEFECTS / DEFAUTS CORE – KERNFEHLER: EN 10308 CL.3

DIFETTI SUPERF. - SURFACE DEFECTS / DEFAUTS DE SURFACE – OBERFLÄCHENFEHLER: EN 10221 B

CONTROLLO ANTIMESCOLAMENTO - ANTIMIXING CONTROL / CONTROLE ANTIMELANGE - VERWECHSLUNGSPRÜFUNG: 100%

ENTI COLLAUDATORI - INSPECTION AUTHORITIES / SERVICE D'ESSAI - ABNAHMEBEHÖRDE

NOTE – NOTES – NOTES - ANMERKUNGEN

CONTROLLO UT INTERNO 100% CONTROLLO SUPERFICIALE 100%
VACUUM DEGASSED

SILFAS HOT STEEL FORGINGS

Silfas S.r.l. QHSE Manager (M. PERONO)

CONTROLLO QUALITA' - QUALITY CONTROL - CONTROLE QUALITE - QUALITÄTSTELLE

Fornasiero I.

SERVIZIO QUALITA' ACCIAIERIE VENETE SPA

CERTIFICATO CONFORME AL CAPITOLATO E SPECIFICHE DI RIFERIMENTO - CERTIFICATE IN COMPLIANCE WITH THE SPECIFICATION AND ITS REFERENCES-CERTIFICAT EN ACCOMPLIANCE AVEC LE CAHIER DES CHARGES ET SES REFERENCES-ZERTIFIKAT IN ÜBEREINSTIMMUNG MIT DER SPEZIFIKATION UND DESSEN BEZÜGE

DATI DEL CARICATORE / LUOGO DI CARICO

T.T.S.
Trattamenti Termici Speciali
divisione della F G GRUPPO S.P.A.
Via Mascagni n.6 - 42048 Rubiera (RE)
Partita IVA e Codice Fiscale n.05764390018
TEL. 0522/626444 FAX 0522/628678 Email:tts@fg-gruppo.it
Capitale Sociale €1.032.000 i.v. Reg.Imprese di Torino 2647/89
Sede Legale: 10134 Torino (To) - Via Tunisi n.70

DICHIARAZIONE DI CONFORMITA'

NUMERO BC001344 *DATA* 25/05/2023

CLIENTE / CUSTOMER

ROSSI SPA

VIA EMILIA OVEST 915/A
41123 MODENA MO

STABILIMENTO

VIA STRADELLO BAGNESI
41121 GANACETO MO

pag. 1	Cod.cliente 1 3576	Partita Iva/Cod.Fiscale IT 01855520365	Cod.fornitore	Mod. FT 005 Rif. PG 08

Vs.DDT/Your DN	Disegno/Part Number	Materiale/Material	Specifica/Specific	Lavorazione/Heat Treatment	Durezza/Hardness	Profond/Case Dept	Pz/Qt	Kg
43013527 28/04/23 LDP: L1-6193/ L9-1673/ L9-1674	5.148B/5,07 RC00056077 Ruota	. -M.4R	ord.737914	CMT+DIST +S	HRc 59-61 HRc= 59-60	0,75-1,05 0,9-1,0mm da Be	72	1.642
4313868 03/05/23 LDP: L8-2776	5.49A/2,81 RC00057311 Ruota	. -M.5R	ord.753893	CMT+DIST +S	HRc 59-61 HRc = 59-60	0,85-1,15 0,90mm da Be	23	274
43013868 03/05/23 LDP: L8-2776	1052427 Ruota5.167A/3,6	20MnCr5 -M.5R	ord.750345	CMT+DIST +S	HRc= 59-61 HRc= 59-60	0,85-1,15 0,90mm da Be	11	250
43015574 17/05/23 LDP: L3-2344 L10-1532/1534 L9-1672 L4-3516/3523/22	5.147B/5 RC00055393 Ruota	. -M.4R	ord.747738	CMT+DIST +S	HRc 59-61 HRc= 59-60	0,75-1,05 0,80-1,0mm da Be	288	3.080
	I-C01 CONTENITORE GRANDE (Rossi)						7	

Note

La seconda riga di ogni voce porta i valori di collaudo. La F G GRUPPO S.p.A., certifica sotto la propria responsabilita' che, a parte quanto indicato nelle NOTE, i controlli di processo ed i controlli finali sono stati eseguiti conformemente al proprio MGSQ. Le caratteristiche ottenute sono conformi alle descrizioni richieste ai vostri requisiti / specifica / disegni applicabili.
The F G GRUPPO S.p.A., hereby certify, a part the deviations quoted in the square below as 'NOTES', that the whole of the heats treatments described above are conform to the specifications, drawings and order relative thereto and the goods have been inspected and tested in accordance with the conditions andrequirements of the order.

F G Gruppo S.p.A
P.IVA 05764390018
QUALITY MANAGER
MARCO RADDI RE

FIRMA/SIGNATURE .....

www.bielle.it - Licenza d'uso rilasciata a FG Gruppo S.p.a.

COMPANY WITH
MANAGEMENT SYSTEM
CERTIFIED BY DNV
= ISO 9001 =
= ISO 14001 =

CERTIFICATO DI CONTROLLO 3.1
INSPECTION CERTIFICATE 3.1

Norma UNI EN 10204:2005
According to EN 10204:2005

N. 40000339167

Committente/destinatario Purchaser/consignee	541 ROSSI S.P.A.	**N.ordine del committente** Purchaser order number	802655 OA/3 - 16.01.2024	**Partita** Batch	**L22196**
N.articolo del committente Purchaser article number	1105292	**Commessa** Job		**Matricola** Serial number	
Prodotto Product	CARCASSA	**N.ordine del fabbricante** Manufacturer's work order number	11070095 /30 - 17.01.2024	**Condizioni di fornitura** Product delivery condition	
Materiale Material designation	UNI EN 1563 EN-GJS-400-15	**Bolla di consegna** Delivery note	DDT BASSANESE N.62/D-220424 80116206 /30	**Peso unitario** Weight per unit	54,200 KG
Disegno Drawing		**Numero di pezzi** Number of pieces	53	**Spessore rilevante** Relevant wall thickness	

Prova di trazione
Tensile test — EN ISO 6892-1

	Prova N. Test N.	Forma del provino Shape of the test piece	Snervamento Proof stress Rp0,2 (MPa)	Rottura Tensile strength Rm (MPa)	Allungamento Elongation A5 (%)
Valori richiesti Required values			**250 min.**	**400 min.**	**15,0 min.**
Valori effettivi Actual values	**L20747**	**EN 1563 Type B (fig. 3)**	**308**	**448**	**20,7**

Prova di resilienza
Impact test — EN ISO 148-1

Valore Medio Mean value (J)	Valori singoli Individual values (J)		
Temperatura del test Test temperature			

Prova di durezza
Hardness test — EN ISO 6506-1

Val. Minino Minimum value (HBW)	Val. Medio Mean value (HBW)	Val. Massimo Maximum value (HBW)
167	**173**	**177**
Numero prove: Number of tests		**5**

Composizione chimica %
Chemical composition %

Prova N.	C	Si	S	P	Mn	Ni	Cr	Mo	V	Cu	Ti	Sn	Al	Pb	Sb	Mg	Zn	Ce
L20747	3,57	2,62	0,010	0,029	0,24	0,01	0,04	0,00	0,02	0,12	0,018	0,0033	0,01	0,0012	0,0001	0,058	0,00	0,0046

Prove non distruttive
Non-destructive test

Note
Notes

Data Emissione
Date of Issue
21.03.2024

Il Responsabile Controllo Qualità
Qual.Contr.Responsible Official

Marchioretto Giovanni



VDP Fonderia S.p.A.
Via Lago di Alleghe, 39 - 36015 Schio (VI) Italy - Ph (+39) 0445 599 000 - vdp@vdp.it - www.vdp.it
Cap.Soc. € 5.200.000 EUR i.v. - R.E.A. VI - 327540 - C.F. e P.IVA IT03465880247

INTERACCIAI
Acciai Speciali

INTERACCIAI S.p.A.
Sede Legale e Amministrativa
Via Pasteur, 2 - 42122 Reggio Emilia - ITALY
Tel.() 39 0522 556800 Fax () 39 0522 557519
http://www.interacciai.it
e-mail: info@interacciai.it
e-mail: amministrazione@interacciai.it
pec: amministrazione@pec.interacciai.it

CAP.SOC. € 2.500.000,00 i.v.
C.Fisc. – P.Iva – N. ISCR. R.I. 00283270353
R.E.A. di Reggio Emilia n.113556
VAT CODE IT 00283270353

Filiali con deposito

ANCONA	BARI	BOLOGNA	BRESCIA	MILANO	MODENA	PIACENZA	REGGIO E.	ROMA	SIENA	TORINO	S.PONSO	TREVISO	VERONA
0731/60452	080/5324378	0542/670000	030/9759065	02/2544161	059/333033	0523/524321	0522/927013	0774/354474	0577/931909	011/8975943	0124/360748	0422/446700	045/8510680

CERTIFICATO DI COLLAUDO

conforme all'originale conservato presso nostra sede
TEST CERTIFICATE
corresponding to the original kept in our head office
CERTIFICAT D'ESSAI
conforme à l'original conserve au siego
WERKPRUFZEUGNIS
entsprechend dem'in unserem siz aufbewahrten original

UNI EN 10204/2005 3.1 DI RIFERIMENTO

Cliente:

INGRANAGGI MOREALI MARIO S.P.A.
VIA C. CAFIERO, 16
42124 REGGIO EMILIA RE

Il prodotto relativo a questo documento è conforme alle prescrizioni contrattuali / The product describes in this document is in according to the Customer's

ACCIAIO -STEEL - ACIER - STAHL	2181402352	Quantità/Weight	CERTIFICATO N°	Rif Norma
18NiCrMoS5 +A TD	52	312,00	3092274	UNI 7846

COLATA - HEAT - COULEE - SCHMELZE	N. C. INTERNA	Ordine Cliente/Order	RIF. NS. DDT	DEL
23/78357	2234206		RE01494	09/06/2023

COMPOSIZIONE CHIMICA % - CHEMICAL ANALYSIS % - COMPOSITION CHIMIQUE % - CHEMISCHE ZUSAMMENSETZUNG %

C	Si	Mn	P	S	Cr	Ni	Mo	Cu	Sn	Al
0,185	0,28	0,87	0,014	0,021	0,95	1,22	0,21	0,23	0,009	0,024

Ti	V	Pb	B	Ca	N	O2 ppm	H2 ppm	Nb	C.E.
0,008	0,004			0,0014	0,0093	17,00	2,10	0,003	0,66

CARATTERISTICHE MECCANICHE - MECHANICAL PROPERTIES - CARATTERISTIQUES MECANIQUES - MECHANISCHE EIGENSCHAFTEN

Di riferimento / Di prodotto	Trattamento termico del provino / Heat treatment / Traitement termique / Warmebehandlung	Grano / Grain size / Dim. grain / Korngrosse	Temp. prova di Resilienza / Temp. impact test / Temp. essai resilience / Temp. kerbschlagsprobe
	Temprato e Disteso	6	20

PRELIEVO TEST ESSAI PRUFUNG	Diametro	Sezione	Rp02 MPa	Rm MPa	A %	Z %	HBW	KV Joule			Kcu Joule
			1326	1439	11.4	49.3	183				38.2

PROVA JOMINY - JOMINY - TEST - ESSAI JOMINY - STIRNABSCHRECKVERSUCH

mm A	1.5	3	5	7	9	11	13	15	20	25	30	35	40	45	50
HRC	44	44	44	44	42	39	38	36	33	31	30	30	29	29	29

Durezza superficiale HRc Surface hardness Min.	Max.	**Profondità di tempra mm** Hardening depth Min.	Max.	**Durezza profondità Di tempra** Hardness HRc

Bandosità Band structure	**Micropurezza** Micropurity	**Tasso di Riduzione** Reduction ratio
2 UNI 8449	K4=6	12.06

Controllo antimescolamento 100% -anti-mixing test 100%-Anti Mischungskontrolle-contrôle anti mélange: YES

CONFORME CIS
MATERIALE DEGASATO SOTTOVUOTO

INGRANAGGI
MOREALI MARIO S. p. A.
Ufficio Acquisti
APPROVATO
DATA 12/06/2023 FIRMA

Note - notes:

INTERACCIAI S.p.A.
Via Pasteur n. 2
42122 - REGGIO EMILIA
Partita IVA 00283270353

INTERACCIAI S.p.A.

TEMPRASUD
Advanced heat treatment solutions

Rapporto di Collaudo

Commessa **202313300** 0

Data Collaudo **28/10/2023**

Cliente **001216 INGRANAGGI MOREALI MARIO SPA** DDT Cliente **1329** Del **19-ott-23**

Num Disegno **12,101/R** **PIGNONE CONICO SX** Materiale **18NCD5**

Pezzi **97** Peso **78,764** Numero Lotto **2023/001111**

Colata **78357** Indice Rev. **5A** Carica Impianto **231025001**

Numero Carica **230.005.583** Sistema **LLF5** Ciclo **608**

Trattamento **Cementazione tempra e rinvenimento 0,8 mm**

Risultato del Collaudo

Collaudatore **GIULIANO GENOVA**

Caratteristiche Richieste	Zona Rilievo	UM	Da	A	Strumento
DUREZZA SUPERF.		**HRC**	**59,00**	**61,00**	
PENETRAZ.EFFIC.		**mm**	**0,65**	**0,95**	

Caratteristiche Rilevate	Zona Rilievo	UM	Da	A	Strumento
DUREZZA SUPERF.		**HRC**	**60,00**	**60,50**	**4**
PENETRAZ.EFFIC.		**mm**	**0,83**	**0,83**	**2**

ESEGUITO CICLO DI TRATTAMENTO DI CEMENTAZIONE TEMPRA E RINVENIMENTO
ESEGUITO COLLAUDO SU PROVINO TEMPRASUD

Strumento	Descrizione	Marca	Modello	Matricola
2	**Microdurometro affri J**	**AFFRI**	**Wiki 200 JS1**	**74353**
4	**Durometro TWIN 2**	**ERNST**	**TWIN 2**	**47/1999**

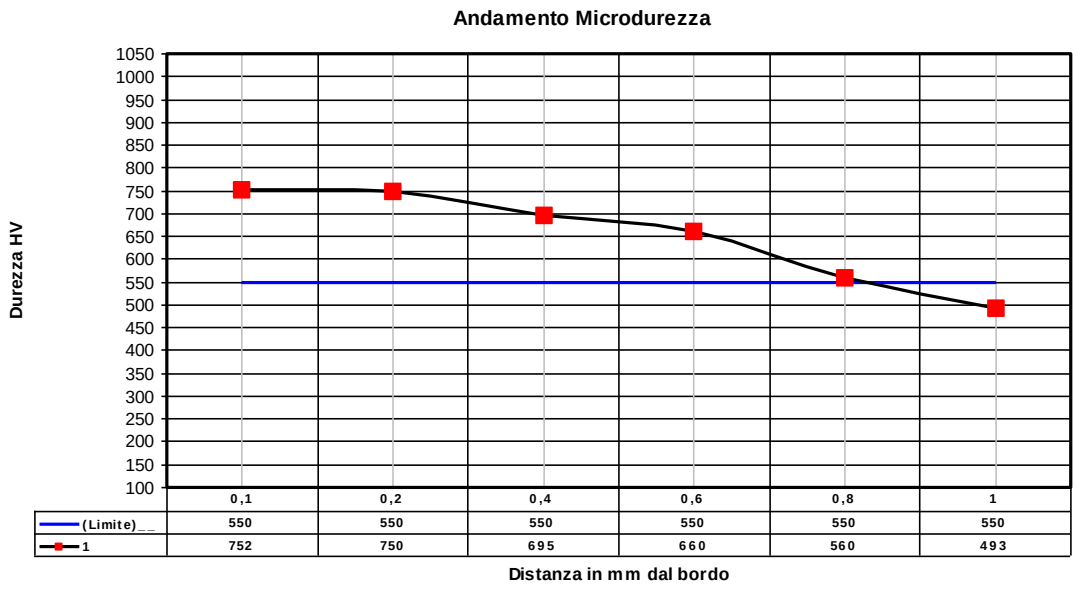
Eseguito collaudo di tipo 2.2 in ottemperanza alla norma UNI EN ISO 10204

Esito: **Conforme** Collaudatore: **GIULIANO GENOVA**

TEMPRASUD
Advanced heat treatment solutions

Diagramma Andamento Microdurezza

Commessa **2023/13300.0**



	0,1	0,2	0,4	0,6	0,8	1
(Limite)__	550	550	550	550	550	550
1	752	750	695	660	560	493

RIVA ACCIAIO S.P.A.
STABILIMENTO DI LESEGNO
Via Statale, 28 nord
12076 Lesegno(CN) ITALIA
Tel. 0174-718111 Fax. 0174-77251

Sede legale e amministrativa: Viale Certosa, 249 - 20151 Milano
telefono 02 30700 - telefax 02 38000346
codice fiscale, partita iva e numero iscrizione Registro Imprese Milano 08521290158

CERTIFICATO DI COLLAUDO

A03 Numero Certificato: 30956 — Data Certificato: 14/11/2022

CERTIFICHIAMO CHE IL PRODOTTO RELATIVO A QUESTO DOCUMENTO E' CONFORME ALLE PRESCRIZIONI CITATE IN ORDINE

B14 Norma riferimento: UNI EN 10204/2005 — **B15** Tipo: 3.1

B02 Acciaio: 17NICRM06-4HH/D EN 10084

B07 Anno/Numero colata: 22/77453

B01 Profilo: LAMINATO TONDO EN 10060

B09 Misura 1 x Misura 2: 35,00

B04 Stato fornitura: LAMINATO TONDO

B09 Lunghezza: 5,500 - 6,500

A07 Ordine Cliente: 22/005770

A08 Conferma: 07 Y1J97 003

C14 Tasso di riduzione: 26,62

B06

A06 Dati Cliente:
PAPANI ACCIAI S.R.L.
VIA CARONNO VARESINO, 64 CP 40
21048 SOLBIATE ARNO

C70 Processo:
FUSIONE AL FORNO ELETTRICO
COLAGGIO PROTETTO IN C.C. 160

COMPOSIZIONE CHIMICA - ANALISI DI COLATA

C71 C	C72 Mn	C73 Si	C74 P	C75 S	C76 Cr	C77 Ni	C78 Mo	C79 Cu	C80 Sn	C85 Al	C91 Ti
0,195	0,840	0,260	0,014	0,024	0,930	1,210	0,190	0,190	0,008	0,022	0,008

C87 V	C88 Nb	C89 B	C92 Ca				C93 N	C94 $O_{2(ppm)}$	C95 $H_{2(ppm)}$		C96 CEV
0,005	0,003	0,0000									

CARATTERISTICHE MECCANICHE

C01 Prelievo: C - Colata, L - Laminato, T - Trafilato: C

C03 Trattamento Termico: PROVETTA — TEMPR.E DIST

PROVE DI TRAZIONE

C08 Dim. Campione	C10 Dim. Provetta	C12 R_m (MPa)	C11 R_e (MPa)	C13 $A5_{\%}$	C15 $Z_{\%}$
11	10	1464	1355	12,0	47,3

PROVE DI RESILIENZA

C41 Dim. Provetta	C40 Tipo	C42 $K_{1(J)}$	C42 $K_{2(J)}$	C42 $K_{3(J)}$	C43 $K_{v(J)}$	C44 Temp.
10x10	KCU				37,3	20°C

C22 HB:

PROVA JOMINY

C03 Normalizzazione: Tempra

C61 mm	1,5	3	5	7	9	11	13	15	20	25	30	35	40	45	50					C45 DI
C60 HRC	44	44	44	43	41	38	37	35	33	31	30	29	29	29	29					

C65 Grano Austenitico: MAC QUAID - EHN 6

C62 Micropurezza: ASTM E45 - JERKONTORET METODO A
S: A1,5 B0,5 C0,5 D1,0

C05 Bandatura

C31 Valori di durezza: +AR | +A HB 183 | +FP

INFORMAZIONI SUPPLEMENTARI

B03
RICOT.CESOIABILE A FREDDO (+S)
RULLATO 2 MM/M MAX
BARRE LUNG. COMMERCIALE

CONTROLLO ANTIMESCOLAMENTO ESEGUITO

D51 Note:
CONFORME 18NICRMOS5 UNI7846
E 17NICRMOS6-4 EN10084

CONFORME 18NICRMO5 UNI7846
E 17NICRMO6-4 EN10084

DOCUMENTO ELETTRONICO VALIDO SENZA FIRMA

A10 Dati DDT: N° 11054 KG. 10773

Z04
INGRANAGGI
MOREALI MARIO S. p. A.
Ufficio Acquisti
APPROVATO
DATA 29/08/2023 FIRMA

Z01 Responsabile C.Q.: G. Piumatti

Z02

SIDERIT
TRATTAMENTI TERMICI
STABILIMENTO ZOLA PREDOSA

SEDE LEGALE:
SIDERIT S.r.l. con Socio Unico
Società soggetta a direzione
e coordinamento di Proterm S.r.l.
Via Casteldebole 2/A
40069 Zola Predosa (BO) – IT
Tel. 051752321
Cap. Soc. EUR 2.184.000,00 i.v.
P.IVA C.F e R.I. 01603891209 - R.E.A. 350684/BO

STABILIMENTO PRODUTTIVO:
SIDERIT ZOLA PREDOSA
Via Casteldebole 2/A
40069 Zola Predosa (BO) – IT
Tel. 051752321

AZIENDA CON SISTEMA DI GESTIONE CERTIFICATO DA KIWA-CERMET SECONDO UNI EN ISO 9001:2015 CERTIFICATO NUMERO 008

COMPANY WITH MANAGEMENT SYSTEM CERTIFIED BY KIWA-CERMET IN COMPLIANCE WITH THE STANDARD UNI EN ISO 9001:2015 (CERT. N. 008)

Prove di durezza eseguite secondo normative UNI EN ISO 6506, 6507 e 6508.
Spessore degli strati induriti UNI 11153 laddove non diversamente indicato nei CSR cliente.

Eventuali contestazioni dovranno essere comunicate prima dell'esecuzione di ulteriori lavorazioni e dell'utilizzo dei particolari.

CERTIFICATO DI COLLAUDO TEST CERTIFICATE	**2322085**	**DATA** DATE	**03/09/2023**

UNI EN 10204:2005 - 3.1 *Pos05a06r1*

Spett.le: **C.F.T. RICALCATURA SRL**
CASE BENSIO, 15
10070 CORIO TO

DISEGNO Part Number	**S12186**	**COMMESSA** Committed	
DESCRIZIONE Description	**PIGNONE S12.186**	**ORDINE** Order	
DDT Delivery note	**1867**	**Q.TA'** Pieces	**1009 (TOT)**
DATA DDT Delivery note date	**30/08/2023**	**PESO [Kg]** Weight [Kg]	**1.715,00**
MATERIALE Material	**18NICRMO5**	**CONTENITORI** Cases	**42S 8S8**
COLATA Heat Code	**22-77453**	**PARTITA** Batch	**2319100**

TRATTAMENTO TERMICO Heat Treatment	**MODALITA' DI LAVORO** Work Details
RICOTTURA ISOTERMICA 18NCD5 **PALLINATURA GREZZI** **COLLAUDO GREZZI**	

ANALISI DI COLLAUDO
Laboratory analysis

Specifiche Specification	**Richieste** Required	**Risultati** Results	**u.m.**
Durezza superficiale HB Surface Hardness HB	**149 - 201**	**170-174**	**HB**

Specifiche cliente Customer standard	**Esame microstrutturale** Microstructural Analisys
OAMP/2023/1236 **OPF 2023/001533/0020**	

Strumento Tool device code	**Reicherter Briviskop 3000H**	**Classe funzionale** Class	
Note Notes		**Settore applicazione** Area	
Collaudatore Inspector	**PATTARA**	**ESITO** COMPLIANCE RESULT	CONFORME
Responsabile collaudo Lab Supervisor	**Claudio Mellini**		

CONFORME

04.09.2023

TEMPRASUD
Advanced heat treatment solutions

Rapporto di Collaudo

Commessa **202313409** 0

Data Collaudo **04/11/2023**

Cliente **001216 INGRANAGGI MOREALI MARIO SPA** DDT Cliente **1337** Del **23-ott-23**

Num Disegno **12,187/R** **PIGNONE CONICO SX** Materiale **17NiCrMo6-4**

Pezzi **354** Peso **259,128** Numero Lotto **2023/001535**

Colata **77453** Indice Rev. **6** Carica Impianto **231103002**

Numero Carica **230.005.785** Sistema **LLF7** Ciclo **609**

Trattamento **Cementazione tempra e rinvenimento 0,8 mm**

Risultato del Collaudo

Collaudatore **DANIELE GAVOTO**

Caratteristiche Richieste	Zona Rilievo	UM	Da	A	Strumento
DUREZZA SUPERF.		**HRC**	**59,00**	**61,00**	
PENETRAZ.EFFIC.		**mm**	**0,65**	**0,95**	

Caratteristiche Rilevate	Zona Rilievo	UM	Da	A	Strumento
DUREZZA SUPERF.		**HRC**	**60,00**	**60,50**	
PENETRAZ.EFFIC.		**mm**	**0,91**	**0,91**	

ESEGUITO COLLAUDO SU PROVINO TEMPRASUD
PROVINO N° 4931

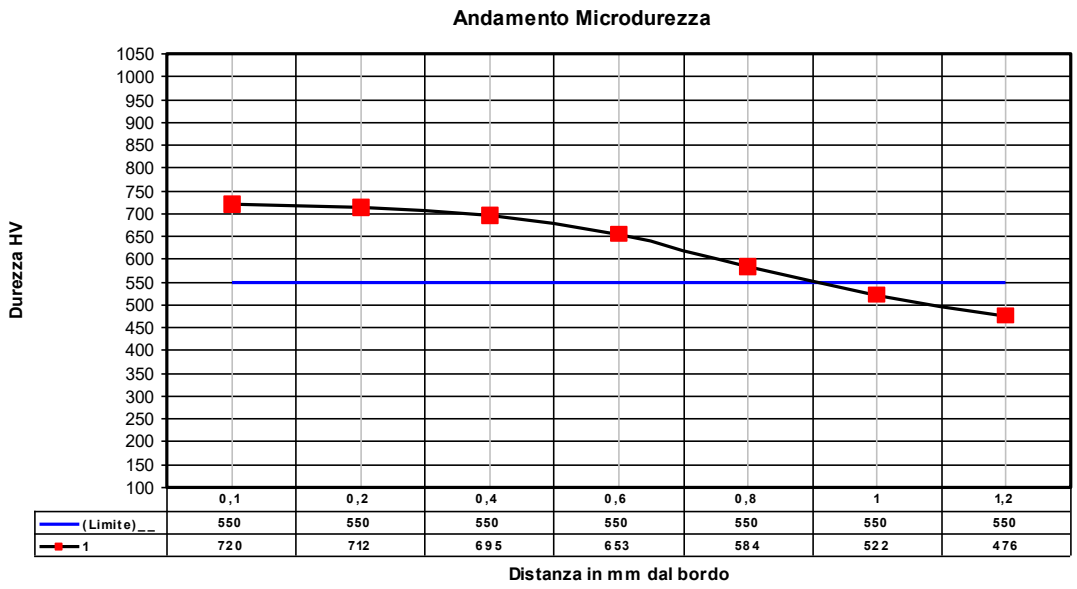
Eseguito collaudo di tipo 2.2 in ottemperanza alla norma UNI EN ISO 10204

Esito: **Conforme** Collaudatore: **DANIELE GAVOTO**

TEMPRASUD
Advanced heat treatment solutions

Diagramma Andamento Microdurezza

Commessa **2023/13409.0**



	0,1	0,2	0,4	0,6	0,8	1	1,2
(Limite)__	550	550	550	550	550	550	550
1	720	712	695	653	584	522	476

ACCIAIERIE BERTOLI SAFAU
ABSOLUTE STEEL QUALITY

ACCIAIERIE BERTOLI SAFAU SpA
Via Buttrio n.28 - Frazione Cargnacco - 33050 Pozzuolo del Friuli (UD)
Tel. +39 0432 613212 - Fax +39 0432 613209 - www.absacciai.it

CERTIFICATO DI COLLAUDO

Inspection Certificate 3.1/Certificat de reception 3.1/
Abnahmeprufzeugnis 3.1

N. 259294 / 1
Data 07.05.2020
COLATA N. Heat-Coulee-Schmelze 262628

CLIENTE Customer-Client-Besteller: RODA FORGE S.P.A.
ORDINE Order-Commande-Bestellung: 200067
PROFILO Shape-Section-Profili: LAMINATO BARRE TONDO GREZZO 55 MM -
STATO DI FORNITURA SupplyCondition-Etat de livraison: CESOIABILE
ACCIAIO Steel-Acier-Stahl: 16CRNI4
COMESSA/POS Sales Order/Pos: 1066620/280
CAPITOLATO ABS: Technical Specification: ABS
MATERIALE CLIENTE Customer Material Code: 16CRNI4+G0T055-028
CAPITOLATO DI ANALISI: Material Specification: DANA Q.F.1001 REV.1 1.4.2015
CAPITOLATO DI FORNITURA: Technical Delivery Raquirements:

COMPOSIZIONE CHIMICA DI COLATA %

CAST ANALYSIS % - COMPOSITION CHIMIQUE DE COULEE % - SCHMELZE CHEMISCHE ANALYSE %

	C	Mn	Si	P	S	Cr	Ni	Mo	Al (T)	Cu	Sn	Ti
Min	0,130	0,70	0,15		0,015	0,80	0,80		0,020			
Max	0,180	1,00	0,40	0,020	0,030	1,10	1,10	0,10	0,050	0,30	0,100	0,0500
Colata/Heat	0,170 ✓	0,94 ✓	0,25 ✓	0,010 ✓	0,022 ✓	0,96 ✓	0,90 ✓	0,05	0,020 ✓	0,28	0,012	0,0020 ✓
	B (T)	V	Nb	As	Ca	Sb	Co	O/ppm	H/ppm	N/ppm	Al/N2	
Min										60	2,10	
Max	0,0005	0,100	0,060	0,100	0,0010	0,100	0,300	20,00	2,50	120		
Colata/Heat	0,0001	0,008	0,003	0,006	0,0003 ✓	0,001	0,013	9,00	0,70	95	2,11	

CAP. SECONDO CLASSE QL2

CARATT. MECCANICHE

MECHANICAL PROPERTIES - CARACTERISTIQUES MECANIQUE - MECHANISCHE EIGSNSCHAFTER

TRAZIONE/RESILIENZA DI RIFERIMENTO

TRATTAMENTO TERMICO HEAT TREATMENT

TEMPRA RINVENIMENTO

TRAZIONE

TENSILE TEST

	R LONG.	RE LONG.	A%5D LONG.
Min	1.080Mpa	835Mpa	9%
Max	1.470Mpa		
Colata/Heat	1.272Mpa	872Mpa	12,2%
	✓	✓	✓

RESILIENZE

IMPACT TEST

	KCU 20°C Long
Min	30J
Max	
Colata/Heat	32J
	✓

DUREZZE

HARDNESS

	IN PELLE
Min	
Max	260HB
Colata/Heat	181HB

PROVA JOMINY

JOMINY TEST - ESSAI JOMINY - STIRNABSCHRECKVERSUCH

	J1.5 MM - HRC	J3.0 MM - HRC	J5.0 MM - HRC	J7.0 MM - HRC	J9.0 MM - HRC	J10.0 MM - HRC	J11.0 MM - HRC	J13.0 MM - HRC	J15.0 MM - HRC	J20.0 MM - HRC	J25.0 MM - HRC	J30.0 MM - HRC
Min	39		34,5			29			25	22,5	21	20
Max	44		40,5			35,5			31,5	29	27,5	26,5
Colata/Heat	43,1 ✓	42,2 ✓	40,3 ✓	37,1 ✓	34,3 ✓	33	31,7 ✓	29,8 ✓	28,5	27,3	26,4	25,2
	J35.0 MM - HRC	J40.0 MM - HRC	J45.0 MM - HRC	J50.0 MM - HRC								
Min												
Max												
Colata/Heat	24,2	23,8	23,3	22,8								

PROVA JOMINI MM - HRC EN ISO 642

TEMPERATURA DI AUSTENITIZZAZIONE 880 °C

ACCIAIERIE BERTOLI SAFAU
ABSOLUTE STEEL QUALITY
ACCIAIERIE BERTOLI SAFAU SpA
Via Buttrio n.28 - Frazione Cargnacco - 33050 Pozzuolo del Friuli (UD)
Tel. +39 0432 613211 - Fax +39 0432 613209 - www.abssocial.it

CERTIFICATO DI COLLAUDO

Inspection Certificate 3.1/Certificat de reception 3.1/
Abnahmeprufzeugnis 3.1

N.	259294 / 1
Data	07.05.2020
COLATA N. Heat-Coulee-Schmelze	262628
Pag.	2 / 2

INCLUSIONI NON METALLICHE

NON METALLIC INCLUSION - INCLUSIONS NON METALLIQUES - PRUFUNG NICHTEMETALLISCHE EINSCHLUSSE

	Tipo A Type A	Tipo B Type B	Tipo C Type C	Tipo D Type D
Fine Thin	2	0	0	1
Grosso Heavy	1	0,5	0	1

MICROINCLUSIONI: METODO JK, CAMPO PEGGIORE
MICROINCLUSIONI: NORMA UNI 3244-66

GRANO

GRAIN - GRAIN - KORNGROSSE

GRANO AUSTENITICO: NORMA UNI EN ISO 643 / ASTM E112
GRANO AUSTENITICO: METODO MC QUAID
TEMPERATURA GRANO AUSTENITICO 920 °C
DIMENSIONE GRANO AUSTENITICO 7 ✓

ALTRE PROVE

OTHER TESTS - AUTRES ESSAIS - SONSTIGE PRUFUNGEN

GRADO BANDATURA 2
MACROGRAFIA C 1
MACROGRAFIA R 1
MACROGRAFIA S 1
BANDATURA NORMA UNI 8449
MACROGRAFIE NORMA ASTM E381

NOTE

DIFETTI SUPERFICIALI: CONTROLLO ESEGUITO AL 100%
DIFETTI INTERNI METODO CONTROLLO US ESEGUITO AL 100%
ANTIMIX 100 %
R/R = 24
CERTIFICATO REDATTO IN ACCORDO A: EN 10204/3.1
PROD. DI PARTENZA COLATA CONTINUA
PAESE D'ORIGINE ITALIA
ACCIAIO DEGASATO SOTTOVUOTO .
ACCIAIO ELABORATO AL FORNO ELETTRICO .
ACCIAIO GRANO FINE .
ACCIAIO COMPLETAMENTE CALMATO .
- Materiale esente da piombo, mercurio, cadmio e cromo esavalente (dir. 2000/53/CE - dir. 2011/65/UE e s.m.i.)
- Materiale con radioattivita' non superiore a 0,1Bq/g (d.lgs. 230/1995 e s.m.i.)

CONTROLLO QUALITA'

QUALITY CONTROL - CONTROLE DE QUALITE - QUALITATSSTEILE

Azienda con sistema di gestione certificato da IGQ secondo
ISO 9001 e IATF 16949

Verif.:Sabrina Anzile

Sabrina Anzile

INGRANAGGI
MOREALI MARIO S. p. A.
Ufficio Acquisti

APPROVATO

DATA	FIRMA
11/01/2024	Moreali

PROTERM
TRATTAMENTI TERMICI
REGGIO EMILIA
PROTERM S.r.l
SEDE LEGALE: Via Piretti 4 40012 Calderara di Reno (BO) – IT | Tel. 0514148611
Cap. Soc. EUR 1.064.368,00 i.v. | P.IVA 00505861203 | C.F e R.I. 00368640371
R.E.A 212723/BO | Codice SDI A4707H7

STABILIMENTO PRODUTTIVO:
REGGIO EMILIA (RE)
42124 Via Casorati 13
Tel. 0522926336

AZIENDA CON SISTEMA DI GESTIONE CERTIFICATO DA IGQ SECONDO UNI EN ISO 9001 CERTIFICATO NUMERO IT-20894 IGQ 2D53

COMPANY WITH MANAGEMENT SYSTEM CERTIFIED BY IGQ IN COMPLIANCE WITH THE STANDARD UNI EN ISO 9001 CERT. N° IT-20894 IGQ 2D53

CERTIFICATO DI COLLAUDO TEST CERTIFICATE	**2404740**	**DATA** DATE	**28/05/2024**

UNI 10204 Pt.3.1/05 *PRQ 824*

Spett.le: **INGRANAGGI MOREALI MARIO SPA**
VIA C.CAFIERO 16
42124 REGGIO EMILIA RE

DISEGNO Part Number	**RC00047370**	**COMMESSA** Committed	**C 0114**
DESCRIZIONE Description	**CORONA CONICA DX REV.0**	**ORDINE** Order	**249**
DDT Delivery note	**420**	**Q.TA'** Pieces	**270 (PARZ)**
DATA DDT Delivery note date	**10/05/2024**	**PESO [Kg]** Weight [Kg]	**867,51**
MATERIALE Material	**16CrNi4**	**CONTENITORI** Cases	**5C8 684**
COLATA Heat Code	**262628**	**PARTITA** Batch	**2403774/2**

TRATTAMENTO TERMICO Heat Treatment	**MODALITA' DI LAVORO** Work Details
PREPARAZIONE-MONTAGGIO CARICA **CEMENTAZIONE-TEMPRA-RINVENIMENTO** **PALLINATURA CEMENTAZIONE** **COLLAUDO** **PROVE DI DUREZZA (CUCITURA) CMT**	**Griglia 303, Fornata 1120**

ANALISI DI COLLAUDO
Laboratory analysis

Specifiche Specification	**Richieste** Required	**Risultati** Results	**u.m.**
Durezza Superficiale HRC Surface Hardness HRC	**59 - 61**	**60-61**	**HRc**
Profondità da cucitura	**0.65 - 0.95**	**0.96**	**mm**
Profondita Briro-E Case Depth Briro-E PROVETTA	**0.65 - 0.95**	**0.88**	**mm**

Specifiche cliente Customer standard	**Esame microstrutturale** Microstructural Analisys
spCLI C006	

Strumento Tool device code	**D04ERN ERNST** **D05BRI BRIRO**	**Classe funzionale** Class	
Note Notes		**Settore applicazione** Area	
Collaudatore Inspector	**YL**	**ESITO** COMPLIANCE RESULT	CONFORME
Responsabile collaudo Lab Supervisor	**Francesco Del Giudice**		

INFORMAZIONI RISERVATE. È VIETATA LA DIVULGAZIONE E L'UTILIZZO SE NON ESPRESSAMENTE AUTORIZZATI DALLA DIREZIONE AZIENDALE.

PROTERM
TRATTAMENTI TERMICI
REGGIO EMILIA
PROTERM S.r.l
SEDE LEGALE: Via Piretti 4 40012 Calderara di Reno (BO) – IT | Tel. 0514148611
Cap. Soc. EUR 1.064.368,00 i.v. | P.IVA 00505861203 | C.F e R.I. 00368640371
R.E.A 212723/BO | Codice SDI A4707H7

STABILIMENTO PRODUTTIVO:
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42124 Via Casorati 13
Tel. 0522926336

AZIENDA CON SISTEMA DI GESTIONE CERTIFICATO DA IGQ SECONDO UNI EN ISO 9001 CERTIFICATO NUMERO IT-20894 IGQ 2D53

COMPANY WITH MANAGEMENT SYSTEM CERTIFIED BY IGQ IN COMPLIANCE WITH THE STANDARD UNI EN ISO 9001 CERT. N° IT-20894 IGQ 2D53

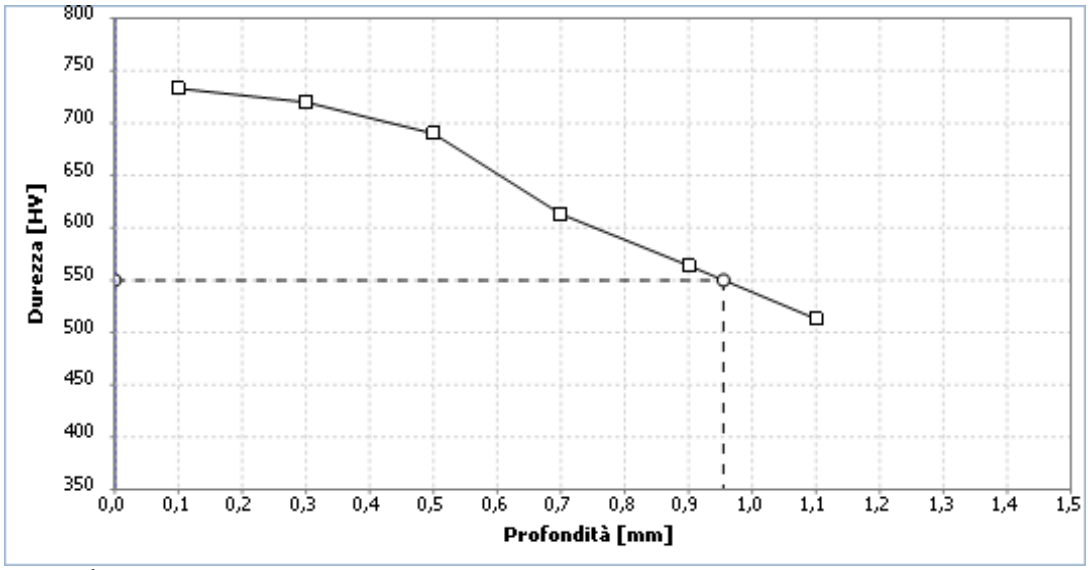
CERTIFICATO DI COLLAUDO TEST CERTIFICATE	**2404740**	**DATA** DATE	**28/05/2024**

UNI 10204 Pt.3.1/05 *PRQ 824* *Pagina 1/1*

PROFONDITA' DI INDURIMENTO

GRADIENTE DI DUREZZA

Profondità [mm] Depth [mm]	**Durezza [HV]** Hardness [HV]
0,10	733,00
0,30	720,00
0,50	690,00
0,70	613,00
0,90	564,00
1,10	513,00



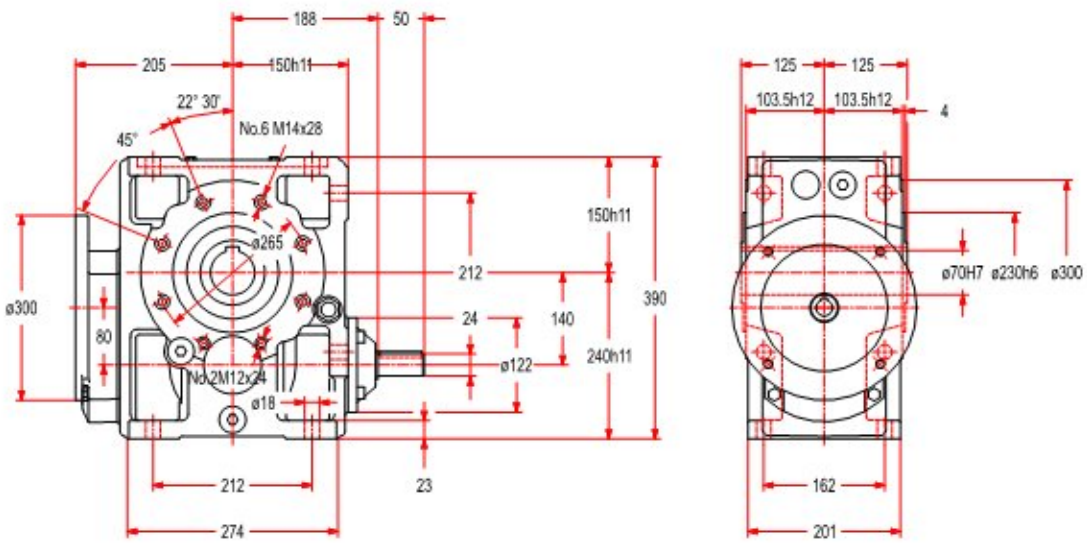
Profondità di 0,95mm ottenuta con durezza di 550HV

Note NOTES		**CERTIFICATO DI CUCITURA**	**2404740**
Collaudatore Inspector	**Francesco Del Giudice**	**ESITO** COMPLIANCE RESULT	CONFORME
Responsabile Lab supervisor	**Francesco Del Giudice**		

Documento riservato di rilevante valore economico, di proprietà di Proterm S.r.l.

E' vietata la riproduzione e/o divulgazione, anche parziale, a terzi, senza l'autorizzazione scritta specifica della direzione di Proterm S.r.l.

Dimensioni principali [mm] (per accessori, vedere pag. seguenti)



Informazione

Vite UNI 5737: M 16 x 55

Viti UNI 5588: M 16

Affidabilità prodotto, considerazioni sull'applicazione
Il cliente è responsabile della corretta selezione e applicazione del prodotto in vista dei propri fabbisogni industriali e/o commerciali, salvo il caso in cui l'utilizzo non sia stato raccomandato da personale tecnico qualificato Rossi, dopo opportuna formazione sul tipo di applicazione del cliente. In questo caso tutti i dati necessari richiesti per la selezione devono essere comunicati esattamente e per iscritto dal cliente, indicati in sede di ordine e confermati da Rossi. Il cliente è sempre responsabile della sicurezza delle applicazioni di prodotto. Ogni possibile cura è stata adottata nella stesura del presente catalogo al fine di assicurare l'accuratezza delle informazioni contenute in questa pubblicazione, tuttavia Rossi non può assumere alcuna responsabilità per eventuali errori, omissioni o dati non aggiornati. A causa della costante evoluzione dello stato dell'arte, Rossi si riserva il diritto di apportare modifiche in qualsiasi momento alle pubblcazioni. La responsabilità della selezione del prodotto è del cliente, salvo diversi accordi legalmente formalizzati per iscritto e sottoscritti dalle parti.

RAPPORTO DI PROVA - EN 10204 - 2.2
TEST REPORT - EN 10204 - 2.2

CLIENTE: *CUSTOMER :*	**REMAZEL ENGINEERING SPA**	**CONFERMA D'ORDINE - RIGA:** *ORDER CONFIRMATION - LINE:*	**50533327 ZOG**
ORDINE CLIENTE: *CUSTOMER ORDER:*	**24004219 DEL**	**DESTINAZIONE FINALE:** *SHIP TO:*	**REMAZEL ENGINEERING S.P.A.**
CODICE ARTICOLO: *ARTICLE CODE:*	**B2045232**	**QUANTITA':** *QUANTITY:*	**1**
DESCRIZIONE ARTICOLO : *DESCRIPTION CODE:*	**ET3065/MR/208.2/61104600690 V5**	**ORDINE DI PRODUZIONE:** *MANUFACTURING ORDER:*	**11427171**

MATRICOLE : *SERIAL NUMBERS:*	**07017447**

La Dana Motion Systems Italia s.r.l dichiara sotto la propria responsabilità, sulla base dei risultati ottenuti dai test standard di verifica effettuati sui prodotti costruiti con gli stessi materiali e con lo stesso metodo di produzione, che i prodotti specificati sopra, sono conformi alle prescrizioni dell'ordine ed alle regole tecniche corrispondenti ai regolamenti ufficiali.

Dana Motion Systems Italia s.r.l under its own responsibility, based on results of its standard tests aimed to verify products manufactured using the same materials and production method, declares that the products hereabove specified fully comply with order prescriptions and with all technical norms corresponding to official regulations.

Sono stati eseguiti i seguenti test standard non specifici:
The following non-specific inspection tests were performed:

DESCRIZIONE DEI TEST *TEST DESCRIPTION*	**RISULTATO** *RESULTS*
Prova di tenuta secondo SP001 *Seal Test according to SP001*	Approvato *Approved*
Prova di rotazione a vuoto secondo SP001 *Rotation with no load according to SP001*	Approvato *Approved*
Prova del senso di rotazione secondo SP001 *Free rotation test according to SP001*	Approvato *Approved*
Verifica verniciatura/protettivo secondo SP017 *Paint/protective check according to SP017*	Approvato *Approved*

Quando applicabile:
Where applicable:

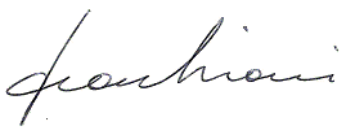
Prova di apertura e tenuta freno secondo SP001 *Brake engagement and seal test according to SP001*	Approvato *Approved*
Verifica livello olio *Oil level check*	Approvato *Approved*

Reggio Emilia

30.07.2024

DIRETTORE DI PRODUZIONE
MANUFACTURING DIRECTOR
DIRECTEUR DE PRODUCTION
PRODUKTIONSLEITERS
DIRECTOR DE PRODUCCIÓN

Fracchioni Claudio



Dana Motion Systems Italia S.r.l.
Via Luciano Brevini, 1/A
42124 REGGIO EMILIA - ITALY
Tel. +39 0522 9281 Fax +39 0522 928200
www.brevini.com

TRACEABILITY SHEET
SCHEDA DI RINTRACCIABILITA'

QCMAT31TT0

FORM	F0610
FORMREVISION	06
FORM REVISED	2023/10/26

GEARBOX DESCRIPTION DESCRIZIONE RIDUTTORE	SERIAL NUMBER NUMERO DI SERIE	ORDER CONFIRMATION CONFERMA D'ORDINE	ASSEMBLING ORDER ORDINE DI MONTAGGIO	CUSTOMER CLIENTE	N° ORDER N° ORDINE	QUANTITY QUANTITA'
ET3065/MR/208.2/61104600690 V5	**7017447**	**50533327**	**11427171**	**219934 - REMAZEL ENGINEERING S.P.A.**	**24004219 DEL**	**1**

REFERENCES NORME DI RIFERIMENTO	DATA RILASCIO/ DATE OF ISSUE	
SP045-01 = Magnetic particle inspection (EN 10228 - 1) SP045-02 = Penetrant Testing (EN 10228 - 2) SP045-03 = Ultrasonic Testing (EN 10228 - 3) SP045-04 = Overheating Check (ISO 14104) SP045-05 = BARKHAUSEN	**16.09.2024**	**B2045232**

COMPONENT CODE CODICE COMPONENTE	DESCRIPTION *DESCRIZIONE*	WORKING ORDER ORDINE DI LAVORO	RAW MATERIAL MATERIALE GREZZO	INCOMING GOODS DATA MERCE IN INGRESSO
30506940100	COUPLING B24/../D28i	5002838119.2024.0001		01_4500649437 - 2425E00097 31.05.24 - SPUN MICROPROCESSING - 500
31113730600	SHAFT EM1065/B32/../B32	11442439	31113731599	02_4500630917 - FY2324-EX-661 30.03.2024 - SPUN MICROPROCESSING - 250+125PZ
32000538300	RING-GEAR EM1010/6F/../Z95M1,5	11381214	9029443	03_4500640225 - 800054294 15.04.24 - MASSUCCO INDUSTRIE SPA - 1800 PZ
32001021100	RING-GEAR EM1020/8F/../Z75M2,5	11400205	32001000088	04_4500640225 - 800054295 15.04. 24 - MASSUCCO INDUSTRIE SPA - 2112 PZ
32001921100	RING-GEAR EM1065/10F/../Z60M3,5	11381201	32001900088	05_4500640225 - 800054634 03.05.24 - MASSUCCO INDUSTRIE SPA - 903 PZ
32500941100	PLANET GEAR EM1010/../6,93/Z38M1,5	11365879	32500841199	06_4500566121 - 550172-01 17.07.2023 - RAMCO STEELS PVT. LTD. - 1928 PZ
32501541100	PLANET GEAR EM1020/../6/Z29M2,5	11400084	32501541199	07_4500629185 - 2401045 04.06.24 - F.A.C.E.M. SPA - 1433 - PZ
32513641100	PLANET GEAR EM1065/../5/Z21M3,5	11400363	32513641199	08_4500612666 - 2400623 03.04.24 - F.A.C.E.M. SPA - 2250 PZ
32603241900	SUN PINION EM1010/Z16M1,5/6,94/A24	11399726	32602831999	09_4500586850 - DANA2315-6 24.04.2024 - JINAN HONG ZHENG SCIENCE & TEC - 900 PZ
32730430300	SUN GEAR EM1020/Z15M2,5/6/B20	11394771	9042031	10_4500624042 - 264/V 20.03.24 - GI.GI.ESSE SRL - 543 PZ
32733530300	SUN PINION EM1065/Z15M3,5/5/B27	11386265	32733500088	11_4500626889 - 304/V 03.04.24 - GI.GI.ESSE SRL - 520 PZ
3355332000K	PINION EM1065/Z11M10/../A32	11232108	9022943	12_4500548192 - 810 01.08.23 - GI.GI.ESSE SRL - 55 PZ
34513131800	PLANET CARRIER EM1010/A20/6,93/..	11396796	34512831895	13_4500611892 - DANA2401-3 30.05.2024 - JINAN HONG ZHENG SCIENCE & TEC - 3000
34546531800	PLANET CARRIER EM1020/A27c/6/..	11396804	34546131895	14_4500591063 - DANA2316-1 19.03.2024 - JINAN HONG ZHENG SCIENCE & TEC - 2700 PZ
345F471000K	PLANET CARRIER EM1065/A32C/5/..	11404168	345F4400095	15_4500639713 - F.LLI GALLI-666 16.04.2024 - ZANARDI FONDERIE SPA - 920 PZ

ARORA IRON & STEEL ROLLING MILLS (P) LTD.

DHANDARI KHURD, NEAR PHASE-VII, FOCAL POINT, LUDHIANA- 141 010.
Website : www.arorairon.com

IATF 16949:2016 | ISO 14001 : 2015 | ISO 45001 : 2018 | ISO 9001:2015

TEST CERTIFICATE

TEST CERTIFICATE ACCORDING TO EN10204 TYPE 3.1

Customer Address:				
M/S - SPUN MICRO PROCESSING PVT. LTD. BEHRAMPUR ROAD, VILLAGE BEGAMPUR KHATOLA, GURGAON, HARYANA	Material	Billet Route	Test Certificate No.	2023-24/030467
	Process Route	EAF-LRF-VD-CCM-AMLC-EMS-RM	Date	27-02-2024
	Specification	Doc NO-SM16 QWI 173	Invoice No.	17316.
			Weight (MT.)	4.395
	Heat No.	A28548	Input/Billet Size	200X200 MM
	Grade	20MnCr5	Reduction Ratio	18.14:1 (Spec.5:1 min)
	Supply Size	53 MMØ	No's of Pcs	45
	Supply Condition	AS HOT ROLLED	No's of Bundle	2
	Colour Code	YELLOW+BLUE	Multiple	NA

TEST RESULT

CHEMICAL ANALYSIS (ASTM E 415 / IS 8811)

Element		C%	Mn%	Si%	S%	P%	Cr%	Ni%	Mo%	V%	Al%	Cu%	Ti%	-	-	-	-	-	-
Spec.	Min	0.170	1.100	-	-	-	1.000	-	-	-	-	-	0.010	-	-	-	-	-	-
	Max	0.220	1.400	0.400	0.035	0.025	1.300	-	-	-	-	-		-	-	-	-	-	-
Achieved		0.215	1.365	0.225	0.026	0.019	1.235	0.100	0.030	0.004	0.023	0.140	0.002	-	-	-	-	-	-

JOMINY HARDENABILITY TEST (IS:3848, ASTM A255, SAE J406)

Distance (MM)		1.5	3	5	7	9	11	13	15	20	25	30	35	40					
Spec. (HRC)	Min	44	42	40	37	34	33	31	30	28	26	25	24	23					
	Max	49	49	48	46	43	42	41	39	37	35	34	33	32					
Achieved (HRC)		47.5	47.0	46.5	44.5	43.0	41.0	38.0	36.5	33.5	31.5	30.0	29.0	28.0					

Mechanical Properties

Parameters		IS:1608 / ASTM A370 Test Condition: As Rolled				IS:1757	ASTM A255		IS:1500
		Tensile Strength (N/mm^2)	Yield Strength (N/mm^2)	Elongation (%)	Reduction Area (%)	Impact Strength Charpy U-notch KCU at23°+5°(Joules)	D.I. Value (Inch)	D.I. Value (mm)	Surface Hardness As Rolled (BHN)
Spec.	Min	1230	930	7	-	17.5 min	-	-	-
	Max	1570	-	-	-	-	-	-	-
Achieved		1328	1128	9.7		26 J	-	-	229/248

Metallographic Properties

Parameters		Inclusion Rating (IS : 4163 / ASTM : E45A / JK Chart) WORST FIELD RATING									Grain Size IS 4748 / ASTM E112 (No.)	Depth of Decarburization IS 6396/ASTM E1077		Micro Structure		
	Type	A		B		C		D		DS		Complete	Partial	Uniform	Banding	Structure
	Series	Thin	Thick	Thin	Thick	Thin	Thick	Thin	Thick							
Spec.	Min	-	-	-	-	-	-	-	-	-	≥5	-		-	-	-
	Max	-	-	-	-	-	-	-	-	-						Pearlite & Ferrite
Achieved		1.5	0.5	0.5	0.0	0.0	0.0	1.0	0.0	-	6.0 to 6.5	-	-	-	-	

Physical Properties, Non Destructive Test & Other Test

Parameters	Internal Soundness ASTM E381	Step Down Test IS 4075	Surface Inspection IS 13352	Magnetic Particle Inspection ASTM E1444	Ultrasonic Test ASTM A388	Upsetting Test IS 10167
Spec.	-	-	-	-	-	-
Achieved	Better than C2,R1,S1	Satisfactory	Satisfactory	100%	100%	-

Parameters	Dimensional Tolerance	Spark Test	X-RF	Gas Analysis Report Test method-Leco		
				O_2 (ppm)	N_2 (ppm)	H_2 (ppm)
Spec.	-	-	-	-	-	-
Achieved	As per IS 3739 Grade 1	100%	100%	9.0	73.0	0.67

Remarks :
This material comply with RoHS (Pb, Cd, Hg, Cr6+) and REACH permissible limits. 3TG (Tantalum, Tin, Tungsten and Gold) not added intentionally in the product. Material is free from radioactive contamination.

MACHINE STRAIGHTENED MATERIAL

Prepared By:	Approved By:	Pre Dispatch Inspection:
VISHWAKARMA SHARMA		

In case of any Test Certificate issue, please inform Dinesh Singla at quality04@arorairon.com, Mobile No. +919914538700

SPUN MICRO–PROCESSING PVT LTD.
BEGAMPUR KHATOLA, GURGAON–122001(HR.)

MATERIAL TEST CERTIFICATE

PART NAME:-	COUPLING 0694	MATERIAL:-	20MnCr5(UNI EN 10084)		
PART NO:-	30506940100	QTY :-	500 NOS	HEAT NO:-	A28548
DATE:-	31-05-2024	PURCHASE ORDER NO:-	4500649437	Invoice No.	97
CUSTOMER:-	BREVINI POWER TRANSMISSION	REFERENCE TO	UNI -EN-10204-3.1		

CHEMICAL COMPOSITION

	C%	Mn%	Cr%	Mo%	Ni%	S%	Si%	P%	Al%	Cu%	Ca%
MIN	0.17	1.10	1.00						0.02		
MAX	0.22	1.40	1.30			0.035	0.40	0.025	0.05		
ACTUAL	0.213	1.366	1.225			0.022	0.217	0.019	0.02		

HARDENABILITY

DISTANCE		5			11			25			
MIN		40			33			26			
MAX		48			42			35			
ACTUAL		45			38			30			

MECHANICAL PROPERTIES(Test to be conducted in Barø11mm after H/T at190°C)

BAR DIA			R(N/mm2)	RS (N/mm2)	A%		KV(J) Min	GRAIN SIZE
ø53.0		MIN	1000	670	8		25	5
		MAX						8
		ACTUAL	1291.19	1199.52	11.30		37	8

HEAT TREATMENT PROCESS

INITIAL HEAT TREATMENT	FINAL HEAT TREATMENT
Report attached	Report attached

This is certify that all the result mentioned in certificate within specification as per standard mentioned.

PREPARED BY:	CHECKED BY:	APPROVED BY:

SPUN MICRO-PROCESSING PVT LTD.
BEGAMPUR KHATOLA, GURGAON-122001(HR.)

PROCESS CONTROL SHEET

DATE:- 11-04-2024

COMPONENT NAME :- COUPLING

HEAT NO. :- A28548

COMPONENT NO. :- 0694

PURCHASE ORDER NO. :- 4500649437

INVOICE NO. :- 97

PROCESS :- ISO-THERMAL ANNEALING

MAT. GRADE :- 20MnCr5

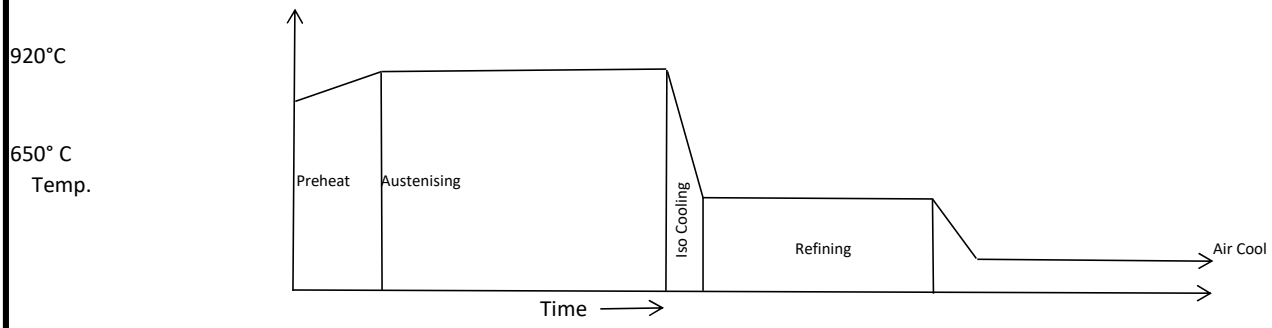
METALLURGICAL SPECIFICATION :-

MICRO STRUCTURE :- PERLITE & FERRITE.

HEAT TREATMENT CYCLE :-

PROCESS	F/C USED	TEMP. (DEG.C)	SOAKING TIME (MINTS.)	QUENCH / COOLING MEDIA	INSPECTION	
					HARDNESS	MICRO STRUCTURE
AUSTENISING	CONT. F/C-5	920	120	Cool in cooling chamber upto 650°C than transfer to F/c -4		
REFINING	CONT. F/C-4	650	195	AIR	166 ~ 178 BHN	Fine distributed of Perlite in Ferritic matrix

H.T CYCLE DIAGRAM:-



H.T CYCLE :-

1 Austenising :-
- I. Temp. :- 920 Deg. C
- ii. Soaking :- 120 minutes.
- iii. Cool in Iso cooling chamber upto 650°C then transfer to other F/C-4

2 Refining :-
- I. Temp. :- 650°C
- ii. Soaking :- 195 Minutes
- iii. Cooling media :- Air

OBSERVATION :-

1 HARDNESS :- 166 - 178 BHN

2 MICRO STRUCTURE :- Fine distribution of Perlite in the matrix of Ferrite.

3 DISPOSITION :- OK

PREPARED BY

APPROVED BY

SPUN Micro Processing Pvt.Ltd.		CASE HARDENING REPORT
ITEM DESCRIPTION	COUPLING - 0694	DATE:- 30-04-2024

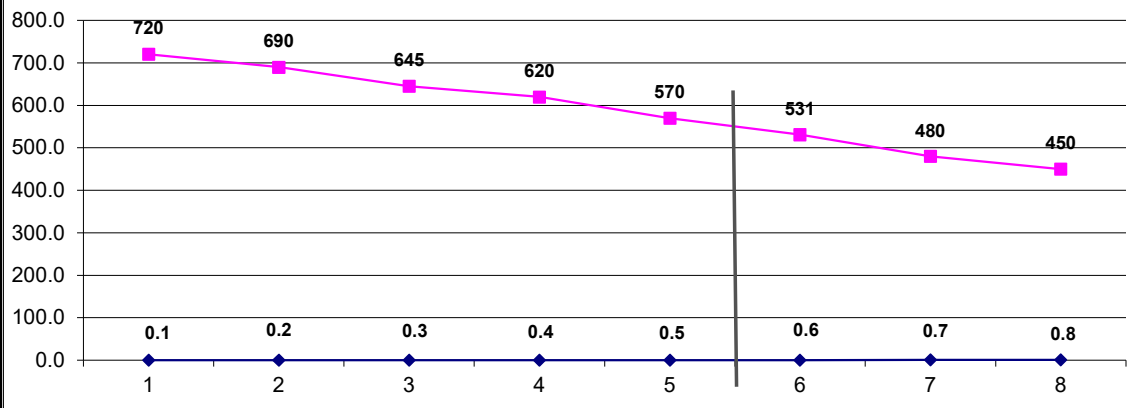
SPECIFICATION		***OBSERVATION***
SURFACE HARDNESS	**58-62 HRC**	60,59,61,61,62
CORE HARDNESS	**32-41 HRC**	39 HRC
EFFECTIVE CASE DEPTH	**0.40~0.60mm (550HV)**	0.55 mm
PURCHASE ORDER NO.	4500649437	
INVOICE NO.	97	
HEAT CODE	A28548	

RESULTS

Load 1000 gf

Case Depth	HARDNESS(HV)
0.1	720
0.2	690
0.3	645
0.4	620
0.5	570
0.6	531
0.7	480
0.8	450

CASE DEPTH / HARDNESS



PREPARED BY APPROVED BY

SPUN MICRO–PROCESSING PVT LTD.
BEGAMPUR KHATOLA, GURGAON–122001(HR.)

MATERIAL TEST CERTIFICATE

PART NAME:-	Shaft 7306	MATERIAL:-	42CrMo4(UNI EN 10083)	
PART NO:-	31113730600	QTY:-	375 NOS	HEAT NO:- A26372
DATE:-	30-03-2024	**PURCHASE ORDER NO:-**	4500630917	INVOICE NO. 661
CUSTOMER:-	BREVINI POWER TRANSMISSION	REFERENCE TO	UNI -EN-10204-3.1	

CHEMICAL COMPOSITION

	C%	Mn%	Cr%	Mo%	Ni%	S%	Si%	P%	Al%	Cu%
MIN	0.38	0.60	0.90	0.15		0.00	0.00	0.00	0.02	0.00
MAX	0.45	0.90	1.20	0.30		0.035	0.40	0.025	0.05	0.30
ACTUAL	0.423	0.754	1.086	0.250		0.016	0.250	0.014	0.030	0.107

HARDENABILITY

DISTANCE		5			11			25			
MIN		55			48			39			
MAX		61			59			53			
ACTUAL		55			50			40			

MECHANICAL PROPERTIES

BAR DIA	SIZE		R(N/mm2)	RS (N/mm2)	A%	Z%	KV(J)	GRAIN SIZE
Ø90.0		MIN	1100	900	10		35	5
		MAX						8
		ACTUAL	1136.48	1040.83	15.36		65	8.0

HEAT TREATMENT PROCESS

INITIAL HEAT TREATMENT	FINAL HEAT TREATMENT
Report attached	Not Applicable

This is to certify that all the result mentioned in this certificate is within specification.

PREPARED BY:	CHECKED BY:	APPROVED BY:

SPUN MICRO–PROCESSING PVT LTD. BEGAMPUR KHATOLA, GURGAON–122001(HR.)	**PROCESS CONTROL SHEET**	**DATE:- 15.03.2024**

Component Name :-	**SHAFT**	**HEAT NO. :- A26372**	
Componet Number :-	**31113730600**	**PURCHASE ORDER NO :- 4500630917**	**Invoice No. : - 661**
Process :-	Hard & Temper	Matrial Grade :-42CrMo4	

Metallurgical Specification :-

Specified Hardness :- **305-355 BHN**

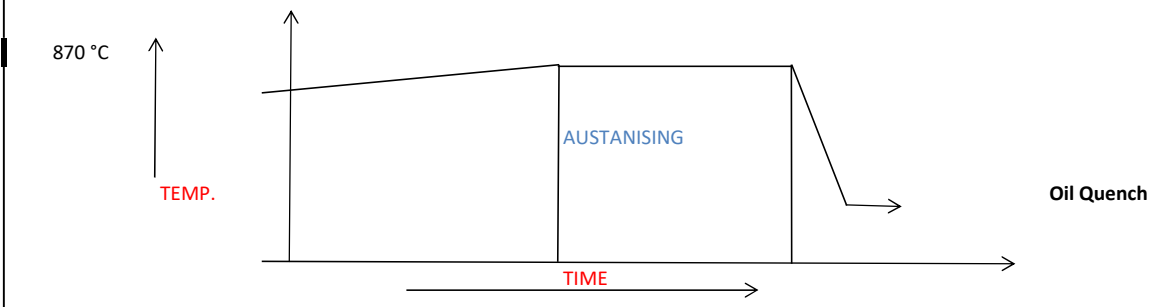
Micro Structure :- Uniform Sorbit

Heat Treatment Cycle :-

PROCESS	F/C USED	TEMP. (DEG.C)	SOAKING TIME (MINTS.)	QUENCH / COOLING MEDIA	INSPECTION	
					HARDNESS	MICRO STRUCTURE
HARDENING	CONT. F/C	870	120	OIL	401 ~ 429 BHN	--------
TEMPERING	CONT. F/C	600	180	AIR	321 ~ 342 BHN	UNIFORM SORBITE

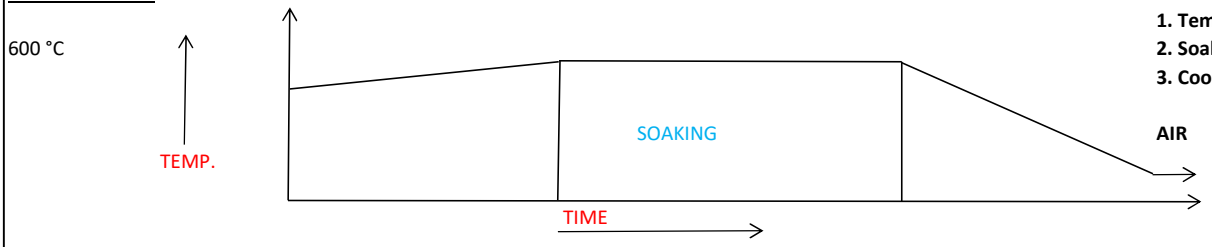
H.T CYCLE DIAGRAM:-

1. HARDENING:-



1. Hardening Temp. :- 870 Deg. C
2. Soaking Time :- 120 Mints.
3. Quenching Media :- Oil

2. TEMPERING :-



1. Tempering Temp. :- 600 Deg. C
2. Soaking Time :- 180 Mints.
3. Cooling :- Air

1. Hardness Observed :-	**321 - 342 BHN**
2. Micro Structure :-	Uniform Sorbit
3. Disposition :-	Satisfactory

PREPARED BY

APPROVED BY

ARORA IRON & STEEL ROLLING MILLS (P) LTD.

DHANDARI KHURD, NEAR PHASE-VII, FOCAL POINT, LUDHIANA- 141 010.
Website : www.arorairon.com

IATF 16949:2016 | ISO 14001 : 2015 | ISO 45001 : 2018
ISO 9001:2015

TEST CERTIFICATE

TEST CERTIFICATE ACCORDING TO EN10204 TYPE 3.1

Customer Address:				
M/S - SPUN MICRO PROCESSING PVT. LTD.	Material	Billet Route	Test Certificate No.	2023-24/018523
BEHRAMPUR ROAD,	Process Route	EAF-LRF-VD-CCM-AMLC-EMS-RM	Date	11-10-2023
VILLAGE BEGAMPUR KHATOLA,	Specification	AS PER SPECIFICATION SHEET	Invoice No.	9811
GURGAON			Weight (MT.)	13.320
HARYANA	Heat No.	A26372	Input/Billet Size	250X250 MM
	Grade	42CrMo4	Reduction Ratio	9.83:1(Spec 5:1 Mini.)
	Supply Size	90 MMØ	No's of Pcs	60
	Supply Condition	AS HOT ROLLED	No's of Bundle	8
	Colour Code	BLACK+ORANGE LINE	Multiple	NA

TEST RESULT

CHEMICAL ANALYSIS (ASTM E 415 / IS 8811)

Element		C%	Mn%	Si%	S%	P%	Cr%	Ni%	Mo%	V%	Al%	Cu%	-	-	B%	Ca%	-	-	-
Spec.	Min	0.380	0.600	-	-	-	0.900	-	0.150	-	-	-	-	-	-	-	-	-	-
	Max	0.450	0.900	0.400	0.035	0.035	1.200	-	0.300	-	-	-	-	-	-	-	-	-	-
Achieved		0.440	0.750	0.255	0.013	0.013	1.060	0.145	0.260	0.005	0.025	0.110			0.0003	0.0007	-	-	-

JOMINY HARDENABILITY TEST (IS:3848, ASTM A255, SAE J406)

Distance (mm)		1.5	3	5	7	9	11	13	15	20	25	30	35	40	45	50			
Spec. (HRC)	Min	53	53	52	51	49	43	40	37	34	32	31	30	30	29	29			
	Max	61	61	61	60	60	59	59	58	56	53	51	48	47	46	45			
Achieved (HRC)		58.0	57.0	56.5	56.0	55.5	55.0	53.0	51.5	51.0	50.0	48.0	47.0	45.0	44.0	42.0			

Mechanical Properties

Parameters		IS:1608 / ASTM A370 Test Condition:- Q & T				IS:1757	ASTM A255		IS:1500
		Tensile Strength (N/mm2)	Yield Strength (N/mm2)	Elongation (%)	Reduction Area (%)	Impact Strength Charpy U-notch (Joules)	D.I. Value (Inch)	D.I. Value (mm)	Surface Hardness As Rolled (BHN)
Spec.	Min	880	635	11	-	25 KCU @23°±5°	-	-	-
	Max	1030	-	-	-	-	-	-	-
Achieved		946	783	13.1	-	34 J	-	-	269/285

Metallographic Properties

Parameters		Inclusion Rating (ISO : 4967 / EN: 10247 / JK Chart) WORST FIELD RATING									Grain Size IS 4748 / ASTM E112 (No.)	Depth of Decarburization IS 6396/ASTM E1077		Micro Structure		
	Type	A		B		C		D		DS						
	Series	Thin	Thick	Thin	Thick	Thin	Thick	Thin	Thick			Complete	Partial	Uniform	Banding	Structure
Spec.	Min	-	-	-	-	-	-	-	-	-	≥ 5	-		-	-	-
	Max	-	-	-	-	-	-	-	-	-						
Achieved		1.5	0.0	0.5	0.0	0.0	0.0	1.0	0.0	-	6.0 to 6.5	-	-	-	-	Pearlite+Ferrite+Bainite

Physical Properties, Non Destructive Test & Other Test

Parameters	Internal Soundness ASTM E381	Step Down Test IS 4075	Surface Inspection IS 13352	Magnetic Particle Inspection ASTM E1444	Ultrasonic Test ASTM A388	Upsetting Test IS 10167
Spec.	-	-	-	-	-	-
Achieved	Better than C2,R1,S1	Satisfactory	Satisfactory	100% Done Ok	100% Done Ok	-

Parameters	Dimensional Tolerance	Spark Test	X-RF	Gas Analysis Report Test method-Leco		
				O_2 (ppm)	N_2 (ppm)	H_2 (ppm)
Spec.	-	-	-			
Achieved	As per IS 3739 Grade 1	100% Done Ok	100% Done Ok	10.00	76.0	0.53

Remarks :

This material comply with RoHS (Pb, Cd, Hg, Cr6+) and REACH permissible limits. 3TG (Tantalum, Tin, Tungsten and Gold) not added intentionally in the product.
Material is free from radioactive contamination

Prepared By:	Approved By:	Pre-Dispatch Inspection:
PRIYARANJAN RAI		

In case of any **Test certificate** Issue, please inform Dinesh Singla at **quality04@arorairon.com**, Mobile No.**+919914538700**

MASSUCCO INDUSTRIE SpA
STAMPAGGIO A CALDO ACCIAI
LAMINAZIONE CIRCOLARE
10081 CASTELLAMONTE(TO) - LOC. PIOVA 98 - TORINO - ITALY
QUALITY ASSURANCE DEPT.
tel. +39 0124 518555 - fax +39 0124 514720 - mail: quality@massucco.it

DECLARATION:
Dichiarazione di conformità secondo EN10204-2004 - attestato 3.1.
Il lotto dettagliato è stato fabbricato/ispezionato/testato e, se non diversamente dichiarato conforme a tutti i disegni,specifiche e requisiti d'ordine applicabili.
Declaration of Conformity according to EN10204-2004 - certificate type 3.1
Supplies detailed have been manufactured/inspected/tested and, unless otherwise stated, conform in all respects to the relevant specifications, drawings and purchase order requirements.

Cliente - Customer **Stabilimento - Plant**	**DANA MOTION SYSTEMS ITALIA SRL** **HUB VERONA C/TO INTRA LOGISTIC**
Ordine di acquisto **Purchase Order-Bestellungnumber**	Nr. 4500640225 del 20.03.2024
n° di disegno **part Number**	9029443- GEAR EM1010/6F/../.. 9029443 rev D del 11/07/2019 --- 9029443
Numero colata materiale **Material Heat nr.**	69209T080
N° Rintracciabilità - Commessa **Traceability ID Massucco**	005400017855
Quantita' lotto **Batch Quantity**	1.800,000
Documento di consegna **Delivery document**	800054294

	FATTO DONE	REGISTRATO RECORDED	INVIATO SUBMITTED	NOTE NOTES
Material certificate	**YES**	**YES**	**YES**	
Forging Temperature check	**YES**	**YES**	**NOT**	
Dimension Control	**YES**	**YES**	**NOT**	
Heat treatment & check	**YES**	**YES**	**YES**	

Other notes:

Date

15.04.2024

Signature Quality Assurance

Firma digitale personale autorizzata da password
Personal digital signature authorized by password

MASSUCCO INDUSTRIE ASSICURAZIONE QUALITA'

COGNOR S.A. ODDZIAŁ HSJ W STALOWEJ WOLI
Adres: str. E. Kwiatkowskiego 1
37-450 Stalowa Wola POLAND
NIP 118-12-34-296

ORIGINAL

ROLLED PRODUCTS

INSPECTION CERTIFICATE No 90800/23/D

PN-EN 10204:2006/3.1

maurizio.perono@massucco.it

Customer: MASSUCCO INDUSTRIE S.P.A
10081 CASTELLAMONTE ul. LOCALITR PIOVA 98

Delivery address: Localita Goritti n. 15 10082 - CUORGNE IT - WŁOCHY

Customer order No:	Order No:	Receipt Report No:
4800002969 **4800002969**	**263.1110.280.23**	

Description:	Dimension:	Steel type:	Heat No:	Pieces:	Weight
Hot rolled steel bars **Delivery condition: as rolled** EN ISO 683-3:2018 / B21 [29.09.2012] / SP 046-03 Ver. 05 / [07.03.2014] / EN 10060:2003 /	∅ 80 (+1.00;-1.00) Length: exact: 6 m Toler.: -0/+200mm Reduction ratio 17.2	**20MnCr5 MOD +U**	**69209** EAF + LF + VD + CC 270x320 Radio -isotopic activity is no than max 0,1 Bq/g	140	34 250

1. Chemical Analysis:

Heat No	C	Mn	Si	P	S	Cr	Ni	Cu	Mo	V	Al
69209	0.2100	1.2800	0.2400	0.0160	0.0280	1.2300	0.1600	0.2300	0.0600	0.0050	0.0260
	Ti	N2	Nb	Sn	Ca	H2 ppm	O2 ppm				
	0.0030	0.0074	0.0040	0.0110	0.0018	0.9800	8.0000				

2. Mechanical properties on testing sample:

Test No	Heat treatment test	[MPa]		Rm [MPa]	[%]	Z [%]	Impact	Heat treatment tests	Hardness
6/3	**quenched+tempe**	**ReH**	**1252**	**1421**	**A5 15.0**	**54.5**	**KV+25°C[J]37/38/31**	**Q-860°C oil** **T-200°C air**	delivery cond. HB=187-187

Samples 6/3 made from the dimension dia 11 mm.

3. Other tests

Macroetch test:

Microinlusions: DIN 50602 K4(S+O) = 5,3 K4(S) = 5,3 K4(O) = 0

Grain size:
ISO 643 6-7 method MQE

Hardenability SP 046-03

mm	5	7	9	11	25
HRC	47.0	45.5	42.5	41.5	34.5

N - 920 ℃ air
Q - 900 ℃ water

DI = 3,576 inch.
100% ultrasonic test was carried out acc. to: EN10308Tab.1type 1aTab2, 3 class -satisfactory results.The surface material checked using the thermovision flaw detector.
Material does not show residual magnetism.Material is 'Fully Killed'.Spectrotest - 100%.
Surface defects acc. to: PN-EN 10221 class B.

Surface and dimensions tested at 100%. MIXMATCH TEST 100%	Material was carried out acc. to Technical Specifications and order confirmation	Material marked: Heat No, grade, Quality Control KJ

Material was released on the base of inspection and tests carried out. The product in accordance with European Directive No 2000/53/WE.

Quality Control	The quality manager	Expert stamp	
Krystyna Dul	COGNOR SPÓŁKA AKCYJNA ODDZIAŁ HSJ W STALOWEJ WOLI DYREKTOR ds. jakości Przemysław Winiarski	Assicurazione Qualità Quality Department D. ANSINELLO MASSUCCO 644 25/05/2023	Stalowa Wola 2023.05.25

T.T.N. PIEMONTE S.r.l.
Via Europa, 1
10081 CASTELLAMONTE (TO)
Tel: 0039-0124.423105 Fax: 0039-0124.510178
E-mail: info@ttnpiemonte.it

Informazione ed assistenza tecnica e commerciale:
Tel: 0039-0331463711
CAP. SOC. € 50.000
Registro Imprese Milano Nro. 05425320966
R.E.A. Milano Nro. 1820662
Cod. Fisc. e P. IVA 05425320966
Sede legale: NERVIANO (MI)

T.T.N. PIEMONTE
GRUPPO T.T.N.
www.ttnspa.it

BONIFICHE - NORMALIZZAZIONI
RICOTTURE - DISTENSIONI

NITRURAZIONI
CEMENTAZIONI

TEMPRA AD INDUZIONE

RIVESTIMENTI PVD, CVD

LABORATORIO
METALLOGRAFICO

CERTIFICAZIONE IGQ N° 2L02

Certificato conforme alla normativa
UNI EN 10204 - 3.1

* 1 5 6 6 2 0 *

Questo codice consente di risalire
ai diagrammi tempo temperatura
dei seguenti particolari.

CERTIFICATO DI QUALITÀ E CONFORMITÀ

Certificato N°: 463

Cliente: 008007 - MASSUCCO INDUSTRIE S.P.A.
LOC. PIOVA 98
10081 CASTELLAMONTE TO

Descrizione particolari Vs.D.d.t. n. 51592 - 02/01/2024

N° 2114 Kg 7927 CORONA DENTATA TB383B SEC SP022-09 DOG 73261990 PART 57786 COMM 005400017855 - Disegno: 9029443-S - Colata: 69209 TJ 41.5/34.5 - Ns. Comm.:156620

Tipo di materiale: 20MC5

Trattamento richiesto: **Bonifica**

Tempra

N. Car.	Forno	1° Preriscaldo	2° Preriscaldo	Temp. Austenitiz.	Raffreddamento
29	SOTTRI N.5	680	0	900	Acqua

Rinvenimento

N. Car.	Forno		Rinvenimento °C	Raffreddamento
30	SOTTRI N.5	0	565	aria calma

	VALORI RICHIESTI	VALORI OTTENUTI
Durezza richiesta:	780/950 mpa	min: 813 max: 880 mpa
Durezza Piena Tempra		0 mpa
Durezza a cuore	/	/
Sabbiatura	☑	☑
Raddrizzatura	☐	☐
Micrografie	☐	☐

Castellamonte, 24/01/2024
T.T.N. PIEMONTE s.r.l.
Controllo Qualità

Assicurazione Qualità
Quality Department
F. BONATTO
MASSUCCO

2024-02-01

LABORATORIO METALLOGRAFICO T.T.N. PIEMONTE

T.T.N. PIEMONTE S.r.l.
Via Europa, 1
10081 CASTELLAMONTE (TO)
Tel: 0039-0124.423105 Fax: 0039-0124.510178
E-mail: info@ttnpiemonte.it

Informazione ed assistenza tecnica e commerciale:
Tel: 0039-0331463711
CAP. SOC. € 50.000
Registro Imprese Milano Nro. 05425320966
R.E.A. Milano Nro. 1820662
Cod. Fisc. e P. IVA 05425320966
Sede legale: NERVIANO (MI)

T.T.N. PIEMONTE
GRUPPO T.T.N.
www.ttnspa.it

CERTIFICAZIONE IGQ N° 2L02

BONIFICHE - NORMALIZZAZIONI
RICOTTURE - DISTENSIONI

NITRURAZIONI
CEMENTAZIONI

TEMPRA AD INDUZIONE

RIVESTIMENTI PVD, CVD

LABORATORIO
METALLOGRAFICO

Certificato conforme alla normativa
UNI EN 10204 - 3.1

* 1 5 6 6 2 0 *

Conservate con cura questo codice !! Vi consentirà in ogni momento di conoscere il ciclo tecnico subito dai Vostri pezzi.

CERTIFICATO DI QUALITÀ E CONFORMITÀ

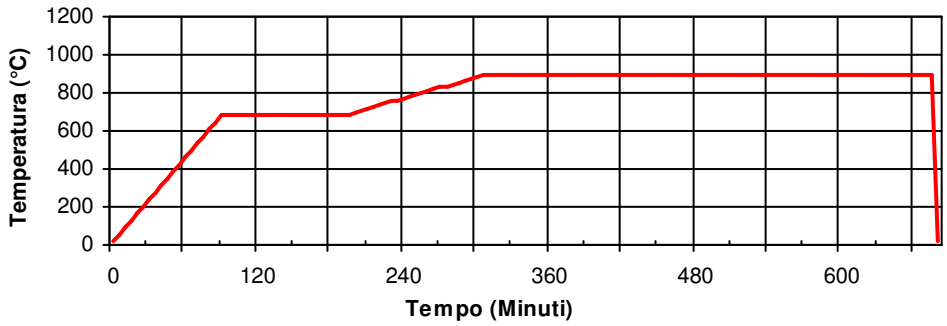
Certificato N°: 463

Cliente: 008007 - MASSUCCO INDUSTRIE S.P.A.
LOC. PIOVA 98
10081 CASTELLAMONTE TO

Descrizione particolari Vs.D.d.t. n. 51592 - 02/01/2024

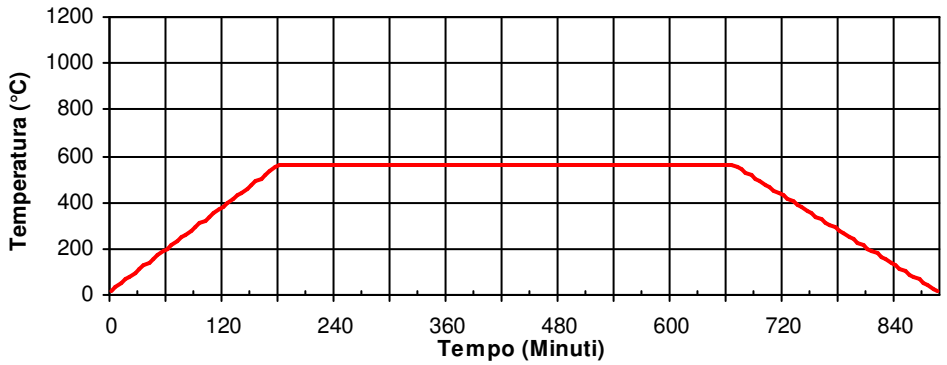
N° 2114 Kg 7927 CORONA DENTATA TB383B SEC SP022-09 DOG 73261990 PART 57786 COMM 005400017855 - Disegno: 9029443-S - Colata: 69209 TJ 41.5/34.5 - Ns. Comm.:156620

Tipo di materiale: 20MC5 Durezza richiesta: 780/950 mpa



Tempra

Andamento	Ore	°C
Salita	01:30	680
Permanenza	01:30	680
Salita	02:00	900
Permanenza	06:00	900



1° Rinvenimento

Andamento	Ore	°C
Salita	03:00	565
Permanenza	08:00	565

Assicurazione Qualità
Quality Department
F. BONATTO

2024-02-01

T.T.N. PIEMONTE s.r.l.
Controllo Qualità

LABORATORIO METALLOGRAFICO T.T.N. PIEMONTE

T.T.N. PIEMONTE S.r.l.
Via Europa, 1
10081 CASTELLAMONTE (TO)
Tel: 0039-0124.423105 Fax: 0039-0124.510178
E-mail: info@ttnpiemonte.it

Technical and commercial information and assistance:
Tel: 0039-0331463711
SPEC. CAPITAL € 50.000
Milan Company Register No. 05425320966
Milan R.E.A. No. 1820662
Tax Code and VAT No. 05425320966
Registered Office: NERVIANO (MI)

T.T.N. PIEMONTE
GRUPPO T.T.N.
www.ttnspa.it

HARDENING AND TEMPERING - NORMALISATION
ANNEALING - DESTRESSING
NITRIDING
CASE HARDENING
INDUCTION HARDENED
PVD, CVD COATING
METALLOGRAPHIC LABORATORY

IGQ CERTIFICATION No. 2L02

QUALITY AND CONFORMITY CERTIFICATE

Certified compliant with the standards
UNI EN 10204 - 3.1

* 1 5 6 6 2 0 *

This code can be used to trace the temperature time diagrams of the following parts.

Certificate No.: **463**

Client: **008007 - MASSUCCO INDUSTRIE S.P.A.**
LOC. PIOVA 98
10081 CASTELLAMONTE TO

Part description Your delivery note no. 51592 - 02/01/2024

2114 kg 7927 RING GEAR TB383B TO SP022-09 CUST. 73261990 BATCH 57786 JOB 005400017855 - Drawing: 9029443-S -

Casting: 69209 TJ 41.5/34.5 Our Job: :156620

Material type: 20MC5

Required treatment: **Hardening and Tempering**

Hardening

Load No.	Furnace	1st Preheating	2nd Preheating	Austenitiz. Temp.	Cooling
29	SOTTRI N.5	680	0	900	Water

Tempering

Load No.	Furnace		Tempering °C	Cooling
30	SOTTRI N.5	0	565	still air

	VALUES REQUIRED	VALUES OBTAINED
Required hardness:	780/950 mpa	min: 813 max: 880 mpa
Hardened Solid Hardness		0 mpa
Core Hardness	/	/
Sandblasting	☑	☑
Straightening	☐	☐
Micrography	☐	☐

Castellamonte, 24/01/2024
T.T.N. PIEMONTE s.r.l.
Quality Control

Assicurazione Qualità
Quality Department
F. BONATTO
MASSUCCO Federica Bonatto

2024-02-01

METALLOGRAPHIC LABORATORY T.T.N. PIEMONTE

T.T.N. PIEMONTE S.r.l.
Via Europa, 1
10081 CASTELLAMONTE (TO)
Tel: 0039-0124.423105 Fax: 0039-0124.510178
E-mail: info@ttnpiemonte.it

Technical and commercial information and assistance:
Tel: 0039-0331463711
SPEC. CAPITAL € 50.000
Milan Company Register No. 05425320966
Milan R.E.A. No. 1820662
Tax Code and VAT No. 05425320966
Registered Office: NERVIANO (MI)

T.T.N. PIEMONTE
GRUPPO T.T.N.
www.ttnspa.it
IGQ CERTIFICATION No. 2L02

HARDENING AND TEMPERING - NORMALISATION
ANNEALING - DESTRESSING
NITRIDING
CASE HARDENING
INDUCTION HARDENED
PVD, CVD COATING
METALLOGRAPHIC LABORATORY

Certified compliant with the standards
UNI EN 10204 - 3.1

* 1 5 6 6 2 0 *

Keep this code carefully!! It will allow you to identify the technical cycle of your parts at any time.

QUALITY AND CONFORMITY CERTIFICATE

Certificate No.: **463**

Client: **008007 - MASSUCCO INDUSTRIE S.P.A.**
LOC. PIOVA 98
10081 CASTELLAMONTE TO

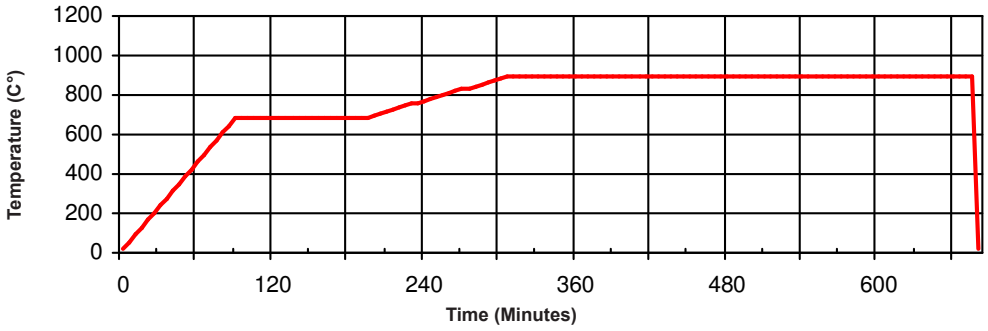
Part description Your delivery note no. 51592 - 02/01/2024

2114 kg 7927 RING GEAR TB383B TO SP022-09 CUST. 73261990 BATCH 57786 JOB 005400017855 - Drawing: 9029443-S -

Casting: 69209 TJ 41.5/34.5 - Our Job: 156620

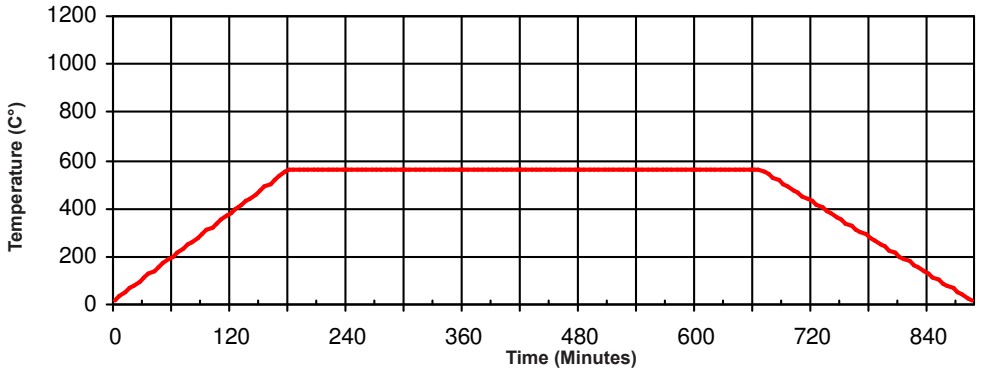
Material type: 20MC5

Required hardness: 780/950 mpa



Hardening

Trend	Hours	°C
Ramp up	01:30	680
Hold	01:30	680
Ramp up	02:00	900
Hold	06:00	900



1st Tempering

Trend	Hours	°C
Ramp up	03:00	565
Hold	08:00	565

Assicurazione Qualità
Quality Department
F. BONATTO
MASSUCCO INDUSTRIE

01/02/2024

T.T.N. PIEMONTE s.r.l.
Quality Control

DANA	Check sheet F0501 - R04.02 - 12.11.2012	Inspection lot 030001085372	Quantity 960	Order Type/Number/Position ZWO0 11381214 0080	Work Center 0030

PART NUMBER	REVISION	OPERATION	OPERATION DESCRIPTION
32000538300	E	0080	bioteco furnace for nitriding

ID	CHARACTERISTIC	METHOD	SAMPLING	UM	TARGET	MIN_MAX	#1	#2	#3	#4	#5	#6	#7	#8
20	MT3009 VICKERS HARDNESS HV5	DUR001 DUROMETER	ZF0004 4 Pieces	HV		740,000 620,000	766	766	766	766				
30	MT3010 VICKERS HARDNESS HV10	DUR001 DUROMETER	ZF0004 4 Pieces	HV		690,00 590,00	724	724	724	724				
40	MT3011 VICKERS HARDNESS HV30	DUR001 DUROMETER	ZF0004 4 Pieces	HV		600,00 570,00	618	618	618	618				
50	MT0100 MATERIAL TYPE	VIS002 VISUAL INSPECTION	ZF0001 1 Piece				B21-20MnCr5							
60	MT4101 TEST SPECIMEN TYPE USED (SP022-02)	PRO001 TEST SPECIMEN ACCORDING TO SP022-2	ZF0001 1 Piece											
70	MT5100 PROGRAM CODE USED	VIS002 VISUAL INSPECTION	ZF0001 1 Piece											
80	MT5101 LOAD NUMBER	VIS002 VISUAL INSPECTION	ZF0001 1 Piece											
90	DOD001 OUTSIDE DIAMETER Ø151,5 A	CAL001 CALIB.ACM.O R	ZF0008 8 Pieces	mm		151,500 151,460	151,46	151,46	151,46	151,46	151,47	151,47	151,46	151,46
100	DOD001 OUTSIDE DIAMETER Ø151,5 B	CAL001 CALIB.ACM.O R	ZF0008 8 Pieces	mm		151,500 151,460	151,47	151,46	151,46	151,47	151,46	151,47	151,46	151,47
110	VC3010 VISUAL TEST: AFTER HEAT TREATMENT	VIS001 VISUAL INSPECTION ACCORDING TO WI0519	ZF0004 4 Pieces											
120	TX0038 NON-CONFORMITY OR RERA TEST	VIS002 VISUAL INSPECTION	ZF0004 4 Pieces											

Date	Time	Signature	Remarks
28.05.2024	11:17:50	DVALCAV001	

MASSUCCO INDUSTRIE SpA
STAMPAGGIO A CALDO ACCIAI
LAMINAZIONE CIRCOLARE
10081 CASTELLAMONTE(TO) - LOC. PIOVA 98 - TORINO - ITALY
QUALITY ASSURANCE DEPT.
tel. +39 0124 518555 - fax +39 0124 514720 - mail: quality@massucco.it

DECLARATION:
Dichiarazione di conformità secondo EN10204-2004 - attestato 3.1.
Il lotto dettagliato è stato fabbricato/ispezionato/testato e, se non diversamente dichiarato conforme a tutti i disegni,specifiche e requisiti d'ordine applicabili.
Declaration of Conformity according to EN10204-2004 - certificate type 3.1
Supplies detailed have been manufactured/inspected/tested and, unless otherwise stated, conform in all respects to the relevant specifications, drawings and purchase order requirements.

Cliente - Customer **Stabilimento - Plant**	**DANA MOTION SYSTEMS ITALIA SRL** **HUB VERONA C/TO INTRA LOGISTIC**
Ordine di acquisto **Purchase Order-Bestellungnumber**	Nr. 4500640225 del 20.03.2024
n° di disegno **part Number**	32001000088 32001000088 rev. E --- 32001000088
Numero colata materiale **Material Heat nr.**	69208T100
N° Rintracciabilità - Commessa **Traceability ID Massucco**	005400017854
Quantita' lotto **Batch Quantity**	2.112,000
Documento di consegna **Delivery document**	800054295

	FATTO DONE	REGISTRATO RECORDED	INVIATO SUBMITTED	NOTE NOTES
Material certificate	**YES**	**YES**	**YES**	
Forging Temperature check	**YES**	**YES**	**NOT**	
Dimension Control	**YES**	**YES**	**NOT**	
Heat treatment & check	**YES**	**YES**	**YES**	

Other notes:

Date

15.04.2024

Signature Quality Assurance

Firma digitale personale autorizzata da password
Personal digital signature authorized by password

MASSUCCO INDUSTRIE ASSICURAZIONE QUALITA'

COGNOR S.A. ODDZIAŁ HSJ W STALOWEJ WOLI
Adres: str. E. Kwiatkowskiego 1
37-450 Stalowa Wola POLAND
NIP 118-12-34-296

ORIGINAL

ROLLED PRODUCTS

INSPECTION CERTIFICATE No 90781/23/D

PN-EN 10204:2006/3.1

maurizio.perono@massucco.it

Customer: MASSUCCO INDUSTRIE S.P.A
10081 CASTELLAMONTE ul. LOCALITR PIOVA 98

Delivery address: Localita Goritti n. 15 10082 - CUORGNE IT - WŁOCHY

Customer order No:	Order No:	Receipt Report No:
4200007497 **4200007497**	**263.1110.030.23**	

Description:	Dimension:	Steel type:	Heat No:	Pieces:	Weight
Hot rolled steel bars **Delivery condition: as rolled** EN ISO 683-3:2018 / B21 [29.09.2012] / SP 046-03 Ver. 05 / [07.03.2014] / EN 10060:2003 /	∅ 100 (+1.30;-1.30) Length: exact: 6 m Toler.: -0/+200mm Reduction ratio 11.0	**20MNCR5 MOD +U**	**69208** EAF + LF + VD + CC 270x320 Radio -isotopic activity is no than max 0,1 Bq/g	36	13 505

1. Chemical Analysis:

Heat No	C	Mn	Si	P	S	Cr	Ni	Cu	Mo	V	Al
69208	0.2100	1.2700	0.2300	0.0160	0.0290	1.2700	0.1500	0.2800	0.0600	0.0060	0.0260
	Ti	N2	Nb	Sn	Ca	H2 ppm	O2 oom				
	0.0030	0.0077	0.0040	0.0120	0.0015	0.9400	10.0000				

2. Mechanical properties on testing sample:

Test No	Heat treatment test	[MPa]		Rm [MPa]	[%]	Z [%]	Impact	Heat treatment tests	Hardness
4/3	quenched+tempe	ReH	1322	1511	A5 11.8	51.0	KV+25°C[J]35/28/31	Q-870°C oil T-190°C air	delivery cond. HB=241-241

Samples 4/3 made from the dimension dia 11 mm.

3. Other tests

Macroetch test:

Microinlusions: DIN 50602 K4(S+O) = 5,3 K4(S) = 5,3 K4(O) = 0

Grain size:
ISO 643 6-7 method MQE

Hardenability SP 046-03

mm	5	7	9	11	25
HRC	46.0	44.0	42.0	39.5	32.5

N - 920 ℃ air
Q - 900 ℃ water

DI = 3,658 inch.
100% ultrasonic test was carried out acc. to: EN10308Tab.1type 1aTab2, 3 class -satisfactory results.The surface material checked using the thermovision flaw detector.
Material does not show residual magnetism.Material is 'Fully Killed'.Spectrotest - 100%.
Surface defects acc. to: PN-EN 10221 class B.

Surface and dimensions tested at 100%. MIXMATCH TEST 100%	Material was carried out acc. to Technical Specifications and order confirmation	Material marked: Heat No, grade, Quality Control KJ

Material was released on the base of inspection and tests carried out. The product in accordance with European Directive No 2000/53/WE.

Quality Control	The quality manager	Expert stamp	
Krystyna Dul	COGNOR SPÓŁKA AKCYJNA ODDZIAŁ HSJ W STALOWEJ WOLI DYREKTOR ds. jakości Przemysław Winiarski	Assicurazione Qualità Quality Department D. ANSINELLO 644 15/05/2023	Stalowa Wola 2023.05.15

T.T.N. PIEMONTE S.r.l.
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10081 CASTELLAMONTE (TO)
Tel: 0039-0124.423105 Fax: 0039-0124.510178
E-mail: info@ttnpiemonte.it

Informazione ed assistenza tecnica e commerciale:
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Registro Imprese Milano Nro. 05425320966
R.E.A. Milano Nro. 1820662
Cod. Fisc. e P. IVA 05425320966
Sede legale: NERVIANO (MI)

T.T.N. PIEMONTE
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BONIFICHE - NORMALIZZAZIONI
RICOTTURE - DISTENSIONI

NITRURAZIONI
CEMENTAZIONI

TEMPRA AD INDUZIONE

RIVESTIMENTI PVD, CVD

LABORATORIO
METALLOGRAFICO

CERTIFICAZIONE IGQ N° 2L02

Certificato conforme alla normativa
UNI EN 10204 - 3.1

CERTIFICATO DI QUALITÀ E CONFORMITÀ

* 1 5 6 4 6 5 *

Questo codice consente di risalire
ai diagrammi tempo temperatura
dei seguenti particolari.

Certificato N°: 310

Cliente: **008007 - MASSUCCO INDUSTRIE S.P.A.**
LOC. PIOVA 98
10081 CASTELLAMONTE TO

Descrizione particolari Vs.D.d.t. n. 51371 - 18/12/2023

N° 1043 Kg 8291 BLANCK RING GEAR EM1020 SP-022-09 DOG 73261990 PART 57667 COMM 005400017854 - Disegno: 32001022699-S - Colata: 69208 TJ 39.5/32 - Ns. Comm.:156465

Tipo di materiale: 20MN5

Trattamento richiesto: **Bonifica**

Tempra

N. Car.	Forno	1° Preriscaldo	2° Preriscaldo	Temp. Austenitiz.	Raffreddamento
15	SOTTRI N.5	680	0	900	Acqua

Rinvenimento

N. Car.	Forno		Rinvenimento °C	Raffreddamento
16	SOTTRI N.5	0	565	aria calma

	VALORI RICHIESTI	VALORI OTTENUTI
Durezza richiesta:	780/950 mpa	min: 833 max: 906 mpa
Durezza Piena Tempra		0 mpa
Durezza a cuore	/	/
Sabbiatura	☑	☑
Raddrizzatura	☐	☐
Micrografie	☐	☐

Castellamonte, 17/01/2024
T.T.N. PIEMONTE s.r.l.
Controllo Qualità

Assicurazione Qualità
Quality Department
F. BONATTO
MASSUCCO

26.01.2024

LABORATORIO METALLOGRAFICO T.T.N. PIEMONTE

T.T.N. PIEMONTE S.r.l.
Via Europa, 1
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E-mail: info@ttnpiemonte.it

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R.E.A. Milano Nro. 1820662
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CERTIFICAZIONE IGQ N° 2L02

BONIFICHE - NORMALIZZAZIONI
RICOTTURE - DISTENSIONI

NITRURAZIONI
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TEMPRA AD INDUZIONE

RIVESTIMENTI PVD, CVD

LABORATORIO
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CERTIFICATO DI QUALITÀ E CONFORMITÀ

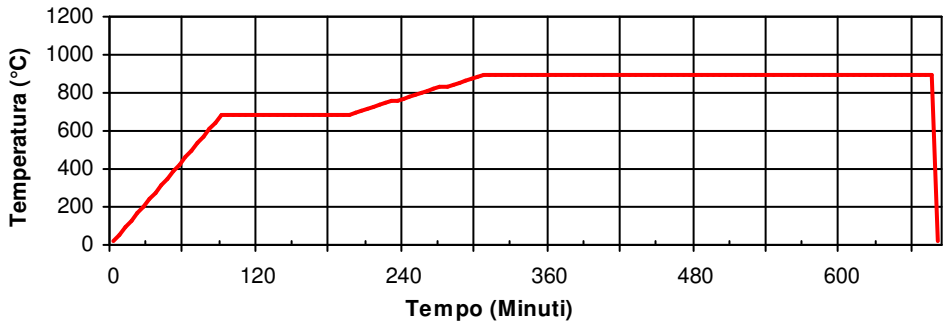
Certificato N°: 310

Cliente: 008007 - MASSUCCO INDUSTRIE S.P.A.
LOC. PIOVA 98
10081 CASTELLAMONTE TO

Descrizione particolari Vs.D.d.t. n. 51371 - 18/12/2023

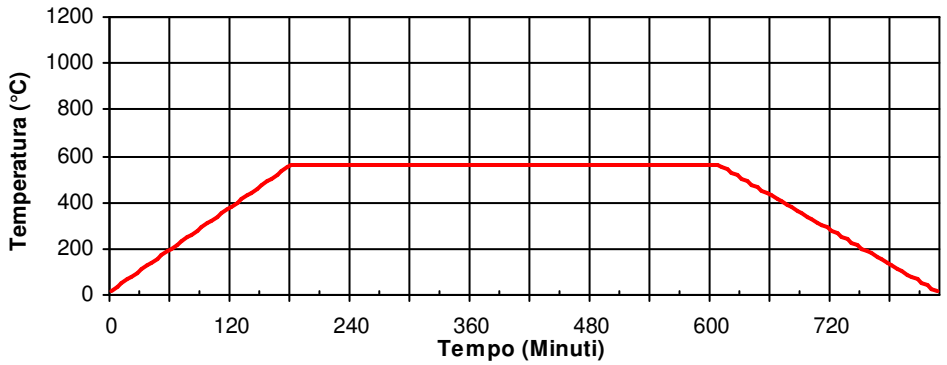
N° 1043 Kg 8291 BLANCK RING GEAR EM1020 SP-022-09 DOG 73261990 PART 57667 COMM 005400017854 - Disegno: 32001022699-S - Colata: 69208 TJ 39.5/32 - Ns. Comm.:156465

Tipo di materiale: 20MN5 Durezza richiesta: 780/950 mpa



Tempra

Andamento	Ore	°C
Salita	01:30	680
Permanenza	01:30	680
Salita	02:00	900
Permanenza	06:00	900



1° Rinvenimento

Andamento	Ore	°C
Salita	03:00	565
Permanenza	07:00	565

Assicurazione Qualità
Quality Department
F. BONATTO
MASSUCCO INDUSTRIE

26.01.2024

T.T.N. PIEMONTE s.r.l.
Controllo Qualità

LABORATORIO METALLOGRAFICO T.T.N. PIEMONTE

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BONIFICHE - NORMALIZZAZIONI
RICOTTURE - DISTENSIONI

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CEMENTAZIONI

TEMPRA AD INDUZIONE

RIVESTIMENTI PVD, CVD

LABORATORIO
METALLOGRAFICO

CERTIFICAZIONE IGQ N° 2L02

Certificato conforme alla normativa
UNI EN 10204 - 3.1

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Questo codice consente di risalire
ai diagrammi tempo temperatura
dei seguenti particolari.

CERTIFICATO DI QUALITÀ E CONFORMITÀ

Certificato N°: 60

Cliente: **008007 - MASSUCCO INDUSTRIE S.P.A.**
LOC. PIOVA 98
10081 CASTELLAMONTE TO

Descrizione particolari Vs.D.d.t. n. 51354 - 15/12/2023

N° 1184 Kg 9412 BLANK RING GEAR EM1020 TB383BD SP022-09 DOC 73261990 PART 57667 COMM 005400017854 - Disegno: 32001022699-S - Colata: 69208 TJ 39.5/32.5 - Ns. Comm.:156347

Tipo di materiale: 20MC5 Trattamento richiesto: **Bonifica**

Tempra

N. Car.	Forno	1° Preriscaldo	2° Preriscaldo	Temp. Austenitiz.	Raffreddamento
2	SOTTRI N.5	680	0	900	Acqua

Rinvenimento

N. Car.	Forno		Rinvenimento °C	Raffreddamento
3	SOTTRI N.5	0	565	aria calma

	VALORI RICHIESTI	VALORI OTTENUTI
Durezza richiesta:	780/950 mpa	min: 813 max: 906 mpa
Durezza Piena Tempra		0 mpa
Durezza a cuore	/	/
Sabbiatura	☑	☐
Raddrizzatura	☐	☐
Micrografie	☐	☐

Assicurazione Qualità
Quality Department
F. BONATTO
MASSUCCO INDUSTRIE

11-01-2024

Castellamonte, 10/01/2024
T.T.N. PIEMONTE s.r.l.
Controllo Qualità

LABORATORIO METALLOGRAFICO T.T.N. PIEMONTE

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CAP. SOC. € 50.000
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R.E.A. Milano Nro. 1820662
Cod. Fisc. e P. IVA 05425320966
Sede legale: NERVIANO (MI)

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CERTIFICAZIONE IGQ N° 2L02

BONIFICHE - NORMALIZZAZIONI
RICOTTURE - DISTENSIONI

NITRURAZIONI
CEMENTAZIONI

TEMPRA AD INDUZIONE

RIVESTIMENTI PVD, CVD

LABORATORIO
METALLOGRAFICO

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CERTIFICATO DI QUALITÀ E CONFORMITÀ

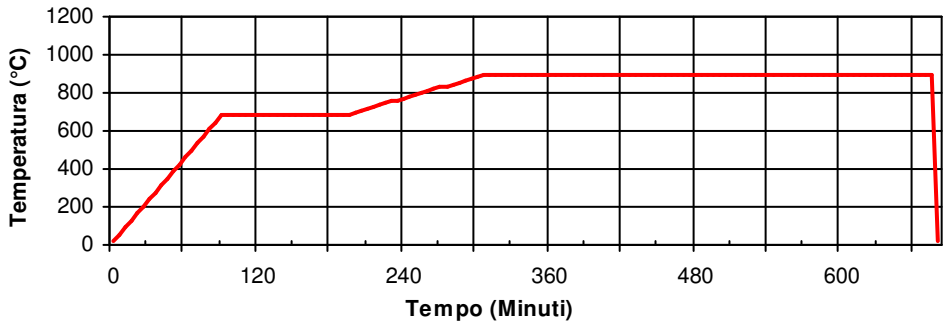
Certificato N°: 60

Cliente: **008007 - MASSUCCO INDUSTRIE S.P.A.**
LOC. PIOVA 98
10081 CASTELLAMONTE TO

Descrizione particolari Vs.D.d.t. n. 51354 - 15/12/2023

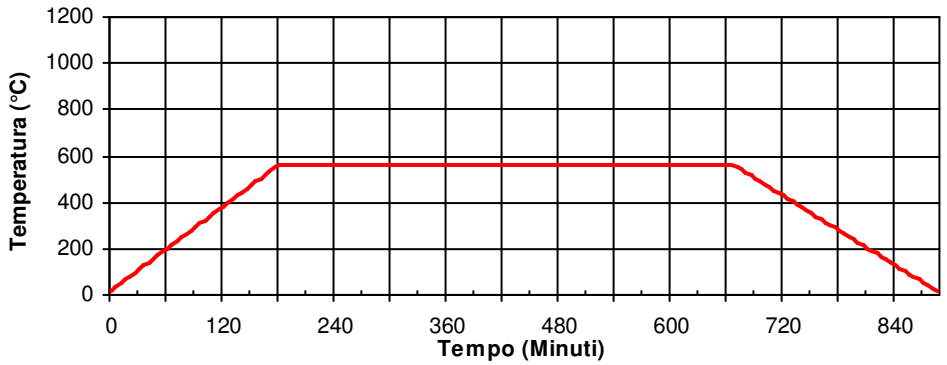
N° 1184 Kg 9412 BLANK RING GEAR EM1020 TB383BD SP022-09 DOC 73261990 PART 57667 COMM 005400017854 - Disegno: 32001022699-S - Colata: 69208 TJ 39.5/32.5 - Ns. Comm.:156347

Tipo di materiale: 20MC5 Durezza richiesta: 780/950 mpa



Tempra

Andamento	Ore	°C
Salita	01:30	680
Permanenza	01:30	680
Salita	02:00	900
Permanenza	06:00	900



1° Rinvenimento

Andamento	Ore	°C
Salita	03:00	565
Permanenza	08:00	565

Assicurazione Qualità
Quality Department
F. BONATTO
MASSUCCO

11-01-2024

T.T.N. PIEMONTE s.r.l.
Controllo Qualità

LABORATORIO METALLOGRAFICO T.T.N. PIEMONTE

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SPEC. CAPITAL € 50.000
Milan Company Register No. 05425320966
Milan R.E.A. No. 1820662
Tax Code and VAT No. 05425320966
Registered Office: NERVIANO (MI)

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HARDENING AND TEMPERING - NORMALISATION
ANNEALING - DESTRESSING
NITRIDING
CASE HARDENING
INDUCTION HARDENED
PVD, CVD COATING
METALLOGRAPHIC LABORATORY

IGQ CERTIFICATION No. 2L02

Certified compliant with the standards
UNI EN 10204 - 3.1

CE QUALITY AND CONFORMITY CERTIFICATE

* 1 5 6 4 6 5 *
This code can be used to trace the temperature time diagrams of the following parts.

Certificate No.: **310**

Client: **008007 - MASSUCCO INDUSTRIE S.P.A.**
LOC. PIOVA 98
10081 CASTELLAMONTE TO

Part description Your delivery note no. 51371 - 18/12/2023

1043 kg 8291 BLANK RING GEAR EM1020 SP-022-09 CUST. 73261990 BATCH 57667 JOB 005400017854 - Drawing: 32001022699-S -
Casting: 69208 TJ 39.5/32 - Our Job: 156465

Material type: 20MN5

Required treatment: **Hardening and Tempering**

Hardening

Load No.	Furnace	1st Preheating	2nd Preheating	Austenitiz. Temp.	Cooling
15	SOTTRI N.5	680	0	900	Water

Tempering

Load No.	Furnace		Tempering °C	Cooling
16	SOTTRI N.5	0	565	still air

	VALUES REQUIRED	VALUES OBTAINED
Required hardness:	780/950 mpa	min: 833 max: 906 mpa
Hardened Solid Hardness		0 mpa
Core Hardness	/	/
Sandblasting	☑	☑
Straightening	☐	☐
Micrography	☐	☐

Castellamonte, 17/01/2024
T.T.N. PIEMONTE s.r.l.
Quality Control

Assicurazione Qualità
Quality Department
F. BONATTO
MASSUCCO

26.01.2024

METALLOGRAPHIC LABORATORY T.T.N. PIEMONTE

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E-mail: info@ttnpiemonte.it

Technical and commercial information and assistance:
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Milan Company Register No. 05425320966
Milan R.E.A. No. 1820662
Tax Code and VAT No. 05425320966
Registered Office: NERVIANO (MI)

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IGQ CERTIFICATION No. 2L02

HARDENING AND TEMPERING - NORMALISATION
ANNEALING - DESTRESSING
NITRIDING
CASE HARDENING
INDUCTION HARDENED
PVD, CVD COATING
METALLOGRAPHIC LABORATORY

Certified compliant with the standards
UNI EN 10204 - 3.1

* 1 5 6 4 6 5 *

Keep this code carefully!! It will allow you to identify the technical cycle of your parts at any time.

QUALITY AND CONFORMITY CERTIFICATE

Certificate No.: **310**

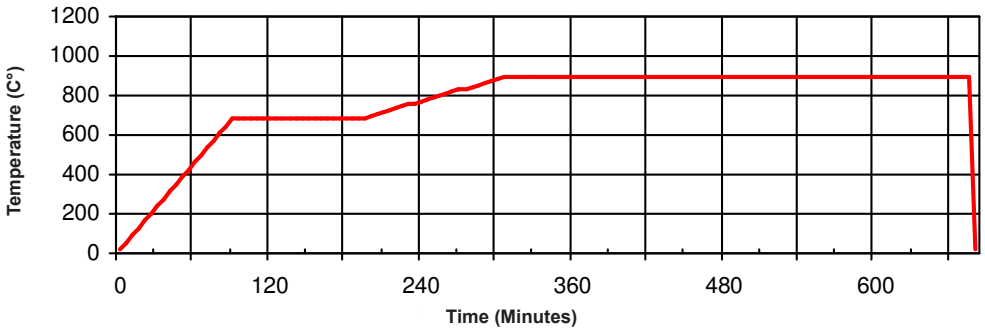
Client: **008007 - MASSUCCO INDUSTRIE S.P.A.**
LOC. PIOVA 98
10081 CASTELLAMONTE TO

Part description Your delivery note no. 51371 - 18/12/2023

1043 kg 8291 BLANK RING GEAR EM1020 SP-022-09 CUST. 73261990 BATCH 57667 JOB 005400017854 - Drawing: 32001022699-S -

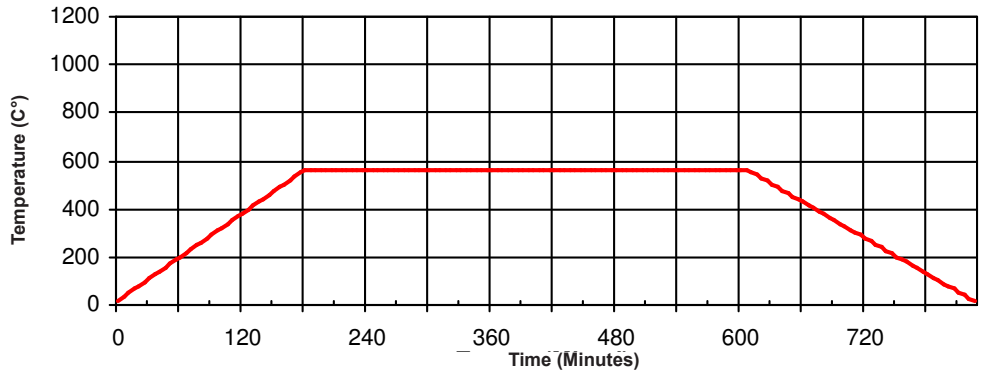
Casting: 69208 TJ 39.5/32 - Our Job: 156465

Material type: 20MN5 Required hardness: 780/950 mpa



Hardening

Trend	Hours	°C
Ramp up	01:30	680
Hold	01:30	680
Ramp up	02:00	900
Hold	06:00	900



1st Tempering

Trend	Hours	°C
Ramp up	03:00	565
Hold	07:00	565

Assicurazione Qualità
Quality Department
F. BONATTO
MASSUCCO Fabrizio Bonatto

26/01/2024

T.T.N. PIEMONTE s.r.l.
Quality Control
Controllo Qualità

METALLOGRAPHIC LABORATORY T.T.N. PIEMONTE

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METALLOGRAPHIC LABORATORY

IGQ CERTIFICATION No. 2L02

QUALITY AND CONFORMITY CERTIFICATE

Certified compliant with the standards
UNI EN 10204 - 3.1

156347

This code can be used to trace the temperature time diagrams of the following parts.

Certificate No.: **60**

Client: **008007 - MASSUCCO INDUSTRIE S.P.A.**
LOC. PIOVA 98
10081 CASTELLAMONTE TO

Part description Your delivery note no. 51354 - 15/12/2023

1184 Kg 9412 BLANK RING GEAR EM1020 TB383BD SP022-09 DOC 73261990 PART 57667 COMM 005400017854 - Drawing: 32001022699-S - Casting: 69208 TJ 39.5/32.5 - Our Job: 156347

Material type: 20MC5

Required treatment: Hardening and Tempering

Hardening

Load No.	Furnace	1st Preheating	2nd Preheating	Austenitiz. Temp.	Cooling
2	SOTTRI N.5	680	0	900	Water

Tempering

Load No.	Furnace		Tempering °C	Cooling
3	SOTTRI N.5	0	565	still air

	VALUES REQUIRED	VALUES OBTAINED
Required hardness:	780/950 mpa	min: 813 max: 906 mpa
Hardened Solid Hardness		0 mpa
Core Hardness	/	/
Sandblasting	☑	☐
Straightening	☐	☐
Micrography	☐	☐

Castellamonte, 10/01/2024
T.T.N. PIEMONTE s.r.l.
Quality Control

Assicurazione Qualità
Quality Department
F. BONATTO
MASSUCCO Federica Bonatto

11-01-2024

METALLOGRAPHIC LABORATORY T.T.N. PIEMONTE

T.T.N. PIEMONTE S.r.l.
Via Europa, 1
10081 CASTELLAMONTE (TO)
Tel: 0039-0124.423105 Fax: 0039-0124.510178
E-mail: info@ttnpiemonte.it

Technical and commercial information and assistance:
Tel: 0039-0331463711
SPEC. CAPITAL € 50.000
Milan Company Register No. 05425320966
Milan R.E.A. No. 1820662
Tax Code and VAT No. 05425320966
Registered Office: NERVIANO (MI)

T.T.N. PIEMONTE
GRUPPO T.T.N.
www.ttnspa.it
IGQ CERTIFICATION No. 2L02

HARDENING AND TEMPERING - NORMALISATION
ANNEALING - DESTRESSING
NITRIDING
CASE HARDENING
INDUCTION HARDENED
PVD, CVD COATING
METALLOGRAPHIC LABORATORY

Certified compliant with the standards
UNI EN 10204 - 3.1

* 1 5 6 3 4 7 *

Keep this code carefully!! It will allow you to identify the technical cycle of your parts at any time.

QUALITY AND CONFORMITY CERTIFICATE

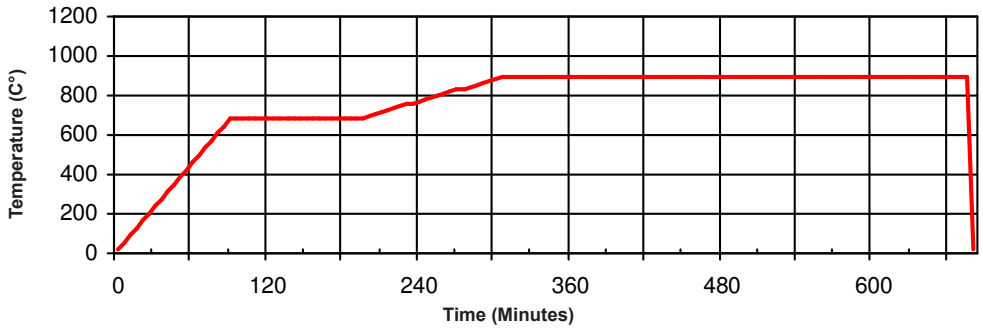
Certificate No.: **60**

Client: **008007 - MASSUCCO INDUSTRIE S.P.A.**
LOC. PIOVA 98
10081 CASTELLAMONTE TO

Part description Your delivery note no. 51354 - 15/12/2023

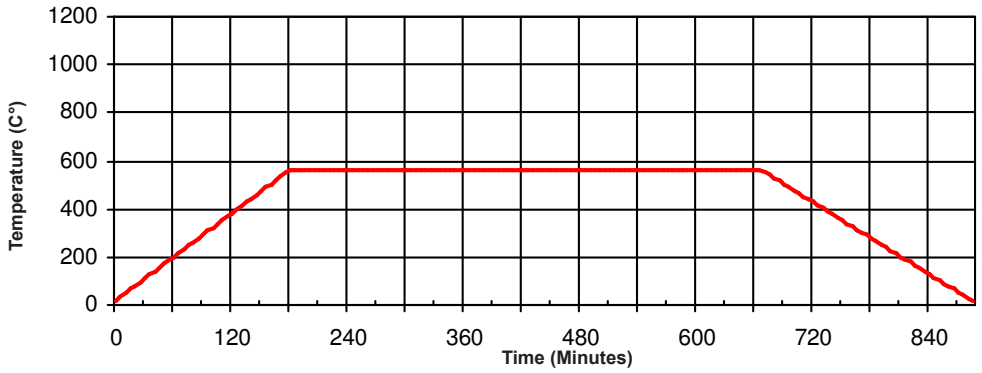
1184 Kg 9412 BLANK RING GEAR EM1020 TB383BD SP022-09 DOC 73261990 PART 57667 COMM 005400017854 - Drawing:
32001022699-S Casting: 69208 TJ 39.5/32.5 - Our Job: 156347

Material type: 20MC5 Required hardness: 780/950 mpa



Hardening

Trend	Hours	°C
Ramp up	01:30	680
Hold	01:30	680
Ramp up	02:00	900
Hold	06:00	900



1st Tempering

Trend	Hours	°C
Ramp up	03:00	565
Hold	08:00	565

Assicurazione Qualità
Quality Department
F. BONATTO
MASSUCCO INDUSTRIE

11-01-2024

T.T.N. PIEMONTE s.r.l.
Quality Control

METALLOGRAPHIC LABORATORY T.T.N. PIEMONTE

DANA	Check sheet F0501 - R04.02 - 12.11.2012	Inspection lot 030001096759	Quantity 864	Order Type/Number/Position ZWO0 11400205 0070	Work Center 0030

PART NUMBER	REVISION	OPERATION	OPERATION DESCRIPTION
32001021100	N	0070	bioteco furnace for nitriding

ID	CHARACTERISTIC	METHOD	SAMPLING	UM	TARGET	MIN_MAX	#1	#2	#3	#4	#5	#6	#7	#8
20	MT3009 VICKERS HARDNESS HV5	DUR001 DUROMETER	ZF0004 4 Pieces	HV		740,00 620,00	766							
30	MT3010 VICKERS HARDNESS HV10	DUR001 DUROMETER	ZF0004 4 Pieces	HV		690,00 590,00	724							
40	MT3011 VICKERS HARDNESS HV30	DUR001 DUROMETER	ZF0004 4 Pieces	HV		600,00 570,00	660							
50	MT0100 MATERIAL TYPE	VIS002 VISUAL INSPECTION	ZF0001 1 Piece				B21-20MnCr5							
60	MT4101 TEST SPECIMEN TYPE USED (SP022-02)	PRO001 TEST SPECIMEN ACCORDING TO SP022-2	ZF0001 1 Piece											
70	MT5100 PROGRAM CODE USED	VIS002 VISUAL INSPECTION	ZF0001 1 Piece											
80	MT5101 LOAD NUMBER	VIS002 VISUAL INSPECTION	ZF0001 1 Piece											
90	DOD001 OUTSIDE DIAMETER Ø203 h7 "A"	CAL001 CALIB.ACM.O R	ZF0008 8 Pieces	mm	203,000	203,000 202,954	202,98							
100	DOD001 OUTSIDE DIAMETER Ø203 h7 OPPOSITE "A"	CAL001 CALIB.ACM.O R	ZF0008 8 Pieces	mm	203,000	203,000 202,954	202,97							
110	VC3010 VISUAL TEST: AFTER HEAT TREATMENT	VIS001 VISUAL INSPECTION ACCORDING TO WI0519	ZF0004 4 Pieces											
120	TX0038 NON-CONFORMITY OR RERA TEST	VIS002 VISUAL INSPECTION	ZF0004 4 Pieces											

Date Time	Signature	Remarks
20.06.2024 09:50:50	RUGGIERO.S	

MASSUCCO INDUSTRIE SpA
STAMPAGGIO A CALDO ACCIAI
LAMINAZIONE CIRCOLARE
10081 CASTELLAMONTE(TO) - LOC. PIOVA 98 - TORINO - ITALY
QUALITY ASSURANCE DEPT.
tel. +39 0124 518555 - fax +39 0124 514720 - mail: quality@massucco.it

DECLARATION:
Dichiarazione di conformità secondo EN10204-2004 - attestato 3.1.
Il lotto dettagliato è stato fabbricato/ispezionato/testato e, se non diversamente dichiarato conforme a tutti i disegni,specifiche e requisiti d'ordine applicabili.
Declaration of Conformity according to EN10204-2004 - certificate type 3.1
Supplies detailed have been manufactured/inspected/tested and, unless otherwise stated, conform in all respects to the relevant specifications, drawings and purchase order requirements.

Cliente - Customer **Stabilimento - Plant**	**DANA MOTION SYSTEMS ITALIA SRL** **HUB VERONA C/TO INTRA LOGISTIC**
Ordine di acquisto **Purchase Order-Bestellungnumber**	Nr. 4500640225 del 20.03.2024
n° di disegno **part Number**	32001900088 32001900088 mod. D del 22/02/17 --- 32001900088
Numero colata materiale **Material Heat nr.**	55387T120
N° Rintracciabilità - Commessa **Traceability ID Massucco**	005400018047
Quantita' lotto **Batch Quantity**	903,000
Documento di consegna **Delivery document**	800054634

	FATTO **DONE**	**REGISTRATO** **RECORDED**	**INVIATO** **SUBMITTED**	**NOTE** **NOTES**
Material certificate	**YES**	**YES**	**YES**	
Forging Temperature check	**YES**	**YES**	**NOT**	
Dimension Control	**YES**	**YES**	**NOT**	
Heat treatment & check	**YES**	**YES**	**YES**	

Other notes:

Date

03.05.2024

Signature Quality Assurance

Firma digitale personale autorizzata da password
Personal digital signature authorized by password

MASSUCCO INDUSTRIE ASSICURAZIONE QUALITA'

COGNOR S.A. ODDZIAŁ HSJ W STALOWEJ WOLI
Adres: str. E. Kwiatkowskiego 1
37-450 Stalowa Wola POLAND
NIP 118-12-34-296

ORIGINAL

ROLLED PRODUCTS

INSPECTION CERTIFICATE No 41675/21/D

EN 10204:2004/3.1

maurizio.perono@massucco.it

Customer: MASSUCCO INDUSTRIE S.P.A
10081 CASTELLAMONTE ul. LOCALITR PIOVA 98

Delivery address: Localita Goritti n. 15 10082 - CUORGNE IT - WŁOCHY

Customer order No:		Order No:	Receipt Report No:
4200003835	**4200003835**	**262.1110.672.21**	

Description:	Dimension:	Steel type:	Heat No:	Pieces:	Weight
Hot rolled steel bars Delivery condition: as rolled EN 10084:2008 / B21 [29.09.2012] / SP 046-03 Ver. 05 / [07.03.2014] / EN 10060:2003 /	∅ 120 Length: limited: 5-6,5 m Toler.: Reduction ratio 7.6	**20MNCR5 MOD**	**55387** EAF + LF + VD + CC 270x320 Radio -isotopic activity is no than max 0,1 Bq/g	40	21 935

1. Chemical Analysis:

Heat No	C	Mn	Si	P	S	Cr	Ni	Cu	Mo	V	Al
55387	0.2100	1.2600	0.2300	0.0160	0.0250	1.2400	0.1400	0.2200	0.0400	0.0050	0.0250
	Ti	N2	Nb	Sn	Ca	B	H2 ppm	O2 ppm			
	0.0030	0.0095	0.0040	0.0110	0.0016	0.0003	2.4000	15.0000			

2. Mechanical properties and hardness

Test No	Heat treatment	[MPa]		Rm[MPa]	[%]	Z[%]	Impact	Heat treatment tests	Hardness
8/3	quenched+tempe	Rp02	1238	1498	A5 14.4	49.6	KV2+25°C[J]35/35/34	Q-870°C oil T-200°C air	

Samples forged to dia 11 from dia 120

3. Other tests

Macroetch test:

Microinlusions: ASTM E45 metoda A ASTM E-45 A method =A(2,5/1) B(0/0) C(0/0) D(1,5/0,5)
DIN 50602 K4(S+O) S(12,08)+O(0)=12,08

Grain size:
ISO 643 7 method MQE

Hardenability SP 046-03

mm	5	7	9	11	25
HRC	48.0	46.0	43.0	41.5	35.0

Steel killed DI=3,25.
100% ultrasonic test was carried out acc. to: EN10308Tab.1type 1aTab2, 3 class -satisfactory results.The surface material checked using the thermovision flaw detector.
Material does not show residual magnetism.Spectrotest - 100%.
Surface defects acc. to: PN-EN 10221 class B.

Assicurazione Qualità
Quality Department
M. PERONO

Compliant with 19MnCr5 acc. to ISO683/17

Surface and dimensions tested at 100%. MIXMATCH TEST 100%	Material was carried out acc. to Technical Specifications and order confirmation	Material marked: Heat No, grade,

Material was released on the base of inspection and tests carried out. The product in accordance with European Directive No 2000/53/WE.

Quality Control	The quality manager	Expert stamp	
Tomasz Żak	COGNOR SPÓŁKA AKCYJNA ODDZIAŁ HSJ W STALOWEJ WOLI DYREKTOR ds. Jakości Krzysztof Kułaga		Stalowa Wola 2021.04.23

T.T.N. PIEMONTE S.r.l.
Via Europa, 1
10081 CASTELLAMONTE (TO)
Tel: 0039-0124.423105 Fax: 0039-0124.510178
E-mail: info@ttnpiemonte.it

Informazione ed assistenza tecnica e commerciale:
Tel: 0039-0331463711
CAP. SOC. € 50.000
Registro Imprese Milano Nro. 05425320966
R.E.A. Milano Nro. 1820662
Cod. Fisc. e P. IVA 05425320966
Sede legale: NERVIANO (MI)

T.T.N. PIEMONTE
GRUPPO T.T.N.
www.ttnspa.it

BONIFICHE - NORMALIZZAZIONI
RICOTTURE - DISTENSIONI

NITRURAZIONI
CEMENTAZIONI

TEMPRA AD INDUZIONE

RIVESTIMENTI PVD, CVD

LABORATORIO
METALLOGRAFICO

CERTIFICAZIONE IGQ N° 2L02

Certificato conforme alla normativa
UNI EN 10204 - 3.1

* 1 5 7 5 8 8 *

Questo codice consente di risalire
ai diagrammi tempo temperatura
dei seguenti particolari.

CERTIFICATO DI QUALITÀ E CONFORMITÀ

Certificato N°: 1286

Cliente: **008007 - MASSUCCO INDUSTRIE S.P.A.**
LOC. PIOVA 98
10081 CASTELLAMONTE TO

Descrizione particolari Vs.D.d.t. n. 462 - 12/02/2024

N° 942 Kg 9043 BREVINI BLANK RING-GEAR EM1065 - Disegno: 32001900088-F1 - Colata: 55387 TJ 41.5/35 - Ns. Comm.:157588

Tipo di materiale: 20MNCR5 Trattamento richiesto: **Bonifica + Distensione**

Tempra

N. Car.	Forno	1° Preriscaldo	2° Preriscaldo	Temp. Austenitiz.	Raffreddamento
77	SOTTRI N.5	680	0	900	Acqua

Distensione

N. Car.	Forno	1° Preriscaldo	2° Preriscaldo	Distensione °C	Raffreddamento
85	SOTTRI N.5	0	0	540	aria calma

Rinvenimento

N. Car.	Forno		Rinvenimento °C	Raffreddamento
78	SOTTRI N.5	0	565	aria calma

	VALORI RICHIESTI	VALORI OTTENUTI
Durezza richiesta:	780/950 mpa	min: 791 max: 906 mpa
Durezza Piena Tempra		0 mpa
Durezza a cuore	780/950	792/906
Sabbiatura	☑	☑
Raddrizzatura	☐	☐
Micrografie	☐	☐

Assicurazione Qualità
Quality Department
F. BONATTO
MASSUCCO

23.02.2024

Castellamonte, 22/02/2024
T.T.N. PIEMONTE s.r.l.
Controllo Qualità

LABORATORIO METALLOGRAFICO T.T.N. PIEMONTE

T.T.N. PIEMONTE S.r.l.
Via Europa, 1
10081 CASTELLAMONTE (TO)
Tel: 0039-0124.423105 Fax: 0039-0124.510178
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R.E.A. Milano Nro. 1820662
Cod. Fisc. e P. IVA 05425320966
Sede legale: NERVIANO (MI)

T.T.N. PIEMONTE
GRUPPO T.T.N.
www.ttnspa.it

CERTIFICAZIONE IGQ N° 2L02

BONIFICHE - NORMALIZZAZIONI
RICOTTURE - DISTENSIONI

NITRURAZIONI
CEMENTAZIONI

TEMPRA AD INDUZIONE

RIVESTIMENTI PVD, CVD

LABORATORIO
METALLOGRAFICO

Certificato conforme alla normativa
UNI EN 10204 - 3.1

* 1 5 7 5 8 8 *

Conservate con cura questo codice !! Vi consentirà in ogni momento di conoscere il ciclo tecnico subito dai Vostri pezzi.

CERTIFICATO DI QUALITÀ E CONFORMITÀ

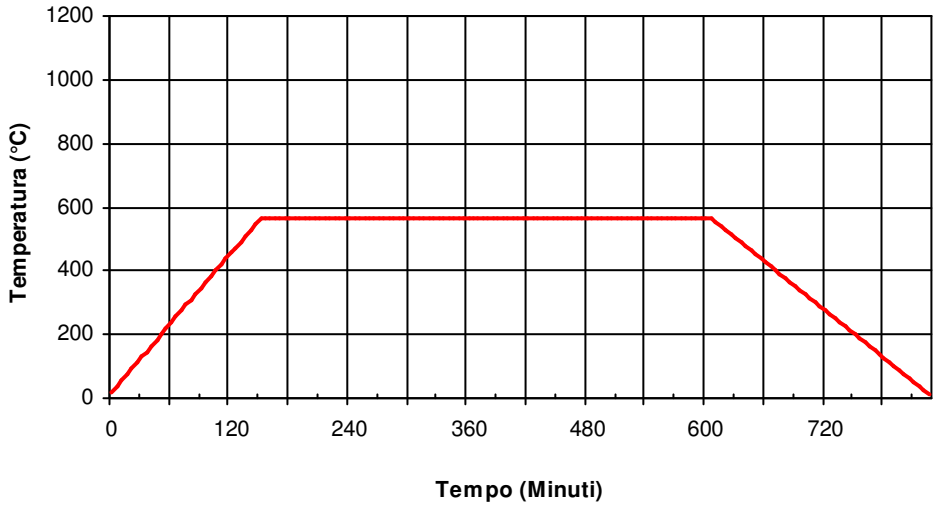
Certificato N°: 1286

Cliente: 008007 - MASSUCCO INDUSTRIE S.P.A.
LOC. PIOVA 98
10081 CASTELLAMONTE TO

Descrizione particolari Vs.D.d.t. n. 462 - 12/02/2024

N° 942 Kg 9043 BREVINI BLANK RING-GEAR EM1065 - Disegno: 32001900088-F1 - Colata: 55387 TJ 41.5/35 - Ns. Comm.:157588

Tipo di materiale: 20MNCR5 Durezza richiesta: 780/950 mpa



1° Rinvenimento

Andamento	Ore	°C
Salita	02:30	565
Permanenza	07:30	565

Assicurazione Qualità
Quality Department
F. BONATTO
MASSUCCO Federica Bonatto

23.02.2024

T.T.N. PIEMONTE s.r.l.
Controllo Qualità

LABORATORIO METALLOGRAFICO T.T.N. PIEMONTE

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IGQ CERTIFICATION No. 2L02

HARDENING AND TEMPERING - NORMALISATION
ANNEALING - DESTRESSING
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CASE HARDENING
INDUCTION HARDENED
PVD, CVD COATING
METALLOGRAPHIC LABORATORY

Certified compliant with the standards
UNI EN 10204 - 3.1

* 1 5 7 5 8 8 *
This code can be used to trace the temperature time diagrams of the following parts.

QUALITY AND CONFORMITY CERTIFICATE

Certificate No.: **1286**

Client: **008007 - MASSUCCO INDUSTRIE S.P.A.**
LOC. PIOVA 98
10081 CASTELLAMONTE TO

Part description Your delivery note no. 51371 - 18/12/2023

1043 kg 8291 BLANK RING GEAR EM1020 SP-022-09 CUST. 73261990 BATCH 57667 JOB 005400017854 - Drawing: 32001022699-S -

Material type: 20MNCR5

Required treatment: **Hardening and Tempering**

Hardening

Load No.	Furnace	1st Preheating	2nd Preheating	Austenitiz. Temp.	Cooling
77	SOTTRI N.5	680	0	900	Water

Tempering

Load No.	Furnace	1st Preheating	2nd Preheating	Tempering °C	Cooling
85	SOTTRI N.5	0	0	540	still air

Tempering

Load No.	Furnace		Tempering °C	Cooling
78	SOTTRI N.5	0	565	still air

	VALUES REQUIRED	VALUES OBTAINED
Required hardness:	780/950 mpa	min: 791 max: 906 mpa
Hardened Solid Hardness		0 mpa
Core Hardness	780/950	792/906
Sandblasting	☑	☑
Straightening	☐	☐
Micrography	☐	☐

Assicurazione Qualità
Quality Department
F. BONATTO
MASSUCCO Industrie

23.02.2024

Castellamonte, 22/02/2024
T.T.N. PIEMONTE s.r.l.
Quality Control

METALLOGRAPHIC LABORATORY T.T.N. PIEMONTE

T.T.N. PIEMONTE S.r.l.
Via Europa, 1
10081 CASTELLAMONTE (TO)
Tel: 0039-0124.423105 Fax: 0039-0124.510178
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IGQ CERTIFICATION No. 2L02

HARDENING AND TEMPERING - NORMALISATION
ANNEALING - DESTRESSING
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METALLOGRAPHIC LABORATORY

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* 1 5 7 5 8 8 *

Keep this code carefully!! It will allow you to identify the technical cycle of your parts at any time.

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Certificate No.: **1286**

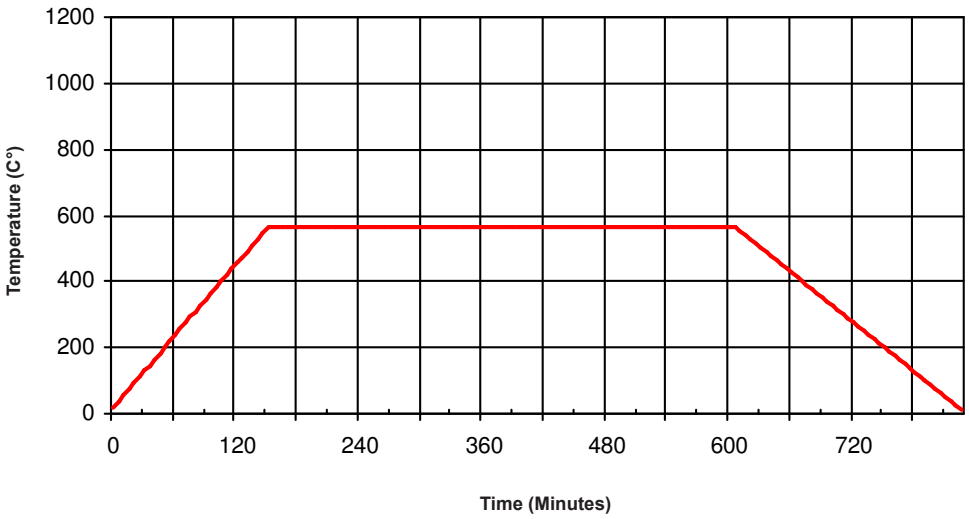
Client: **008007 - MASSUCCO INDUSTRIE S.P.A.**
LOC. PIOVA 98
10081 CASTELLAMONTE TO

Part description Your delivery note no. 462 - 12/02/2024

942 Kg 9043 BREVINI BLANK RING-GEAR EM1065 - Drawing - 32001900088-F1 - Casting: 55387 TJ 41.5/35 - Our Job: 157588

Material type: 20MNCR5

Required hardness: 780/950 mpa



1st Tempering

Trend	Hours	°C
Ramp up	02:30	565
Hold	07:30	565

Assicurazione Qualità
Quality Department
F. BONATTO
MASSUCCO INDUSTRIE

23.02.2024

T.T.N. PIEMONTE s.r.l.
Quality Control

METALLOGRAPHIC LABORATORY T.T.N. PIEMONTE

DANA	Check sheet F0501 - R04.02 - 12.11.2012	Inspection lot 030001085941	Quantity 576	Order Type/Number/Position ZWO0 11381201 0070	Work Center 0030

PART NUMBER	REVISION	OPERATION	OPERATION DESCRIPTION
32001921100	S	0070	bioteco furnace for nitriding

ID	CHARACTERISTIC	METHOD	SAMPLING	UM	TARGET	MIN_MAX	#1	#2	#3	#4	#5	#6	#7	#8
20	MT3009 VICKERS HARDNESS HV5	DUR001 DUROMETER	ZF0004 4 Pieces	HV		740,000 620,000	740	735						
30	MT3010 VICKERS HARDNESS HV10	DUR001 DUROMETER	ZF0004 4 Pieces	HV		690,00 590,00								
40	MT3011 VICKERS HARDNESS HV30	DUR001 DUROMETER	ZF0004 4 Pieces	HV		600,00 570,00								
50	MT0100 MATERIAL TYPE	VIS002 VISUAL INSPECTION	ZF0001 1 Piece				B21-20MnCr5							
60	MT4101 TEST SPECIMEN TYPE USED (SP022-02)	PRO001 TEST SPECIMEN ACCORDING TO SP022-2	ZF0001 1 Piece											
70	MT5100 PROGRAM CODE USED	VIS002 VISUAL INSPECTION	ZF0001 1 Piece											
80	MT5101 LOAD NUMBER	VIS002 VISUAL INSPECTION	ZF0001 1 Piece											
90	DOD001 OUTSIDE DIAMETER Ø230h7 A	CAL001 CALIB.ACM.O R	ZF0008 8 Pieces	mm		230,000 229,954	229,98	229,98	229,98	229,98	229,99	230	229,99	229,99
100	DOD001 OUTSIDE DIAMETER Ø203 h7 OPPOSITE "A"	CAL001 CALIB.ACM.O R	ZF0008 8 Pieces	mm		230,000 229,954	229,98	229,98	229,98	229,98	229,97	229,99	230	229,99
110	VC3010 VISUAL TEST: AFTER HEAT TREATMENT	VIS001 VISUAL INSPECTION ACCORDING TO WI0519	ZF0008 8 Pieces											
120	TX0038 NON-CONFORMITY OR RERA TEST	VIS002 VISUAL INSPECTION	ZF0008 8 Pieces											

Date	Time	Signature	Remarks
11.06.2024	14:54:02	RUGGIERO.S	

MATERIAL SPECIFICATION (RSPL- 2561)

RAMCO STEELS PRIVATE LIMITED

PLOT NO. 782-783, SECTOR 69, FARIDABAD - 121004, INDIA.
Tel. No. +91-129-4290500
Email: info@ramcosteels.com
Web: www.ramcosteels.com

T.C. NO.: 03/21543/1
DATE: Jul 17, 2023

Inspection Certificate in accordance with DIN EN 10204 - 3.1
Metallurgical Test Report

Ramco Heat Code Reference # 14962

ITEM DESCRIPTION	BLANK PLANET GEAR EM1010/../6-6,9/..(Reggio Emilia)	CUSTOMER	Dana Italia SRL
CUSTOMER DRG. NO.	32500841199 Rev.1	P.O. NO. & DATE	4500566121/20, May 26, 2023
MATERIAL SPECS.	20MnCr5 +HH as Per EN-10084 NUMBER 1.7147 Ref. Customer std.(SP 046-03)	INVOICE NO. & DATE	550172, Jul 17, 2023
CAST/HEAT NO.	J11836	QUANTITY	1928 Pieces
SUPPLIER	M/s. Arjas Modern Steel Pvt. Ltd.	ROUTE CARD NO.	03/21543

RAW MATERIAL --> HOT FORGING --> QUENCHING & TEMPERING --> FINAL MACHINED PART

RAW MATERIAL CHARACTERISTICS

1. CHEMICAL ANALYSIS

ELEMENT IN %		C%	Mn%	Si%	S%	P%	Cr%	Ni%	Mo%	Al%				
As per Specs.	Minimum	0.180	1.150	0.200	--	--	1.150	--	--	0.020				
	Maximum	0.220	1.280	0.400	0.035	0.025	1.250	--	--	0.040				
AS REPORTED BY STEEL MILL		0.200	1.260	0.270	0.024	0.015	1.210	0.080	0.014	0.026				
OBSERVED VALUE AT RAMCO / OUTSIDE LAB		0.195	1.250	0.278	0.025	0.012	1.200	0.077	0.013	0.029				

2. METALLOGRAPHIC CHARACTERISTICS

GRAIN SIZE (As per ASTM E112 / IS:4748)	SPECIFIED ASTM NUMBER	6.0 - 8.0	MACRO-ETCH (As per ASTM E 381)	SPECIFIED	C2 R2 S2 OR BETTER
	REPORTED BY STEEL MILL	6.0/7.0		REPORTED BY STEEL MILL	C2 R2 S2
	OBSERVED BY RAMCO	6.5		OBSERVED BY RAMCO	C2 R2 S2
GRAIN FLOW OF RAW MATERIAL	SYMMETRICAL ALONG THE ROLLING DIRECTION		AS ROLLED HARDNESS (BHN)	REPORTED BY STEEL MILL	217~229 BHN
				OBSERVED BY RAMCO	170 BHN

INCLUSION RATING (AS PER ASTM E45A/IS 4163)							DEPTH OF DECARB		
TYPE	SPECIFIED		REPORTED BY STEEL MILL		OBSERVED BY RAMCO			REPORTED BY STEEL MILL	0.14/0.15 MM
	THIN	THICK	THIN	THICK	THIN	THICK		OBSERVED BY RAMCO	--
A	2.0	1.0	1.5	--	1.5	0.5	REDUCTION RATIO OF STEEL BAR (REPORTED BY STEEL MILL)		25.0:1
B	2.0	1.0	0.5	--	1.0	--	AS REPORTED BY STEEL MILL		
C	1.0	0.5	--	--	--	--	ULTRASONIC TEST	MPI TEST	NI TEST	SPARK TEST
D	2.0	1.0	1.5	--	1.0	--	100%	100%	--	100%

3. JOMINY HARDNEABILITY (HRC)

Distance (mm)	1.5	3.0	5.0	7.0	9.0	11.0	13.0	15.0	20.0	25.0	30.0	35.0	40.0		
Specified MIN (HRC)	44.0	44.0	42.0	40.0	37.0	35.0	33.0	32.0	30.0	28.0	27.0	26.0	25.0		
Specified Max (HRC)	47.0	47.0	46.0	44.0	41.0	40.0	39.0	37.0	35.0	33.0	32.0	31.0	30.0		
As Reported by Steel Mill	46.0	45.0	44.0	42.5	40.0	37.0	35.0	33.0	30.0	29.0	28.0	27.0	26.0		
Observed Value at Ramco (HRC)	46.0	44.0	43.0	42.0	40.0	36.0	34.0	32.0	30.0	28.5	28.0	26.0	25.0		

4. MECHANICAL PROPERTIES (CHECKED ON ROUND BAR AFTER QUENCHING & TEMPERING OF RAW MATERIAL)

PARAMETER	SPECIFIED AS PER Customer std. (SP 046-03)		AS REPORTED BY STEEL MILL	OBSERVED VALUE BY RAMCO
	MINIMUM	MAXIMUM		
Tensile Strength (Mpa)	1200	1420	--	1284.30
Yield Strength (Mpa)	885	--	--	1064.10
Elongation (%)	8	--	--	10.22
Reduction Area (%)	--	--	--	41.52
Impact in Joules (at room temp.)	25	--	--	46.00

Final Remarks: Material accepted.

We hereby certify, that the material described above complies with the terms of the order contract.
Wir bestätigen, daß die Lieferung den Vereinbarungen bei der Bestellannahme entspricht.

With friendly regards,
mit freundlichen Grüßen,

SURESH PANDEY
PREPARED BY

VIVEK SHARMA
APPPROVED BY

DANA

Check Sheet

F0501 - R04.02 - 12.11.2012

Inspection lot	Quantity	Order Type/Number/Position	Work Center
030001079546	2.360	ZWO0 11365879 0140	0062

PART NUMBER	REVISION	OPERATION	OPERATION DESCRIPTION
32500941100	C	0140	ipsen case-hardening furnace

ID	CHARACTERISTIC	METHOD	SAMPLING	UM	TARGET	MIN_MAX	#1	#2	#3	#4	#5	#6	#7	#8
10	MT3006 ROCKWELL HARD-NESS C	DUR001 DUROMETER	ZF0004 4 PIECES			62,000 58,000	59	59	58	58				
20	MT3012 CASE-HARDENING DEPTH (HV550)	PRO001 TEST SPECIMEN ACCORDING TO SP022-2	ZF0004 4 PIECES			0,700 0,500	,69	,7	,71					
30	MT3023 P3 CORE STRENGTH	LAB001 LABORATORY	ZF0004 4 PIECES			1.400,00 1.100,00	1350							
40	MT0100 MATERIAL TYPE	VIS002 VISUAL IN-SPECTION	ZF0001 1 PIECE				B21-20MnCr5							
50	MT4101 TEST SPECIMEN TYPE USED (SP022-02)	PRO001 TEST SPECIMEN ACCORDING TO SP022-2	ZF0004 4 PIECES				01-TEST ON PART							
60	MT5100 PROGRAM CODE USED	VIS002 VISUAL IN-SPECTION	ZF0004 4 PIECES											
70	MT5101 LOAD NUMBER	VIS002 VISUAL IN-SPECTION	ZF0004 4 PIECES				24-05/0108 RTQ 4							
100	VC3010 VISUAL TEST: AFTER HEAT TREATMENT	VIS001 VISUAL INSPEC-TION ACCORDING TO WI0519	ZF0004 4 PIECES											
110	TX0038 NON-CONFORMITY OR RERA TEST	VIS002 VISUAL IN-SPECTION	ZF0004 4 PIECES											

Date	Time	Signature	Remarks
04.06.2024	14:42:07	DVALCAV001	Tested according SP022-02 , carburizing temperature below 940°C

F.A.C.E.M. S.p.A.
Fabbricazione Articoli Casalinghi E Metallurgici

TRE SPADE ®
www.trespade.it

Partita Iva IT 00517250015
Cod. Fisc. e n° Reg.Imp.Torino 00517250015
REA di Torino n° 151967 - Cap.Soc. 3.000.000 € i.v.
Sede Legale:
Via Bricherasio, 7 - 10128 Torino (TO) - Italia
Tel. +39 0124 707711
Sede Amministrativa:
Borgata Braidacroce, 108 - 10087 Valperga (TO) - Italia
Tel. +39 0124 707711
www.facem.com E-mail: facem@facem.com

CERTIFICATO DI ANALISI
ANALYSIS CERTIFICATE

DANA MOTION SYSTEMS ITALIA Srl -POWER TRANSMISSION
POWER TRANSMISSION
Via Luciano Brevini, 1/a
42124 REGGIO EMILIA
RE
Italia

Rif. DDT Nr. SDDT-2401045 del 04/06/2024 riga 5 Cod. articolo 32501541199 (SA0009) Spediti Nr. 156
Rif. Vs. Ordine Nr. 4500629185 del 08/02/2024 Marchiatura Nr. 3250154-14

COLATA N. 379512

Colata originale n. 23/79512

Certificato di analisi originario n. 14370 Rilasciato il 29/05/2023 da: RIVA ACCIAIO Spa

MATERIALE 20MNCR5 CAP. BREVINI SP 046-03

COMPOSIZIONE CHIMICA

C [%]	Mn [%]	Si [%]	P [%]	S [%]	Cr [%]	Ni [%]	Mo [%]	Al [%]	Cu [%]	Sn [%]	Ti [%]	Ca [%]	V [%]	N [PPM]	Nb [%]
0,1800	1,2800	0,3000	0,0120	0,0220	1,1700	0,0900	0,0200	0,0240	0,2000	0,0080	0,0100	0,0015	0,0050	100,0000	0,0020

O2 [PPM]	H2 [PPM]
20,0000	2,5000

DIAMETRO IDEALE 0 "

GROSSEZZA GRANO AUSTENITICO
Grano austenitico definito 6
Grano austenitico inferiore
Grano austenitico superiore

PROVA JOMINY

mm	1,5	3,0	5,0	7,0	9,0	11,0	13,0	15,0	20,0	25,0	30,0	35,0	40,0	45,0	50,0
HRC	44	43	43	42	38	36	34	33	31	29	28	27	26	25	23

CARATTERISTICHE MECCANICHE

RESISTENZA A TRAZIONE
Tipo prova TRAZIONE LONGITUDINALE - UNI EN ISO 6892-1
T.T. Provetta TEMPRA E DISTENSIONE

A [%]	HB [HB]	R [N/MM2]	RS [N/MM2]	%
13,00	250,00	1.316,00	1.213,00	53,50

RESILIENZA
Tipo prova PROVA DI RESILIENZA - UNI EN ISO 148/1
T.T. Provetta TEMPRA E DISTENSIONE
Temperatura [°C] 20
Valore medio [Joule] 33,3

MICROPUREZZA
Metodo: DIN 50602/85 METODO K4
Tipo K4
12,0

NOTE
Rapporto di riduzione tondo mm 38 = 22,58:1
Bandatura grado 3 secondo UNI 8449
ACCIAIO DEGASATO SOTTOVUOTO

I dati riportati in questo certificato sono conformi alla norma UNI EN 10204/3.1 ed all'originale da noi archiviato

Per F.A.C.E.M. SpA
Vacca Simone

230303

RIVA ACCIAIO S.P.A.
STABILIMENTO DI LESEGNO
Via Statale, 28 nord
12076 Lesegno(CN) ITALIA
Tel. 0174-718111 Fax. 0174-77251

Sede legale e amministrativa: Viale Certosa, 249 - 20151 Milano
telefono 02 30700 - telefax 02 38000346
codice fiscale, partita iva e numero iscrizione Registro Imprese Milano 08521290158

CERTIFICATO DI COLLAUDO

A03 Numero Certificato: 14370
Data Certificato: 29/05/2023

CERTIFICHIAMO CHE IL PRODOTTO RELATIVO A QUESTO DOCUMENTO E' CONFORME ALLE PRESCRIZIONI CITATE IN ORDINE

B14 Norma riferimento: UNI EN 10204/2005
B15 Tipo: 3.1

B02 Acciaio: 20MNCRS5+HH INT 017
B07 Anno/Numero colata: 23/79512
B01 Profilo: LAMINATO TONDO EN 10060
B09 Misura 1 x Misura 2: 38,00
B04 Stato fornitura: LAMINATO TONDO
B09 Lunghezza: 5,500 - 6,500
A07 Ordine Cliente: SP04180
A08 Conferma: 07 Y4P47 003
C14 Tasso di riduzione: 22,58
B06

A06 Dati Cliente:
INTERACCIAI S.P.A.
VIA PASTEUR 2
42122 REGGIO EMILIA

C70 Processo:
FUSIONE AL FORNO ELETTRICO
COLAGGIO PROTETTO IN C.C. 160
ACCIAIO DEGASATO SOTTOVUOTO

COMPOSIZIONE CHIMICA - ANALISI DI COLATA

C71 C	C72 Mn	C73 Si	C74 P	C75 S	C76 Cr	C77 Ni	C78 Mo	C79 Cu	C80 Sn	C85 Al	C91 Ti
0,180	1,280	0,300	0,012	0,022	1,170	0,090	0,020	0,200	0,008	0,024	0,010

C87 V	C88 Nb	C89 B	C92 Ca				C93 N	C94 $O_{2\,[ppm]}$	C95 $H_{2\,[ppm]}$		C96 CEV
0,005	0,002	0,0000	0,0015				0,0100	20	2,5		

CARATTERISTICHE MECCANICHE

C01 Prelievo: C - Colata, L - Laminato, T - Trafilato: C
C03 Trattamento Termico: PROVETTA TEMPR.E DIST

PROVE DI TRAZIONE

C08 Dim. Campione	C10 Dim. Provetta	C12 $R_{m\,[MPa]}$	C11 $R_{e\,[MPa]}$	C13 $A5_{\%}$	C15 $Z_{\%}$
11	10	1316	1213	13,0	53,5

PROVE DI RESILIENZA

C41 Dim. Provetta	C40 Tipo	C42 $K_{1\,[J]}$	C42 $K_{2\,[J]}$	C42 $K_{3\,[J]}$	C43 $K_{v\,[J]}$	C44 Temp.
10x10	KCU				33,3	20°C

C22 HB:

PROVA JOMINY

C03 Normalizzazione: Tempra

C61 mm	1,5	3	5	7	9	11	13	15	20	25	30	35	40	45	50					C45 DI
C60 HRC	44	43	43	42	38	36	34	33	31	29	28	27	26	25	23					

C65 Grano Austenitico: MAC QUAID - EHN 6
C62 Micropurezza: DIN50602/UNI3244 K4=12,0
C05 Bandatura: 3 BANDATURA SECONDO UNI 8449
C31 Valori di durezza: +AR HB 250 | +A | +FP

INFORMAZIONI SUPPLEMENTARI

B03
BARRE LUNG. COMMERCIALE

CONTROLLO ANTIMESCOLAMENTO ESEGUITO

D51 Note:
CONFORME 2000/53/CE, 2011/65/UE E SMI
RADIOATTIVITÀ < 0,1 BQ/G
(D.LGS. N°101 31/07/2020 E SMI)

DOCUMENTO ELETTRONICO VALIDO SENZA FIRMA

A10 Dati DDT: N° 4998 KG. 8738

Z04
ID Doc. 640682 - CERTIFICATO COLATA
Cod.Colata: 379512
Nr.23/79512 Pr. 230303
Acciaio Base: S20MNCR5BPT
Forn/Cli: RIVA ACCIAIO Spa

Z01 Responsabile C.Q.: G. Piumatti

Z02

F.A.C.E.M. S.p.A.
Fabbricazione Articoli Casalinghi E Metallurgici

TRE SPADE ®
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Sede Amministrativa:
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Tel. +39 0124 707711
www.facem.com E-mail: facem@facem.com

CERTIFICATO DI ANALISI
ANALYSIS CERTIFICATE

DANA MOTION SYSTEMS ITALIA Srl -POWER TRANSMISSION
POWER TRANSMISSION
Via Luciano Brevini, 1/a
42124 REGGIO EMILIA
RE
Italia

Rif. DDT Nr. SDDT-2401045 del 04/06/2024 riga 5 Cod. articolo 32501541199 (SA0009) Spediti Nr. 1277
Rif. Vs. Ordine Nr. 4500629185 del 08/02/2024 Marchiatura Nr. 3250154-15

COLATA N. 379514

Colata originale n. 23/79514

Certificato di analisi originario n. 14371 Rilasciato il 29/05/2023 da: RIVA ACCIAIO Spa

MATERIALE 20MNCR5 CAP. BREVINI SP 046-03

COMPOSIZIONE CHIMICA

C [%]	Mn [%]	Si [%]	P [%]	S [%]	Cr [%]	Ni [%]	Mo [%]	Al [%]	Cu [%]	Sn [%]	Ti [%]	Ca [%]	V [%]	N [PPM]	Nb [%]
0,1800	1,3000	0,3000	0,0130	0,0220	1,1600	0,1200	0,0200	0,0220	0,1800	0,0080	0,0100	0,0013	0,0050	110,0000	0,0020

O2 [PPM]	H2 [PPM]
20,0000	2,5000

DIAMETRO IDEALE 0 "

GROSSEZZA GRANO AUSTENITICO
Grano austenitico definito 6
Grano austenitico inferiore
Grano austenitico superiore

PROVA JOMINY

mm	1,5	3,0	5,0	7,0	9,0	11,0	13,0	15,0	20,0	25,0	30,0	35,0	40,0	45,0	50,0
HRC	44	43	43	42	39	37	35	34	32	30	29	28	27	27	25

CARATTERISTICHE MECCANICHE

RESISTENZA A TRAZIONE
Tipo prova TRAZIONE LONGITUDINALE - UNI EN ISO 6892-1
T.T. Provetta TEMPRA E DISTENSIONE

A [%]	HB [HB]	R [N/MM2]	RS [N/MM2]	%
12,50	250,00	1.319,00	1.219,00	53,70

RESILIENZA
Tipo prova PROVA DI RESILIENZA - UNI EN ISO 148/1
T.T. Provetta TEMPRA E DISTENSIONE
Temperatura [°C] 20
Valore medio [Joule] 32,4

MICROPUREZZA
Metodo: ASTM/E45 METODO A JERNKONTORET

Tipo	A/S	B/S	C/S	D/S
	1,5	0,5	1,0	1,0

NOTE
Rapporto di riduzione tondo mm 38 = 22,58;1 | mm 30 = 36,23:1 | mm 35 = 26,62:1
Bandatura grado 3 secondo UNI 8449
ACCIAIO DEGASATO SOTTOVUOTO

I dati riportati in questo certificato sono conformi alla norma UNI EN 10204/3.1 ed all'originale da noi archiviato

Per F.A.C.E.M. SpA
Vacca Simone

230304

RIVA ACCIAIO S.P.A.
STABILIMENTO DI LESEGNO
Via Statale, 28 nord
12076 Lesegno(CN) ITALIA
Tel. 0174-718111 Fax. 0174-77251

Sede legale e amministrativa: Viale Certosa, 249 - 20151 Milano
telefono 02 30700 - telefax 02 38000346
codice fiscale, partita iva e numero iscrizione Registro Imprese Milano 08521290158

CERTIFICATO DI COLLAUDO

A03 Numero Certificato: 14371
Data Certificato: 29/05/2023

CERTIFICHIAMO CHE IL PRODOTTO RELATIVO A QUESTO DOCUMENTO E' CONFORME ALLE PRESCRIZIONI CITATE IN ORDINE

B14 Norma riferimento: UNI EN 10204/2005
B15 Tipo: 3.1

B02 Acciaio: 20MNCRS5+HH INT 017
B07 Anno/Numero colata: 23/79514
B01 Profilo: LAMINATO TONDO EN 10060
B09 Misura 1 x Misura 2: 38,00
B04 Stato fornitura: LAMINATO TONDO
B09 Lunghezza: 5,500 - 6,500
A07 Ordine Cliente: SP04180
A08 Conferma: 07 Y4P47 003
C14 Tasso di riduzione: 22,58
B06

A06 Dati Cliente:
INTERACCIAI S.P.A.
VIA PASTEUR 2
42122 REGGIO EMILIA

C70 Processo:
FUSIONE AL FORNO ELETTRICO
COLAGGIO PROTETTO IN C.C. 160
ACCIAIO DEGASATO SOTTOVUOTO

COMPOSIZIONE CHIMICA - ANALISI DI COLATA

C71 C	C72 Mn	C73 Si	C74 P	C75 S	C76 Cr	C77 Ni	C78 Mo	C79 Cu	C80 Sn	C85 Al	C91 Ti
0,180	1,300	0,300	0,013	0,022	1,160	0,120	0,020	0,180	0,008	0,022	0,010

C87 V	C88 Nb	C89 B	C92 Ca				C93 N	C94 $O_{2\,[ppm]}$	C95 $H_{2\,[ppm]}$		C96 CEV
0,005	0,002	0,0000	0,0013				0,0110	20	2,5		

CARATTERISTICHE MECCANICHE

C01 Prelievo: C - Colata, L - Laminato, T - Trafilato: [C]
C03 Trattamento Termico: PROVETTA TEMPR.E DIST

PROVE DI TRAZIONE

C08 Dim. Campione	C10 Dim. Provetta	C12 $R_{m\,[MPa]}$	C11 $R_{e\,[MPa]}$	C13 $A5_{\%}$	C15 $Z_{\%}$	
11	10	1319	1219	12,5	53,7	

PROVE DI RESILIENZA

C41 Dim. Provetta	C40 Tipo	C42 $K_{1\,[J]}$	C42 $K_{2\,[J]}$	C42 $K_{3\,[J]}$	C43 $K_{s\,[J]}$	C44 Temp.
10x10	KCU				32,4	20°C

C22 HB

PROVA JOMINY

C03 Normalizzazione: Tempra

C61 mm	1,5	3	5	7	9	11	13	15	20	25	30	35	40	45	50					C45 DI
C60 HRC	44	43	43	42	39	37	35	34	32	30	29	28	27	27	25					

C65 Grano Austenitico: MAC QUAID - EHN 6
C62 Micropurezza: ASTM E45 - JERKONTORET METODO A
S: A1,5 B0,5 C1,0 D1,0

C05 Bandatura: 3 BANDATURA SECONDO UNI 8449

C31 Valori di durezza

+AR	+A	+FP
HB 250		

INFORMAZIONI SUPPLEMENTARI

B03
BARRE LUNG. COMMERCIALE

CONTROLLO ANTIMESCOLAMENTO ESEGUITO

D51 Note:
CONFORME 2000/53/CE, 2011/65/UE E SMI
RADIOATTIVITÀ < 0,1 BQ/G
(D.LGS. N°101 31/07/2020 E SMI)

DOCUMENTO ELETTRONICO VALIDO SENZA FIRMA

A10 Dati DDT
N° 4998 KG. 5022

Z04
ID Doc. 640683 - CERTIFICATO COLATA
Cod.Colata: 379514
Nr.23/79514 Pr. 230304
Acciaio Base: S20MNCR5BPT
Forn/Cli: RIVA ACCIAIO Spa

Z01 Responsabile C.Q.
G. Piumatti

Z02

F.A.C.E.M. S.p.A.
Fabbricazione **A**rticoli **C**asalinghi **E** **M**etallurgici

TRE SPADE ®
www.trespade.it

Hot & Warm Steel Forging Division
Partita Iva IT 00517250015
Cod. Fisc. e n° Reg.Imp.Torino 00517250015
REA di Torino n° 151967 - Cap.Soc. 3.000.000 € i.v.
Sede Legale:
Via Bricherasio, 7 - 10128 Torino (TO) - Italia
Tel. +39 0124 707711
Sede Amministrativa:
Borgata Braidacroce, 108 - 10087 Valperga (TO) - Italia
Tel. +39 0124 707711
www.facem.com E-mail: facem@facem.com

CERTIFICATO DI TRATTAMENTO TERMICO

HEAT TREATMENT CERTIFICATE

Modulo MR-CQU-32 Rev. 02 del 27/03/2011

N. D.d.T. Delivery Note No.	SDDT-2401045	Riga Row	5	Del Of	04/06/2024	N. Pezzi spediti N. Pieces Shipped	156
Marchiatura Marking	3250154-14	Colata N. Casting No.	379512			Kg spediti Kg Shipped	122
Accorpamento N. Grouping No.	2301734	Ordine di controllo N. Inspection Order No.	CQ23-01182				
Cliente Customer	C000001	DANA MOTION SYSTEMS ITALIA Srl - POWER TRANSMISSION					
Nr. Articolo Item No.	32501541199/T	COD. 32501541199 RICOTTO				Nr. Articolo FACEM Item No. FACEM	SA0009/T10
Acciaio di base Steel	20MNCR5						
Trattamento termico eseguito Executed Heat Treatment	NORMALIZZAZIONE						

N. totale pezzi controllati N. of Controlled Pieces	5				
Metodo di prova Test Method	Ø Sfera Ø Sphere	0	Kg Applicati Kg Applied	0	SECONDO NORMA UNI EN ISO 6506-1

LOTTO DI TRATTAMENTO: 202311092327 - STTV01 - RIF. RILEVAZIONE: 23-1637
VALORE DUREZZA RICHIESTO: HB min 160 max 210

1) 173 HB 2) 171 HB 3) 170 HB 4) 174 HB 5) 178 HB

DATA VERIFICA: 10/11/2023 RILIEVI ESEGUITI DA: COLLAUDOV - ANDREA

TRE SPADE

Eventuali contestazioni circa il trattamento termico richiesto devono essere formulate prima di sottoporre i particolari conformi ad ulteriore lavorazione

F.A.C.E.M. S.p.A.
Fabbricazione **A**rticoli **C**asalinghi **E** **M**etallurgici

TRE SPADE ®
www.trespade.it

Hot & Warm Steel Forging Division
Partita Iva IT 00517250015
Cod. Fisc. e n° Reg.Imp.Torino 00517250015
REA di Torino n° 151967 - Cap.Soc. 3.000.000 € i.v.
Sede Legale:
Via Bricherasio, 7 - 10128 Torino (TO) - Italia
Tel. +39 0124 707711
Sede Amministrativa:
Borgata Braidacroce, 108 - 10087 Valperga (TO) - Italia
Tel. +39 0124 707711
www.facem.com E-mail: facem@facem.com

CERTIFICATO DI TRATTAMENTO TERMICO

HEAT TREATMENT CERTIFICATE

Modulo MR-CQU-32 Rev. 02 del 27/03/2011

N. D.d.T. / Delivery Note No.	SDDT-2401045	Riga / Row	5	Del / Of	04/06/2024	N. Pezzi spediti / N. Pieces Shipped	1277
Marchiatura / Marking	3250154-15	Colata N. / Casting No.	379514			Kg spediti / Kg Shipped	1000,5
Accorpamento N. / Grouping No.	2301734	Ordine di controllo N. / Inspection Order No.	CQ23-01183				
Cliente / Customer	C000001	DANA MOTION SYSTEMS ITALIA Srl - POWER TRANSMISSION					
Nr. Articolo / Item No.	32501541199/T	COD. 32501541199 RICOTTO				Nr. Articolo FACEM / Item No. FACEM	SA0009/T10
Acciaio di base / Steel	20MNCR5						
Trattamento termico eseguito / Executed Heat Treatment	NORMALIZZAZIONE						

N. totale pezzi controllati / N. of Controlled Pieces	5				
Metodo di prova / Test Method	Ø Sfera / Ø Sphere	0	Kg Applicati / Kg Applied	0	SECONDO NORMA UNI EN ISO 6506-1

LOTTO DI TRATTAMENTO: 202311092328 - STTV01 - RIF. RILEVAZIONE: 23-1643
VALORE DUREZZA RICHIESTO: HB min 160 max 210

1) 165 HB 2) 167 HB 3) 164 HB 4) 169 HB 5) 173 HB

DATA VERIFICA: 10/11/2023 RILIEVI ESEGUITI DA: COLLAUDOV - ANDREA

TRE SPADE

Eventuali contestazioni circa il trattamento termico richiesto devono essere formulate prima di sottoporre i particolari conformi ad ulteriore lavorazione

F.A.C.E.M. S.p.A.
Fabbricazione Articoli Casalinghi E Metallurgici

TRE SPADE ®
www.trespade.it

VAT No.: IT 00517250015
Tax Code and Turin Company Register No. 00517250015
REA di Torino n° 151967 - Cap.Soc. 3.000.000 €i.v.
Registered Office:
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Administration Office:
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CERTIFICATO DI ANALISI
ANALYSIS CERTIFICATE

DANA MOTION SYSTEMS ITALIA Srl -POWER TRANSMISSION
POWER TRANSMISSION
Via Luciano Brevini, 1/a
42124 REGGIO EMILIA
RE
Italia

Delivery Note Ref. No. SDDT-2401045 of 04/06/2024 line 5 Item code 32501541199 (SA0009) Shipment No. 156
Your Ref. Order No. 4500629185 of 08/02/2024 Marking No. 3250154-14

CASTING No. 379512

Original casting no. 23/79512

Original analysis certificate no. 14370 Released on 29/05/2023 by: RIVA ACCIAIO Spa

MATERIAL 20MNCR5 CAP. BREVINI SP 046-03

CHEMICAL COMPOSITION

C [%]	Mn [%]	Si [%]	P [%]	S [%]	Cr [%]	Ni [%]	Mo [%]	Al [%]	Cu [%]	Sn [%]	Ti [%]	Ca [%]	V [%]	N [PPM]	Nb [%]
0,1800	1,2800	0,3000	0,0120	0,0220	1,1700	0,0900	0,0200	0,0240	0,2000	0,0080	0,0100	0,0015	0,0050	100,0000	0,0020

O2 [PPM]	H2 [PPM]
20,0000	2,5000

IDEAL DIAMETER 0 "

AUSTENITIC GRAIN SIZE
Austenitic grain defined 6
Austenitic grain smaller
Austenitic grain larger

JOMINY TEST

mm	1,5	3,0	5,0	7,0	9,0	11,0	13,0	15,0	20,0	25,0	30,0	35,0	40,0	45,0	50,0
HRC	44	43	43	42	38	36	34	33	31	29	28	27	26	25	23

MECHANICAL PROPERTIES

TENSILE STRENGTH
Test type **LONGITUDINAL TENSILE - EN ISO 6892-1**
Heat Treatment Specimen **HARDENING AND DESTRESSING**

A [%]	HB [HB]	R [N/MM2]	RS [N/MM2]	%
13,00	250,00	1.316,00	1.213,00	53,50

STRENGTH
Test type **STRENGTH TEST - EN ISO 148/1**
Heat Treatment Specimen **HARDENING AND DESTRESSING**
Temperature [°C] 20
Average value [Joule] 33,3

MICRO-PURITY
Method: DIN 50602/85 K4 METHOD
Type K4
12,0

NOTES
Reduction ratio 38 mm round bar = 22.58:1
Grade 3 banding according to UNI 8449
STEEL DEGASSED UNDER VACUUM

The data contained in this certificate complies with the EN 10204/3.1 standard and is true to the original archived at our site

For F.A.C.E.M. SpA
Vacca Simone

230303

RIVA ACCIAIO S.P.A.
LESEGNO PLANT
Via Statale, 28 nord
12076 Lesegno(CN) ITALIA
Tel. 0174-718111 Fax. 0174-77251

Registered and administration Office Viale Certosa, 249 - 20151 Milano
telephone 02 30700 - telefax 02 38000346
tax Code, VAT number and Milan Company Register number 08521290158

TEST CERTIFICATE

A03 Certificate Number: 14370
Certificate Date: 29/05/2023

WE CERTIFY THAT THE PRODUCT COVERED BY THIS DOCUMENT COMPLIES WITH THE REQUIREMENTS STATED IN THE ORDER

B14 Reference standard: UNI EN 10204/2005
B15 Type: 3.1

B02 Steel: 20MNCRS5+HH INT 017
B07 Casting Year/Number: 23/79512
B01 Profile: ROUND ROLLED EN 10060
B09 Measurement 1 x Measurement 2: 38,00
B04 Supply status: ROUND ROLLED
B09 Length: 5,500 - 6,500
A07 Client Order: SP04180
A08 Confirmation: 07 Y4P47 003
C14 Reduction rate: 22,58
B06

A06 Client Data:
INTERACCIAI S.P.A.
VIA PASTEUR 2
42122 REGGIO EMILIA

C70 Process:
MELTING IN ELECTRIC FURNACE,
CASTING PROTECTED IN C.C. 160
STEEL DEGASSED UNDER VACUUM

CHEMICAL COMPOSITION - CASTING ANALYSIS

C71 C	C72 Mn	C73 Si	C74 P	C75 S	C76 Cr	C77 Ni	C78 Mo	C79 Cu	C80 Sn	C85 Al	C91 Ti
0,180	1,280	0,300	0,012	0,022	1,170	0,090	0,020	0,200	0,008	0,024	0,010

C87 V	C88 Nb	C89 B	C92 Ca				C93 N	C94 $O_{2\,[ppm]}$	C95 $H_{2\,[ppm]}$		C96 CEV
0,005	0,002	0,0000	0,0015				0,0100	20	2,5		

MECHANICAL PROPERTIES

C01 Sample: C-Casting L-Rolled T-Drawn — [C]

C03 Heat Treatment: SPECIMEN — HARDENING AND DESTRESSING

TENSILE TEST

C08 Sample Size	C10 Specimen Size	C12 $R_{m\,[MPa]}$	C11 $R_{e\,[MPa]}$	C13 $A5_{\%}$	C15 $Z_{\%}$
11	10	1316	1213	13,0	53,5

STRENGTH TESTS

C41 Specimen Size	C40 Type	C42 $K_{1\,[J]}$	C42 $K_{2\,[J]}$	C42 $K_{3\,[J]}$	C43 $K_{s\,[J]}$	C44 Temp.
10x10	KCU				33,3	20°C

C22 HB

JOMINY TEST

C03 Normalisation Hardening

C61 mm	1,5	3	5	7	9	11	13	15	20	25	30	35	40	45	50					C45 DI
C60 HRC	44	43	43	42	38	36	34	33	31	29	28	27	26	25	23					

C65 Austenitic grade: MAC QUAID - EHN 6

C62 Micro-purity: DIN50602/UNI3244
K4=12,0

C05 Banding: 3 BANDING ACCORDING TO UNI 8449

C31 Hardness values: +AR HB 250 | +A | +FP

ADDITIONAL INFORMATION

B03
RODS OF COMMERCIAL LENGTH

ANTI-MIXING CHECK PERFORMED

D5 Notes:
COMPLIANT WITH 2000/53/EC, 2011/65/EU AS AMENDED RADIOACTIVITY < 0.1 BQ/G (ITALIAN LEGISLATIVE DECREE No.101 31/07/2020 AS AMENDED)

ELECTRONIC DOCUMENT VALID WITHOUT SIGNATURE

A10 Delivery Note Data: N° 4998 KG. 8738

Z04
Doc. ID. 640682 - CASTING CERTIFICATE
code Casting 379512
No. 23/79512 Pr. 230303
Base Steel; S20MNCR5BPT
Supplier/Client: RIVA ACCIAIO SPA

Z01 Q.C. Manager: G. Piumatti

Z02

F.A.C.E.M. S.p.A.
Fabbricazione Articoli Casalinghi E Metallurgici

TRE SPADE ®
www.trespade.it

VAT No.: IT 00517250015
Tax Code and Turin Company Register No. 00517250015
REA di Torino n° 151967 - Cap.Soc. 3.000.000 €i.v.
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CERTIFICATO DI ANALISI
ANALYSIS CERTIFICATE

DANA MOTION SYSTEMS ITALIA Srl -POWER TRANSMISSION
POWER TRANSMISSION
Via Luciano Brevini, 1/a
42124 REGGIO EMILIA
RE
Italia

Delivery Note Ref. No. SDDT-2401045 of 04/06/2024 line 5 Item code 32501541199 (SA0009) Shipment No. 156
Your Ref. Order No. 4500629185 of 08/02/2024 Marking No. 3250154-14

CASTING No. 379514

Original casting no. 23/79514

Original analysis certificate no. 14370 Released on 29/05/2023 by: RIVA ACCIAIO Spa

MATERIAL 20MNCR5 CAP. BREVINI SP 046-03

CHEMICAL COMPOSITION

C [%]	Mn [%]	Si [%]	P [%]	S [%]	Cr [%]	Ni [%]	Mo [%]	Al [%]	Cu [%]	Sn [%]	Ti [%]	Ca [%]	V [%]	N [PPM]	Nb [%]
0,1800	1,2800	0,3000	0,0120	0,0220	1,1700	0,0900	0,0200	0,0240	0,2000	0,0080	0,0100	0,0015	0,0050	100,0000	0,0020

O2 [PPM]	H2 [PPM]
20,0000	2,5000

IDEAL DIAMETER 0 "

AUSTENITIC GRAIN SIZE
Austenitic grain defined 6
Austenitic grain smaller
Austenitic grain larger

JOMINY TEST

mm	1,5	3,0	5,0	7,0	9,0	11,0	13,0	15,0	20,0	25,0	30,0	35,0	40,0	45,0	50,0
HRC	44	43	43	42	38	36	34	33	31	29	28	27	26	25	23

MECHANICAL PROPERTIES

TENSILE STRENGTH
Test type **LONGITUDINAL TENSILE - EN ISO 6892-1**
Heat Treatment Specimen **HARDENING AND DESTRESSING**

A [%]	HB [HB]	R [N/MM2]	RS [N/MM2]	%
13,00	250,00	1.316,00	1.213,00	53,50

STRENGTH
Test type **STRENGTH TEST - EN ISO 148/1**
Heat Treatment Specimen **HARDENING AND DESTRESSING**
Temperature [°C] 20
Average value [Joule] 33,3

MICRO-PURITY
Method: DIN 50602/85 K4 METHOD
Type K4
12,0

NOTES
Reduction ratio 38 mm round bar = 22.58:1
Grade 3 banding according to UNI 8449
STEEL DEGASSED UNDER VACUUM

The data contained in this certificate complies with the EN 10204/3.1 standard and is true to the original archived at our site

For F.A.C.E.M. SpA
Vacca Simone

230304

RIVA ACCIAIO S.P.A.
LESEGNO PLANT
Via Statale, 28 nord
12076 Lesegno(CN) ITALIA
Tel. 0174-718111 Fax. 0174-77251

Registered and administration Office viale Certosa, 249 - 20151 Milano
telephone 02 30700 - telefax 02 38000346
tax Code, VAT number and Milan Company Register number 08521290158

TEST CERTIFICATE

A03 Certificate Number: 14371
Certificate Date: 29/05/2023

WE CERTIFY THAT THE PRODUCT COVERED BY THIS DOCUMENT COMPLIES WITH THE REQUIREMENTS STATED IN THE ORDER

B14 Reference standard: UNI EN 10204/2005
B15 Type: 3.1

B02 Steel: 20MNCRS5+HH INT 017
B07 Casting Year/Number: 23/79514
B01 Profile: ROUND ROLLED EN 10060
B09 Measurement 1 x Measurement 2: 38,00
B04 Supply status: ROUND ROLLED
B09 Length: 5,500 - 6,500
A07 Client Order: SP04180
A08 Confirmation: 07 Y4P47 003
C14 Reduction rate: 22,58
B06

A06 Client Data:
INTERACCIAI S.P.A.
VIA PASTEUR 2
42122 REGGIO EMILIA

C70 Process:
MELTING IN ELECTRIC FURNACE,
CASTING PROTECTED IN C.C. 160

STEEL DEGASSED UNDER VACUUM

CHEMICAL COMPOSITION - CASTING ANALYSIS

C71 C	C72 Mn	C73 Si	C74 P	C75 S	C76 Cr	C77 Ni	C78 Mo	C79 Cu	C80 Sn	C85 Al	C91 Ti
0,180	1,300	0,300	0,013	0,022	1,160	0,120	0,020	0,180	0,008	0,022	0,010

C87 V	C88 Nb	C89 B	C92 Ca				C93 N	C94 $O_{2\,[ppm]}$	C95 $H_{2\,[ppm]}$		C96 CEV
0,005	0,002	0,0000	0,0013				0,0110	20	2,5		

MECHANICAL PROPERTIES

C01 Sample: C-Casting L-Rolled T-Drawn — [C]

C03 Heat Treatment: SPECIMEN HARDENING AND DESTRESSING

TENSILE TEST

C08 Sample Size	C10 Specimen Size	C12 $R_{m\,[MPa]}$	C11 $R_{e\,[MPa]}$	C13 $A5_{\%}$	C15 $Z_{\%}$	
11	10	1319	1219	12,5	53,7	

STRENGTH TESTS

C41 Specimen Size	C40 Type	C42 $K_{1\,[J]}$	C42 $K_{2\,[J]}$	C42 $K_{3\,[J]}$	C43 $K_{s\,[J]}$	C44 Temp.
10x10	KCU				32,4	20°C

C22 HB

JOMINY TEST

C03 Normalisation
Hardening

C61 mm	1,5	3	5	7	9	11	13	15	20	25	30	35	40	45	50					C45 DI
C60 HRC	44	43	43	42	39	37	35	34	32	30	29	28	27	27	25					

C65 Austenitic grade: MAC QUAID - EHN 6

C62 Micro-purity: ASTM E45 - JERKONTORET METHOD A
S: A1,5 B0,5 C1,0 D1,0

C05 Banding: 3 BANDING ACCORDING TO UNI 8449

C31 Hardness values: +AR HB 250 | +A | +FP

ADDITIONAL INFORMATION

B03
RODS OF COMMERCIAL LENGTH

ANTI-MIXING CHECK PERFORMED

D51 Notes:
COMPLIANT WITH 2000/53/EC, 2011/65/EU AS AMENDED RADIOACTIVITY < 0.1 BQ/G (ITALIAN LEGISLATIVE DECREE No.101 31/07/2020 AS AMENDED)

ELECTRONIC DOCUMENT VALID WITHOUT SIGNATURE

A10 Delivery Note Data:
N° 4998 KG. 5022

Z04
Doc. ID. 640683 - CASTING CERTIFICATE
code Casting 379514
No. 23/79514 Pr. 230304
Base Steel; S20MNCR5BPT
Supplier/Client: RIVA ACCIAIO SPA

Z01 Q.C. Manager: G. Piumatti

Z02

F.A.C.E.M. S.p.A.
Fabbricazione Articoli Casalinghi E Metallurgici

TRE SPADE ®
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Hot & Warm Steel Forging Division
VAT No.: **IT 00517250015**
Tax Code and Turin Company Register No. 00517250015
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Administration Office:
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CERTIFICATO DI TRATTAMENTO TERMICO

HEAT TREATMENT CERTIFICATE

Form MR-CQU-32 Rev. 02 of 27/03/2011

N. D.d.T. Delivery Note No.	SDDT-2401045	Riga Row	5	Del Of	04/06/2024	N. Pezzi spediti N. Pieces Shipped	156
Marchiatura Marking	3250154-14	Colata N. Casting No.	379512			Kg spediti Kg Shipped	122
Accorpamento N. Grouping No.	2301734	Ordine di controllo N. Inspection Order No.	CQ23-01182				
Cliente Customer	C000001	DANA MOTION SYSTEMS ITALIA Srl - POWER TRANSMISSION					
Nr. Articolo Item No.	32501541199/T	CODE 32501541199 ANNEALED				Nr. Articolo FACEM Item No. FACEM	SA0009/T10
Acciaio di base Steel	20MNCR5						
Trattamento termico eseguito Executed Heat Treatment	NORMALISATION						

N. totale pezzi controllati N. of Controlled Pieces	5					
Metodo di prova Test Method	Ø Sfera Ø Sphere	0	Kg Applicati Kg Applied	0	ACCORDING TO EN ISO 6506-1 STANDARD	

TREATMENT BATCH : 202311092327 - STTV01 - REF. MEASUREMENT: 23-1637

REQUIRED HARDNESS VALUE HB min 160 max 210

1) 173 HB 2) 171 HB 3) 170 HB 4) 174 HB 5) 178 HB

CHECK DATE: 10/11/2023 MEASUREMENTS MADE BY: TESTED - ANDREA

Any complaints regarding the required heat treatment must be raised before subjecting conforming parts to further processing

F.A.C.E.M. S.p.A.
Fabbricazione Articoli Casalinghi E Metallurgici

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CERTIFICATO DI TRATTAMENTO TERMICO

HEAT TREATMENT CERTIFICATE

Form MR-CQU-32 Rev. 02 of 27/03/2011

N. D.d.T. / Delivery Note No.	SDDT-2401045	Riga / Row	5	Del / Of 04/06/2024	N. Pezzi spediti / N. Pieces Shipped 1277
Marchiatura / Marking	3250154-15	Colata N. / Casting No.	379514		Kg spediti / Kg Shipped 1000,5
Accorpamento N. / Grouping No.	2301734	Ordine di controllo N. / Inspection Order No.	CQ23-01183		
Cliente / Customer	C000001	DANA MOTION SYSTEMS ITALIA Srl - POWER TRANSMISSION			
Nr. Articolo / Item No.	32501541199/T	CODE 32501541199 ANNEALED			Nr. Articolo FACEM / Item No. FACEM SA0009/T10
Acciaio di base / Steel	20MNCR5				
Trattamento termico eseguito / Executed Heat Treatment	NORMALISATION				

N. totale pezzi controllati / N. of Controlled Pieces	5				
Metodo di prova / Test Method	Ø Sfera / Ø Sphere 0	Kg Applicati / Kg Applied	0	ACCORDING TO EN ISO 6506-1 STANDARD	

TREATMENT BATCH : 202311092328 - STTV01 -REF. MEASUREMENT: : 23-1643

REQUIRED HARDNESS VALUE HB min 160 max 210

1) 165 HB 2) 167 HB 3) 164 HB 4) 169 HB 5) 173 HB

CHECK DATE: 10/11/2023 MEASUREMENTS MADE BY: TESTED - ANDREA

Any complaints regarding the required heat treatment must be raised before subjecting conforming parts to further processing

	Check Sheet F0501 - R04.02 - 12.11.2012	Inspection lot 030001099863	Quantity 1.440	Order Type/Number/Position ZWO0 11400084 0140	Work Center 0062

PART NUMBER	REVISION	OPERATION	OPERATION DESCRIPTION
32501541100	W	0140	ipsen case-hardening furnace

ID	CHARACTERISTIC	METHOD	SAMPLING	UM	TARGET	MIN_MAX	#1	#2	#3	#4	#5	#6	#7	#8
10	MT3006 ROCKWELL HARDNESS C	DUR001 DUROMETER	ZF0004 4 Pieces			62,00 58,00	60	59	60	60				
20	MT3012 CASE-HARDENING DEPTH (HV550)	PRO001 TEST SPECIMEN ACCORDING TO SP022-2	ZF0004 4 Pieces			0,80 0,60	,63	,65	,69					
30	MT3023 P3 CORE STRENGTH	LAB001 LABORATORY	ZF0004 4 Pieces			1.400,00 1.100,00	1130							
40	MT0100 MATERIAL TYPE	VIS002 VISUAL INSPECTION	ZF0001 1 Piece				B21-20MnCr5							
50	MT4101 TEST SPECIMEN TYPE USED (SP022-02)	PRO001 TEST SPECIMEN ACCORDING TO SP022-2	ZF0004 4 Pieces				01-TEST ON PART							
60	MT5100 PROGRAM CODE USED	VIS002 VISUAL INSPECTION	ZF0004 4 Pieces											
70	MT5101 LOAD NUMBER	VIS002 VISUAL INSPECTION	ZF0004 4 Pieces				24-07/0073 RTQ 2							
100	VC3010 VISUAL TEST: AFTER HEAT TREATMENT	VIS001 VISUAL INSPECTION ACCORDING TO WI0519	ZF0004 4 Pieces											
110	TX0038 NON-CONFORMITY OR RERA TEST	VIS002 VISUAL INSPECTION	ZF0004 4 Pieces											

Date Time	Signature	Remarks
23.07.2024 16:04:01	DVALCAV001	Tested according SP022-02 , carburizing temperature below 940°C

F.A.C.E.M. S.p.A.
Fabbricazione Articoli Casalinghi E Metallurgici

TRE SPADE ®
www.trespade.it

Partita Iva IT 00517250015
Cod. Fisc. e n° Reg.Imp.Torino 00517250015
REA di Torino n° 151967 - Cap.Soc. 3.000.000 € i.v.
Sede Legale:
Via Bricherasio, 7 - 10128 Torino (TO) - Italia
Tel. +39 0124 707711
Sede Amministrativa:
Borgata Braidacroce, 108 - 10087 Valperga (TO) - Italia
Tel. +39 0124 707711
www.facem.com E-mail: facem@facem.com

CERTIFICATO DI ANALISI
ANALYSIS CERTIFICATE

DANA MOTION SYSTEMS ITALIA Srl -POWER TRANSMISSION
POWER TRANSMISSION
Via Luciano Brevini, 1/a
42124 REGGIO EMILIA
RE
Italia

Rif. DDT Nr. SDDT-2400623 del 03/04/2024 riga 2 Cod. articolo 32513641199 (SA0026) Spediti Nr. 2250
Rif. Vs. Ordine Nr. 4500612666 del 04/12/2023 Marchiatura Nr. 20

COLATA N. 379862

Colata originale n. 23/79862

Certificato di analisi originario n. 17998 Rilasciato il 26/07/2023 da: RIVA ACCIAIO Spa

MATERIALE 20MNCR5 UNI EN ISO 683-3

COMPOSIZIONE CHIMICA

C [%]	Mn [%]	Si [%]	P [%]	S [%]	Cr [%]	Ni [%]	Mo [%]	Al [%]	Cu [%]	Sn [%]	Ti [%]	V [%]	N [PPM]	Nb [%]	O2 [PPM]	H2 [PPM]
0,1800	1,2100	0,2500	0,0160	0,0230	1,1300	0,1100	0,0200	0,0220	0,2300	0,0090	0,0070	0,0040	105,0000	0,0030	20,0000	2,5000

DIAMETRO IDEALE 0 "

GROSSEZZA GRANO AUSTENITICO
Grano austenitico definito 6
Grano austenitico inferiore
Grano austenitico superiore

PROVA JOMINY

mm	1,5	3,0	5,0	7,0	9,0	11,0	13,0	15,0	20,0	25,0	30,0	35,0	40,0	45,0	50,0
HRC	44	43	42	40	36	34	32	31	28	27	25	24	23	22	21

CARATTERISTICHE MECCANICHE

RESISTENZA A TRAZIONE
Tipo prova TRAZIONE LONGITUDINALE - UNI EN ISO 6892-1
T.T. Provetta TEMPRA E DISTENSIONE

A [%]	HB [HB]	R [N/MM2]	RS [N/MM2]	%
12,50	228,00	1.299,00	1.201,00	54,30

RESILIENZA
Tipo prova PROVA DI RESILIENZA - UNI EN ISO 148/1
T.T. Provetta TEMPRA E DISTENSIONE
Temperatura [°C] 20
Valore medio [Joule] 33,3

MICROPUREZZA
Metodo: ASTM/E45 METODO A JERNKONTORET

Tipo	A/S	B/S	C/S	D/S
	1,5	0,5	0,5	1,0

NOTE
Rapporto di riduzione tondo mm 55 = 10,78:1
ACCIAIO DEGASATO SOTTOVUOTO

I dati riportati in questo certificato sono conformi alla norma UNI EN 10204/3.1 ed all'originale da noi archiviato

Per F.A.C.E.M. SpA
Vacca Simone

230377

RIVA ACCIAIO S.P.A.
STABILIMENTO DI LESEGNO
Via Statale, 28 nord
12076 Lesegno(CN) ITALIA
Tel. 0174-718111 Fax. 0174-77251

Sede legale e amministrativa: Viale Certosa, 249 - 20151 Milano
telefono 02 30700 - telefax 02 38000346
codice fiscale, partita iva e numero iscrizione Registro Imprese Milano 08521290158

CERTIFICATO DI COLLAUDO

A03 Numero Certificato: 17998

Data Certificato: 26/07/2023

CERTIFICHIAMO CHE IL PRODOTTO RELATIVO A QUESTO DOCUMENTO E' CONFORME ALLE PRESCRIZIONI CITATE IN ORDINE

B14 Norma riferimento: UNI EN 10204/2005

B15 Tipo: 3.1

B02 Acciaio: 20MNCRS5+HH EN 10084

B07 Anno/Numero colata: 23/79862

B01 Profilo: LAMINATO TONDO EN 10060

B09 Misura 1 x Misura 2: 55,00

B04 Stato fornitura: LAMINATO TONDO

B09 Lunghezza: 8,000 - 9,000

A07 Ordine Cliente: 228/2023

A08 Conferma: 07 Y5K77 001

C14 Tasso di riduzione: 10,78

B06

A06 Dati Cliente:
BERFER SRL
CORSO TORINO 60
10086 RIVAROLO CANAVESE

C70 Processo:
FUSIONE AL FORNO ELETTRICO
COLAGGIO PROTETTO IN C.C. 160

COMPOSIZIONE CHIMICA - ANALISI DI COLATA

C71 C	C72 Mn	C73 Si	C74 P	C75 S	C76 Cr	C77 Ni	C78 Mo	C79 Cu	C80 Sn	C85 Al	C91 Ti
0,180	1,210	0,250	0,016	0,023	1,130	0,110	0,020	0,230	0,009	0,022	0,007

C87 V	C88 Nb	C89 B	C92 Ca				C93 N	C94 $O_{2\,[ppm]}$	C95 $H_{2\,[ppm]}$		C96 CEV
0,004	0,003	0,0000					0,0105	20	2,5		

CARATTERISTICHE MECCANICHE

C01 Prelievo: C - Colata, L - Laminato, T - Trafilato: [C]

C03 Trattamento Termico: PROVETTA TEMPR.E DIST

PROVE DI TRAZIONE

C08 Dim. Campione	C10 Dim. Provetta	C12 $R_{m\,[MPa]}$	C11 $R_{e\,[MPa]}$	C13 $A5_{\%}$	C15 $Z_{\%}$	
11	10	1299	1201	12,5	54,3	

PROVE DI RESILIENZA

C41 Dim. Provetta	C40 Tipo	C42 $K_{1\,[J]}$	C42 $K_{2\,[J]}$	C42 $K_{3\,[J]}$	C43 $K_{x\,[J]}$	C44 Temp.
10x10	KCU				33,3	20°C

C22 HB:

PROVA JOMINY

C03 Normalizzazione: Tempra

C61 mm	1,5	3	5	7	9	11	13	15	20	25	30	35	40	45	50					C45 DI
C60 HRC	44	43	42	40	36	34	32	31	28	27	25	24	23	22	21					

C65 Grano Austenitico: MAC QUAID - EHN 6

C62 Micropurezza:
ASTM E45 - JERKONTORET METODO A
S: A1,5 B0,5 C0,5 D1,0

C05 Bandatura:

C31 Valori di durezza:

+AR HB 228 | +A | +FP

INFORMAZIONI SUPPLEMENTARI

B03
BARRE LUNG. COMMERCIALE

CONTROLLO ANTIMESCOLAMENTO ESEGUITO

D51 Note:

DOCUMENTO ELETTRONICO VALIDO SENZA FIRMA

A10 Dati DDT:
N° 6316 KG. 5015

Z04

ID Doc. 647303 - CERTIFICATO COLATA
Cod.Colata: 379862
Nr.23/79862 Pr. 230377
Acciaio Base: S20MNCR5
Forn/Cli: RIVA ACCIAIO Spa

Z01 Responsabile C.Q.:
G. Piumatti

Z02

F.A.C.E.M. S.p.A.
Fabbricazione **A**rticoli **C**asalinghi **E** **M**etallurgici

TRE SPADE ®
www.trespade.it

Hot & Warm Steel Forging Division
Partita Iva IT 00517250015
Cod. Fisc. e n° Reg.Imp.Torino 00517250015
REA di Torino n° 151967 - Cap.Soc. 3.000.000 € i.v.
Sede Legale:
Via Bricherasio, 7 - 10128 Torino (TO) - Italia
Tel. +39 0124 707711
Sede Amministrativa:
Borgata Braidacroce, 108 - 10087 Valperga (TO) - Italia
Tel. +39 0124 707711
www.facem.com E-mail: facem@facem.com

CERTIFICATO DI TRATTAMENTO TERMICO

HEAT TREATMENT CERTIFICATE

Modulo MR-CQU-32 Rev. 02 del 27/03/2011

N. D.d.T. / Delivery Note No.	SDDT-2400623	Riga / Row	2	Del / Of 03/04/2024	N. Pezzi spediti / N. Pieces Shipped 2250
Marchiatura / Marking	20	Colata N. / Casting No.	379862		Kg spediti / Kg Shipped 4692,5
Accorpamento N. / Grouping No.	2400306	Ordine di controllo N. / Inspection Order No.	CQ24-00223		
Cliente / Customer	C000001	DANA MOTION SYSTEMS ITALIA Srl - POWER TRANSMISSION			
Nr. Articolo / Item No.	32513641199/T	COD. 32513641199 RICOTTO		Nr. Articolo FACEM / Item No. FACEM	SA0026/T10
Acciaio di base / Steel	20MNCR5				
Trattamento termico eseguito / Executed Heat Treatment	NORMALIZZAZIONE				

N. totale pezzi controllati / N. of Controlled Pieces	20				
Metodo di prova / Test Method	Ø Sfera / Ø Sphere	10	Kg Applicati / Kg Applied	3.000	SECONDO NORMA UNI EN ISO 6506-1

LOTTO DI TRATTAMENTO: 202402281359 - STTV01 - RIF. RILEVAZIONE: 24-0407
VALORE DUREZZA RICHIESTO: HB min 160 max 210

1) 171 HB 2) 176 HB 3) 169 HB 4) 176 HB 5) 172 HB

DATA VERIFICA: 28/02/2024 RILIEVI ESEGUITI DA: COLLAUDOV - OMAR

LOTTO DI TRATTAMENTO: 202402281645 - STTV01 - RIF. RILEVAZIONE: 24-0409
VALORE DUREZZA RICHIESTO: HB min 160 max 210

1) 175 HB 2) 177 HB 3) 176 HB 4) 169 HB 5) 172 HB

DATA VERIFICA: 28/02/2024 RILIEVI ESEGUITI DA: COLLAUDOV - OMAR

LOTTO DI TRATTAMENTO: 202402281940 - STTV01 - RIF. RILEVAZIONE: 24-0410
VALORE DUREZZA RICHIESTO: HB min 160 max 210

1) 170 HB 2) 171 HB 3) 173 HB 4) 176 HB 5) 173 HB

DATA VERIFICA: 29/02/2024 RILIEVI ESEGUITI DA: COLLAUDOV - ANDREA

LOTTO DI TRATTAMENTO: 202402282228 - STTV01 - RIF. RILEVAZIONE: 24-0411
VALORE DUREZZA RICHIESTO: HB min 160 max 210

1) 174 HB 2) 179 HB 3) 173 HB 4) 170 HB 5) 172 HB

DATA VERIFICA: 29/02/2024 RILIEVI ESEGUITI DA: COLLAUDOV - ANDREA

Eventuali contestazioni circa il trattamento termico richiesto devono essere formulate prima di sottoporre i particolari conformi ad ulteriore lavorazione

F.A.C.E.M. S.p.A.
Fabbricazione Articoli Casalinghi E Metallurgici

VAT No.: IT 00517250015
Tax Code and Turin Company Register No. 00517250015
REA di Torino n° 151967 - Cap.Soc. 3.000.000 €i.v.
Registered Office:
Via Bricherasio, 7 - 10128 Torino (TO) - Italia
Tel. +39 0124 707711
Administration Office:
Borgata Braidacroce, 108 - 10087 Valperga (TO) - Italia
Tel. +39 0124 707711
www.facem.com E-mail: facem@facem.com

TRE SPADE ®
www.trespade.it

CERTIFICATO DI ANALISI
ANALYSIS CERTIFICATE

DANA MOTION SYSTEMS ITALIA Srl -POWER TRANSMISSION
POWER TRANSMISSION
Via Luciano Brevini, 1/a
42124 REGGIO EMILIA
RE
Italia

Delivery Note Ref. No. SDDT-2400623 of 03/04/2024 line 2
Your Ref. Order No. 4500612666 of 04/12/2023

Item code 32513641199 (SA0026)
Marking No. 20

Shipment No. 2250

CASTING No. 379862

Original casting no. 23/79862

Original analysis certificate no. 17998 Released on 26/07/2023 by: RIVA ACCIAIO Spa

MATERIAL 20MNCR5 UNI EN ISO 683-3

CHEMICAL COMPOSITION

C [%]	Mn [%]	Si [%]	P [%]	S [%]	Cr [%]	Ni [%]	Mo [%]	Al [%]	Cu [%]	Sn [%]	Ti [%]	V [%]	N [PPM]	Nb [%]	O2 [PPM]
0,1800	1,2100	0,2500	0,0160	0,0230	1,1300	0,1100	0,0200	0,0220	0,2300	0,0090	0,0070	0,0040	105,0000	0,0030	20,0000

H2 [PPM]
2,5000

IDEAL DIAMETER 0 "

AUSTENITIC GRAIN SIZE

Austenitic grain defined 6
Austenitic grain smaller
Austenitic grain larger

JOMINY TEST

mm	1,5	3,0	5,0	7,0	9,0	11,0	13,0	15,0	20,0	25,0	30,0	35,0	40,0	45,0	50,0
HRC	44	43	42	40	36	34	32	31	28	27	25	24	23	22	21

MECHANICAL PROPERTIES

TENSILE STRENGTH

Test type LONGITUDINAL TENSILE UNI EN ISO 6892-1
Heat Treatment Specimen HARDENING AND DESTRESSING

A [%]	HB [HB]	R [N/MM2]	RS [N/MM2]	%
12,50	228,00	1.299,00	1.201,00	54,30

STRENGTH

Test type STRENGTH TEST UNI EN ISO 148/1
Heat Treatment Specimen HARDENING AND DESTRESSING
Temperature [°C] 20
Average value [Joule] 33,3

MICRO-PURITY

Method: ASTM/E45 JERNKONTORET METHOD

Type	A/S	B/S	C/S	D/S
	1,5	0,5	0,5	1,0

NOTES

Reduction ratio 55 mm round bar = 10,78:1
STEEL DEGASSED UNDER VACUUM

The data contained in this certificate complies with the EN 10204/3.1 standard and is true to the original archived at our site

For F.A.C.E.M. SpA
Vacca Simone

230377

RIVA ACCIAIO S.P.A.
LESEGNO PLANT
Via Statale, 28 nord
12076 Lesegno(CN) ITALIA
Tel. 0174-718111 Fax. 0174-77251

Registered and administration Office Viale Certosa, 249 - 20151 Milano
telephone 02 30700 - telefax 02 38000346
tax Code, VAT number and Milan Company Register number 08521290158

TEST CERTIFICATE

A03 Certificate Number: 17998
Certificate Date: 26/07/2023

WE CERTIFY THAT THE PRODUCT COVERED BY THIS DOCUMENT COMPLIES WITH THE REQUIREMENTS STATED IN THE ORDER

B14 Reference standard: UNI EN 10204/2005
B15 Type: 3.1

B02 Steel: 20MNCRS5+HH EN 10084
B01 Profile: ROUND ROLLED EN 10060
B04 Supply status: ROUND ROLLED
A07 Client Order: 228/2023
A08 Confirmation: 07 Y5K77 001
B06

B07 Casting Year/Number: 23/79862
Measurement 1 x Measurement 2: 55,00
B09 Length: 8,000 - 9,000
C14 Reduction rate: 10,78

A06 Client Data:
BERFER SRL
CORSO TORINO 60
10086 RIVAROLO CANAVESE

C70 Process:
MELTING IN ELECTRIC FURNACE,
CASTING PROTECTED IN C.C. 160

CHEMICAL COMPOSITION - CASTING ANALYSIS

C71 C	C72 Mn	C73 Si	C74 P	C75 S	C76 Cr	C77 Ni	C78 Mo	C79 Cu	C80 Sn	C85 Al	C91 Ti
0,180	1,210	0,250	0,016	0,023	1,130	0,110	0,020	0,230	0,009	0,022	0,007

C87 V	C88 Nb	C89 B	C92 Ca				C93 N	C94 $O_{2\,[ppm]}$	C95 $H_{2\,[ppm]}$		C96 CEV
0,004	0,003	0,0000					0,0105	20	2,5		

MECHANICAL PROPERTIES

C01 Sample: C-Casting, L-Rolled, T-Drawn — [C]
C03 Heat Treatment: SPECIMEN HARDENING AND DESTRESSING

TENSILE TEST

C08 Sample Size	C10 Specimen Size	C12 $R_{m\,[MPa]}$	C11 $R_{e\,[MPa]}$	C13 $A5_{\%}$	C15 $Z_{\%}$	
11	10	1299	1201	12,5	54,3	

STRENGTH TESTS

C41 Specimen Size	C40 Type	C42 $K_{1\,[J]}$	C42 $K_{2\,[J]}$	C42 $K_{3\,[J]}$	C43 $K_{x\,[J]}$	C44 Temp.
10x10	KCU				33,3	20°C

C22 HB

JOMINY TEST

C03 Normalisation
Hardening

C61 mm	1,5	3	5	7	9	11	13	15	20	25	30	35	40	45	50					C45 DI
C60 HRC	44	43	42	40	36	34	32	31	28	27	25	24	23	22	21					

C65 Austenitic grade: MAC QUAID - EHN 6
C62 Micro-purity: ASTM E45 - JERKONTORET METHOD A
S: A1,5 B0,5 C0,5 D1,0
C05 Banding
C31 Hardness values: +AR HB 228 | +A | +FP

ADDITIONAL INFORMATION

B03
RODS OF COMMERCIAL LENGTH
ANTI-MIXING CHECK PERFORMED

D51 Notes

ELECTRONIC DOCUMENT VALID WITHOUT SIGNATURE

A10 Delivery Note Data: N° 6316 KG. 5015

Z04
Doc. ID. 647303 - CASTING CERTIFICATE
code Casting 379862
No. 23/79862 Pr. 230377
Base Steel; S20MNCR5
Supplier/Client: RIVA ACCIAIO SPA

Z01 Q.C. Manager: G. Piumatti
Z02

F.A.C.E.M. S.p.A.
Fabbricazione **A**rticoli **C**asalinghi **E** **M**etallurgici

TRE SPADE ®
www.trespade.it

Hot & Warm Steel Forging Division
VAT No.: IT 00517250015
(Tax Code and Turin Company Register No. 00517250015
REA di Torino n° 151967 - Cap.Soc. 3.000.000 €i.v.
Registered Office:
Via Bricherasio, 7 - 10128 Torino (TO) - Italia
Tel. +39 0124 707711
Administration Office:
Borgata Braidacroce, 108 - 10087 Valperga (TO) - Italia
Tel. +39 0124 707711
www.facem.com E-mail: facem@facem.com

CERTIFICATO DI TRATTAMENTO TERMICO

HEAT TREATMENT CERTIFICATE

Form MR-CQU-32 Rev. 02 of 27/03/2011

N. D.d.T. / Delivery Note No.	SDDT-2400623	Riga / Row	2	Del / Of 03/04/2024	N. Pezzi spediti / N. Pieces Shipped 2250
Marchiatura / Marking	20	Colata N. / Casting No.	379862		Kg spediti / Kg Shipped 4692,5
Accorpamento N. / Grouping No.	2400306	Ordine di controllo N. / Inspection Order No.	CQ24-00223		
Cliente / Customer	C000001	DANA MOTION SYSTEMS ITALIA Srl - POWER TRANSMISSION			
Nr. Articolo / Item No.	32513641199/T	CODE 32513641199 ANNEALED			Nr. Articolo FACEM / Item No. FACEM SA0026/T10
Acciaio di base / Steel	20MNCR5				
Trattamento termico eseguito / Executed Heat Treatment	NORMALISATION				

N. totale pezzi controllati / N. of Controlled Pieces	20				
Metodo di prova / Test Method	Ø Sfera / Ø Sphere 10	Kg Applicati / Kg Applied	3.000	ACCORDING TO STANDARD	UNI EN ISO 6506-1

TREATMENT BATCH: 202402281359 - STTV01 - REF. MEASUREMENT: 24-0407
REQUIRED HARDNESS VALUE: HB min 160 max 210
1) 171 HB 2) 176 HB 3) 169 HB 4) 176 HB 5) 172 HB
CHECK DATE: 28/02/2024 MEASUREMENTS MADE BY: TESTED - OMAR

TREATMENT BATCH: 202402281645 - STTV01 - REF. MEASUREMENT: 24-0409
REQUIRED HARDNESS VALUE: HB min 160 max 210
1) 175 HB 2) 177 HB 3) 176 HB 4) 169 HB 5) 172 HB
CHECK DATE: 28/02/2024 MEASUREMENTS MADE BY: TESTED - OMAR

TREATMENT BATCH: 202402281940 - STTV01 - REF. MEASUREMENT: 24-0410
REQUIRED HARDNESS VALUE: HB min 160 max 210
1) 170 HB 2) 171 HB 3) 173 HB 4) 176 HB 5) 173 HB
CHECK DATE: 29/02/2024 MEASUREMENTS MADE BY: TESTED - ANDREA

TREATMENT BATCH: 202402282228 - STTV01 - REF. MEASUREMENT: 24-0411
REQUIRED HARDNESS VALUE: HB min 160 max 210
1) 174 HB 2) 179 HB 3) 173 HB 4) 170 HB 5) 172 HB
CHECK DATE: 29/02/2024 MEASUREMENTS MADE BY: TESTED - ANDREA

Any complaints regarding the required heat treatment must be raised before subjecting conforming parts to further processing

DANA

Check Sheet

F0501 - R04.02 - 12.11.2012

Inspection lot	Quantity	Order Type/Number/Position	Work Center
030001097049	1.160	ZWO0 11400363 0140	0062

PART NUMBER	REVISION	OPERATION	OPERATION DESCRIPTION
32513641100	O	0140	ISPEN CASE-HARDENING FURNACE

ID	CHARACTERISTIC	METHOD	SAMPLING	UM	TARGET	MIN_MAX	#1	#2	#3	#4	#5	#6	#7	#8
10	MT3006 ROCKWELL HARDNESS C	DUR001 DUROMETER	ZF0002 2 Pieces			62,00 58,00	59	58						
20	MT3012 CASE-HARDENING DEPTH (HV550)	PRO001 TEST SPECIMEN ACCORDING TO SP022-2	ZF0001 1 Piece			0,90 0,70								
30	MT3023 P3 CORE STRENGTH	LAB001 LABORATORY	ZF0001 1 Piece			1.400,00 1.000,00								
40	MT0100 MATERIAL TYPE	VIS002 VISUAL INSPECTION	ZF0001 1 Piece				B21-20MnCr5							
50	MT4101 TEST SPECIMEN TYPE USED (SP022-02)	PRO001 TEST SPECIMEN ACCORDING TO SP022-2	ZF0001 1 Piece											
60	MT5100 PROGRAM CODE USED	VIS002 VISUAL INSPECTION	ZF0001 1 Piece											
70	MT5101 LOAD NUMBER	VIS002 VISUAL INSPECTION	ZF0001 1 Piece											
100	VC3010 VISUAL TEST: AFTER HEAT TREATMENT	VIS001 VISUAL INSPECTION ACCORDING TO WI0519	ZF0008 8 Pieces											

Date Time	Signature	Remarks
26.06.2024 16:52:02	DVALCAV001	Tested according SP022-02 , carburizing temperature below 940°C

MATERIAL TEST CERTIFICATE
(材质证书)
ACCORDING EN10204 3.1

LANGUAGE
ENGLISH

DANAMotionSystemsItaliaS.r.lMATERIAL STANDARD (SP046-3)（标准）		CERTIFICATE DATE（证书日期）	CAST ID （批号）
B21	20CrMnTiH	2023.11.16	22108581C
RAW MATERIAL ORIGIN /MATERIAL（原料产地/材料）		CUSTOMER （客户）	
CAST ID：22108581C		DanaMotionSystems Italia S.r.l .	
MATERIAL（材质）: 20CrMnTiH		VIALUCIANODanaMotionSystemsItaliaS.r.l1/A-42124STRADARIO 01483 REGGIO EMILIA - ITALY (RE) ENROLLED AT REGISTER OF ENTERPRISES OF REGGIO EMILIA-NUMBER REA 75379	
PART NUMBER （客户零件号码）		QUANTITY （数量）	SUPPLIER （供应商）
32602831999		900	JINANHONGZHENG SCIENCE
PART DESCRI PTION （零件叙述/名称）		ORDER NUMBER/DELIVERY NOTE （订单号码/交货通知单）	DANA2315
BLANK SUN PINION		4500586850	

CHEMICAL COMPOSITION
(化学成份)

	%C	%Mn	%Cr	%S	%Si	%P	%Ti	-----	-----	-----	-----
MIN	0.17	0.80	1.00	-----	0.17	-----	0.04	-----	-----	-----	-----
MAX	0.23	1.10	1.30	0.035	0.37	0.035	0.10	-----	-----	-----	-----
CAST	0.185	0.897	1.15	0.008	0.22	0.011	0.07	-----	-----	-----	-----
								“Grain Growth:A/min=0.020%,Timin=0.04%			

MECHANICAL PROPERTIES
（机械性能）

TEST MEDIA AND HEAT TREATMENT （试验热处理）		Rm[N/mm²]	Re[N/mm²]	A%	Z%	Kv[J]	SOUNDNESS	Grain Size
+QT WITH TEMPERING AT 190ºC （淬火、回火）	MIN	600	-----	-----	-----	-----	MPI	-----
	MAX	850	-----	-----	-----	-----	ONBAR	-----
	CAST	730	-----	-----	-----	-----	PASSED	-----

REMARKS AND ADDITIONAL TESTS

MATERIAL ON DRAWING (图面材质)/32602831999
20CrMnTiH/EN10084

APPROVAL(核准)：	CHECKED（审核）：		ENGINEER（主办人）：
Yuan min Chen	Shan Gao	Yue zhen Yu	Chun min Liu

江苏沙钢集团淮钢特钢股份有限公司产品质量证明书

Mill Test Certificate by Jiangsu Shagang Group Huaigang Special Steel Co.,Ltd

地址：江苏省淮安市西安南路188号
ADD：NO.188, SOUTH XI'AN ROAD, HUAI'AN CITY, JIANGSU PROVINCE
TEL：0517-83033310
FAX：0517-83803715

需方：Buyer　　合同号：Contract No.　　信用证号：L/C Number　　牌号：20CrMnTi Steel Grade

HGR-13-16

产品名称：齿轮钢20CrMnTi Description of Goods　　执行标准：GB/T 3077-2015 Standard Adopted　　交货状态：热轧 State of Delivery　　加工用途：Final Applica

生产许可证：Production License No.

批号 Batch No	炉号 Heat No	规格(mm) Size	重量(t) Weight	件数(件) No of Bundles	C/% x10²	Si/% x10²	Mn/% x10²	P/% x10³	S/% x10³	Ni/% x10²	Cr/% x10²	Cu/% x10²	Mo/% x10⁴	Ti/% x10⁴
42202-0509	22108581C	φ70*6000	41.25	15	20	25	96	23	6	2	117	2	30	510
42202-0510	12108372C	φ70*6000	77.0810	28	20	25	101	17	23	4	109	2	70	500

批号 Batch No	炉号 Heat No	一般疏松(级) Scattered Porosity	中心疏松(级) Central Porosity	锭型偏析(级) IngotShape Segregate	中心偏析(级) Central Segregation	ReI/MPa	Rm/MPa	A/%	Z/%	热顶锻 Hot Upset Forging	KU2(J)/20℃	表面质量 Surface Quality
42202-0509	22108581C	1.0/1.0	1.0/1.0	0/0	0/0	1148/1116	1390/1355	12.0/12.5	53.0/55.0	合格	109.0/95.0	合格
42202-0510	12108372C	1.0/1.0	1.5/1.5	0/0	0/0	1070/1058	1315/1300	13.0/13.5	54.0/55.0	合格	74.0/83.0	合格

批号 Batch No	炉号 Heat No	外形尺寸 Physical Size	工艺流程 Manufacturing Process
42202-0509	22108581C	合格	LD→LF→(RH)→CCM
42202-0510	12108372C	合格	LD→LF→(RH)→CCM

说明 Note

酸浸低倍组织中白点、宏观夹杂等标准规定不允许有的缺陷，我们均保证符合标准出厂，有异议时，来函请标明钢号、批号或炉号、规格、发货单号、原因，提供质量证明书，并将实物保管好。No impermissible macro-structural defects such as flakes and macro inclusions are available. If there are any complaints, you are kindly requested to mark the Steel Grade, Batch No. or Heat No., Size, delivery sheet No., Causes and this Mill Test Certificate. The steel bars or billet with problems shall be properly kept.

备注 Explanation

除特殊要求，其它微量元素仅供参考！

签发人：Signature　　质量检验章：(盖章有效) Quality inspection stamp　　流水号：0308898 Serial Number

JINAN HONGZHENG SCIENCE & TECHNOLOGY Co. Ltd

HEAT TREATMENT REPORT

ACCORDING TO UNI EN 10204 3.1

DATE:2023.11.16

PART NO.	**32602831999**	**BATCH CODE**	**DANA2315**	**MATERIAL**	**20CrMnTiH**
PART NAME	**BLANK SUN PINION**	**No. OF PCS IN BATCH**	**900PCS**	**ORDER NO.**	**4500586850**

ITEM	**STANDARDVALUE**	**INSPECTION EQUIPMENT**	**1**	**2**	**3**	**JUDGEMENT**
TENSLIE STRENGTH Of MATERIAL	**600~850N/mm²**	**ROCKWELL'S HARDNESS TESTING EQUIP**	**730**	**720**	**730**	**OK**
APPROVAL (QUALITYMANAGER)	Yuan min Chen	**CHECK (QUALITYSUPERVISOR)**	Shan Gao	Yue zhen Yu	**QUALITY (INSPECTOR)**	Chun min Liu

DANA	Check Sheet F0501 - R04.02 - 12.11.2012	Inspection lot 030001094924	Quantity 570	Order Type/Number/Position ZWO0 11399726 0070	Work Center 0062

PART NUMBER	REVISION	OPERATION	OPERATION DESCRIPTION
32603241900	M	0070	ISPEN CASE-HARDENING FURNACE

ID	CHARACTERISTIC	METHOD	SAMPLING	UM	TARGET	MIN_MAX	#1	#2	#3	#4	#5	#6	#7	#8
2	MT3006 ROCKWELL HARDNESS C	DUR001 DUROMETER	ZF0003 3 Pieces			62,00 58,00	60	61	60					
12	MT3012 CASE-HARDENING DEPTH (HV550)	PRO001 TEST SPECIMEN ACCORDING TO SP022-2	ZF0003 3 Pieces			0,40 0,25	,45	,45	,45					
22	MT3023 P3 CORE STRENGTH	LAB001 LABORATORY	ZF0001 1 Piece			1.400,00 1.100,00								
32	MT0100 MATERIAL TYPE AS PER DRAWING	VIS002 VISUAL INSPECTION	ZF0001 1 Piece				B21-20MnCr5							
42	MT4101 TEST SPECIMEN TYPE USED (SP022-02)	PRO001 TEST SPECIMEN ACCORDING TO SP022-2	ZF0001 1 Piece											
52	MT5100 PROGRAM CODE USED	VIS002 VISUAL INSPECTION	ZF0001 1 Piece											
62	MT5101 LOAD NUMBER	VIS002 VISUAL INSPECTION	ZF0001 1 Piece											
72	VC3010 VISUAL TEST: AFTER HEAT TREATMENT	VIS001 VISUAL INSPECTION ACCORDING TO WI0519	ZF0008 8 Pieces											

Date	Time	Signature	Remarks
27.06.2024	13:32:58	DVALCAV001	Tested according SP022-02 , carburizing temperature below 940°C

ACCIAIERIE VENETESPA

CERTIFICATO DI COLLAUDO – INSPECTION CERTIFICATE
CERTIFICAT DE RECEPTION – ABNAHMEPRÜFZEUGNIS

EN 10204 3.1

N° 640869

DATE:28/03/2023

Acciaierie Venete Spa C.S. € 63.000.000,00 i.v C.F. e P.IVA 00224180281
R.I di Trento 00224180281 V.A.T. N° IT 00224180281
Sede Legale: 38051 Borgo Valsugana (TN) Via Puisle, 4 - Italy
Direzione/Amministrazione: 35127 Padova Z.I. Sud - Riviera Francia, 9 - Italy Tel. 049 828.28.20 (r.a.)

CLIENTE
CUSTOMER
CLIENT
KUNDE

101567 - INTERACCIAI SPA
VIA PASTEUR 2
42100 REGGIO EMILIA (RE)

ORDINE CLIENTE - PURCHASE ORDER
COMMANDE CLIENT - KUNDENAUFTRAG
REDS1078

ORDINE - ORDER
COMMANDE - AUFTRAG
168886 / 20

ARTICOLO (ACCIAIO)- ITEM (STEEL) - ITEM (ACIER) - ARTIKEL (STAHL)

PROFILO - PROFILE
PROFIL - ABMESSUNG
TONDO 48 mm (EN 10060 - NORMAL)

STATO DI FORNITURA- DELIVERY CONDITION
CONDITION DE LIVRAISON – LIEFERZUSTAND
RICOTTURA DI CESOIABILITA

STATO DI ESECUZIONE - STATE OF EXECUTION
ETAT DE L'ÉXECUTION - AUSFÜHRUNG
LAMINATO RULLATO

COLATA - HEAT - COULEE - SCHMELZE
293753

MARCA ACCIAIO - STEEL GRADE - MARQUE ACIER - STAHLGÜTE
17NICRMO6-4+HH

NORMA - SPECIFICATION - NORME - NORM
INTERACCIAI INT017 REV03 (S=0.020-0.035%)

PESO - WEIGHT
POIDS - GEWICHT (Kg) **5230**

COLLI - ITEMS
COLIS - KOLLI (Nr) **2**

DDT - DELIVERY NOTE
BON DE LIVRAISON - LIEFERSCHEIN **L1001989** **03/04/2023**

BLUMO - BLOOM
BLOOM - KNÜPPEL **160 X 160 mm**

RIDUZIONE - REDUCTION
REDUCTION - UMFORMUNGSGRAD **14.1**

STAB. SPEDIZIONE: ODOLO (BS)

COMPOSIZIONE CHIMICA (%) - CHEMICAL COMPOSITION (%) - COMPOSITION CHIMIQUE (%) - CHEMISCHE ZUSAMMENSETZUNG (%)

C	Si	Mn	P	S	Cu	Cr	Ni	Sn	Al	As	Mo
0.1870	0.2210	0.8450	0.0110	0.0300	0.2090	0.9610	1.2740	0.0080	0.0290	0.0050	0.1840

V	B	Nb	Ca	Sb
0.0070	0.0004	0.0010	0.0008	0.0013

ANALISI GAS - GAS ANALYSIS - ANALYSE GAZ - GAS ANALYSE
H_2= 1.3 (ppm) | O_2= 16 (ppm) | N_2= 90 (ppm) 0.0090 (%)

D.I. (ASTM A255)

FUSIONE: FORNO ELETTRICO (EAF) - ELABORAZIONE FUORI FORNO: AFFINAZIONE (LF) - COLAGGIO: COLATA CONTINUA (CC)

CARATTERISTICHE MECCANICHE - MECHANICAL PROPERTIES
CARACTERISTIQUES MECANIQUES-MECHANISCHE EIGENSCHAFTEN

TRAZIONE-TENSILE TESTING-TRACTION-ZUGVERSUCH **EN ISO 6892-1**

RESILIENZA - IMPACT TEST - RESILIENCE - ZÄHIGKEIT **EN ISO 148-1**

DUREZZA - HARDNESS - DURETE - HÄRTE **EN ISO 6506-1**

PROVINO - SAMPLE - EPROUVETTE - MUSTER	mm	STATO - CONDITION - ETAT - ZUSTAND	TRATTAMENTO TERMICO - HEAT TREATMENT - TRAITMENT THERMIQUE - WÄRMEBEHANDLUNG			Rm MPa	Re MPa	A %	Z %	TIPO - TYPE - TYPE - ART	KU °C	KU J	KU J	Mean J			HB	HB
COLATA - HEAT - COULEE-SCHMELZE	11	BONIFICATO	850°C	OLIO	180°C	1435	1119	12	41		20	35	37	36	36			
VALORI ALLO STATO DI FORNITURA - VALUES IN DELIVERY CONDITION - WERTE IM LIEFERZUSTAND ▶																		185

THE PRODUCT COMPLIES WITH THE REQUIREMENTS OF THE EUROPEAN DIRECTIVE 2000/53/EC

RADIOACTIVITY MEETS SPECIFICATION 2013/59/EURATOM <= [0,10] Bq/g

TEMPRABILITA' - HARDENABILITY
TREMPABILITE - HÄRTBARKEIT
EN ISO 642

MM	1.5	3	5	7	9	11	13	15	20	25	30	35	40	45	50		
HRC	44.4	44.3	43.8	43.1	42.3	41.5	40.0	37.9	34.4	33.1	31.7	30.7	29.9	29.7	29.4		

GRANO - GRAIN
GRAIN - KORNGRÖSSE
EN ISO 643
AUSTENITICO
8 - 8

INCLUSIONI NON METALLICHE - NON METALLIC INCLUSIONS - INCLUSIONS NON METALLIQUES - NICHTMETALLISCHE EINSCHLÜSSE

A (SS)		B (OA)		C (OS)		D (OG)		
Thin	Heavy	Thin	Heavy	Thin	Heavy	Thin	Heavy	

DIN 50602 (K)
K **4** *(OXIDE)* = **5**
K *(SULFIDE)* =
K *(TOTAL)* =

MACRO - MACROETCHING
MACRO - MAKRO ÄTZUNG

MACROINCLUSIONI - MACROINCLUSIONS
MACRO INCLUSIONS - MAKRO EINSCHLÜSSE

CONTROLLO ANTIMESCOLAMENTO - ANTIMIXING CONTROL
CONTROLE ANTIMELANGE - VERWECHSLUNGSPRÜFUNG **100%**

ENTI COLLAUDATORI
INSPECTION AUTHORITIES
SERVICE D'ESSAI
ABNAHMEBEHÖRDE

NOTE – NOTES – NOTES - ANMERKUNGEN

4500624042- DDT 264-20.03.2024 -
cod 9042031-543 PEZZI - GI.GI.ESSE SRL-
COL: ACC.V 293753

RGQ SERENA ROSSI

GI.GI.ESSE S.R.L.
Tel. 0522.697040 - Fax 0522.751564
C.F./P.I. 02161960353
Sede Legale: Via Zuccarelli, 8/A
42012 Campagnola Emilia (RE)
E-mail: info@gigiessesrl.it

CONTROLLO QUALITA' - QUALITY CONTROL - CONTROLE QUALITE - QUALITÄTSTELLE

I.Pelizzari

SERVIZIO QUALITA' ACCIAIERIE VENETE SPA

CERTIFICATO CONFORME AL CAPITOLATO E SPECIFICHE DI RIFERIMENTO -CERTIFICATE IN COMPLIANCE WITH THE SPECIFICATION AND ITS REFERENCES-CERTIFICAT EN ACCOMPLIANCE AVEC LE CAHIER DES CHARGES ET SES REFERENCES-ZERTIFIKAT IN ÜBEREINSTIMMUNG MIT DER SPEZIFIKATION UND DESSEN BEZÜGE

ACCIAIERIE VENETESPA

CERTIFICATO DI COLLAUDO – INSPECTION CERTIFICATE
CERTIFICAT DE RECEPTION – ABNAHMEPRÜFZEUGNIS

EN 10204 3.1

N° 640869

DATE:28/03/2023

Acciaierie Venete Spa C.S. € 63.000.000,00 i.v C.F. e P.IVA 00224180281
Trento company register 00224180281 V.A.T. N° IT 00224180281
Registered Office 38051 Borgo Valsugana (TN) Via Puisle, 4 - Italy
Management/Administration : 35127 Padova Z.I. Sud - Riviera Francia, 9 - Italy Tel. 049 828.28.20 (r.a.)

CLIENTE
CUSTOMER
CLIENT
KUNDE

101567 - INTERACCIAI SPA
VIA PASTEUR 2
42100 REGGIO EMILIA (RE)

ORDINE CLIENTE - PURCHASE ORDER
COMMANDE CLIENT - KUNDENAUFTRAG
REDS1078

ORDINE - ORDER
COMMANDE - AUFTRAG
168886 / 20

ARTICOLO (ACCIAIO)- ITEM (STEEL) - ITEM (ACIER) - ARTIKEL (STAHL)

PROFILO - PROFILE
PROFIL - ABMESSUNG **48 MM ROUND BAR (EN 10060 - NORMAL)**

STATO DI FORNITURA- DELIVERY CONDITION
CONDITION DE LIVRAISON – LIEFERZUSTAND **ANNEALING FOR SHEARABILITY**

STATO DI ESECUZIONE - STATE OF EXECUTION
ETAT DE L'ÉXECUTION - AUSFÜHRUNG **ROLLED**

COLATA - HEAT - COULEE - SCHMELZE: **293753**

MARCA ACCIAIO - STEEL GRADE - MARQUE ACIER - STAHLGÜTE: **17NICRMO6-4+HH**

NORMA - SPECIFICATION - NORME - NORM: **INTERACCIAI INT017 REV03 (S=0.020-0.035%)**

PESO - WEIGHT
POIDS - GEWICHT (Kg) **5230**

COLLI - ITEMS
COLIS - KOLLI (Nr) **2**

DDT - DELIVERY NOTE
BON DE LIVRAISON - LIEFERSCHEIN **L1001989** **03/04/2023**

BLUMO - BLOOM
BLOOM - KNÜPPEL **160 X 160 mm**

RIDUZIONE - REDUCTION
REDUCTION - UMFORMUNGSGRAD **14.1**

SHIPMENT PLANT : **ODOLO (BS)**

COMPOSIZIONE CHIMICA (%) - CHEMICAL COMPOSITION (%) - COMPOSITION CHIMIQUE (%) - CHEMISCHE ZUSAMMENSETZUNG (%)

C	Si	Mn	P	S	Cu	Cr	Ni	Sn	Al	As	Mo
0.1870	0.2210	0.8450	0.0110	0.0300	0.2090	0.9610	1.2740	0.0080	0.0290	0.0050	0.1840

V	B	Nb	Ca	Sb
0.0070	0.0004	0.0010	0.0008	0.0013

ANALISI GAS - GAS ANALYSIS - ANALYSE GAZ - GAS ANALYSE
H_2= 1.3 (ppm) | O_2= 16 (ppm) | N_2= 90 (ppm) 0.0090 (%)

D.I. (ASTM A255)

MELTING: ELECTRIC FURNACE (EAF) - PROCESSING OUTSIDE FURNACE: REFINING (LF) - CASTING: CONTINUOUS CASTING (CC)

CARATTERISTICHE MECCANICHE - MECHANICAL PROPERTIES
CARACTERISTIQUES MECANIQUES-MECHANISCHE EIGENSCHAFTEN

TRAZIONE-TENSILE TESTING-TRACTION-ZUGVERSUCH **EN ISO 6892-1**

RESILIENZA - IMPACT TEST - RESILIENCE - ZÄHIGKEIT **EN ISO 148-1**

DUREZZA - HARDNESS - DURETE - HÄRTE **EN ISO 6506-1**

PROVINO - SAMPLE EPROUVETTE - MUSTER	mm	STATO - CONDITION ETAT - ZUSTAND	TRATTAMENTO TERMICO - HEAT TREATMENT TRAITMENT THERMIQUE - WÄRMEBEHANDLUNG			Rm MPa	Re MPa	A %	Z %	TIPO - TYPE - TYPE - ART	KU °C	KU J	KU J	Mean J			HB	HB
COLATA - HEAT COULEE-SCHMELZE	11	HEAT-TREATED	850°C	OIL	180°C	1435	1119	12	41		20	35	37	36	36			
VALORI ALLO STATO DI FORNITURA - VALUES IN DELIVERY CONDITION - WERTE IM LIEFERZUSTAND ▶																	185	

THE PRODUCT COMPLIES WITH THE REQUIREMENTS OF THE EUROPEAN DIRECTIVE 2000/53/EC

RADIOACTIVITY MEETS SPECIFICATION 2013/59/EURATOM <= [0,10] Bq/g

TEMPRABILITA' - HARDENABILITY
TREMPABILITE - HÄRTBARKEIT
EN ISO 642

	1.5	3	5	7	9	11	13	15	20	25	30	35	40	45	50
MM	1.5	3	5	7	9	11	13	15	20	25	30	35	40	45	50
HRC	44.4	44.3	43.8	43.1	42.3	41.5	40.0	37.9	34.4	33.1	31.7	30.7	29.9	29.7	29.4

GRANO - GRAIN
GRAIN - KORNGRÖSSE
EN ISO 643
AUSTENITIC
8 - 8

INCLUSIONI NON METALLICHE - NON METALLIC INCLUSIONS - INCLUSIONS NON METALLIQUES - NICHTMETALLISCHE EINSCHLÜSSE

A (SS)		B (OA)		C (OS)		D (OG)		
Thin	Heavy	Thin	Heavy	Thin	Heavy	Thin	Heavy	

DIN 50602 (K)
K 4 *(OXIDE)* = 5
K *(SULFIDE)* =
K *(TOTAL)* =

MACRO - MACROETCHING
MACRO - MAKRO ÄTZUNG

MACROINCLUSIONI - MACROINCLUSIONS
MACRO INCLUSIONS - MAKRO EINSCHLÜSSE

CONTROLLO ANTIMESCOLAMENTO - ANTIMIXING CONTROL
CONTROLE ANTIMELANGE - VERWECHSLUNGSPRÜFUNG **100%**

ENTI COLLAUDATORI
INSPECTION AUTHORITIES
SERVICE D'ESSAI
ABNAHMEBEHÖRDE

NOTE – NOTES – NOTES - ANMERKUNGEN

4500624042 DELIVERY NOTE 264-20.03.2024 -
code 9042031-543 PIECES - GI.GI.ESSE SRL-
CASTING ACC.V 293753

RGQ SERENA ROSSI

GI.GI.ESSE S.R.L.
Tel. 0522.697040 - Fax 0522.751564
C.F./P.IVA 02161960352
Sede Legale: Via Cupa Alta, 8/A
42012 Campagnola Emilia (RE)
E-mail: info@gigiessesrl.it

CONTROLLO QUALITA' - QUALITY CONTROL - CONTROLE QUALITE - QUALITÄTSTELLE

I.Pelizzari

SERVIZIO QUALITÀ ACCIAIERIE VENETE SPA

QUALITY SERVICE

CERTIFICATO CONFORME AL CAPITOLATO E SPECIFICHE DI RIFERIMENTO -CERTIFICATE IN COMPLIANCE WITH THE SPECIFICATION AND ITS REFERENCES-CERTIFICAT EN ACCOMPLIANCE AVEC LE CAHIER DES CHARGES ET SES REFERENCES-ZERTIFIKAT IN ÜBEREINSTIMMUNG MIT DER SPEZIFIKATION UND DESSEN BEZÜGE

DANA	Check Sheet F0501 - R04.02 - 12.11.2012	Inspection lot 030001090587	Quantity 540	Order Type/Number/Position ZWO1 11394771 0080	Work Center 0062

PART NUMBER	REVISION		OPERATION	OPERATION DESCRIPTION
32730430300	I		0080	ISPEN CASE-HARDENING FURNACE

ID	CHARACTERISTIC	METHOD	SAMPLING	UM	TARGET	MIN_MAX	#1	#2	#3	#4	#5	#6	#7	#8
10	MT3006 P1 ROCKWELL HARDNESS C	DUR001 DUROMETER	ZF0003 3 Pieces			62,00 58,00	59	60	59					
20	MT3012 P2 CASE-HARDENING DEPTH (HV550)	PRO001 TEST SPECIMEN ACCORDING TO SP022-2	ZF0003 3 Pieces			0,60 0,40	,65	,65	,65					
30	MT3023 P3 CORE STRENGTH	LAB001 LABORATORY	ZF0001 1 Piece			1.400,00 1.100,00								
40	MT0100 MATERIAL TYPE AS PER DRAWING	VIS002 VISUAL INSPECTION	ZF0001 1 Piece				B01-18CrNiMo7-6							
50	MT4101 TEST SPECIMEN TYPE USED (SP022-02)	PRO001 TEST SPECIMEN ACCORDING TO SP022-2	ZF0001 1 Piece											
60	MT5100 PROGRAM CODE USED	VIS002 VISUAL INSPECTION	ZF0001 1 Piece											
70	MT5101 LOAD NUMBER	VIS002 VISUAL INSPECTION	ZF0001 1 Piece											
80	VC3010 VISUAL TEST: AFTER HEAT TREATMENT	VIS001 VISUAL INSPECTION ACCORDING TO WI0519	ZF0008 8 Pieces											

Date	Time	Signature	Remarks
16.07.2024	16:39:16	DVALCAV001	Tested according SP022-02 , carburizing temperature below 940°C

JSW Steel Italy
Piombino

ORDINE / ORDER
RE05404
DATA / DATE
09.02.2022

NR. 2022 100000058148 -

DATA / DATE
13.04.2022

CERTIFICATO DI COLLAUDO
INSPECTION CERTIFICATE
(according to EN 10204 3.1)

2222312

INTERACCIAI REGGIO EM.
P. COLLETTA 32
42100 Z.I. VILLAGGIO CROSTOLO
Italia

CONFERMA/OUR ORDER	: 1300005474	PROFILE/PROFILE	: Barra/Tondo
LOTTO/ITEM	: 000140	DIMENSIONI/SIZE	: 68,00
COLATA/HEAT	: P0JS2100A34262	QUALITA'/STEELGRADE	:
STATO/DELIVERY C	: RICOTTO LAVORABILE	NORMA/SPECIFICATION	18NICRMO5_17NICRMO6-4+HH : INT.017 R.3_05.12.2016

ANALISI DI COLATA / CHEMICAL ANALYSIS-PROPERTIES

	C%	MN%	S%	P%	SI%	CU%
RISULTATO:	**0.1950**	**0.8050**	**0.0250**	**0.0130**	**0.2580**	**0.0080**
Minimo:	0.1500	0.6000	0.0200	0.0000	0.1500	0.0000
Massimo:	0.2000	0.9000	0.0400	0.0250	0.4000	0.3000
	AL%	MO%	NI%	CR%	O%	N%
RISULTATO:	**0.0250**	**0.2020**	**1.2700**	**0.8740**	**0.0012**	**0.0083**
Minimo:	0.0200	0.1500	1.2000	0.8000	0.0000	0.0060
Massimo:	0.3500	0.2500	1.5000	1.0000	0.0025	0.0150
	CA%	B%	H%			
RISULTATO:	**0.0006**	**0.0003**	**0.00016**			
Minimo:	0.0000	0.0000	0.00000			
Massimo:	0.0015	0.0008	0.00035			

RESPONS. QUALITA' Piombino - E. CHIMISSO

JSW Steel Italy Piombino S.p.A.
Soggetta a Direzione e Coordinamento di JSW Steel ltd
Largo Caduti sul Lavoro, 21 57025 Piombino (Livorno)Tel. +39-0565-64111 Fax +39-0565-36514
email steelpiombino@pec.jswitaly.com - www.jswitaly.com

ACCREDIA
SAFETY SYSTEM CERTIFICATION DNV·GL OHSAS 18001
ISO 14001 BUREAU VERITAS Certification
ISO 9001 BUREAU VERITAS Certification
REG. (UE) N. 333/2011 BUREAU VERITAS Certification

JSW Steel Italy
Piombino

ORDINE / ORDER
RE05404
DATA / DATE
09.02.2022

NR. 2022 100000058148 -

DATA / DATE
13.04.2022

CERTIFICATO DI COLLAUDO
INSPECTION CERTIFICATE
(according to EN 10204 3.1)

JOMINY HRC	TP : NORMALE IN MM		NORMA: EN ISO 642			
DISTANZE:	1,5	3	5	7	9	11
RISULTATO:	**44.7**	**44.5**	**44.0**	**42.7**	**41.1**	**39.0**
Minimo:	43.0	43.0	40.0	38.0	35.5	34.0
Massimo:	48.0	48.0	47.0	46.0	45.0	43.5
DISTANZE:	13	15	20	25	30	35
RISULTATO:	**36.8**	**35.3**	**33.3**	**31.3**	**29.1**	**28.1**
Minimo:	32.0	31.0	29.0	27.0	26.0	25.0
Massimo:	41.0	40.0	37.0	35.5	34.5	33.5
DISTANZE:	40	45	50			
RISULTATO:	**27.6**	**27.1**	**26.4**			
Minimo:	24.0	0.0	0.0			
Massimo:	33.0	32.5	32.0			

- GRANO AUSTENITICO NORMA:EN ISO 643

VALORE	**7/7**
Minimo:	6
Massimo:	8

- BANDATURA UNI GRADO : 3 NORMA : UNI 8449/83

Minimo : 0
Massimo: 3

- INCLUSIONI K NORMA :UNI 3244/80

GRADO :K4

INDICI:	O
RISULTATO:	**0.0**
Minimo:	0.0
Massimo:	25.0

RAPPORTO DI RIDUZIONE

VALORE:	**13.30**
Minimo:	3.9
Massimo:	.

DIM. CC: 220 x 220

RESPONS. QUALITA' Piombino - E. CHIMISSO

JSW Steel Italy Piombino S.p.A.
Soggetta a Direzione e Coordinamento di JSW Steel ltd
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JSW Steel Italy
Piombino

ORDINE / ORDER
RE05404
DATA / DATE
09.02.2022

NR. 2022 100000058148 -

DATA / DATE
13.04.2022

CERTIFICATO DI COLLAUDO
INSPECTION CERTIFICATE
(according to EN 10204 3.1)

- TRAZIONE — NORMA : EN 10002-1
TT : TEMPRA E DISTENSIONE — DIM. SAGGIO: 11 MM
TIPO PROVA : LONGITUDINALE

	RM N/mm²	RE N/mm²	A%
RISULTATO:	**1460**	**1238**	**10.4**
Minimo:	1230	980	8.0
Massimo:	1520	.	.

- DUREZZA — NORMA : EN 10003-1
TT : RICOTT.DI LAVORABILITA — PUNTO ESECUZIONE : SUPERFICIE
SAGGIO : — TIPO DUREZZA: HBW

VALORE:	**182.0**
Minimo:	0.0
Massimo:	210.0

- RESILIENZA — METODO: KU (J)
NORMA : EN 10045-1 — TT : TEMPRA E DISTENSIONE
TIPO PROVA : LONGITUDINALE — TEMPERATURA: +20,0 °C

RISULTATO(J):	**33.0**	**31.0**	**31.0**	**MEDIA(J):**	**31.7**
Minimo:	21.0	21.0	21.0		30.0
Massimo:	.	.	.		.

MATERIALE DEGASATO
Controllo antimescolamento effettuato 100%.

Controlli superficiali ed interni effettuati al 100%

Paese di laminazione: ITALIA.
Il materialefornito non contiene elementi non consentiti o in concentrazione dichiarabile (tipo piombo, cadmio, mercurio, cromo (VI), ecc.) secondo quanto definito nella VDA-List.
In base ai controlli radiometrici effettuati secondo quanto previsto dall'Art. 72 del D.Lgs. 101/2020 (che attua la direttiva 2013/59/Euratom), il materiale non presenta livelli anomali di radioattività.

RESPONS. QUALITA' Piombino - E. CHIMISSO

4500626889- DDT 304-03.04.2024 - cod 32733500088-280 PEZZI - GI.GI.ESSE SRL-COLI JSW A34262

RGQ SERENA ROSSI

JSW Steel Italy Piombino S.p.A.
Soggetta a Direzione e Coordinamento di JSW Steel ltd
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GI.GI.ESSE S.R.L.
Tel. 0522.667040 - Fax 0522.751564
C.F./P.I. 02161260352
Sede Legale: Via Puccini, 6/A
42012 Campagnola Emilia (RE)
E-mail: info@gigiessesrl.it

ACCIAIERIE VENETESPA

CERTIFICATO DI COLLAUDO – INSPECTION CERTIFICATE
CERTIFICAT DE RECEPTION – ABNAHMEPRÜFZEUGNIS

EN 10204 3.1

N° 646672

DATE:27/04/2023

Acciaierie Venete Spa C.S. € 63.000.000,00 i.v C.F. e P.IVA 00224180281
R.I di Trento 00224180281 V.A.T. N° IT 00224180281
Sede Legale: 38051 Borgo Valsugana (TN) Via Puisle, 4 - Italy
Direzione/Amministrazione: 35127 Padova Z.I. Sud - Riviera Francia, 9 - Italy Tel. 049 828.28.20 (r.a.)

CLIENTE
CUSTOMER
CLIENT
KUNDE

101567 - INTERACCIAI SPA
VIA PASTEUR 2
42100 REGGIO EMILIA (RE)

ORDINE CLIENTE - PURCHASE ORDER
COMMANDE CLIENT - KUNDENAUFTRAG
REDS1078

ORDINE - ORDER
COMMANDE - AUFTRAG
168886 / 110

ARTICOLO (ACCIAIO)- ITEM (STEEL) - ITEM (ACIER) - ARTIKEL (STAHL)

PROFILO - PROFILE
PROFIL - ABMESSUNG
TONDO 68 mm (EN 10060 - NORMAL)

STATO DI FORNITURA- DELIVERY CONDITION
CONDITION DE LIVRAISON – LIEFERZUSTAND
RICOTTURA DI CESOIABILITA

STATO DI ESECUZIONE - STATE OF EXECUTION
ETAT DE L'ÉXECUTION - AUSFÜHRUNG
LAMINATO RULLATO

COLATA - HEAT - COULEE - SCHMELZE
295279

MARCA ACCIAIO - STEEL GRADE - MARQUE ACIER - STAHLGÜTE
17NICRMO6-4+HH

NORMA - SPECIFICATION - NORME - NORM
INTERACCIAI INT017 REV03 (S=0.020-0.035%)

PESO - WEIGHT
POIDS - GEWICHT (Kg) **4823**

COLLI - ITEMS
COLIS - KOLLI (Nr) **2**

DDT - DELIVERY NOTE
BON DE LIVRAISON - LIEFERSCHEIN **L1002679** **04/05/2023**

BLUMO - BLOOM
BLOOM - KNÜPPEL **160 X 160 mm**

RIDUZIONE - REDUCTION
REDUCTION - UMFORMUNGSGRAD **7.0**

STAB. SPEDIZIONE: ODOLO (BS)

COMPOSIZIONE CHIMICA (%) - CHEMICAL COMPOSITION (%) - COMPOSITION CHIMIQUE (%) - CHEMISCHE ZUSAMMENSETZUNG (%)

C 0.1800	Si 0.2100	Mn 0.8440	P 0.0100	S 0.0300	Cu 0.2040	Cr 0.9170	Ni 1.2960	Sn 0.0080	Al 0.0290	As 0.0050	Mo 0.1870			
V 0.0060	B 0.0005	Nb 0.0020	Ca 0.0010	Sb 0.0037										

ANALISI GAS - GAS ANALYSIS - ANALYSE GAZ - GAS ANALYSE
H_2= 1.3 (ppm) | O_2= 14 (ppm) | N_2= 105 (ppm) 0.0105 (%)

D.I. (ASTM A255)

FUSIONE: FORNO ELETTRICO (EAF) - ELABORAZIONE FUORI FORNO: AFFINAZIONE (LF) - COLAGGIO: COLATA CONTINUA (CC)

CARATTERISTICHE MECCANICHE - MECHANICAL PROPERTIES
CARACTERISTIQUES MECANIQUES-MECHANISCHE EIGENSCHAFTEN

TRAZIONE-TENSILE TESTING-TRACTION-ZUGVERSUCH **EN ISO 6892-1**

RESILIENZA - IMPACT TEST - RESILIENCE - ZÄHIGKEIT **EN ISO 148-1**

DUREZZA - HARDNESS - DURETE - HÄRTE **EN ISO 6506-1**

PROVINO - SAMPLE / EPROUVETTE - MUSTER	mm	STATO - CONDITION / ETAT - ZUSTAND	TRATTAMENTO TERMICO - HEAT TREATMENT / TRAITMENT THERMIQUE - WÄRMEBEHANDLUNG			Rm MPa	Re MPa	A %	Z %	TIPO - TYPE - TYPE - ART	KU °C	KU J	KU J	Mean J			HB	HB
COLATA - HEAT / COULEE-SCHMELZE	11	BONIFICATO	850°C	OLIO	180°C	1411	1115	12	42	20	36	36	38	36				
VALORI ALLO STATO DI FORNITURA - VALUES IN DELIVERY CONDITION - WERTE IM LIEFERZUSTAND ▶																	203	

THE PRODUCT COMPLIES WITH THE REQUIREMENTS OF THE EUROPEAN DIRECTIVE 2000/53/EC

RADIOACTIVITY MEETS SPECIFICATION 2013/59/EURATOM <= [0,10] Bq/g

TEMPRABILITA' - HARDENABILITY
TREMPABILITE - HÄRTBARKEIT
EN ISO 642

MM	1.5	3	5	7	9	11	13	15	20	25	30	35	40	45	50
HRC	44.1	43.9	42.8	40.3	37.9	36.0	33.9	32.5	29.7	28.3	27.4	27.0	26.5	26.0	25.7

GRANO - GRAIN
GRAIN - KORNGRÖSSE
EN ISO 643
AUSTENITICO
6 - 8

INCLUSIONI NON METALLICHE - NON METALLIC INCLUSIONS - INCLUSIONS NON METALLIQUES - NICHTMETALLISCHE EINSCHLÜSSE

A (SS)		B (OA)		C (OS)		D (OG)		
Thin	Heavy	Thin	Heavy	Thin	Heavy	Thin	Heavy	

DIN 50602 (K)
K **4** *(OXIDE)* = **6**
K *(SULFIDE)* =
K *(TOTAL)* =

MACRO - MACROETCHING
MACRO - MAKRO ÄTZUNG

MACROINCLUSIONI - MACROINCLUSIONS
MACRO INCLUSIONS - MAKRO EINSCHLÜSSE

CONTROLLO ANTIMESCOLAMENTO - ANTIMIXING CONTROL
CONTROLE ANTIMELANGE - VERWECHSLUNGSPRÜFUNG **100%**

ENTI COLLAUDATORI
INSPECTION AUTHORITIES
SERVICE D'ESSAI
ABNAHMEBEHÖRDE

NOTE – NOTES – NOTES - ANMERKUNGEN

4500626889- DDT 304-03.04.2024 -
cod 32733500088-240 PEZZI - GI.GI.ESSE SRL-
COL: ACC.V 295279

CONTROLLO QUALITA' - QUALITY CONTROL - CONTROLE QUALITE - QUALITÄTSTELLE

I.Pelizzari

SERVIZIO QUALITA' ACCIAIERIE VENETE SPA

RCQ SERENA ROSSI

GI.GI.ESSE S.R.L.
Tel. 0522.667040 - Fax 0522.751564
C.F./P.I. 02161860352
Sede Legale: Via Zuccardi, 8/A
42012 Campagnola Emilia (RE)
E-mail: info@gigiesse.it

CERTIFICATO CONFORME AL CAPITOLATO E SPECIFICHE DI RIFERIMENTO -CERTIFICATE IN COMPLIANCE WITH THE SPECIFICATION AND ITS REFERENCES-CERTIFICAT EN ACCOMPLIANCE AVEC LE CAHIER DES CHARGES ET SES REFERENCES-ZERTIFIKAT IN ÜBEREINSTIMMUNG MIT DER SPEZIFIKATION UND DESSEN BEZÜGE

JSW Steel Italy
Piombino

ORDINE / ORDER
RE05404
DATA / DATE
09.02.2022

NR. 2022 100000058148 -

DATA / DATE
13.04.2022

CERTIFICATO DI COLLAUDO
INSPECTION CERTIFICATE
(according to EN 10204 3.1)

222312

INTERACCIAI REGGIO EM.
P. COLLETTA 32
42100 Z.I. VILLAGGIO CROSTOLO
Italia

CONFERMA/OUR ORDER	: 1300005474	PROFILE/PROFILE	: Bar/round
LOTTO/ITEM	: 000140	DIMENSIONI/SIZE	: 68,00
COLATA/HEAT	: P0JS2100A34262	QUALITA'/STEELGRADE	:
STATO/DELIVERY C	: MACHINING ANNEALED	NORMA/SPECIFICATION	18NICRMO5_17NICRMO6-4+HH : INT.017 R.3_05.12.2016

ANALISI DI COLATA / CHEMICAL ANALYSIS-PROPERTIES

	C%	MN%	S%	P%	SI%	CU%
RESULT:	**0.1950**	**0.8050**	**0.0250**	**0.0130**	**0.2580**	**0.0080**
Minimum:	0.1500	0.6000	0.0200	0.0000	0.1500	0.0000
Maximum:	0.2000	0.9000	0.0400	0.0250	0.4000	0.3000
	AL%	MO%	NI%	CR%	O%	N%
RESULT:	**0.0250**	**0.2020**	**1.2700**	**0.8740**	**0.0012**	**0.0083**
Minimum:	0.0200	0.1500	1.2000	0.8000	0.0000	0.0060
Maximum:	0.3500	0.2500	1.5000	1.0000	0.0025	0.0150
	CA%	B%	H%			
RESULT:	**0.0006**	**0.0003**	**0.00016**			
Minimum:	0.0000	0.0000	0.00000			
Maximum:	0.0015	0.0008	0.00035			

QUALITY MANAGER Piombino - E. CHIMISSO

JSW Steel Italy Piombino S.p.A.
Company subject to the management and coordination of JSW Steel ltd
Largo Caduti sul Lavoro, 21 57025 Piombino (Livorno)Tel. +39-0565-64111 Fax +39-0565-36514
email steelpiombino@pec.jswitaly.com - www.jswitaly.com

ACCREDIA
SAFETY SYSTEM CERTIFICATION DNV·GL OHSAS 18001
ISO 14001 BUREAU VERITAS Certification
ISO 9001 BUREAU VERITAS Certification
REG. (UE) N. 333/2011 BUREAU VERITAS Certification

JSW Steel Italy
Piombino

ORDINE / ORDER
RE05404
DATA / DATE
09.02.2022

NR. 2022 100000058148 -

DATA / DATE
13.04.2022

CERTIFICATO DI COLLAUDO
INSPECTION CERTIFICATE
(according to EN 10204 3.1)

JOMINY HRC TEST TYPE: NORMAL IN MM STANDARD: EN ISO 642

DISTANCES:	1,5	3	5	7	9	11
RESULT:	**44.7**	**44.5**	**44.0**	**42.7**	**41.1**	**39.0**
Minimum:	43.0	43.0	40.0	38.0	35.5	34.0
Maximum:	48.0	48.0	47.0	46.0	45.0	43.5
DISTANCES:	13	15	20	25	30	35
RESULT:	**36.8**	**35.3**	**33.3**	**31.3**	**29.1**	**28.1**
Minimum:	32.0	31.0	29.0	27.0	26.0	25.0
Maximum:	41.0	40.0	37.0	35.5	34.5	33.5
DISTANCES:	40	45	50			
RESULT:	**27.6**	**27.1**	**26.4**			
Minimum:	24.0	0.0	0.0			
Maximum:	33.0	32.5	32.0			

- AUSTENITIC GRAIN STANDARD: EN ISO 643

VALUE	**7/7**
Minimum:	6
Maximum:	8

- UNI BANDING GRADE: 3 STANDARD: UNI 8449/83

Minimum: 0
Maximum: 3

- K INCLUSION STANDARD: :UNI 3244/80

GRADE:	K4
INDICES:	O
RESULT:	**0.0**
Minimum:	0.0
Maximum:	25.0

REDUCTION RATIO

VALUE	**13.30**
Minimum:	3.9
Maximum:	

SAMPLE SIZE: 220 x 220

QUALITY MANAGER Piombino - E. CHIMISSO

JSW Steel Italy Piombino S.p.A.
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Largo Caduti sul Lavoro, 21 57025 Piombino (Livorno)Tel. +39-0565-64111 Fax +39-0565-36514
email steelpiombino@pec.jswitaly.com - www.jswitaly.com

ACCREDIA
SAFETY SYSTEM CERTIFICATION DNV·GL OHSAS 18001
ISO 14001 BUREAU VERITAS Certification
ISO 9001 BUREAU VERITAS Certification
REG. (UE) N. 333/2011 BUREAU VERITAS Certification

JSW Steel Italy
Piombino

ORDINE / ORDER
RE05404
DATA / DATE
09.02.2022

NR. 2022 100000058148 -

DATA / DATE
13.04.2022

CERTIFICATO DI COLLAUDO
INSPECTION CERTIFICATE
(according to EN 10204 3.1)

- TRACTION — STANDARD: EN 10002-1
HT: HARDENING AND DESTRESSING — SAMPLE SIZE: 11 MM
TEST TYPE: LONGITUDINAL

	RM N/mm²	RE N/mm²	A%
RESULT:	**1460**	**1238**	**10.4**
Minimum:	1230	980	8.0
Maximum:	1520	.	.

- HARDNESS: — STANDARD: EN 10003-1
HT: WORKABILITY ANNEALING — PROCESSING POINT: SURFACE
SAMPLE: — HARDNESS TYPE: HBW

VALUE	**182.0**
Minimum:	0.0
Maximum:	210.0

- STRENGTH — METHOD): KU (J)
STANDARD: EN 10045-1 — HT: HARDENING AND DESTRESSING
TEST TYPE: LONGITUDINAL — TEMPERATURE: +20,0 °C

RESULT (J):	**33.0**	**31.0**	**31.0**	**MEDIA(J):**	**31.7**
Minimum:	21.0	21.0	21.0		30.0
Maximum:	.	.	.		.

DEGASSED MATERIAL
100% anti-mixing check performed
100% surface and internal check performed.

Rolling country: ITALY

The material supplied does not contain elements that are not permitted or concentrations of such elements that must be declared (such as lead, cadmium, mercury, chromium (VI), etc.) as defined in the VDA-List.

On the basis of the radiometric checks carried out in accordance with Art. 72 of Italian Legislative Decree no. 101/2020 (implementing Directive 2013/59/Euratom), the material does not exhibit abnormal levels of radioactivity.

QUALITY MANAGER Piombino - E. CHIMISSO

4500626889 DELIVERY NOTE 304-03.04.2024 code 32733500088-280 PIECES GI.GI.ESSE SRL-COLL JSW A34262

RGQ SERENA ROSSI

JSW Steel Italy Piombino S.p.A.
Company subject to the management and coordination of JSW Steel ltd
Largo Caduti sul Lavoro, 21 57025 Piombino (Livorno)Tel. +39-0565-64111 Fax +39-0565-36514
email steelpiombino@pec.jswitaly.com - www.jswitaly.com

GI.GI.ESSE S.R.L.
Tel. 0522.667040 - Fax 0522.751564
C.F./P.I. 02161860352
Sede Legale: Via Puccini, 6/A
42012 Campagnola Emilia (RE)
E-mail: info@gigiessesrl.it

ACCIAIERIE VENETESPA

CERTIFICATO DI COLLAUDO – INSPECTION CERTIFICATE
CERTIFICAT DE RECEPTION – ABNAHMEPRÜFZEUGNIS
EN 10204 3.1

N° 646672

DATE:27/04/2023

Acciaierie Venete Spa C.S. € 63.000.000,00 i.v C.F. e P.IVA 00224180281
Trento company register 00224180281 V.A.T. N° IT 00224180281
Registered Office : 38051 Borgo Valsugana (TN) Via Puisle, 4 - Italy
Management/Administration : 35127 Padova Z.I. Sud - Riviera Francia, 9 - Italy Tel. 049 828.28.20 (r.a.)

CLIENTE
CUSTOMER
CLIENT
KUNDE

101567 - INTERACCIAI SPA
VIA PASTEUR 2
42100 REGGIO EMILIA (RE)

ORDINE CLIENTE - PURCHASE ORDER
COMMANDE CLIENT - KUNDENAUFTRAG
REDS1078

ORDINE - ORDER
COMMANDE - AUFTRAG
168886 / 110

ARTICOLO (ACCIAIO)- ITEM (STEEL) - ITEM (ACIER) - ARTIKEL (STAHL)

PROFILO - PROFILE
PROFIL - ABMESSUNG **68 MM ROUND BAR (EN 10060 - NORMAL)**

STATO DI FORNITURA- DELIVERY CONDITION
CONDITION DE LIVRAISON – LIEFERZUSTAND **ANNEALING FOR SHEARABILITY**

STATO DI ESECUZIONE - STATE OF EXECUTION
ETAT DE L'ÉXECUTION - AUSFÜHRUNG **ROLLED**

COLATA - HEAT - COULEE - SCHMELZE: **295279**

MARCA ACCIAIO - STEEL GRADE - MARQUE ACIER - STAHLGÜTE: **17NICRMO6-4+HH**

NORMA - SPECIFICATION - NORME - NORM
INTERACCIAI INT017 REV03 (S=0.020-0.035%)

PESO - WEIGHT
POIDS - GEWICHT (Kg) **4823**

COLLI - ITEMS
COLIS - KOLLI (Nr) **2**

DDT - DELIVERY NOTE
BON DE LIVRAISON - LIEFERSCHEIN **L1002679** **04/05/2023**

BLUMO - BLOOM
BLOOM - KNÜPPEL **160 X 160 mm**

RIDUZIONE - REDUCTION
REDUCTION - UMFORMUNGSGRAD **7.0**

SHIPMENT PLANT **ODOLO (BS)**

COMPOSIZIONE CHIMICA (%) - CHEMICAL COMPOSITION (%) - COMPOSITION CHIMIQUE (%) - CHEMISCHE ZUSAMMENSETZUNG (%)

C	Si	Mn	P	S	Cu	Cr	Ni	Sn	Al	As	Mo
0.1800	0.2100	0.8440	0.0100	0.0300	0.2040	0.9170	1.2960	0.0080	0.0290	0.0050	0.1870

V	B	Nb	Ca	Sb
0.0060	0.0005	0.0020	0.0010	0.0037

ANALISI GAS - GAS ANALYSIS - ANALYSE GAZ - GAS ANALYSE
H_2= 1.3 (ppm) | O_2= 14 (ppm) | N_2= 105 (ppm) 0.0105 (%)

D.I. (ASTM A255)

MELTING: ELECTRIC FURNACE (EAF) - PROCESSING OUTSIDE FURNACE: REFINING (LF) - CASTING: CONTINUOUS CASTING (CC)

CARATTERISTICHE MECCANICHE - MECHANICAL PROPERTIES
CARACTERISTIQUES MECANIQUES-MECHANISCHE EIGENSCHAFTEN

TRAZIONE-TENSILE TESTING-TRACTION-ZUGVERSUCH **EN ISO 6892-1**

RESILIENZA - IMPACT TEST - RESILIENCE - ZÄHIGKEIT **EN ISO 148-1**

DUREZZA - HARDNESS - DURETE - HÄRTE **EN ISO 6506-1**

PROVINO - SAMPLE - EPROUVETTE - MUSTER	mm	STATO - CONDITION - ETAT - ZUSTAND	TRATTAMENTO TERMICO - HEAT TREATMENT - TRAITMENT THERMIQUE - WÄRMEBEHANDLUNG			Rm MPa	Re MPa	A %	Z %	TIPO - TYPE - TYPE - ART KU °C	J	J	J	Mean J			HB	HB
COLATA - HEAT - COULEE-SCHMELZE	11	HEAT-TREATED	850°C	OIL	180°C	1411	1115	12	42	20	36	36	38	36				
VALORI ALLO STATO DI FORNITURA - VALUES IN DELIVERY CONDITION - WERTE IM LIEFERZUSTAND ▶																	203	

THE PRODUCT COMPLIES WITH THE REQUIREMENTS OF THE EUROPEAN DIRECTIVE 2000/53/EC

RADIOACTIVITY MEETS SPECIFICATION 2013/59/EURATOM <= [0,10] Bq/g

TEMPRABILITA' - HARDENABILITY
TREMPABILITE - HÄRTBARKEIT
EN ISO 642

MM	1.5	3	5	7	9	11	13	15	20	25	30	35	40	45	50		
HRC	44.1	43.9	42.8	40.3	37.9	36.0	33.9	32.5	29.7	28.3	27.4	27.0	26.5	26.0	25.7		

GRANO - GRAIN
GRAIN - KORNGRÖSSE
EN ISO 643
AUSTENITIC
6 - 8

INCLUSIONI NON METALLICHE - NON METALLIC INCLUSIONS - INCLUSIONS NON METALLIQUES - NICHTMETALLISCHE EINSCHLÜSSE

A (SS)		B (OA)		C (OS)		D (OG)		
Thin	Heavy	Thin	Heavy	Thin	Heavy	Thin	Heavy	

DIN 50602 (K)
K 4 *(OXIDE)* = 6
K *(SULFIDE)* =
K *(TOTAL)* =

MACRO - MACROETCHING
MACRO - MAKRO ÄTZUNG

MACROINCLUSIONI - MACROINCLUSIONS
MACRO INCLUSIONS - MAKRO EINSCHLÜSSE

CONTROLLO ANTIMESCOLAMENTO - ANTIMIXING CONTROL
CONTROLE ANTIMELANGE - VERWECHSLUNGSPRÜFUNG **100%**

ENTI COLLAUDATORI
INSPECTION AUTHORITIES
SERVICE D'ESSAI
ABNAHMEBEHÖRDE

NOTE – NOTES – NOTES - ANMERKUNGEN

4500626889-DELIVERY NOTE 304-03.04.2024 -
code 32733500088-240 PIECES - GI.GI.ESSE SRL-
CASTING : ACC.V 295279

CONTROLLO QUALITA' - QUALITY CONTROL - CONTROLE QUALITE - QUALITÄTSTELLE

I.Pelizzari

SERVIZIO QUALITÀ ACCIAIERIE VENETE SPA

QUALITY SERVICE

RCQ SERENA ROSSI

GI.GI.ESSE S.R.L.
Tel. 0522.667040 - Fax 0522.751564
C.F./P.I. 02161260352
Sede Legale: Via Zuccardi, 8/A
42012 Campagnola Emilia (RE)
E-mail: info@gigiesserl.it

CERTIFICATO CONFORME AL CAPITOLATO E SPECIFICHE DI RIFERIMENTO -CERTIFICATE IN COMPLIANCE WITH THE SPECIFICATION AND ITS REFERENCES-CERTIFICAT EN ACCOMPLIANCE AVEC LE CAHIER DES CHARGES ET SES REFERENCES-ZERTIFIKAT IN ÜBEREINSTIMMUNG MIT DER SPEZIFIKATION UND DESSEN BEZÜGE

DANA

Check Sheet

F0501 - R04.02 - 12.11.2012

Inspection lot	Quantity	Order Type/Number/Position	Work Center
030001094616	560	ZWO1 11386265 0080	0062

PART NUMBER	REVISION	OPERATION	OPERATION DESCRIPTION
32733530300	H	0080	ISPEN CASE-HARDENING FURNACE

ID	CHARACTERISTIC	METHOD	SAMPLING	UM	TARGET	MIN_MAX	#1	#2	#3	#4	#5	#6	#7	#8
10	MT3006 P1 ROCKWELL HARDNESS C	DUR001 DUROMETER	ZF0003 3 Pieces	HRC		62,00 58,00	60	60	59					
20	MT3012 P2 CASE-HARDENING DEPTH (HV550)	PRO001 TEST SPECIMEN ACCORDING TO SP022-2	ZF0003 3 Pieces	mm		0,80 0,60	,86	,85	,85					
30	MT3023 P3 CORE STRENGTH	LAB001 LABORATORY	ZF0001 1 Piece	N/mm2		1.400,00 1.100,00								
40	MT0100 MATERIAL TYPE AS PER DRAWING	VIS002 VISUAL INSPECTION	ZF0001 1 Piece				B01-18CrNiMo7-6							
50	MT4101 TEST SPECIMEN TYPE USED (SP022-02)	PRO001 TEST SPECIMEN ACCORDING TO SP022-2	ZF0004 4 Pieces				01-TEST ON PART							
60	MT5100 PROGRAM CODE USED	VIS002 VISUAL INSPECTION	ZF0004 4 Pieces											
70	MT5101 LOAD NUMBER	VIS002 VISUAL INSPECTION	ZF0004 4 Pieces				24-07/0041 RTQ 4							
80	VC3010 VISUAL TEST: AFTER HEAT TREATMENT	VIS001 VISUAL INSPECTION ACCORDING TO WI0519	ZF0008 8 Pieces											

Date Time	Signature	Remarks
11.07.2024 13:40:40	DVALCAV001	Tested according SP022-02 , carburizing temperature below 940°C

CITIC PACIFIC SPECIAL STEEL

DAYE SPECIAL STEEL CO., LTD.
NO. 316 HUANGSHI AVENUE, HUANGSHI, HUBEI, CHINA PC:435000

MANUFACTURER S INSPECTION CERTIFICATE

CERTIFICATE NO.:H722075170

ACCORDING TO UNI EN10204:3.1

INVOICE NO:YGBITA22809INR-3C
TO:INTERACCIAI - SOCIETA' PER AZIONI VIA LOUIS PASTEUR 2 42122 REGGIO NELL'EMILIA,ITALY
DESCRIPTION OF GOODS: HOT ROLLED HIGH QUALITY ALLOY STEEL ROUND BARS

Batch No.	Grade	Heat No.	Size(MM)	Pieces	Bundles	Weight(MT)	Total Length(M)	Delivery Condition
H722075170	42CrMoS4+HH+QT	2014133E	145	24	8	17.984	138.9	quenched and tempered

Ⅰ、Chemical Composition:(%):

Ladle:	C:0.40	Si:0.23	Mn:0.75	P:0.013	S:0.024	Cr:1.10	Ni:0.16	Mo:0.24	Cu:0.03	Al:0.026	V:0.010	Ti:0.0061	As:0.0044	Sn:0.0016	Pb:0.0005
Product:	radioactivity:0.02 Bq/g														

Ⅱ、Macrostructure Examination:

1、test standard:	ASTM E381	2、C(level):	1.0 1.0
3、S(level):	1.0 1.0	4、R(level):	1.0 1.0

Ⅲ、Mechanical Properties Examination:

1、tensile test temp:	R.M Temp	2、tensile test direction:	longitudinal
3、tensile test standard:	EN 10002-1	4、yield strength Rp0.2(MPa):	756
5、tensile strength Rm(MPa):	905	6、elongation after fracture A(%):	22.0
7、reduction of area Z(%):	68	8、impact test temp:	R.M Temp
9、impact test direction:	longitudinal	10、impact notch depth:	2mm
11、impact test standard:	EN 10045-1	12、charpyimpact absorbed energy KV2(J) :	130 128 125
13、J1.5(mm-HRC):	58.0	14、J3(mm-HRC):	58.0
15、J5(mm-HRC):	57.5	16、J7(mm-HRC):	57.0
17、J9(mm-HRC):	56.5	18、J11(mm-HRC):	56.0
19、J13(mm-HRC):	55.0	20、J15(mm-HRC):	53.5
21、J20(mm-HRC):	50.5	22、J25(mm-HRC):	46.5
23、J30(mm-HRC):	44.0	24、J35(mm-HRC):	41.5
25、J40(mm-HRC):	40.0	26、J45(mm-HRC):	38.5
27、J50(mm-HRC):	38.5		

4500548192- DDT 810-01.08.2023 - cod 9022943-55PEZZI- GI.GI.ESSE SRL- COL: CPSS 2014133E

Ⅳ、Microstructure Examination:

1、inclusion test standard:	ASTM E45						2、A-thin(level):	2.0	2.5	2.0	2.5	2.0	2.5
3、A-thick(level):	1.0	1.0	1.0	1.0	1.0	1.0	4、B-thin(level):	0.5	0.5	0.5	0.5	0.5	0.5
5、B-thick(level):	0	0	0	0	0	0	6、C-thin(level):	0	0	0	0	0	0
7、C-thick(level):	0	0	0	0	0	0	8、D-thin(level):	0.5	0.5	0.5	0.5	0.5	0.5
9、D-thick(level):	0.5	0.5	0.5	0.5	0.5	0.5	10、K4[0] property values:	0.6					
11、grain size test standard:	ISO 643						12、grain size(level):	8					

Ⅴ、NDT:

1、UT :good 2、standard:SEP1921-1984 3、level:3D/d 4、residual magnetic field(A/cm):2

Ⅵ、Heat Treatment Process:

1、quenching temperature(℃):	850	quenching soaking time(min):	193	quenching cooling method:	water cooling
start temp. of quench media(℃):	25	finish temp. of quench media(℃):	29		
2、tempering temperature(℃):	650	tempering soaking time(min):	245	tempering cooling method:	air cooling

Ⅶ、Dimensions,Appearance and Surface Quality:

1、dimension,appearance and surface quality: good 2、delivery hardness HBW: 266-277

Ⅷ、Others:

1、manufacturing process:BOF+LF+RH+CC 2、reduction ratio:13.2

Date:	2022-07-29	Inspector:	Ming Chao	Manager of Inspection:	Liuguanghui

Note:

(1) We hereby certify that the material herein described has been manufactured, sampled, tested and inspected in accordance with the requirements of specifications and purchase order, and meet the requirements

(2) When there is any complaint, you are kindly requested to mark the Steel Grade, Heat No., Size, Delivery Date, Causes and reserve the material in the condition of delivery

(3) Our company's quality management system has been certified by TÜV SÜD for fulfilling all requirements of ISO9001:2015&IATF16949:2016&AS9100D.

The defects per the requirement such as flakes,sub-surface bubble,macro inclusion in macrostructure of acid etched surface are not allowed and we assure the parts quality for delivery.; Free from ratioactive.Free from mercury and cadmium.No welding repair.The tensile and impact specimens been taken from delivery condition.; All products have met EN 10083-3 requirements,tolerances acc. to EN 10060.

SIDERIT
TRATTAMENTI TERMICI
STABILIMENTO ZOLA PREDOSA

SEDE LEGALE:
SIDERIT S.r.l. con Socio Unico
Società soggetta a direzione
e coordinamento di Proterm S.r.l.
Via Casteldebole 2/A
40069 Zola Predosa (BO) – IT
Tel. 051752321
Cap. Soc. EUR 2.184.000,00 i.v.
P.IVA C.F e R.I. 01603891209 - R.E.A. 350684/BO

STABILIMENTO PRODUTTIVO:
SIDERIT ZOLA PREDOSA
Via Casteldebole 2/A
40069 Zola Predosa (BO) – IT
Tel. 051752321

AZIENDA CON SISTEMA DI GESTIONE CERTIFICATO DA KIWA-CERMET
SECONDO UNI EN ISO 9001:2015 CERTIFICATO NUMERO 008

COMPANY WITH MANAGEMENT SYSTEM CERTIFIED BY KIWA-CERMET
IN COMPLIANCE WITH THE STANDARD UNI EN ISO 9001:2015 (CERT. N. 008)

Prove di durezza eseguite secondo normative UNI EN ISO 6506, 6507 e 6508.
Spessore degli strati induriti UNI 11153 laddove non diversamente indicato nel CSR cliente.

Eventuali contestazioni dovranno essere comunicate prima dell'esecuzione di ulteriori lavorazioni e dell'utilizzo dei particolari.

CERTIFICATO DI COLLAUDO TEST CERTIFICATE	**2319125**	**DATA** DATE	**13/07/2023**

UNI EN 10204:2005 - 3.1 *Pos05a06r1*

Spett.le: **GI.GI.ESSE SRL**
VIA ZUCCARDI 8/A
42012 CAMPAGNOLA EMILIA RE

DISEGNO Part Number	**9022943**	**COMMESSA** Committed	
DESCRIZIONE Description	**PIGNONE**	**ORDINE** Order	
DDT Delivery note	**702**	**Q.TA'** Pieces	**55 (TOT)**
DATA DDT Delivery note date	**05/07/2023**	**PESO [Kg]** Weight [Kg]	**621,00**
MATERIALE Material	**42CrMo4**	**CONTENITORI** Cases	**377**
COLATA Heat Code	**2014133E**	**PARTITA** Batch	**2316300**

TRATTAMENTO TERMICO
Heat Treatment

BONIFICA GREZZI
PALLINATURA GREZZI
COLLAUDO GREZZI

MODALITA' DI LAVORO
Work Details

ANALISI DI COLLAUDO
Laboratory analysis

Specifiche Specification	**Richieste** Required	**Risultati** Results	**u.m.**
Rm da prova di durezza Rm from hardness test	**800 - 950**	**885-891**	**MPa**

Specifiche cliente
Customer standard

Esame microstrutturale
Microstructural Analisys

Strumento Tool device code	**Reicherter Briviskop 3000H**	**Classe funzionale** Class	
Note Notes		**Settore applicazione** Area	
Collaudatore Inspector	**PATTARA**	**ESITO**	CONFORME
Responsabile collaudo Lab Supervisor	**Claudio Mellini**	COMPLIANCE RESULT	

4500548192- DDT 810-01.08.2023 - cod 9022943-55PEZZI-GI.GI.ESSE SRL-COL: CPSS 2014133E

ECQ SERENA ROSSI

GI.GI.ESSE S.R.L.
Tel. 0522.667040 - Fax (522.751564
C.F./P.I. 02161960357
Sede Legale: Via Zuccardi, 8/A
42012 Campagnola Emilia (RE)
E-mail: info@gigiessesrl.it

INFORMAZIONI RISERVATE. È VIETATA LA DIVULGAZIONE E L'UTILIZZO SE NON ESPRESSAMENTE AUTORIZZATI DALLA DIREZIONE AZIENDALE.

SIDERIT
TRATTAMENTI TERMICI
STABILIMENTO ZOLA PREDOSA

SEDE LEGALE:
SIDERIT S.r.l. con Socio Unico
Società soggetta a direzione
e coordinamento di Proterm S.r.l.
Via Casteldebole 2/A
40069 Zola Predosa (BO) – IT
Tel. 051752321
Cap. Soc. EUR 2.184.000,00 i.v.
P.IVA C.F e R.I. 01603891209 - R.E.A. 350684/BO

STABILIMENTO PRODUTTIVO:
SIDERIT ZOLA PREDOSA
Via Casteldebole 2/A
40069 Zola Predosa (BO) – IT
Tel. 051752321

AZIENDA CON SISTEMA DI GESTIONE CERTIFICATO DA KIWA-CERMET
SECONDO UNI EN ISO 9001:2015 CERTIFICATO NUMERO 008

COMPANY WITH MANAGEMENT SYSTEM CERTIFIED BY KIWA-CERMET
IN COMPLIANCE WITH THE STANDARD UNI EN ISO 9001:2015 (CERT. N. 008)

Prove di durezza eseguite secondo normative UNI EN ISO 6506, 6507 e 6508.
Spessore degli strati induriti UNI 11153 laddove non diversamente indicato nel CSR cliente.

Eventuali contestazioni dovranno essere comunicate prima dell'esecuzione di ulteriori lavorazioni e dell'utilizzo dei particolari.

CERTIFICATO DI COLLAUDO TEST CERTIFICATE	**2319125**	**DATA** DATE	**13/07/2023**

UNI EN 10204:2005 - 3.1 *Pos05a06r1*

Spett.le: **GI.GI.ESSE SRL**
VIA ZUCCARDI 8/A
42012 CAMPAGNOLA EMILIA RE

DISEGNO Part Number	**9022943**	**COMMESSA** Committed	
DESCRIZIONE Description	**PIGNONE** PINION	**ORDINE** Order	
DDT Delivery note	**702**	**Q.TA'** Pieces	**55 (TOT)**
DATA DDT Delivery note date	**05/07/2023**	**PESO [Kg]** Weight [Kg]	**621,00**
MATERIALE Material	**42CrMo4**	**CONTENITORI** Cases	377
COLATA Heat Code	**2014133E**	**PARTITA** Batch	**2316300**

TRATTAMENTO TERMICO
Heat Treatment

BONIFICA GREZZI RAW TEMPERING
PALLINATURA GREZZI RAW SHOT PEENING
COLLAUDO GREZZI RAW TEST

MODALITA' DI LAVORO
Work Details

ANALISI DI COLLAUDO
Laboratory analysis

Specifiche Specification	Richieste Required	Risultati Results	u.m.
Rm da prova di durezza Rm from hardness test	**800 - 950**	**885-891**	**MPa**

Specifiche cliente
Customer standard

Esame microstrutturale
Microstructural Analisys

Strumento Tool device code	**Reicherter Briviskop 3000H**	**Classe funzionale** Class	
Note Notes		**Settore applicazione** Area	
Collaudatore Inspector	**PATTARA**	**ESITO**	
Responsabile collaudo Lab Supervisor	**Claudio Mellini**	COMPLIANCE RESULT	CONFORME COMPLIANT

4500548192- DDT 810-01.08.2023 - cod 9022943-55PEZZI-GI.GI.ESSE SRL-COL: CPSS 2014133E

ECQ SERENA ROSSI

GI.GI.ESSE S.R.L.
Tel. 0522.667040 - Fax (522.751564
C.F./P.I. 02161960357
Sede Legale: Via Zuccardi, 8/A
42012 Campagnola Emilia (RE)
E-mail: info@gigiessesrl.it

INFORMAZIONI RISERVATE. È VIETATA LA DIVULGAZIONE E L'UTILIZZO SE NON ESPRESSAMENTE AUTORIZZATI DALLA DIREZIONE AZIENDALE.

MATERIAL TEST CERTIFICATE
(材质证书)
ACCORDING EN10204 3.1

LANGUAGE
ENGLISH

DANAMotionSystemsItaliaS.r.l.MATERIAL STANDARD (SP046-3)（标准）		CERTIFICATE DATE （证书日期）	CAST ID （批号）
B21	C45 GB699-88	2024.01.15	Y236-00653
RAW MATERIAL ORIGIN /MATERIAL（原料产地/材料）		CUSTOMER （客户）	
CAST ID：Y236-00653		DanaMotionSystems Italia S.r.l.	
MATERIAL（材质）:C45 GB699-88		VIA LUCIANO BREVINI 1/A -42124 STRADARIO 01483 REGGIO EMILIA - ITALY (RE) ENROLLED AT REGISTER OF ENTERPRISES OF REGGIO EMILIA-NUMBER REA 75379	
PART NUMBER （客户零件号码）		QUANTITY（数量）	SUPPLIER（供应商）
34512831895		3000	JINANHONGZHENG SCIENCE
PART DESCRI PTION （零件叙述/名称）		ORDERNUMBER/DELIVERY NOTE （订单号码/交货通知单）	DANA2401
PRE-MACHINED PLANET CARRIER		4500611892	

CHEMICAL COMPOSITION
(化学成份)

	%C	%Mn	%S	%Si	%P	-----	-----	-----	-----	-----	-----
MIN	0.42	0.50	-----	-----	-----	-----	-----	-----	-----	-----	-----
MAX	0.50	0.80	0.035	0.40	0.030	-----	-----	-----	-----	-----	-----
CAST	0.457	0.638	0.012	0.21	0.007	-----	-----	-----	-----	-----	-----
								“Grain Growth:A/min=0.020%,Timin=0.04%			

MECHANICAL PROPERTIES
（机械性能）

TEST MEDIA AND HEAT TREATMENT （试验热处理）		Rm[N/mm²]	Re[N/mm²]	A%	Z%	Kv[J]	SOUNDNESS	Grain Size
+QT WITH TEMPERING AT 190ºC （淬火、回火）	MIN	650	-----	-----	-----	-----	MPI	-----
	MAX	800	-----	-----	-----	-----	ONBAR	-----
	CAST	710	-----	-----	-----	-----	PASSED	-----

REMARKS AND ADDITIONAL TESTS

MATERIAL ON DRAWING (图面材质)/34512831895
C45 GB699-88/EN10084

APPROVAL(核准)：	CHECKED（审核）：		ENGINEER（主办人）：
Yuan min Chen	Shan Gao	Yue zhen Yu	Chun min Liu

莱钢®

产品质量证明书
INSPECTION CERTIFICATE

地址：中国山东省济南市钢城区府前大街99号
No.99Fuqian Street,GangCheng District,JiNan ShanDong,China

质保书号/Sheet No:		产品名称/Description of Goods:	优质碳素结构钢	钢种/Grade:	45
合同号/Contract No:		交货状态/Condition:	热轧	执行标准/Specification:	GB/T699-2015
出口批号/Export No:		收货单位/Sold To:	[illegible]		R-LGPBB-QESP16-18

序号 No	炉号 Heat No	规格 Size(mm)	件数 Bundles	支数 Pieces	重量 Net Weigth(MT)	化学成分/Chemical Composition(%)																					
						C	Si	Mn	P	S	Cr	Ni	Cu	Ti	Mo	V	W	B	Alt	Nb	Als	Ca	As	Sb	Pb	Sn	Bi	CEV
1	Y236-00653	65	6	114	18.085	0.46	0.23	0.55	0.018	0.003	0.049	0.015	0.024	0.0020	0.001	0.001	0.0000	0.0003	0.016	0.0007	0.000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	----
2	Y236-00649	65	3	54	8.55	0.46	0.23	0.58	0.018	0.009	0.067	0.019	0.026	0.0030	0.005	0.002	0.0000	0.0005	0.035	0.0008	0.000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	----
3	Y236-00652	65	6	114	18.075	0.43	0.23	0.57	0.018	0.009	0.047	0.019	0.022	0.0030	0.000	0.002	0.0000	0.0005	0.016	0.0008	0.000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	----
4																											

序号 No	一般疏松 Scattered Porosit Grade	中心疏松 Center Unsoundn -ess Grade	偏析 Segrega -tion Grade	中心偏析 Center Segregat -ion Grade	锭型偏析 Ingot Segregat -ion Grade	边缘点偏 Edge Segregat -ion Grade	一般点偏 General Segregat -ion Grade	显微组织 Microsc -opid Structure	非金属夹杂物/Nonmetal Impurity(Grade)									脱碳层 Decarbu -rization mm	带状组织 Bandst -ructure Grade	抗拉强度 Tensile Strength Rm(N/mm)	屈服强度 Yield Streng th Rel (N/mm)	延伸率 Percentage Elongation A(%)	收缩率 Percentage Reduxtion of Area Z(%)	冲击功 Charpy Impact Ak(J)	硬度 Brinell Hardn -ess HB	末端淬透性 Terminal Hardena -bility	
									A		B		C		D		DS										
									细 T	粗 H	细 T	粗 H	细 T	粗 H	细 T	粗 H											
1	0.5	1.0	----	0.0	0.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	654	381	23.0	46.0	----	----	J9	J15
	0.5	1.0	----	0.0	0.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	643	372	23.0	47.0	----	----	----	----
2	0.5	1.0	----	0.0	0.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	658	421	22.5	45.0	----	----	J9	J15
	0.5	1.0	----	0.0	0.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	664	402	22.5	47.0	----	----	----	----
3	0.5	1.0	----	0.0	0.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	657	386	23.0	47.0	----	----	J9	J15
	0.5	1.0	----	0.0	0.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	660	391	23.0	46.0	----	----	----	----
4																											

序号 No	热顶锻 Forging Test	晶粒度 Grain Size Grade	H (ppm)	N (ppm)	O (ppm)
1	合格	----	----	----	----
2	合格	----	----	----	----
3	合格	----	----	----	----
4					

本公司是中国冶金行业首批通过ISO9001、ISO14001、OHSAS18001三体系认证企业，可为冶金、机械、汽车、造船、石油、化工、军工等行业提供5大类、10多个钢种、60多个规格的优质特殊钢。其中齿轮钢、轴承钢、45和40Cr热轧圆钢四种优特钢产品获得“山东名牌产品”荣誉称号，20CrMnTiH、45、40Cr热轧圆钢三种优特钢产品获得“冶金产品实物质量金杯奖”荣誉称号。优钢产品销售电话：（0531）76925288 售后服务电话：（0531）76891016 物流服务热线：（0531）76829827

说明 Explain	①材料的表面质量和外形尺寸均合格。Surface quality and shape size of material are all qualified. ②有异议时，来函请标明钢号、批号、规格、发货日期、原因，并将实物保管好。 When there is any complain,you are kindly requested to mark the Steel Grade,Heat No.,Size,Delivery Date,Causes and materials in the condition. ③本质量证明书复印无效。The press copy invalid.
备注 Remarks	

质保书电签专用章

SHANDONG IRON AND STEEL COMPANY LTD. LAIWU COMPANY 质量证明章

填写人/Principat: 张晔　　复核人/Signature: 高小军　　质量部门盖章有效/Stamp of Quality Assurance

JINAN HONGZHENG SCIENCE & TECHNOLOGY Co. Ltd

HEAT TREATMENT REPORT

ACCORDING TO UNI EN 10204 3.1

DATE:2024.01.15

PART NO.	34512831895	BATCH CODE	DANA2401	MATERIAL	C45 GB699-88	
PART NAME	PIN	No. OF PCS IN BATCH	3000PCS	ORDER NO.	4500611892	
ITEM	STANDARDVALUE	INSPECTION EQUIPMENT	1	2	3	JUDGEMENT
HEAT TREATMENT	HARDENING AND TEMPERING	BRINELL TESTER	OK	OK	OK	OK
HARDNESS OF SURFACE	HB190~240	BRINELL TESTER	205~210			OK
APPROVAL (QUALITY MANAGER)	Yuan min Chen	CHECK (QUALITY SUPERVISOR)	Shan Gao	Yue zhen Yu	QUALITY (INSPECTOR)	Chun min Liu

MATERIAL TEST CERTIFICATE
(材质证书)
ACCORDING EN10204 3.1

LANGUAGE
ENGLISH

DANAMotionSystemsItaliaS.r.l.MATERIAL STANDARD (SP046-3)（标准）		CERTIFICATE DATE（证书日期）	CAST ID （批号）
B21	C45 GB699-88	2024.3.19	23C00098
RAW MATERIAL ORIGIN /MATERIAL（原料产地/材料）		CUSTOMER （客户）	
CAST ID：23C00098		Dana MotionSystems Italia S.r.l.	
MATERIAL（材质）:C45 GB699-88		VIA LUCIANO BREVINI 1/A -42124 STRADARIO 01483 REGGIO EMILIA - ITALY (RE) ENROLLED AT REGISTER OF ENTERPRISES OF REGGIO EMILIA-NUMBER REA 75379	
PART NUMBER （客户零件号码）		QUANTITY （数量）	SUPPLIER （供应商）
34546131895		2700	JINANHONGZHENG SCIENCE
PART DESCRI PTION （零件叙述/名称）		ORDER NUMBER/DELIVERY NOTE （订单号码/交货通知单）	DANA2316-1
PLANETARY CARRIER		4500591063	

CHEMICAL COMPOSITION
(化学成份)

	%C	%Mn	%S	%Si	%P	-----	-----	-----	-----	-----	-----
MIN	0.42	0.50	-----	-----	-----	-----	-----	-----	-----	-----	-----
MAX	0.50	0.80	0.035	0.40	0.030	-----	-----	-----	-----	-----	-----
CAST	0.447	0.565	0.007	0.18	0.013	-----	-----	-----	-----	-----	-----

“Grain Growth:A/min=0.020%,Timin=0.04%

MECHANICAL PROPERTIES
（机械性能）

TEST MEDIA AND HEAT TREATMENT （试验热处理）		Rm[N/mm²]	Re[N/mm²]	A%	Z%	Kv[J]	SOUNDNESS	Grain Size
+QT WITH TEMPERING AT 190ºC （淬火、回火）	MIN	650	-----	-----	------	------	MPI	------
	MAX	800	-----	------	------	------	ONBAR	------
	CAST	710	-----	------	------	------	PASSED	------

REMARKS AND ADDITIONAL TESTS

MATERIAL ON DRAWING (图面材质)/34546131895
C45 GB699-88b/EN10084

APPROVAL(核准)：	CHECKED（审核）：		ENGINEER（主办人）：
Yuan min Chen	Shan Gao	Yue zhen Yu	Chun min Liu

芜湖新兴铸管有限责任公司

产品质量证明书

收货单位Purchaser	玉环新洲机械实业有限公司	产品名称Name	优质碳素结构钢
牌号Steel Grade	45	技术标准Specification	GB/T 699-2015
车号Wagon No.	1657078	发货日期Date of issuance	1/20/2023
交货状态Delivery status	热轧	尺寸规格Size specifications	Φ60mm

运输计划号Transportation plan No S202301032301019

序号	批号	炉号	件数	重量	C	Si	Mn	P	S	Cr	Ni	Cu
1	23100238	23C00098	14	37.724	0.44	0.22	0.6	0.013	0.008	0.03	0.01	0.01

序号	下屈服强度 Yeld Strength X	抗拉强度 Tensile Strength	断后伸长率 Percentage of elongation A	断面收缩率 Area Reduction	一般疏松 Generally porosity	中心疏松 Center porosity	锭型偏析 Pattern segregation	中心偏析 tempering	尺寸外形和表面质量 Dimensions and surface quality	生产日期 Production Date
1	401,400	644,641	24,22	47,46	0.5,0.5	1.5,1.5	0,0	0,0	合格	23/01/18

序号										
1										

说明 1.有异议时，来函请标明钢号、炉号、规格、发货日期、原因，并将实物保管好。
When there is any complain,you are kindly requested to mark the steel Grade,Heat No,Size,Delivery Date,causes and materials in the condition.

芜湖新兴铸管有限责任公司 质保书专用章

制单人:邹越　　审核人：徐琨　　质保书盖章：

JINAN HONGZHENG SCIENCE & TECHNOLOGY Co. Ltd

HEAT TREATMENT REPORT

ACCORDING TO UNI EN 10204 3.1 DATE:2024.3.19

PART NO.	34546131895	BATCH CODE	DANA2316-1		MATERIAL	C45 GB699-88
PART NAME	PLANETARY CARRIER	No. OF PCS IN BATCH	2700pcs		ORDER NO.	4500591063
ITEM	STANDARD VALUE	INSPECTION EQUIPMENT	1	2	3	JUDGEMENT
HEAT TREATMENT	HARDENING AND TEMPERING	BRINELL TESTER	OK	OK	OK	OK
HARDNESS OF SURFACE	HB190~240	BRINELL TESTER	203~215			OK
APPROVAL (QUALITY MANAGER)	Yuan min Chen	CHECK (QUALITY SUPERVISOR)	Shan Gao	Yue zhen Yu	QUALITY (INSPECTOR)	Chun min Liu

Certificate of conformity 3.1 UNI EN 10204

Certificate #	3100021272000010	Material Grade	BR GJS-600-10
Customer	DANA MOTION DIV. POWER	Marking on castings	3MG
Supplier Code	45138	Material Reference Standard	SP 046-07
Customer Item code	345F4400095	Zanardi batch ID	30010115A
Item Description	SEMIL.PORT.EM1065/FEc/3,5	Customer Order reference	4500639713
Delivery note #	666/00	Number of delivered parts	555

MATERIAL CONTROL

Mechanical properties

	Tensile strength UTS [N/mm2]	Yield strength 0,2% [N/mm2]	Elongation A [%]	HB min	HB max
Measured	687	406	11,2	192	212

Type of specimen: Separately cast sample following UNI ISO 1083/1563, Y25 sample Ø=14mm L0=70 mm

Metallographic Test on castings

Structure	Perlitic - Ferritic
Graphite	Spheroidal graphite type VI, Graphite Dimensions 6-7, standard UNI EN ISO 945
Spheroidization	Micrographic check for nodularization carried out at the end of 100% pouring ladles

Chemical Analisys

	C%	Si%	Mn%	P%	S%	Mg%
Measured	3,49	2,52	0,163	0,040	0,0061	0,048

Place and date Minerbe (VR) Apr 16, 2024 11:53:20 AM

Internal Manager signature

Head of Material Laboratory Matteo Pernumian

External Manager signature

The manufacturer's authorized inspection representative

Certificate of conformity 3.1 UNI EN 10204

Certificate #	3100021272000010	Material Grade	BR GJS-600-10
Customer	DANA MOTION DIV. POWER	Marking on castings	4A5
Supplier Code	45138	Material Reference Standard	SP 046-07
Customer Item code	345F4400095	Zanardi batch ID	30010377A
Item Description	SEMIL.PORT.EM1065/FEc/3,5	Customer Order reference	4500639713
Delivery note #	666/00	Number of delivered parts	365

MATERIAL CONTROL

Mechanical properties

	Tensile strength UTS [N/mm2]	Yield strength 0,2% [N/mm2]	Elongation A [%]	HB min	HB max
Measured	634	397	11,5	190	230

Type of specimen: Separately cast sample following UNI ISO 1083/1563, Y25 sample Ø=14mm L0=70 mm

Metallographic Test on castings

Structure	Perlitic - Ferritic
Graphite	Spheroidal graphite type VI, Graphite Dimensions 6-7, standard UNI EN ISO 945
Spheroidization	Micrographic check for nodularization carried out at the end of 100% pouring ladles

Chemical Analisys

	C%	Si%	Mn%	P%	S%	Mg%
Measured	3,52	2,48	0,164	0,037	0,0084	0,049

Place and date Minerbe (VR) Apr 16, 2024 11:53:20 AM

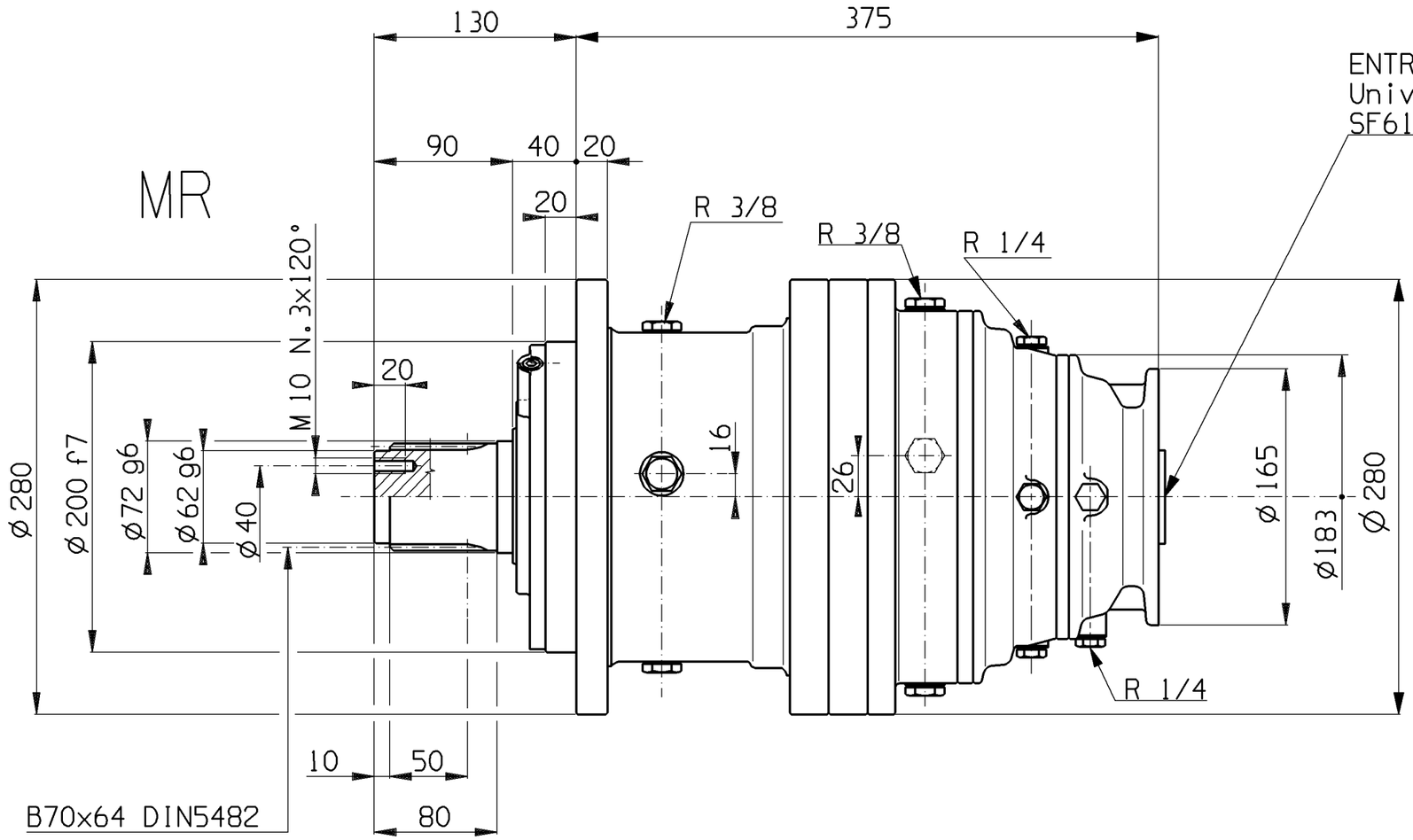
Internal Manager signature

Head of Material Laboratory Matteo Pernumian

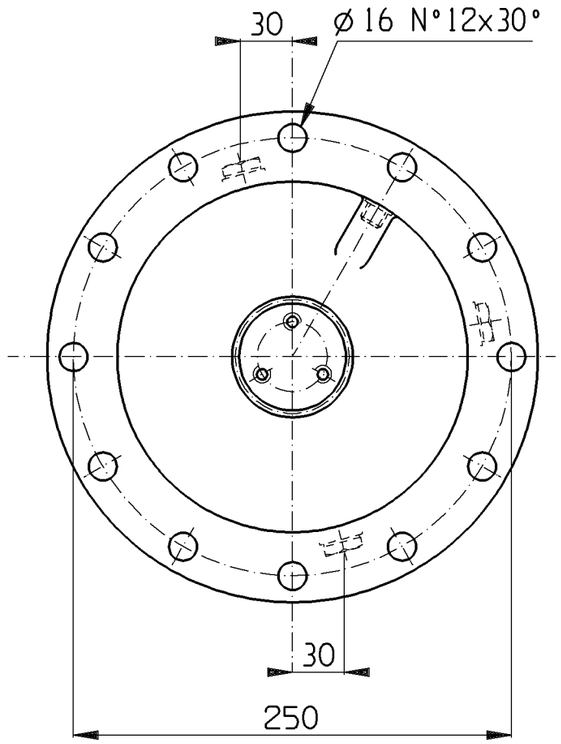
External Manager signature

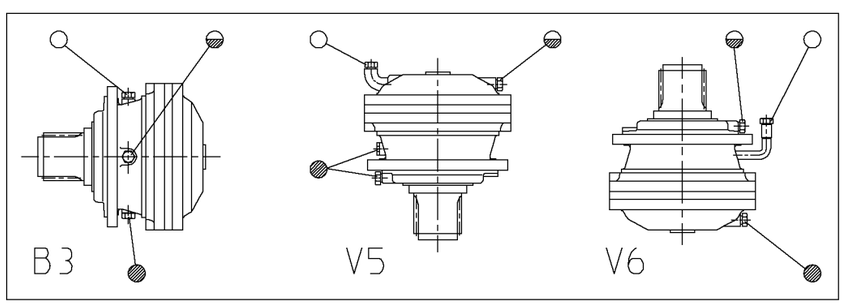
The manufacturer's authorized inspection representative

MR



ENTRATA UNIVERSALE
Universal input:
SF611000001A003





TAPPI OLIO - OIL PLUGS

- TAPPO CARICO E SFIATO FILLING AND BREATHER PLUG
- TAPPO LIVELLO OIL LEVEL PLUG
- TAPPO MAGNETICO E SCARICO MAGNETIC AND DRAIN PLUG
- INGRASSATORE GREASING
- TAPPO CARICO/SFIATO OLIO FRENO BRAKE BREATHER PLUG
- TAPPO LIVELLO OLIO FRENO BRAKE OIL LEVEL PLUG
- TAPPO SCARICO OLIO FRENO BRAKE DRAIN PLUG
- ATTACCO COMANDO APERTURA FRENO BRAKE RELEASING PLUG

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MOD.		MOD. DATA	MODIFICATO DA	CONTROLLATO DA
A	Tolleranze diametri 62 e 72 erano f7 (PA1470)	17.09.07	A.Neroni	K.Foutekova

DENOMINAZIONE/DRAWING DESCRIPTION:
ET3065/MR/../00

DISEGNATO DRAWN BY: Neroni
CONTROLLATO CHECKED BY: V.Montanari
SCALA/SCALE: 1:3,5
DATA/DATE: 20.05.96
SOSTITUISCE IL REPLACES CODE: SD-650/3005
SOSTITUITO DA REPLACED BY CODE:

brevini power transmission
brevini riduttori

FOGLIO SHEET: A3

DISEGNO N° / DRAWING N° :
SI011D80201A003

Danfoss A/S
DK-6430 Nordborg
Denmark
CVR nr.: 20 16 57 15

Telephone: +45 7488 2222
Fax: +45 7449 0949

EU DECLARATION OF CONFORMITY

Danfoss A/S

Vacon Ltd

declares under our sole responsibility that the

Product(s) Vacon NXS/P AC drive

Type(s) Vacon NXS/P 0003 2...0300 2
Vacon NXS/P 0003 5...1030 5
Vacon NXS/P 0004 6...0820 6

Covered by this declaration is in conformity with the following directive(s), standard(s) or other normative document(s), provided that the product is used in accordance with our instructions.

Safety: EN 61800-5-1: 2007
EN 60204-1: 2009+A1:2009 (as relevant)

EMC: EN 61800-3: 2004 + A1: 2012

and conforms to the relevant safety provisions of Low Voltage Directive 2006/95/EC (until April 19th, 2016), 2014/35/EU (from April 20th, 2016) and EMC Directive 2004/108/EC (until April 19th, 2016), 2014/30/EU (from April 20th, 2016).

The year the CE marking was affixed: 2002

Date	Issued by		Date	Approved by	
	Signature			Signature	
15-04-2016	Name	**Antti Vuola**	15-04-2016	Name	**Timo Kasi**
	Title	**Head of Standard Drives**		Title	**VP, Design Center Finland and Italy**

Danfoss only vouches for the correctness of the English version of this declaration. In the event of the declaration being translated into any other language, the translator concerned shall be liable for the correctness of the translation.

SEA METAL SRL	*PAINTING REPORT* *Rapporto di pitturazione*	M 02 Rev. 02 del 12/05/2023		
		PR:	40/2024	Date: 11/11/2024

Customer:	Remazel	*Painting Procedure:*	24-27012-PP-001
Project :	Davit Crane	*Place of Activities:*	Sea Metal
Purchase order:	240005843	*Item:*	C09-0001-P0002 - Carpenteria colonna fissa

ITEM INSPECTED:

STEEL PREPARATION (ISO 8501-3 - GRADE Sa 2 1/2)	**ACCEPTABLE**	☑	**NOT ACCEPTABLE**	☐	**NOT APPL.**	☐
VISUAL CHECK PRIOR TO BLASTING :	**ACCEPTABLE**	☑	**NOT ACCEPTABLE**	☐	**NOT APPL.**	☐
CLEANING OF PIECE BEFORE BLASTING :	**ACCEPTABLE**	☑	**NOT ACCEPTABLE**	☐	**NOT APPL.**	☐
SURFACE CLEANLINESS: (ISO 8501-1)	**ACCEPTABLE**	☑	**NOT ACCEPTABLE**	☐	**NOT APPL.**	☐
SURFACE CLEANLINESS: (ISO 8502-3 RATING 2)	**ACCEPTABLE**	☑	**NOT ACCEPTABLE**	☐	**NOT APPL.**	☐
ROUGHNESS : (profile : 70 µm - Medium G)	**ACCEPTABLE**	☑	**NOT ACCEPTABLE**	☐	**NOT APPL.**	☐

Tape 1:	Tape 2:	Tape 3:

SALT TEST: (ISO 8502-6, ISO8502-9)	<30 mg/m²	**ACCEPTABLE**	☑	**NOT ACCEPTABLE**	☐	**NOT APPL.**	☐
Result 15,6 (mg/m²)	Result (mg/m²)	Result (mg/m²)		Result (mg/m²)			
VISUAL CHECK AFTER TO BLASTING :		**ACCEPTABLE**	☑	**NOT ACCEPTABLE**	☐	**NOT APPL.**	☐

EXPOSED EXTERIOR AND INTERIOR SURFACES:

FIRST LAYER

DATE : 11/11/24	HOUR : 9:00	HUMIDITY :	< 85%		36,3
TYPE OF COAT : Jotamastic 90 Alu		AIR TEMP.:	> 5°C		17,4
PAINT BATCH NUMBER BASE: 3405346-1-*-1:3		STEEL TEMP.:	MIN. DEW P. + 3 °C.		18,4
PAINT BATCH NUMBER CURING AGENT: 3463065-1-*-1:2		DEW POINT :			2,3
NDFT: 150 µm		THICKNESS RESULT :			
Used paint:		N° OF READING: 30	MIN	(Range: -___/+___ of NDFT)	150
			AVERAGE	(Range: -___/+___ of NDFT)	175
RESULT : **ACCEPTABLE** ☑ **NOT ACCEPTABLE** ☐			MAX	(Range: -___/+___ of NDFT)	200

SECOND LAYER

DATE : 12/11/24	HOUR : 9:00	HUMIDITY :	< 85%		46
TYPE OF COAT : Jotamastic 90 Alu		AIR TEMP.:	> 5°C		12,6
PAINT BATCH NUMBER BASE: 3405346-1-*-1:3		STEEL TEMP.:	MIN. DEW P. +3°C.		12,3
PAINT BATCH NUMBER CURING AGENT: 3463065-1-*-1:2		DEW POINT :			1,3
NDFT: 150 µm		THICKNESS RESULT :			
Used paint:		N° OF READING: 30	MIN	(Range: -___/+___ of NDFT)	270
			AVERAGE	(Range: -___/+___ of NDFT)	330
RESULT : **ACCEPTABLE** ☑ **NOT ACCEPTABLE** ☐			MAX	(Range: -___/+___ of NDFT)	380

THIRD LAYER

DATE : 13/11/24	HOUR : 9:30	HUMIDITY :	< 85%		43,4
TYPE OF COAT : Hardtop XP RAL 7038		AIR TEMP.:	> 5°C		11,6
PAINT BATCH NUMBER BASE: 3656202-1-*-1:3		STEEL TEMP.:	MIN. DEW P. +3°C.		11,2
PAINT BATCH NUMBER CURING AGENT: 3614977-1-*-1:2		DEW POINT :			-0,6
NDFT: 60 µm		THICKNESS RESULT :			
Used paint:		N° OF READING:	MIN	(Range: -___/+___ of NDFT)	336
			AVERAGE	(Range: -___/+___ of NDFT)	411
RESULT : **ACCEPTABLE** ☑ **NOT ACCEPTABLE** ☐			MAX	(Range: -___/+___ of NDFT)	496

FOURTH LAYER

DATE :	HOUR :	HUMIDITY :	< 85%		
TYPE OF COAT :		AIR TEMP.:	> 5°C		
PAINT BATCH NUMBER BASE:		STEEL TEMP.:	MIN. DEW P. +3°C.		
PAINT BATCH NUMBER CURING AGENT:		DEW POINT :			
NDFT: µm		THICKNESS RESULT :			
Used paint:		N° OF READING:	MIN	(Range: -___/+___ of NDFT)	0
			AVERAGE	(Range: -___/+___ of NDFT)	0
RESULT : **ACCEPT.** ☐ **NOT ACCEPT.** ☐ **N.A.** ☐			MAX	(Range: -___/+___ of NDFT)	0

DUST TEST : DUST QUANTITY RATE(1÷5):1 DUST PARTICLE SIZE (1÷5):1

TEST

NOTE:

REMAZEL C. Ziber ☐W ☐R

DFT equipment : Thickness gauge Elcometer RE06311 Calibration on smooth surface (correction value=25 µm)

REMARKS:

REDATTO DA *COMPILED FROM*	**ISPETTORE** *INSPECTOR*	**ISPETTORE** *INSPECTOR*	**CLIENTE** *CUSTOMER*
LUCA TRIPOLI N°5402 Sea Metal S.r.l. FROSIO LEVEL III	Data emissione: 14/11/2024		ROSETTI MARINO SpA Michele Sacchi Quality Control Dept. NACE # 35744
	BIANCOLILLO MATTEO FROSIO Gruppo IapAC LEVEL II Matteo Biancolillo Frosio Certified # 12558	Luca Tripoli Frosio Certified # 5402	

REVIEW 16-12-2024

SEA METAL SRL	PAINTING REPORT Rapporto di pitturazione	M 02 Rev. 02 del 12/05/2023			
		PR:	49/2024	Date:	22/11/2024

Customer:	Remazel	*Painting Procedure:*	24-27012-PP-001
Project :	Davit Crane	*Place of Activities:*	Sea Metal
Purchase order:	240005843	*Item:*	C09-0001-P0005+C09-0001-P0007+C09-0001-P0086+C09-0001-P0034+C09-0001-P0076+C09-0001-P0022+C09-0001-P0067+C09-0001-P0023+C09-0001-P0024+C09-0001-P0025+C09-0001-P0028+C09-0001-P0084+C09-0001-P0056+C09-0001-P0057+C09-0001-P0088+C09-0001-P0096 C09-0001-P0045

ITEM INSPECTED:

STEEL PREPARATION (ISO 8501-3 - GRADE Sa 2 1/2)	ACCEPTABLE	☑	NOT ACCEPTABLE	☐	NOT APPL.	☐	
VISUAL CHECK PRIOR TO BLASTING :	ACCEPTABLE	☑	NOT ACCEPTABLE	☐	NOT APPL.	☐	
CLEANING OF PIECE BEFORE BLASTING :	ACCEPTABLE	☑	NOT ACCEPTABLE	☐	NOT APPL.	☐	
SURFACE CLEANLINESS: (ISO 8501-1)	ACCEPTABLE	☑	NOT ACCEPTABLE	☐	NOT APPL.	☐	
SURFACE CLEANLINESS: (ISO 8502-3 RATING 2)	ACCEPTABLE	☑	NOT ACCEPTABLE	☐	NOT APPL.	☐	
ROUGHNESS : (profile : 75 µm - Medium G)	ACCEPTABLE	☑	NOT ACCEPTABLE	☐	NOT APPL.	☐	

Tape 1:	Tape 2:	Tape 3:

SALT TEST: (ISO 8502-6, ISO8502-9)	<30 mg/m²	ACCEPTABLE	☑	NOT ACCEPTABLE	☐	NOT APPL.	☐
Result 4,8 (mg/m²)	Result (mg/m²)	Result (mg/m²)		Result (mg/m²)			
VISUAL CHECK AFTER TO BLASTING :		ACCEPTABLE	☑	NOT ACCEPTABLE	☐	NOT APPL.	☐

EXPOSED EXTERIOR AND INTERIOR SURFACES:

FIRST LAYER

DATE : 22/11/24 HOUR : 9:00	HUMIDITY :	< 85%		66,2
TYPE OF COAT : Jotamastic 90 Alu	AIR TEMP.:	> 5°C		12,9
PAINT BATCH NUMBER BASE: 3674207-1-*-1:2	STEEL TEMP.:	MIN. DEW P. + 3 °C.		12,8
PAINT BATCH NUMBER CURING AGENT: 3650855-1-*-1:2	DEW POINT :			6,7
NDFT: 150 µm	THICKNESS RESULT :			
Used paint:	N° OF READING:	MIN	(Range: -___/+___ of NDFT)	150
RESULT : ACCEPTABLE ☑ NOT ACCEPTABLE ☐	30	AVERAGE	(Range: -___/+___ of NDFT)	180
		MAX	(Range: -___/+___ of NDFT)	206

SECOND LAYER

DATE : 25/11/24 HOUR : 9:00	HUMIDITY :	< 85%		67,5
TYPE OF COAT : Jotamastic 90 Alu	AIR TEMP.:	> 5°C		12,9
PAINT BATCH NUMBER BASE: 3405346-1-*-1:3	STEEL TEMP.:	MIN. DEW P. +3°C.		12,5
PAINT BATCH NUMBER CURING AGENT: 3650855-1-*-1:2	DEW POINT :			7,0
NDFT: 150 µm	THICKNESS RESULT :			
Used paint:	N° OF READING:	MIN	(Range: -___/+___ of NDFT)	294
RESULT : ACCEPTABLE ☑ NOT ACCEPTABLE ☐	30	AVERAGE	(Range: -___/+___ of NDFT)	335
		MAX	(Range: -___/+___ of NDFT)	396

THIRD LAYER

DATE : 26/11/24 HOUR : 9:30	HUMIDITY :	< 85%		68,0
TYPE OF COAT : Hardtop XP RAL 7038	AIR TEMP.:	> 5°C		13,6
PAINT BATCH NUMBER BASE: 3689831-1-*-1:2	STEEL TEMP.:	MIN. DEW P. +3°C.		13,4
PAINT BATCH NUMBER CURING AGENT: 3685294-1-*-1:2	DEW POINT :			7,9
NDFT: 60 µm	THICKNESS RESULT :			
Used paint:	N° OF READING:	MIN	(Range: -___/+___ of NDFT)	336
RESULT : ACCEPTABLE ☑ NOT ACCEPTABLE ☐		AVERAGE	(Range: -___/+___ of NDFT)	400
		MAX	(Range: -___/+___ of NDFT)	494

FOURTH LAYER

DATE : HOUR :	HUMIDITY :	< 85%		
TYPE OF COAT :	AIR TEMP.:	> 5°C		
PAINT BATCH NUMBER BASE:	STEEL TEMP.:	MIN. DEW P. +3°C.		
PAINT BATCH NUMBER CURING AGENT:	DEW POINT :			
NDFT: µm	THICKNESS RESULT :			
Used paint:	N° OF READING:	MIN	(Range: -___/+___ of NDFT)	0
RESULT : ACCEPT. ☐ NOT ACCEPT. ☐ N.A. ☐		AVERAGE	(Range: -___/+___ of NDFT)	0
		MAX	(Range: -___/+___ of NDFT)	0

DUST TEST : DUST QUANTITY RATE(1÷5):1 DUST PARTICLE SIZE (1÷5):1

TEST

NOTE:

DFT equipment : Thickness gauge Elcometer RE06311 Calibration on smooth surface (correction value=25 µm)

REMARKS:

REDATTO DA *COMPILED FROM*	ISPETTORE *INSPECTOR*	ISPETTORE *INSPECTOR*	CLIENTE *CUSTOMER*
Sea Metal S.r.l.	Data emissione 27/11/2024		ROSETTI MARINO SpA Michele Sacchi Quality Control Dept.
	Matteo Biancolillo Frosio Certified # 12558	Luca Tripoli Frosio Certified # 5402	

NACE # 35744
REVIEW 16-12-2024