Base Load Power Hub (BLPH)

DAVIT CRANE
INSTALLATION, OPERATING AND MAINTENANCE MANUAL

Document Number:
1724001010-MAC-MAN-00016

Document Class: 3

03	20/03/2025	Issue for Information (IFI)	AB	MP	MT
02	29/01/2025	Issue for Information (IFI)	AB	MP	MT
01	13/11/2024	Issue for Information (IFI)	AB	MP	MT
00	04/10/2024	Issue for Information (IFI)	AB	MP	MT
Rev.	Date	Description	Prepared	Reviewed	Approved

REMAZEL ENGINEERING

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Revision / Change Log1724001010-MAC-DG-00012

Rev.	Description
00	Issue for Information (IFI)
01	Issue for Information (IFI)
02	Issue for Information (IFI)
03	Issue for Information (IFI)

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.

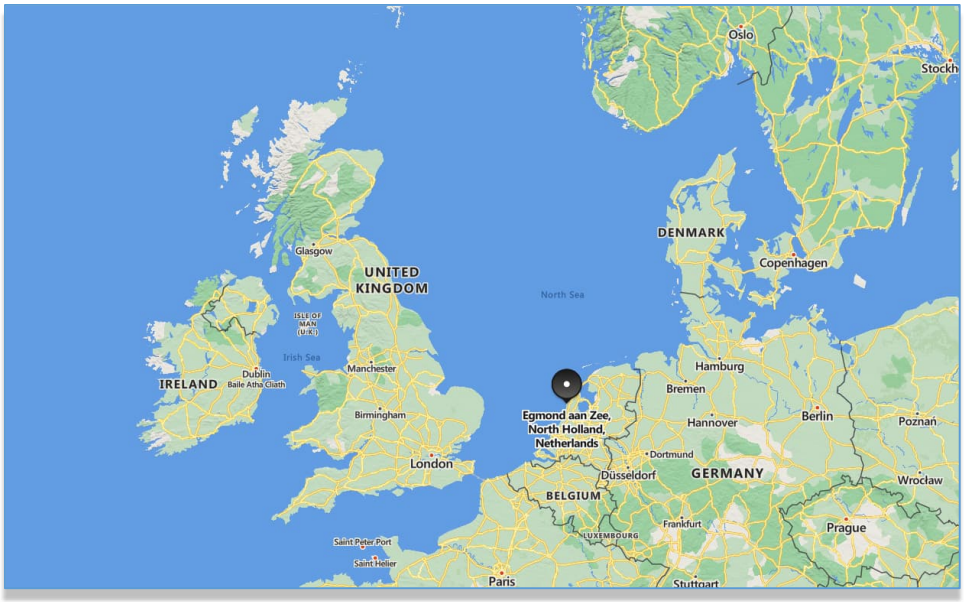


Figure 1 HOLLANDSE KUST NOORD WIND PARK Location Map



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.

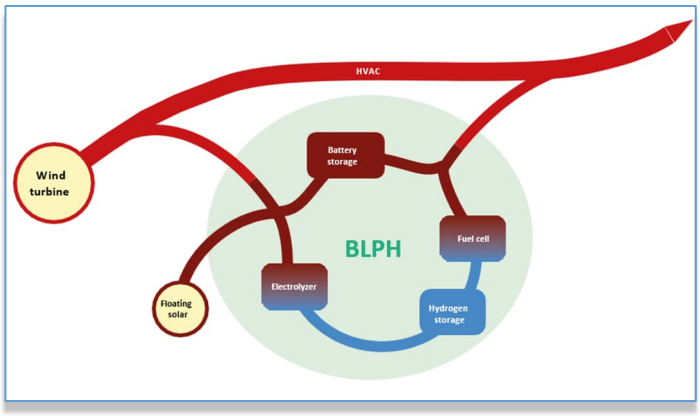


Figure 3 – BLPH Concept

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.

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)**
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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

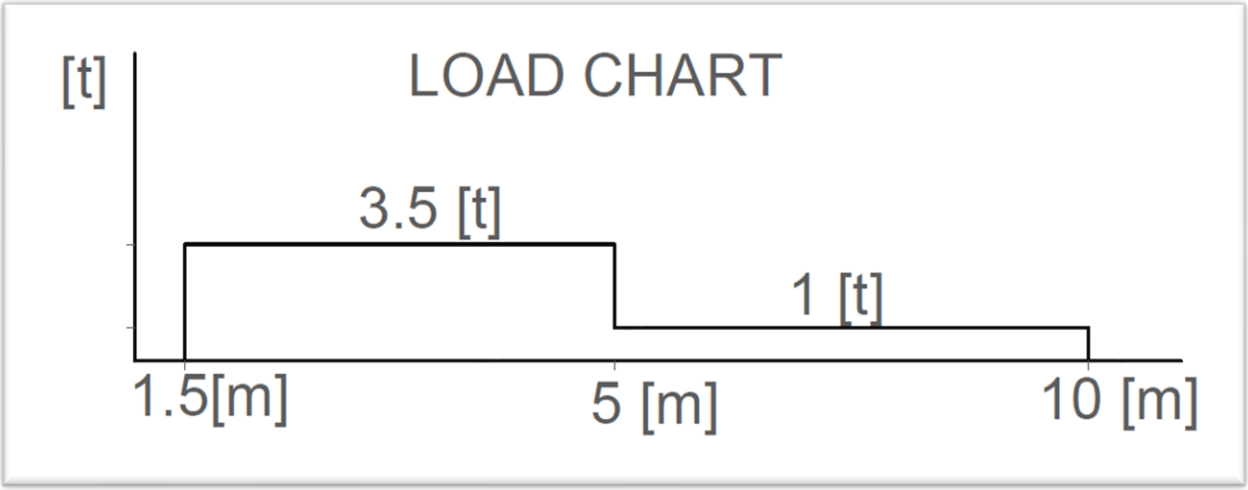
12. ELECTRIC DIAGRAMS

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:

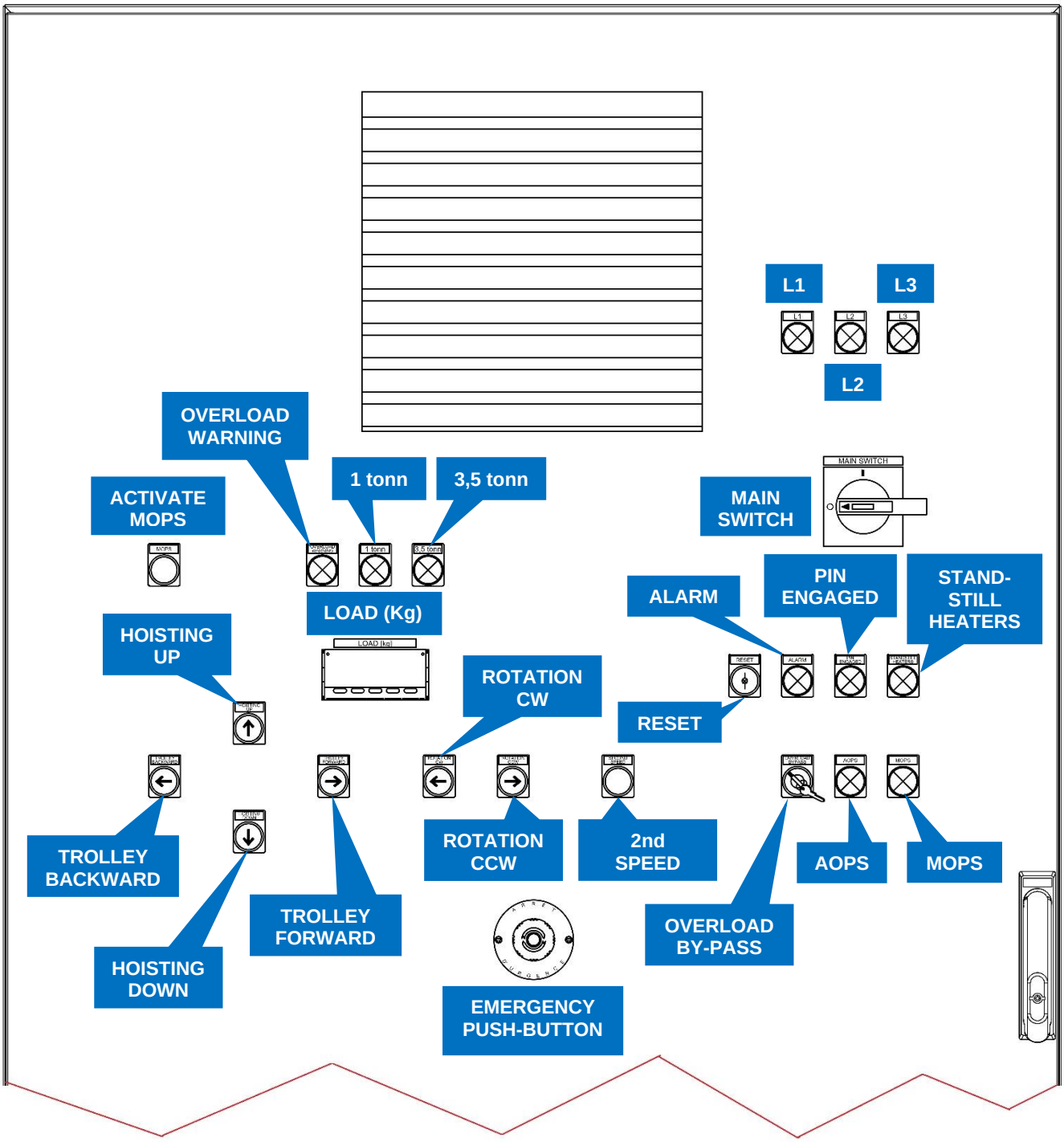
- Painting procedure applicable to structural steel.
- Other commercial items: painting suitable for the installation area, according to manufacturer's standard.

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.

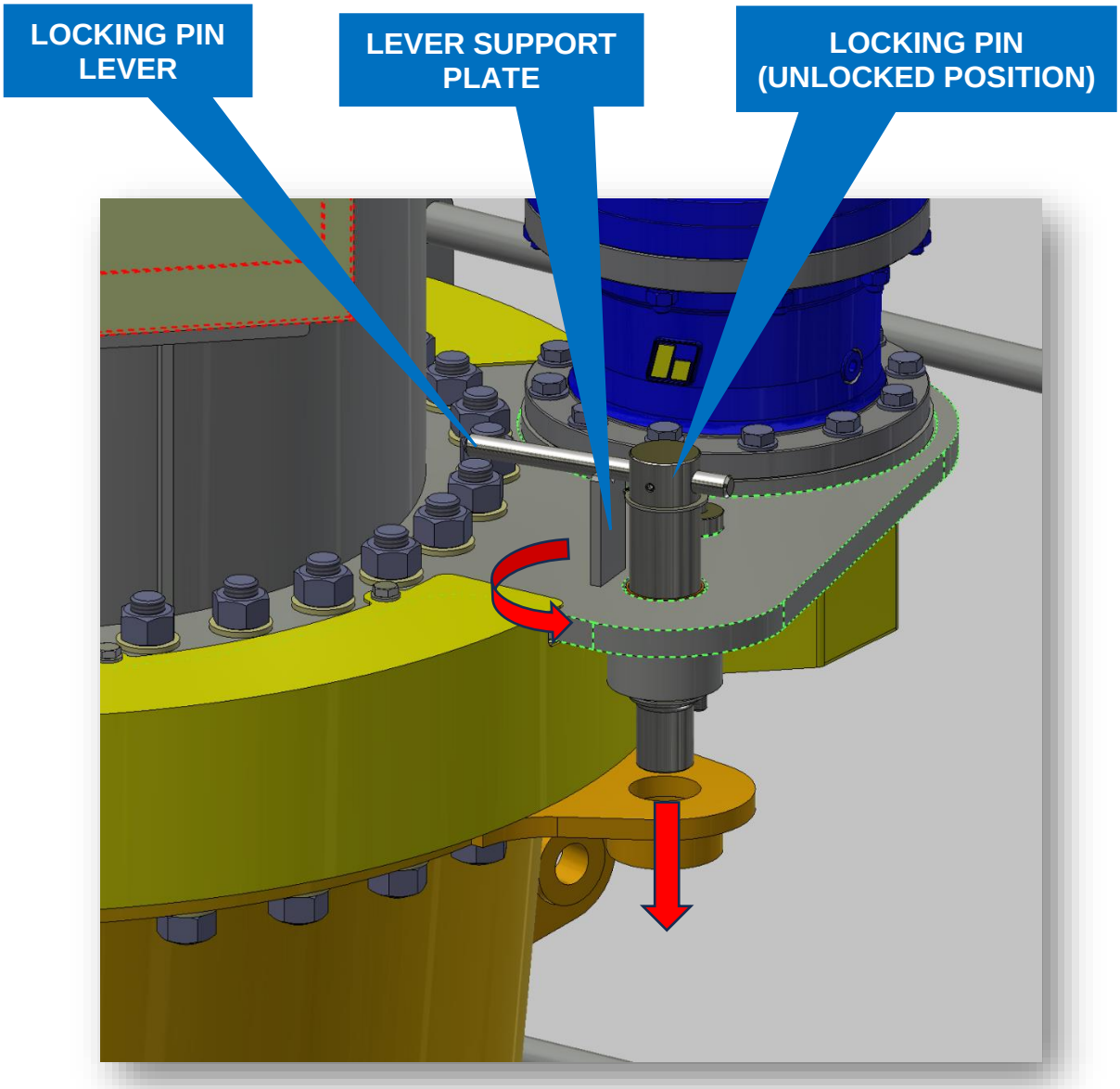
At the end of the crane operations, put the Locking pin on the locking position and press the button Emergency Stop push-button

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).

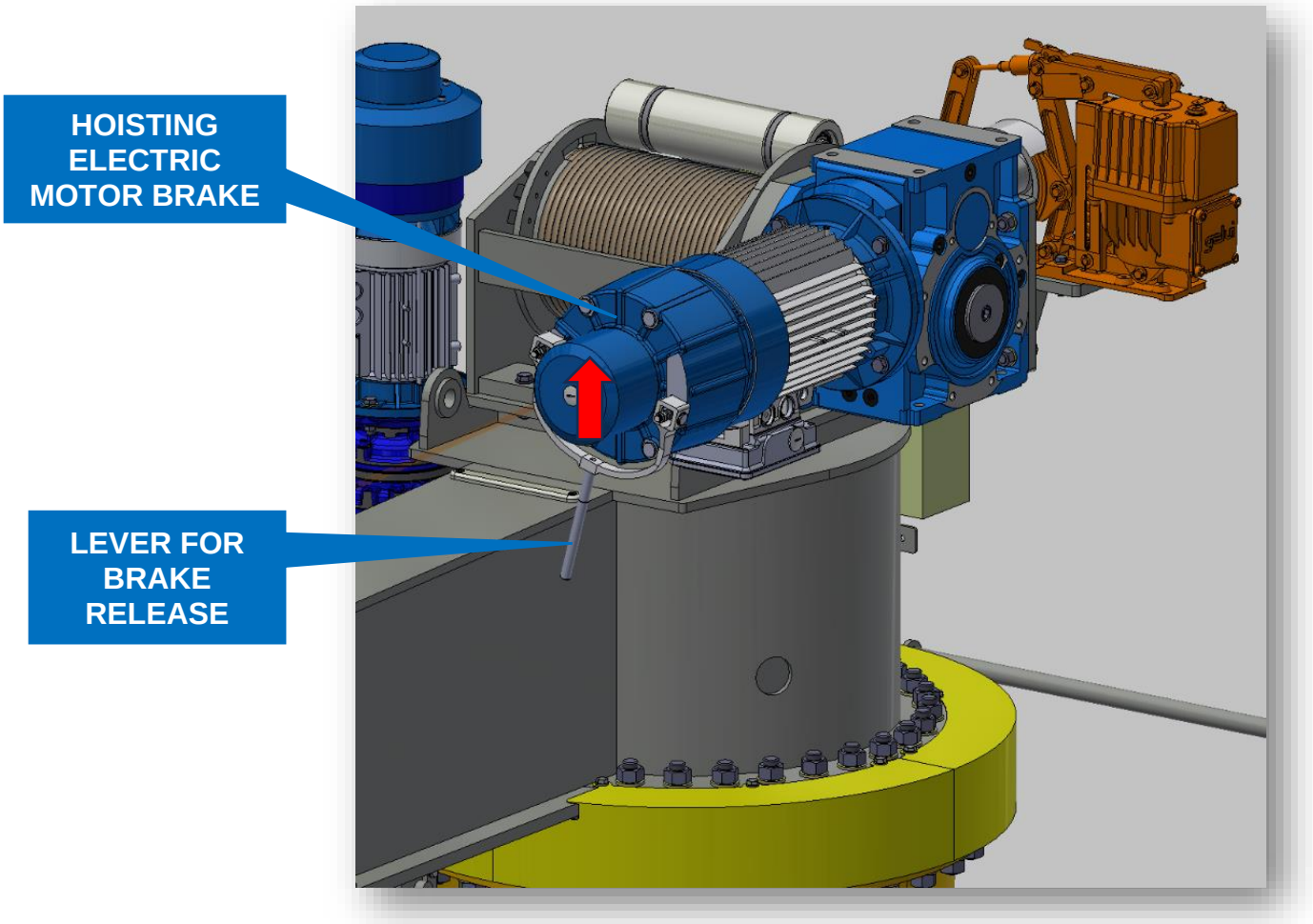
In the picture below the pin is not inserted, to insert it, lift the lever and rotate it to the left (as indicated by the rotating red arrow in the figure below) and lower it (as indicated by the red arrow in the figure below).

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



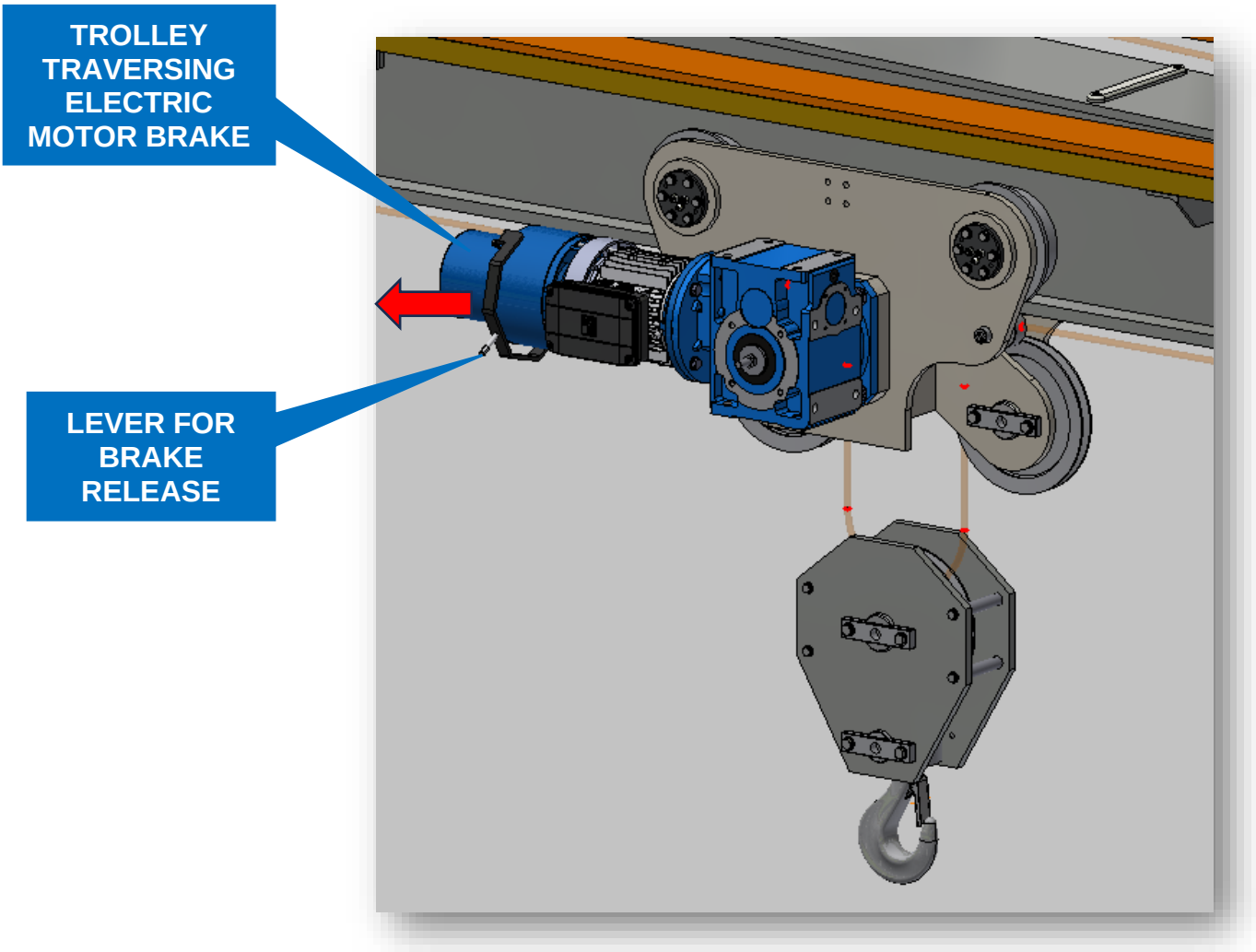
20. LOWERING EMERGENCY OPERATION

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.

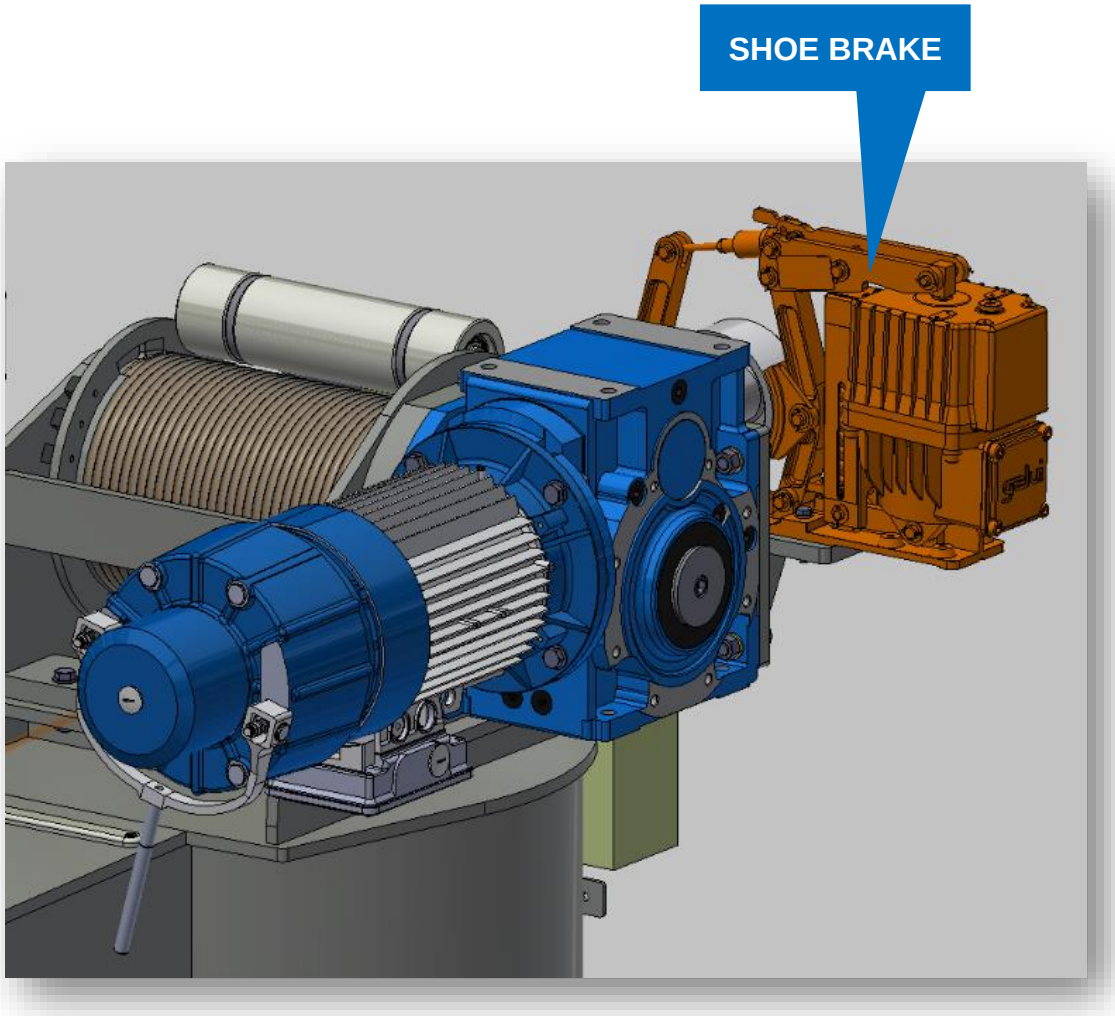


22. EMERGENCY BRAKE FOR HOISTING (SHOE BRAKE)

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)

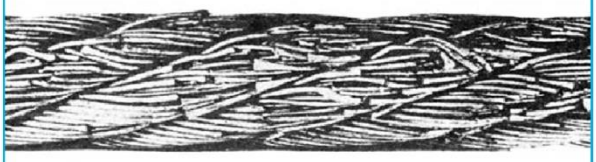
Broken wires out of position in two strands of a regular lay rope. This rope must be replaced.



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.



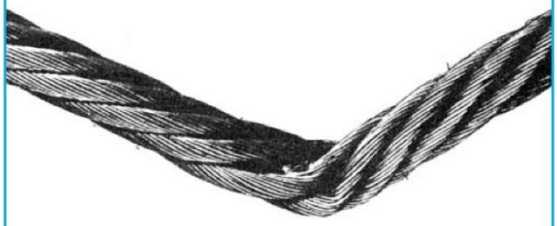
Flattened section caused by local crushing due to mechanical action; this causes a lack of equilibrium in the strands. There are also broken wires. This rope must be replaced.



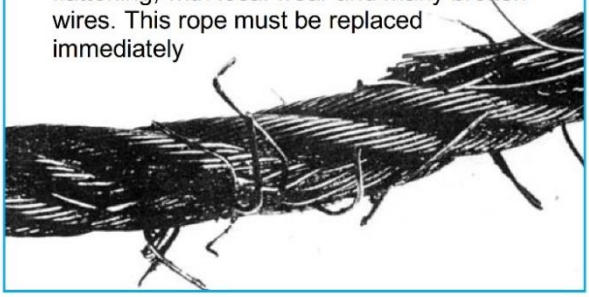
Flattened section of a multi- strand rope caused by mechanical action on a long section caused by incorrect unwinding from a winch. Note the increased lay pitch of the external strands with unbalanced tension in load conditions. This rope must be replaced.



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.

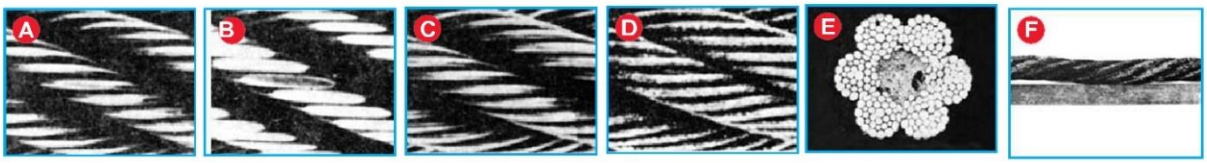
B: Continuous flattening; metal wires which begin to loosen, with a reduction of diameter that can be estimated at approx.. 40%. Immediate replacement.

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

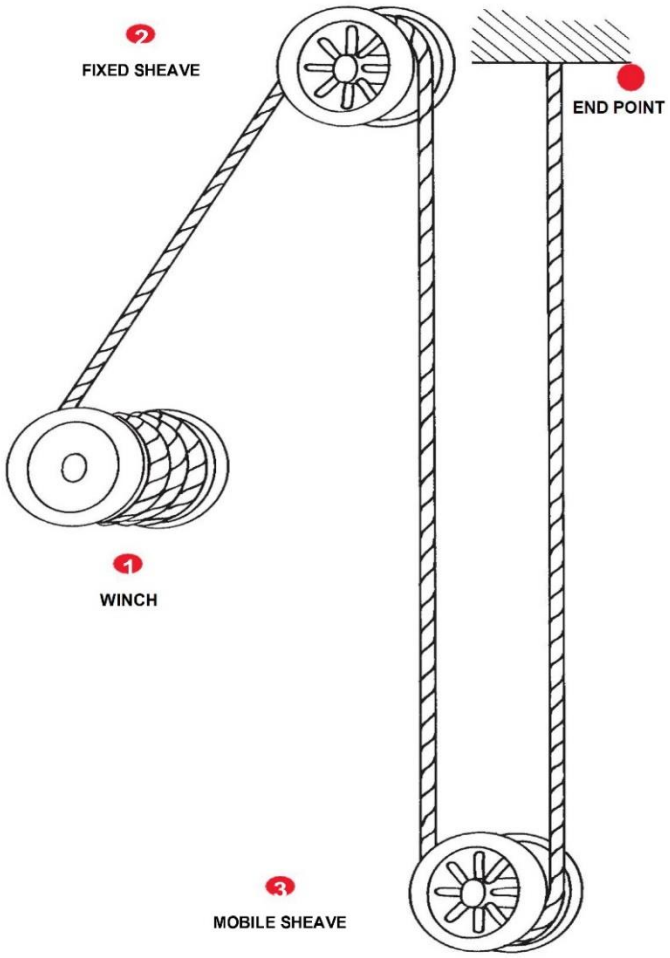
- Check the section of the rope which winds around the sheave for broken wires and wear.
- Check the groove of the sheave in according to the instructions

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.

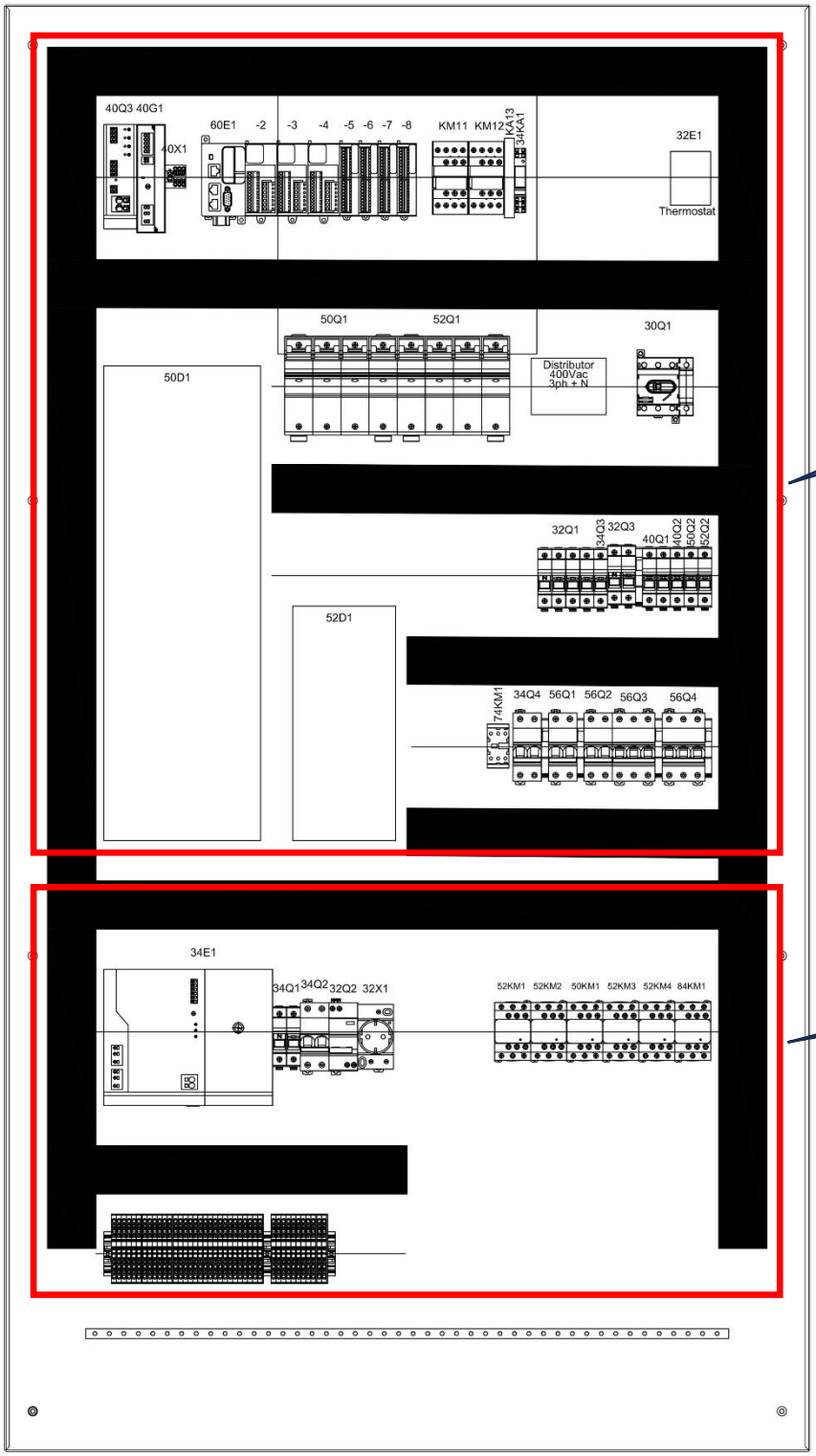
GREASE TYPE: MOBIL MOBILTAC A or

or other equivalent grease.

WIRE ROPE

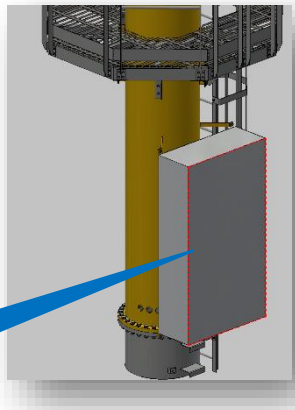
See the relevant page in this book

27. ELECTRICAL PANEL - INTERNAL VIEW



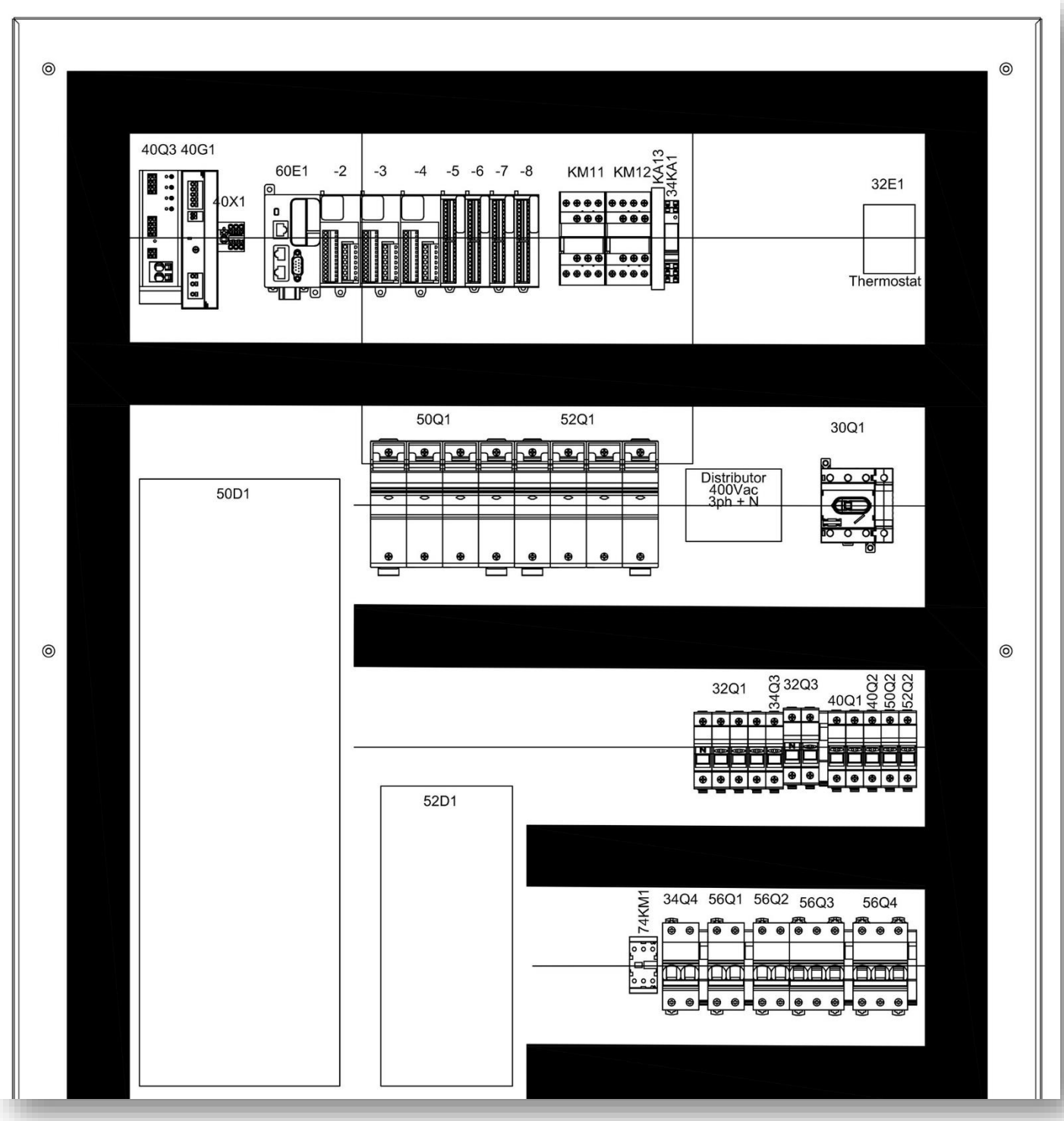
See next pages
Detail “1”

See next pages
Detail “2”

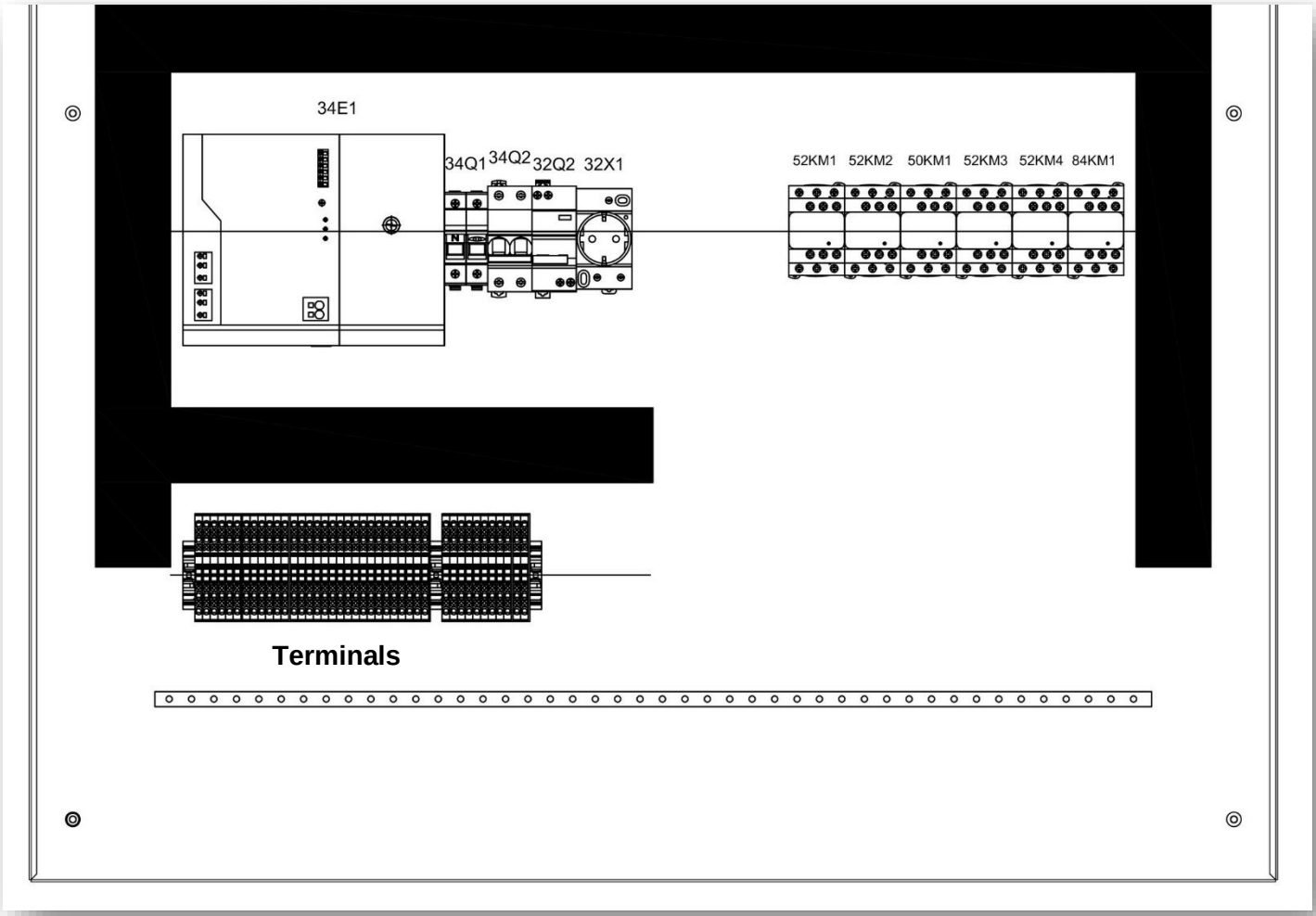


POSITION ON
THE PEDESTAL

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

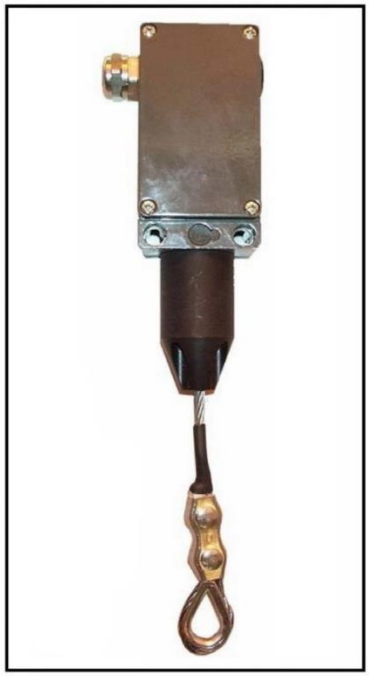
ID-Code	Q.ty	Description	Item
007-0006-C1221	1	Hoisting electric motor 3 phase type BAHK2E 132 MC4 Enhanced Power (E.P.) 4poli 1500rpm 14,0kW @ 50Hz S3 60% voltage 3x230/400V - 50Hz with brake inverter 1x230Vac (PMG250) and release lever (type unlocking and automatic spring return) IP56; Cl.F Tropicalized; 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	-

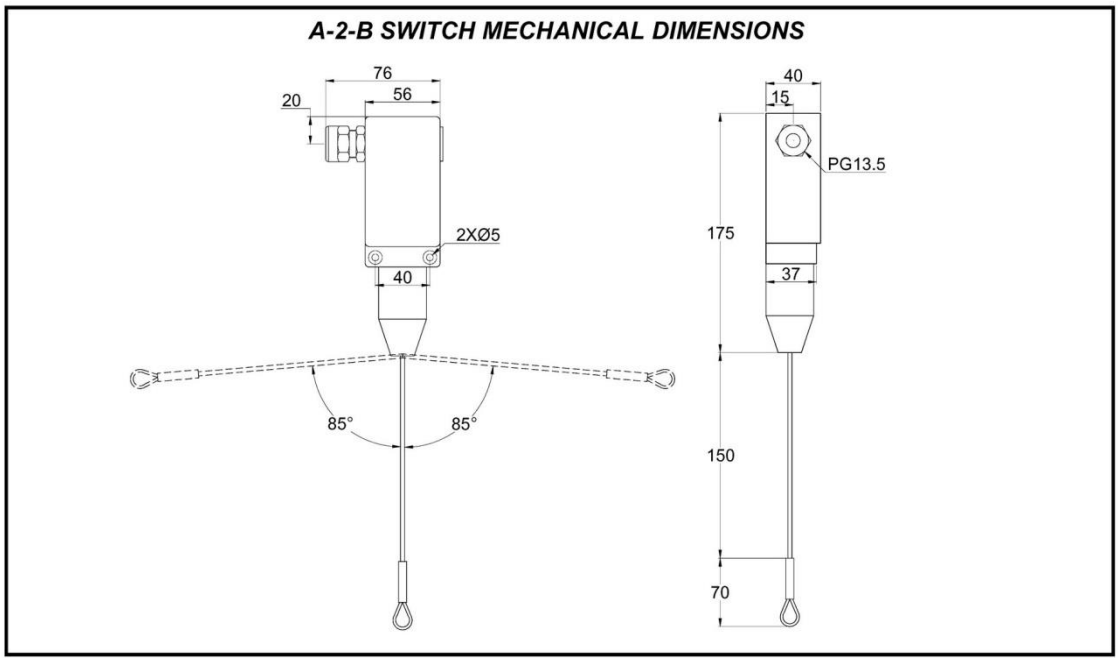
29. HOISTING LIMIT SWITCHES

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

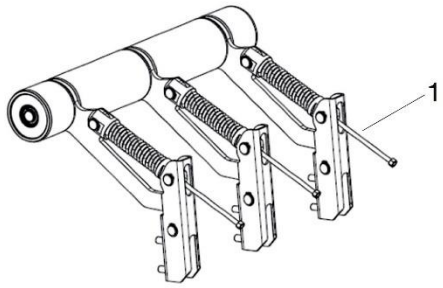
Pay attention to the pressure roller springs: danger of projecting objects and crushing.

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

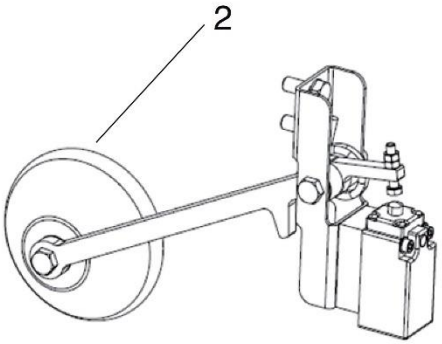
4 - Lift the roller several times and drop it to double check the correct positioning, it should keep clicking the button all the times

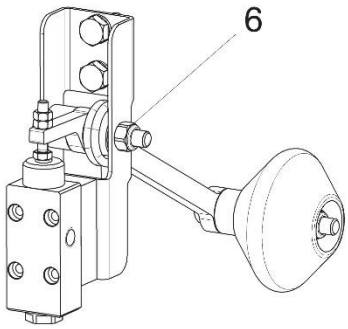
5 - Tighten the nuts (1) to the required torque to avoid later unwanted loosening

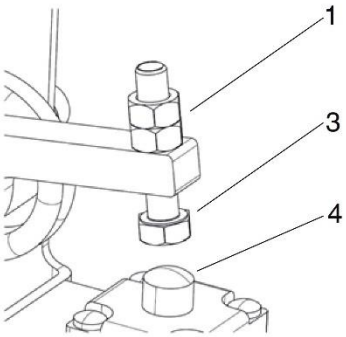
6 - Make sure the self-locking nut (6) of the lever pin is set against the support but it does not prevent the lever from freely rotating

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:

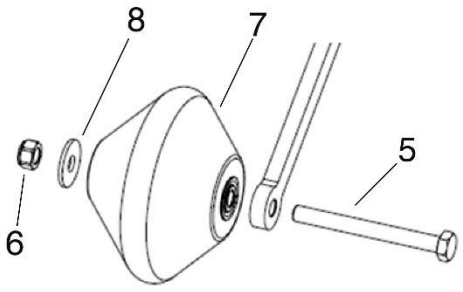
1 - Loosen the screw (5) and nut (6)

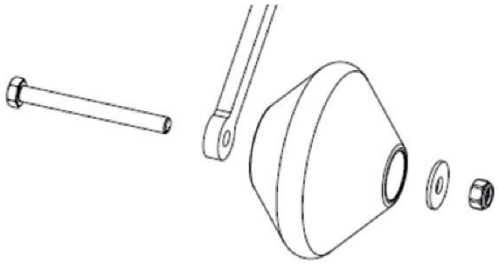
2 - Switch the position of the roller (7) and its internal component

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

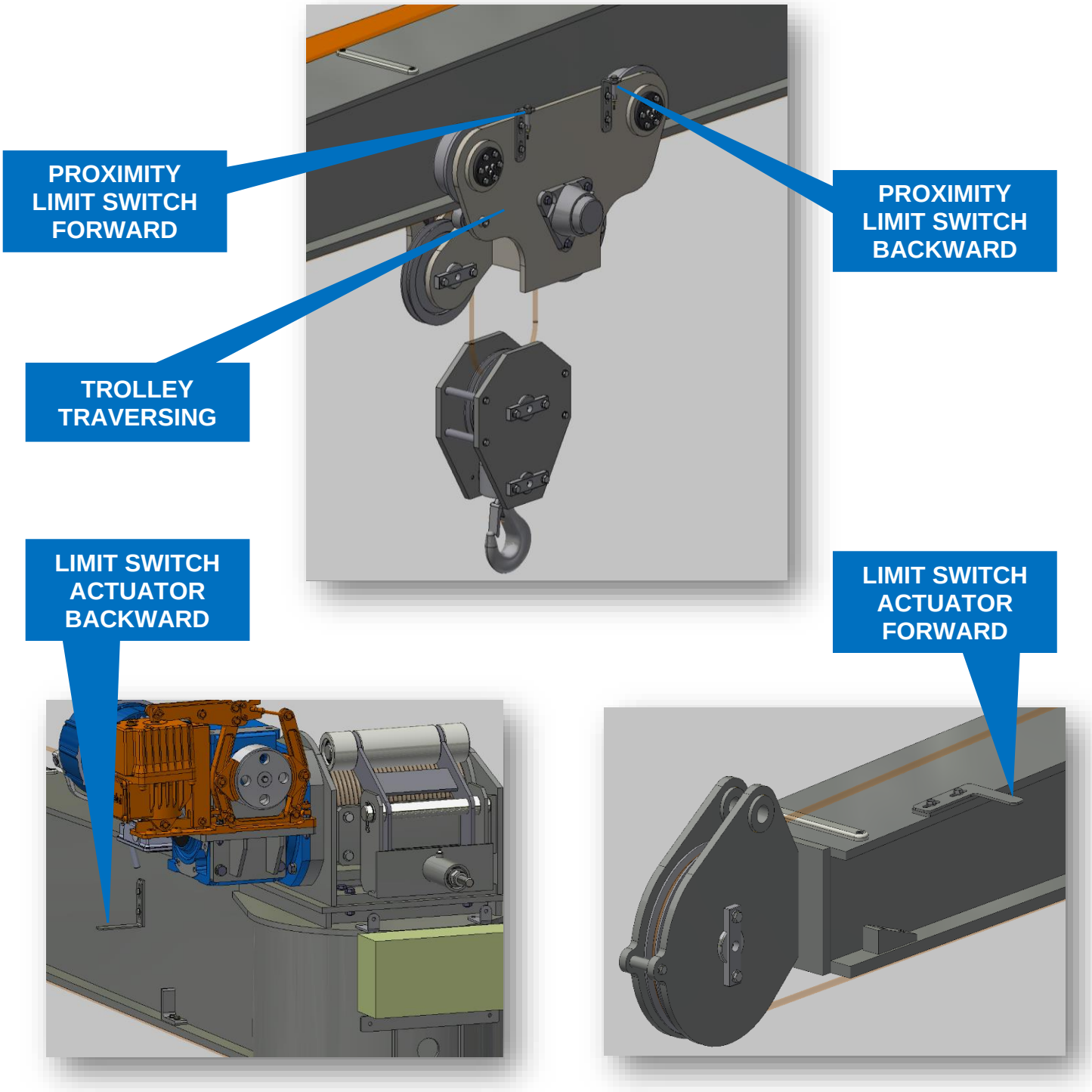




31. TROLLEY TRAVERSING LIMIT SWITCH

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

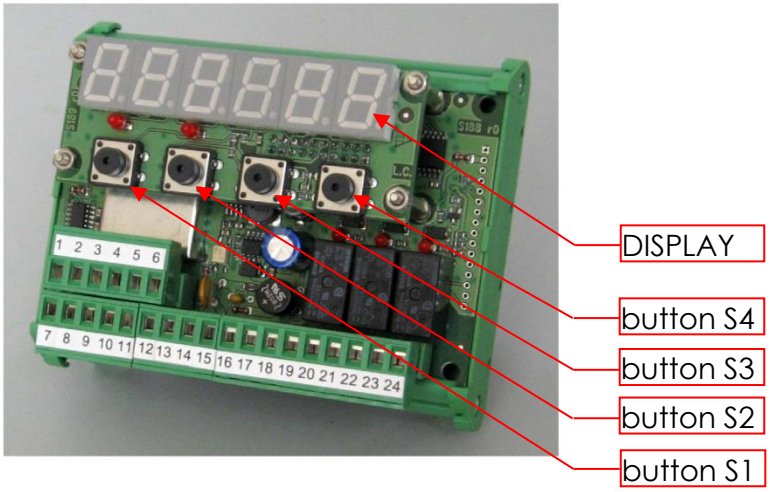


Fig. 1 Electronic card LC 200 front view

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

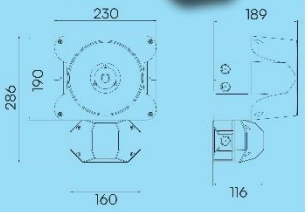
ELECTRA

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

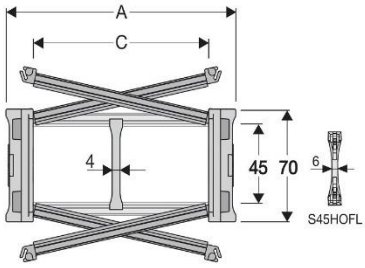
SE 120 PRO LED

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*

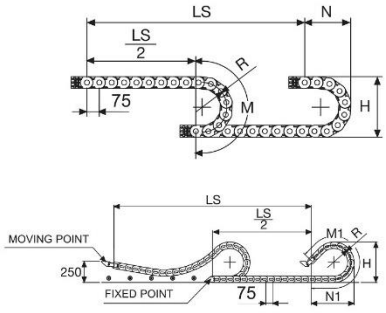
Technical Characteristics when self-supporting	
Speed	8 m/s
Acceleration	40 m/s²

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)

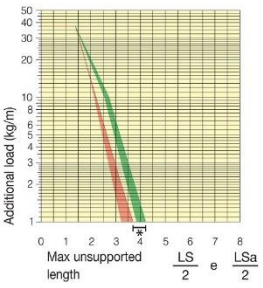
$L = \frac{LS}{2}$ + M or M1

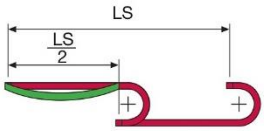
R	H	N	M	N1	M1
mm	mm	mm	mm	mm	mm
075	220	185	390	265	540
100	270	210	465	275	595
125	320	235	545	395	870
150	370	260	625	515	1150
175	420	285	700	635	1430
200	470	310	780	750	1705
250	570	360	940	990	2265
300	670	410	1095	1225	2820



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.

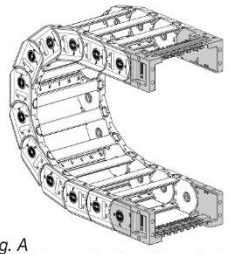
Red for self-supporting chain, green for chain in admissible sagging.

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



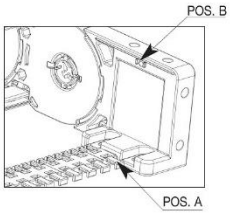
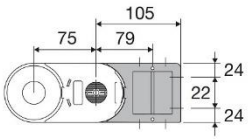
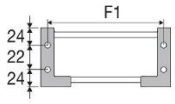
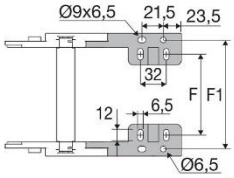


Fig. A
The chain can be fixed frontally, inner and outer radius (Fig A)







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**

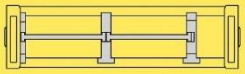
Complete Set Unassembled

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

** Inner Width C*

H45SC

Nylon cable chain with opening frames

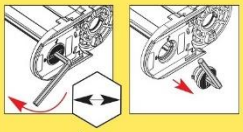


Separation System page. 196

How to open the frame



How to release the pin junction





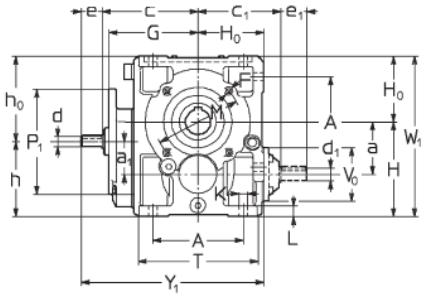
Suitable to long travel distance in frame every pitch version.

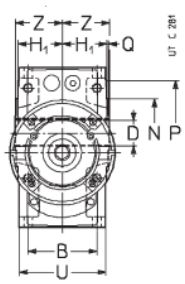
For further informations please consult Brevetti Stendalto's Technical Office

35. TROLLEY TRAVERSING GEARBOX

Designs, dimensions, mounting positions and oil quantities

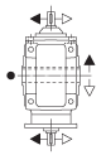






R ICI 50 ... 200

Design (direction of rotation)



U03D

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

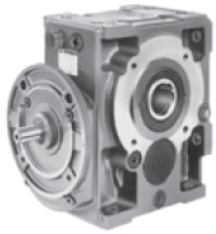
Grand. Size	a	a_1	A	B	c	c_1	D Ø H7	d Ø	e	Y_1	d Ø	e	Y_1	d_1 Ø	e_1	d_1 Ø	e_1	F	G	H	H_0	H_1	h	h_0	K Ø	L	M Ø	N Ø h6	P Ø	P_1	Q	T	U	V_0 Ø	W_1	Z	Massa Mass
								$i_N \leq 80$			$i_N \geq 100$			4) $i_N \leq 40$		5) $i_N \geq 50$		1)		h11	h11	h12	h11	h11				h6									kg
50	50	40	86	75	107	94	24	11	23	197	–	–	–	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

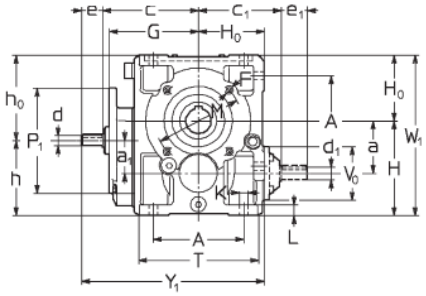
Item	Description	Code	Off
-	Orthogonal type gearbox type cat. G MR ICI 80 UO3A - 24x200 - 52 Form B3 - Flange B5 (F1) painting cycle 2I (C5 M) white RAL 7038 without motor	002-0027-C1433	1

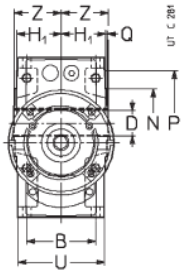
36. HOISTING GEARBOX

Designs, dimensions, mounting positions and oil quantities

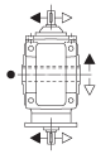
R ICI 50 ... 200







Design (direction of rotation)



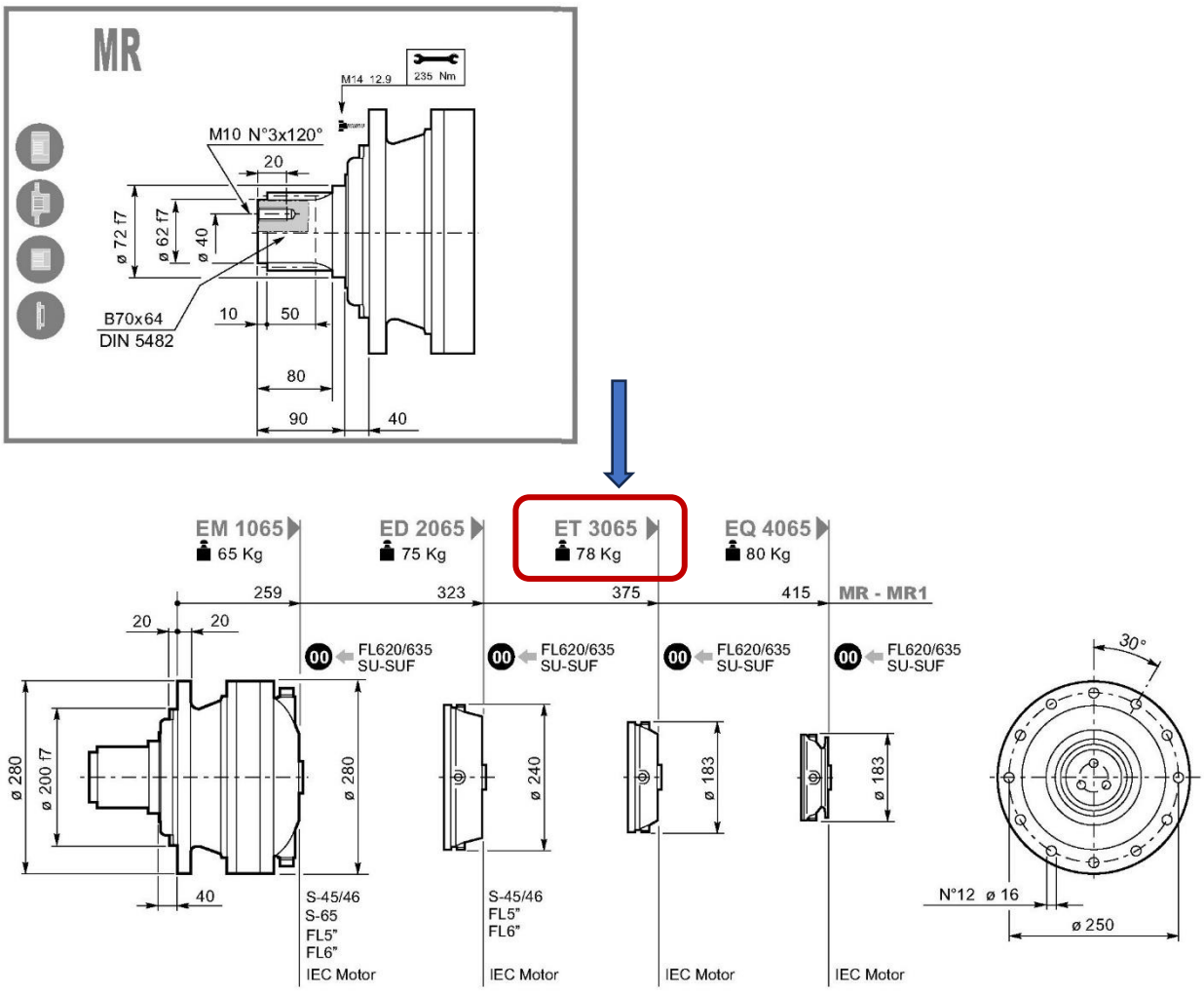
UO3D

● 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

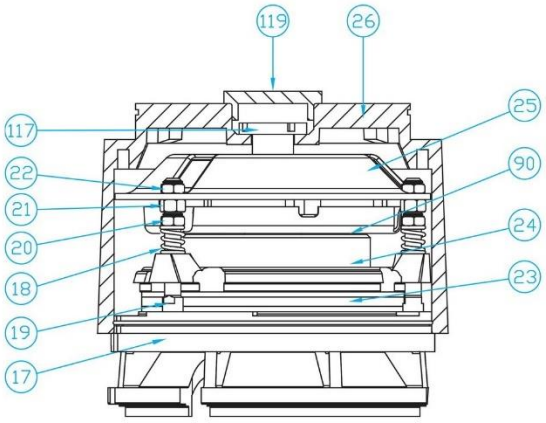
BAH Series 80÷315

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%).

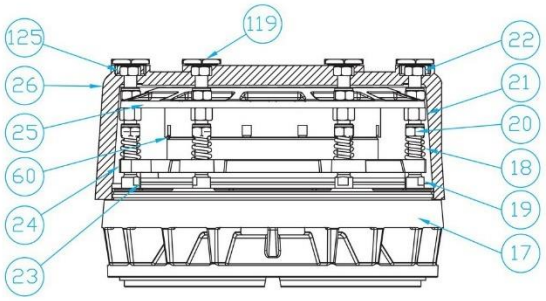
The BAH serie-motors have the same characteristics of the BA-BAX serie-motors. The difference essentially consists in the casing of the brake assembly designed to give greater strenght and protection against the entry of dust and liquids (IP degree). The BAH serie-motors are supplied as standard with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

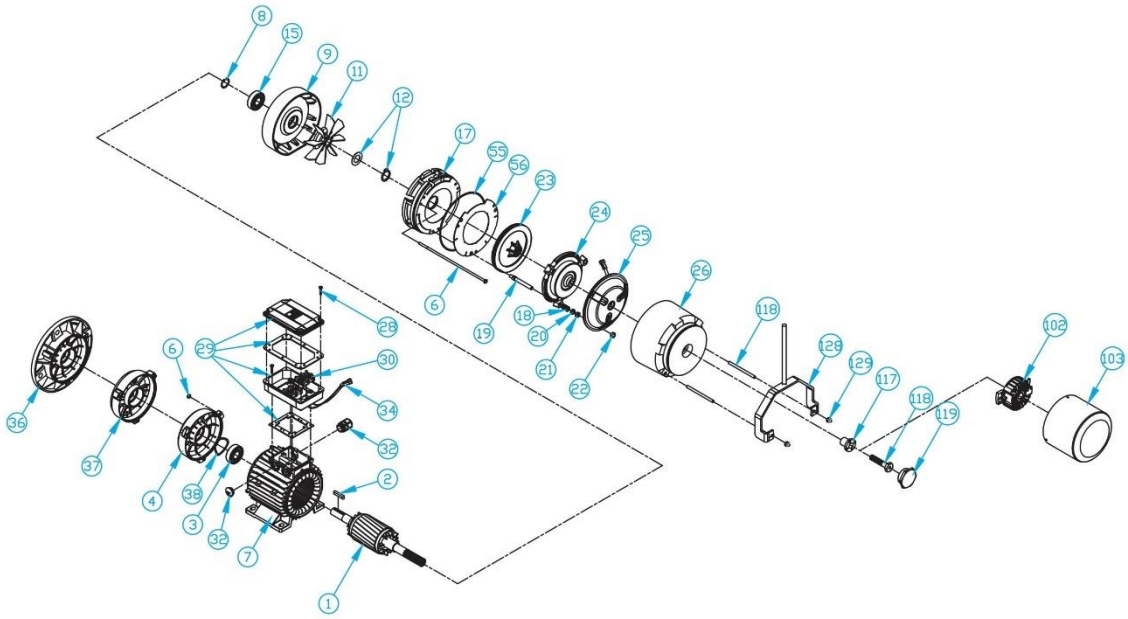


Brake assembly BAH 132÷315



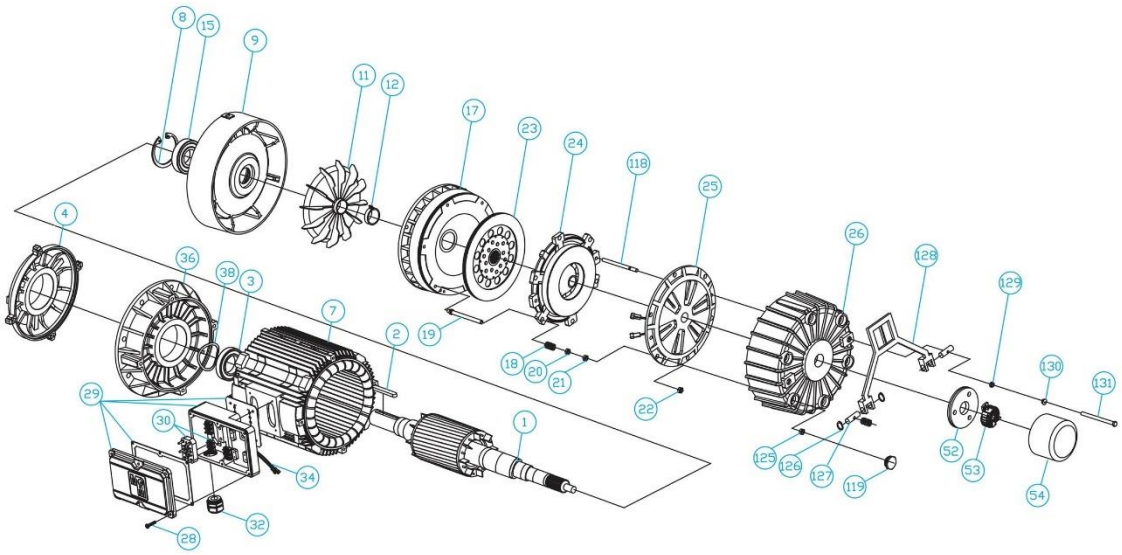
41. ELECTRIC MOTORS SPARE PARTS LIST – SIZES 90-100

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

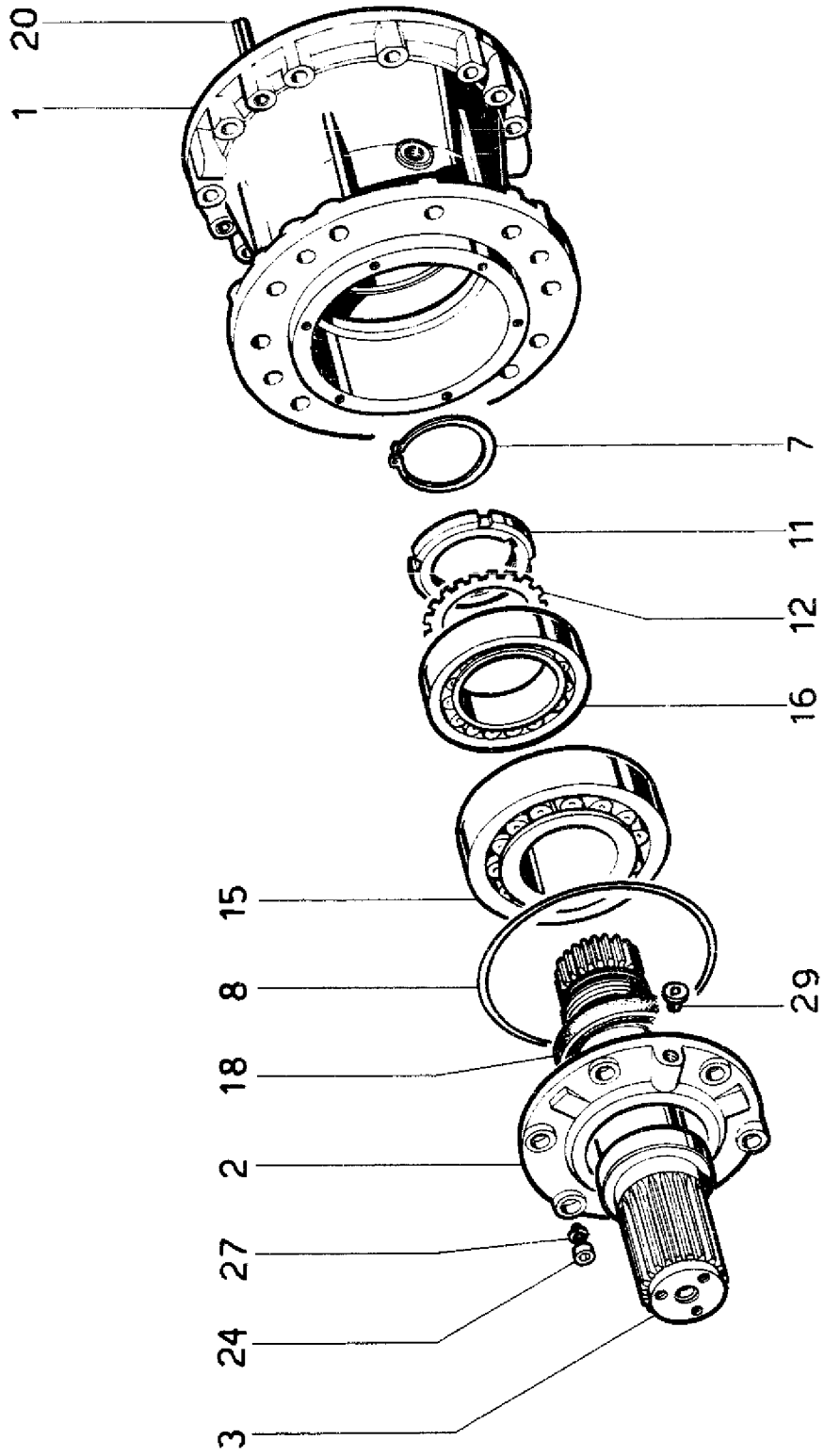
ITEM	TITLE	CODE	N° of sheets
-	SLEWING GEARBOX PARTS LIST	002-0027-C1431	15
-	HOISTING GEARBOX PARTS LIST	002-0027-C1432	1
-	TRAVERSING GEARBOX PARTS LIST	002-0027-C1433	1
-	SHOE BRAKE – INSTALLATION AND MAINTENANCE MANUAL	002-0017-C0396	40

REMAZEL
ENGINEERING

REMAZEL ENGINEERING S.P.A.
Via Portici Manarini 41/A, 24060 Chiuduno (BG), Italy

info@remazel.com
www.remazel.com

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

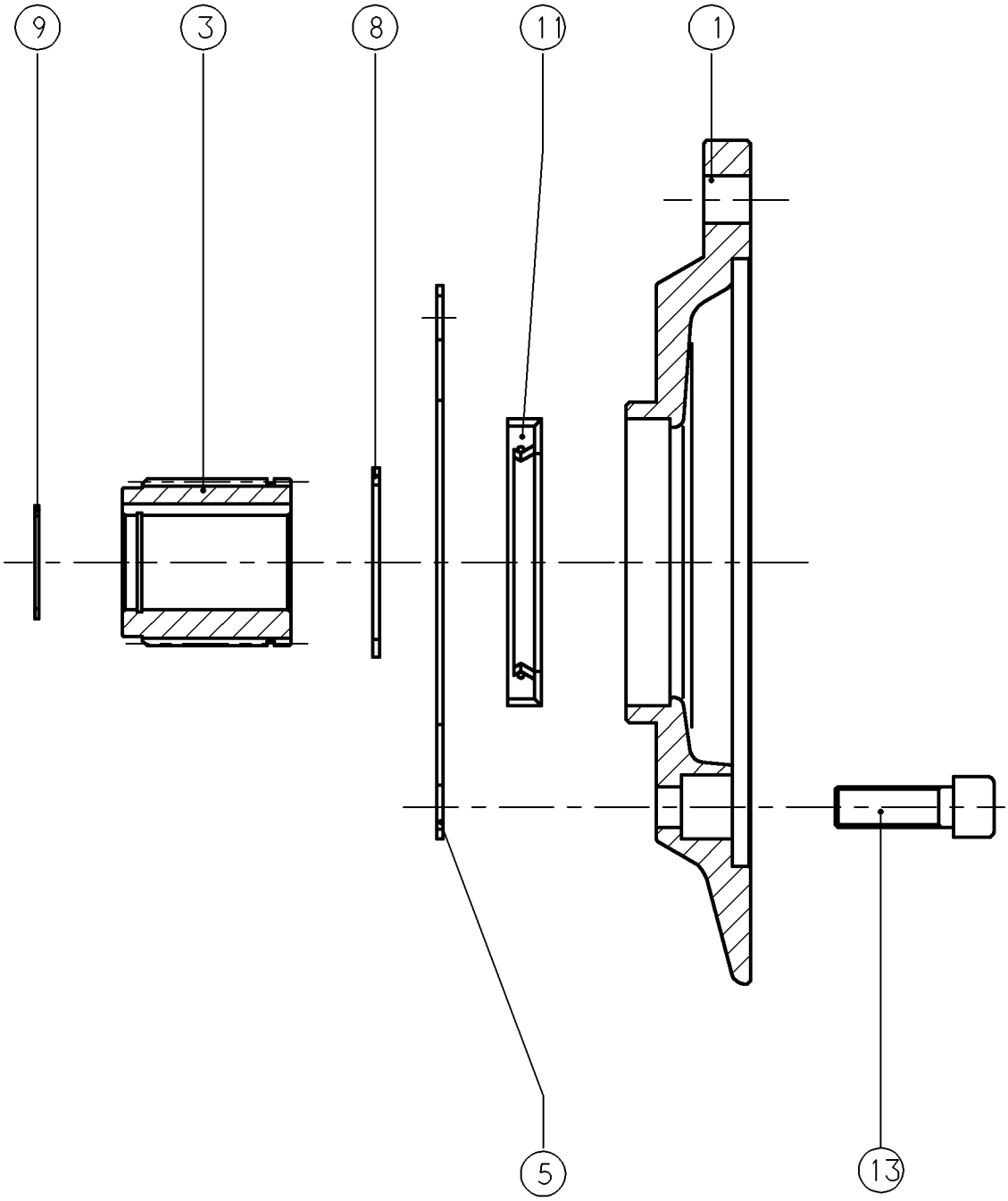
Notes:

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***

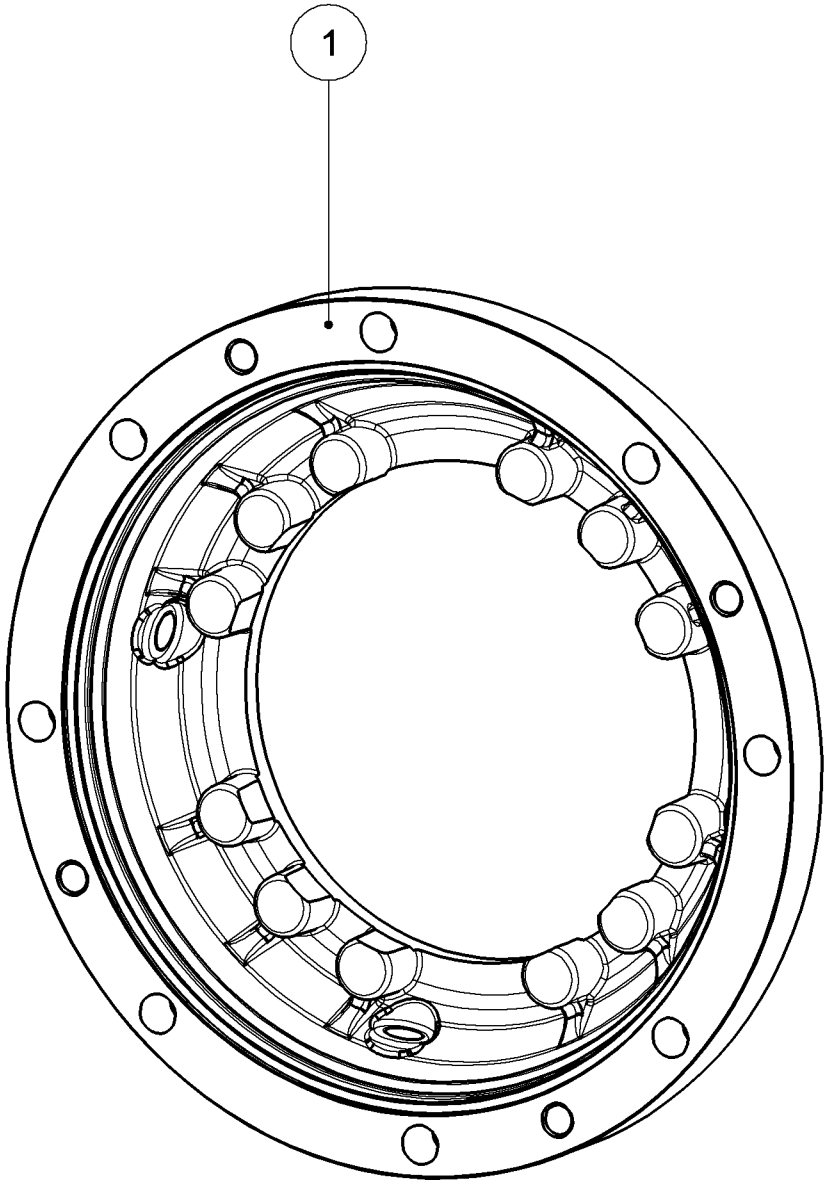
Date: ***03.03.2016***

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***

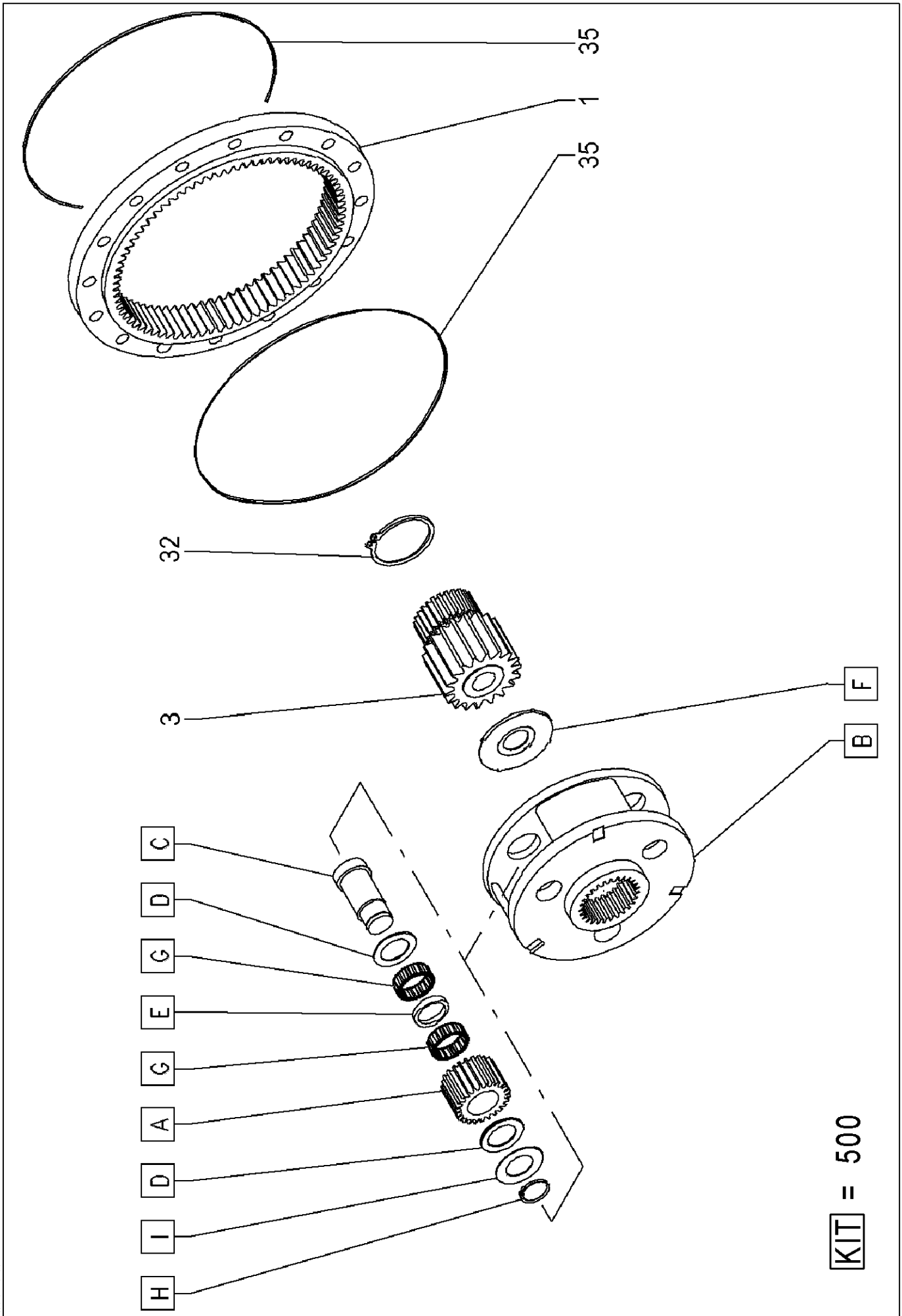
Description: **INTERMEDIATE FLANGE**
Business Code: **EM1065/065/../020**

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

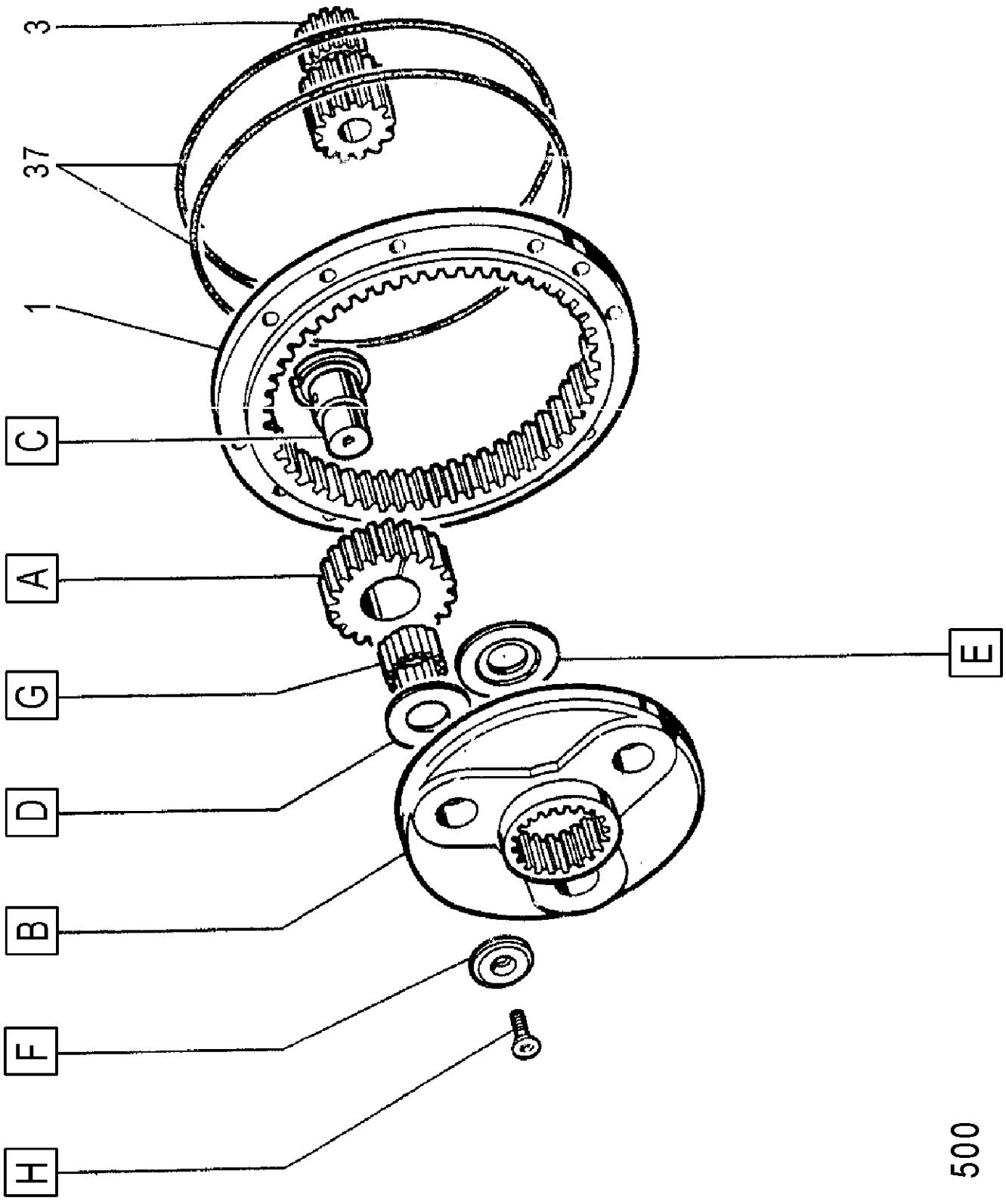
COMPONENT PART LIST

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***

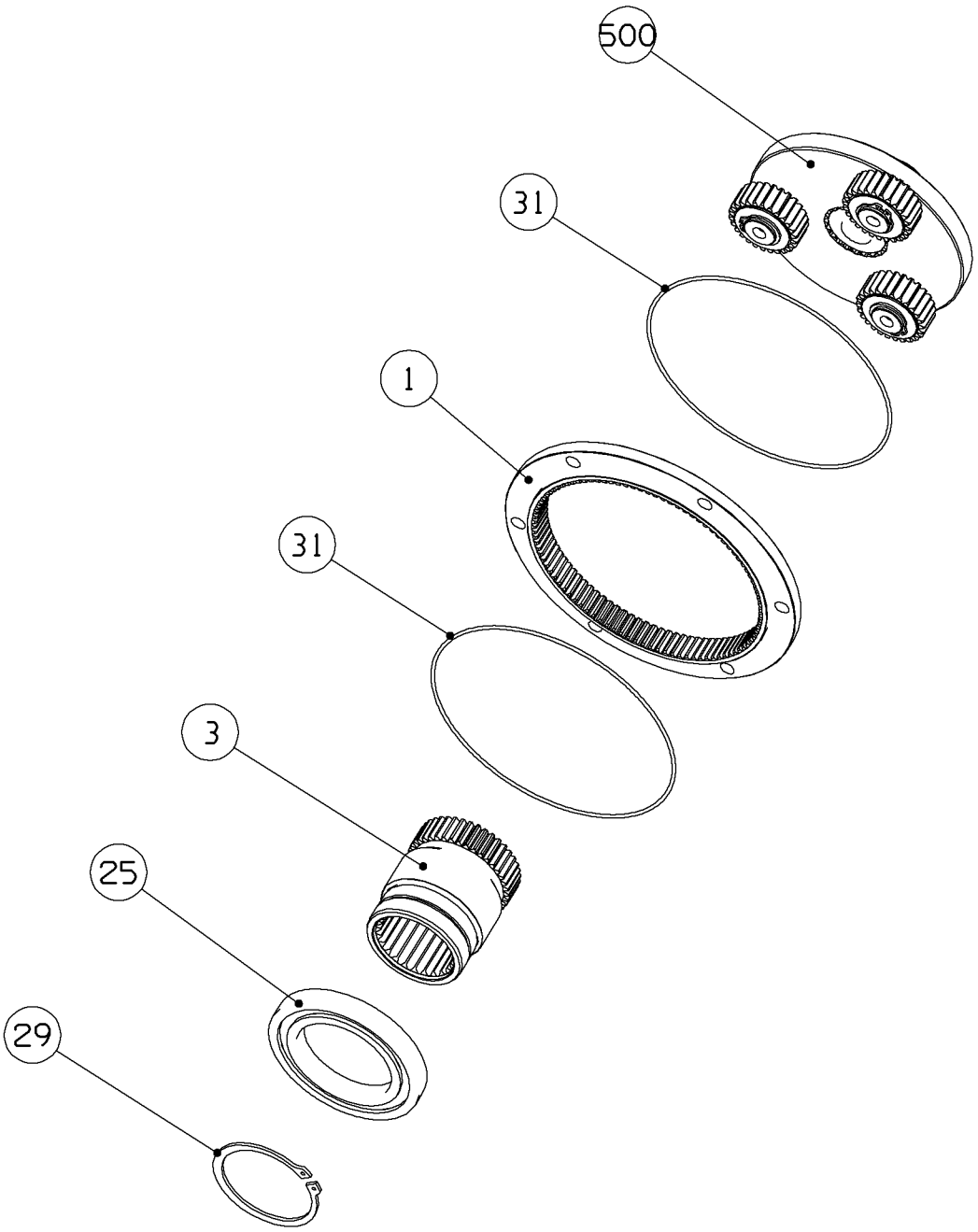
Date: ***10.04.2014***

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

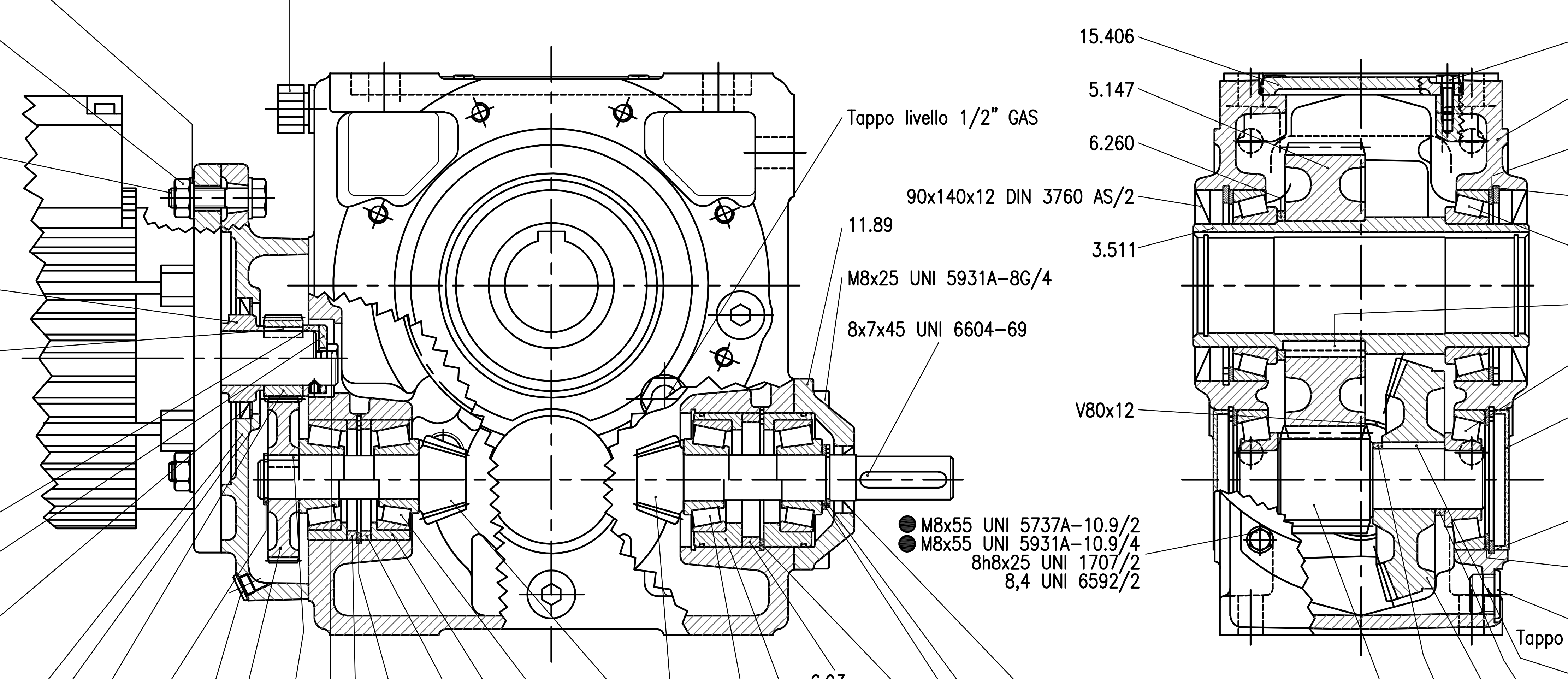
- Il valore dopo la barra indica la quantità maggiore di 1.
- La disposizione dei tappi dipende dalla forma costruttiva.
- Per la richiesta di pezzi di ricambio indicare sempre la relativa designazione, il tipo di riduttore, il numero della tavola e il rapporto di trasmissione.

- 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

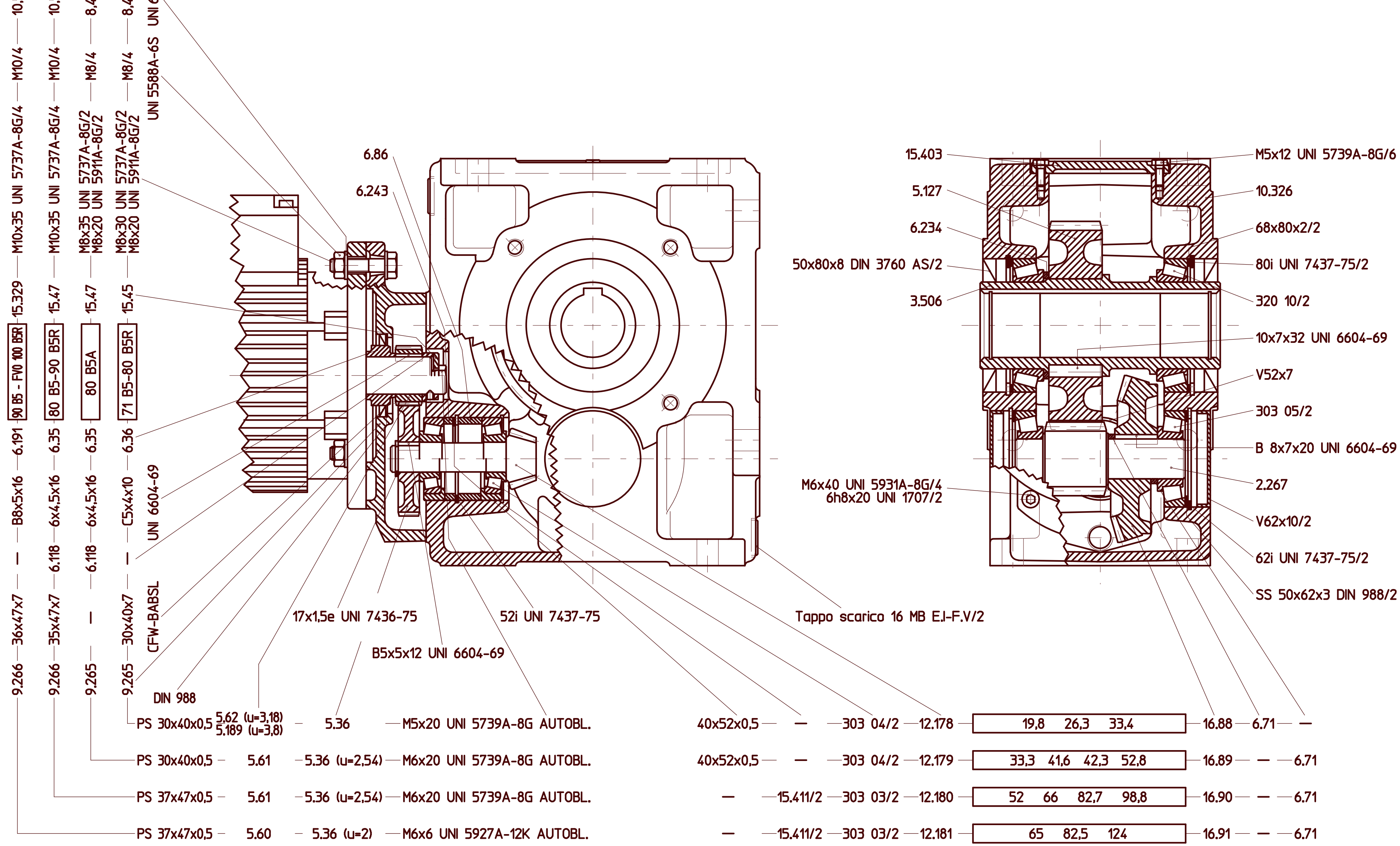


DATA / DATE: 22/06/95	MV MR ICI 80 U03A U03Asin	DIS. / DWG: 1786	
DISEGN. / DRAFTMAN	Rossi S.p.A MODENA - ITALY a company of the Habasit Group	REV. DIS. / DWG REV.: F	
		DATA REV. / REV. DATE: 01/01/08	

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

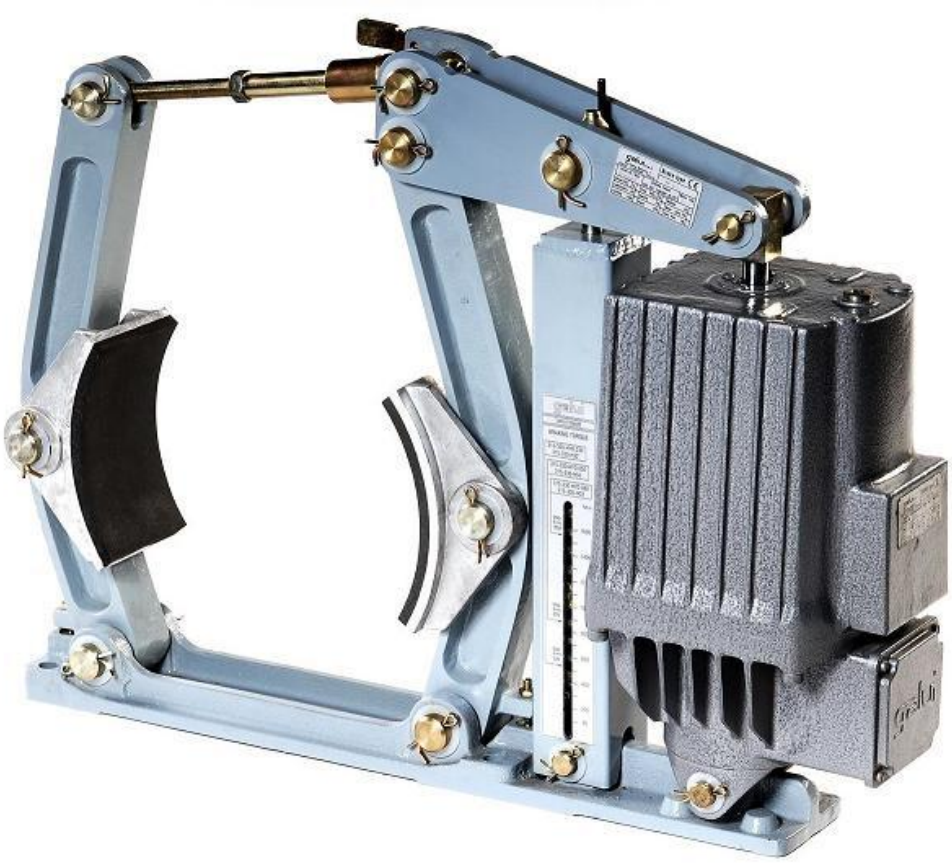


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01.02 - DECLARATION OF INCORPORATION OF PARTLY COMPLETED MACHINERY AS PER MACHINERY DIRECTIVE 2006/42/EC, ANNEX II, POINT B

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.

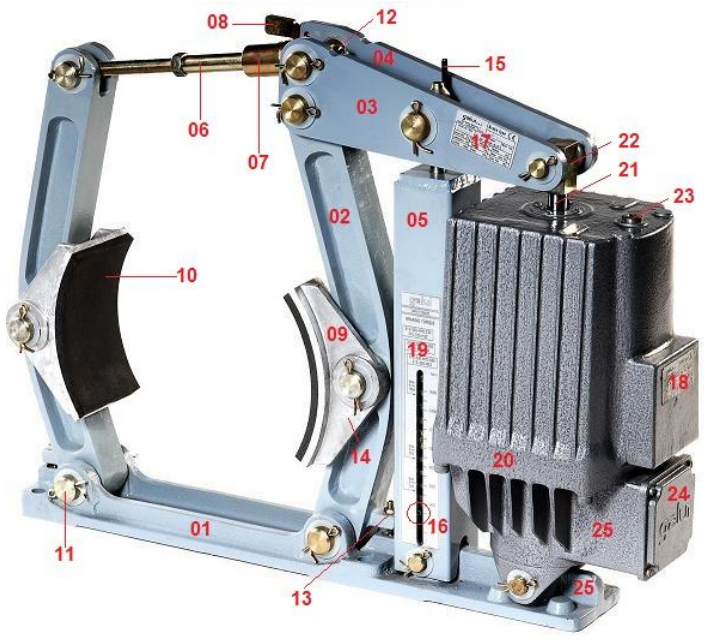
The main dimensional features of the Brake are in conformity with the DIN 15435 Standard, the ones of the Brakedrum are in conformity with DIN 15431 Standard.

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.**

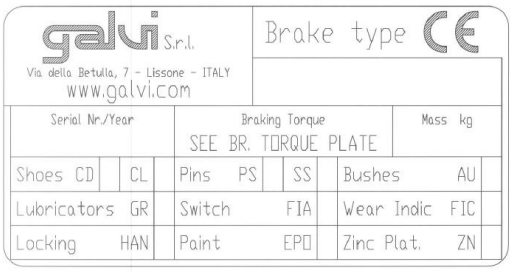
01.05 – IDENTIFICATION AND MARKING OF THE PRODUCT

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.

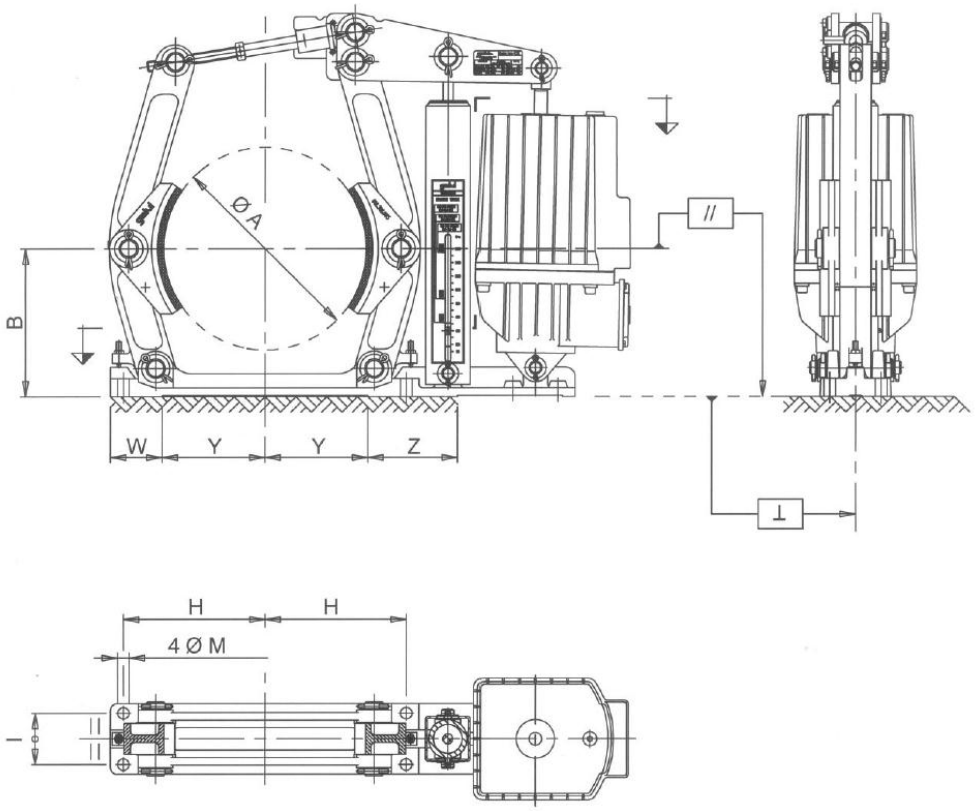
For Brakes with cast iron base it is enough that the portion of base shown with dimensions W, Y, Z is in contact with the anchor base (Drawing 3).

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).

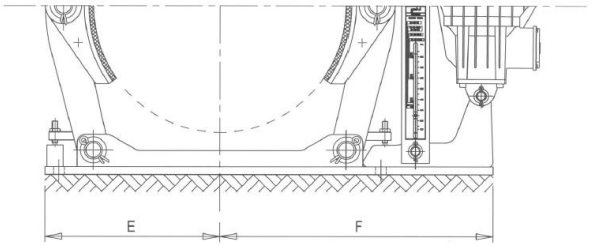
The material of the anchor plane must have a tensile strength ≥ 430 N/mm^2.

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).

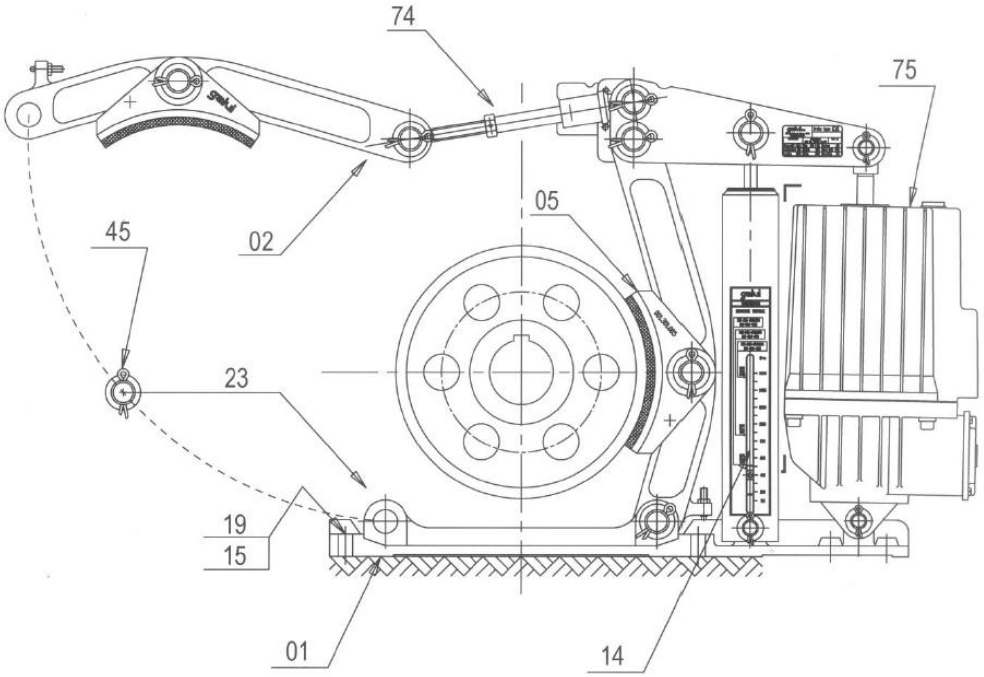
With reference to the Bill of Materials at page 40 of this document and following Drawing 5, it is necessary to remove the lower pin item 23 from the external main lever item 02 after removing its two split pins item 45 or its seegers in case the Brake has optional lubricators on main pins (GR).

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.

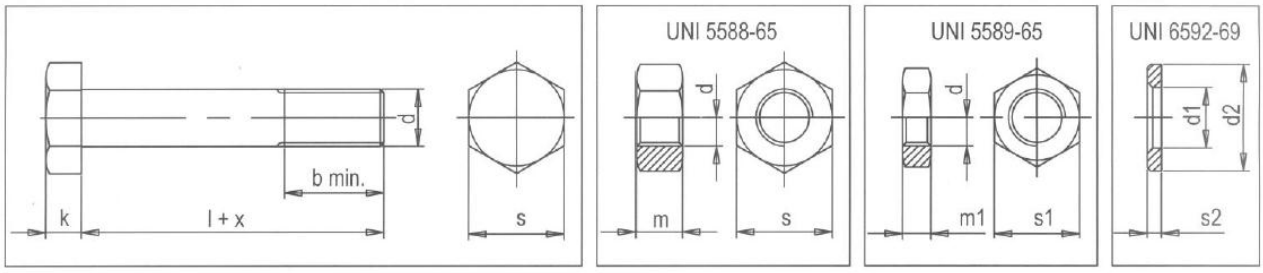
During this operation it is important not to lose disc item 19 and balancing spring item 15.

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).

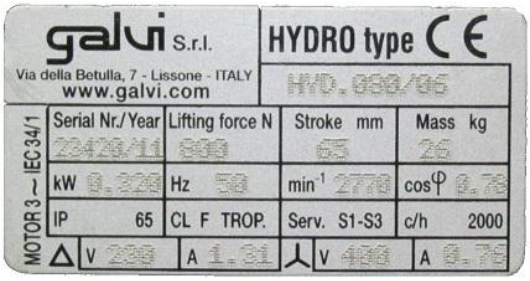
The lower part of the main lever item 02 opposite to Thruster item 75 must be put back in its original position in the Shoe Brake's base item 01, the lower pin item 23 must be put back in its original position with its two split pins item 45 or with its two seegers in case the Brake has optional lubricators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

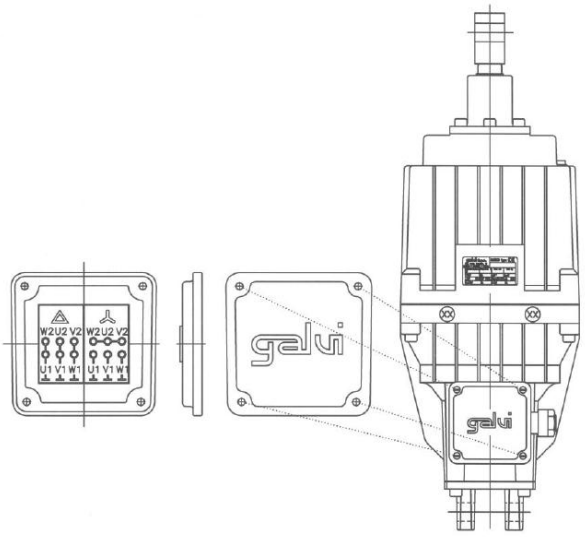
⚠	**Never use a Thruster for Hz 50 at Hz 60.** **Never use a Thruster for Hz 60 at Hz 50.** **Risk of accident.**

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.

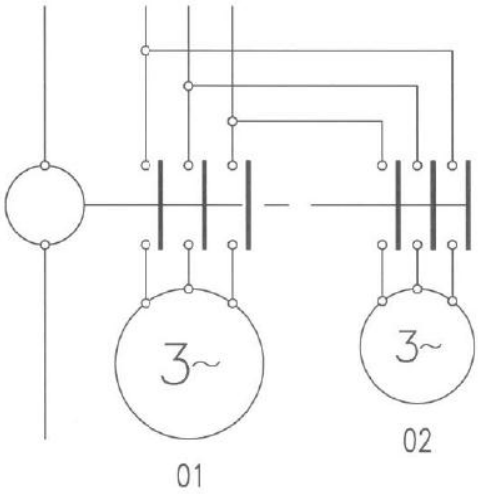
The Thruster motor must be connected to the main motor of the machine as per following suggested wiring diagram (Table 19, Drawing 8).



Picture 5

Pos.	Description
01	Main motor
02	Thruster motor

Table 19



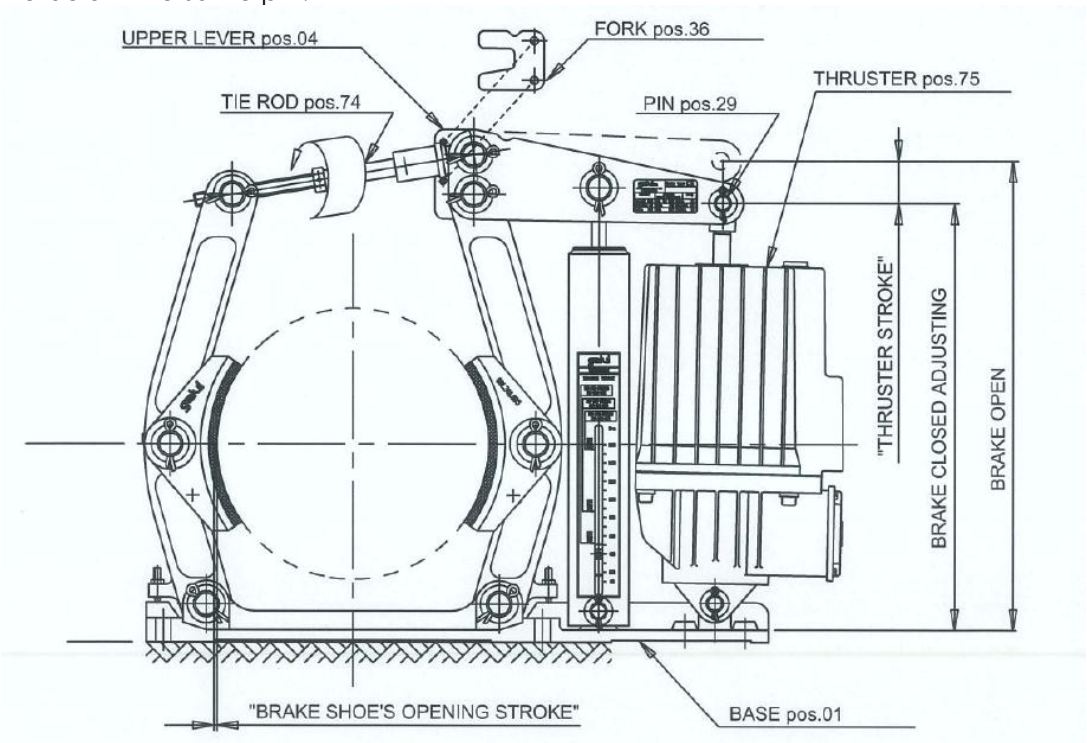
Drawing 8
Suggested wiring diagram

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.

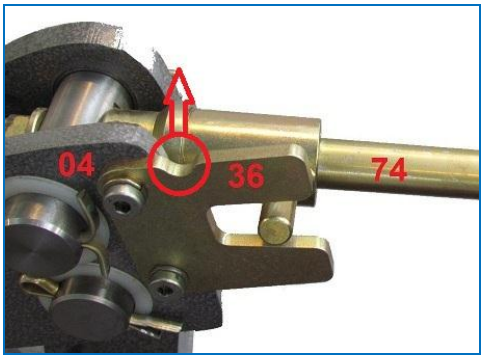
Brake diameter	160 mm not DIN Standard	200 mm	250 mm	315 mm	400 mm	500 mm	630 mm	710 mm
Thruster stroke	30 mm	30 mm	38 mm	38 mm	42 mm	48 mm	50 mm	35 mm

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).

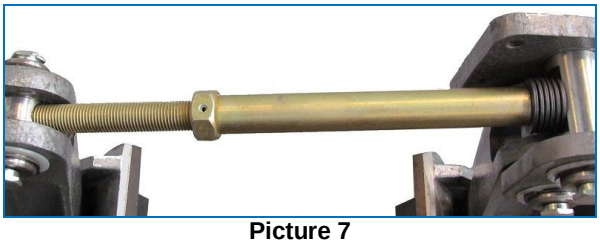
Pos.	Description
04	Upper right lever
36	Fork
74	Upper tie rod
A	Reference mark for fork 36

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.

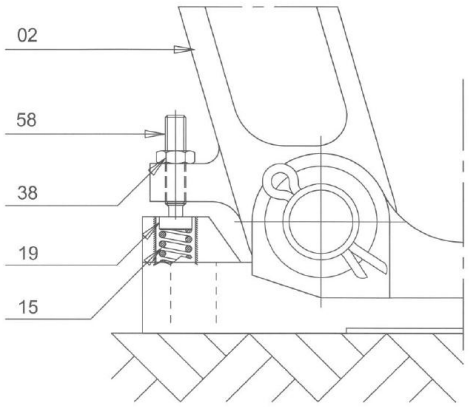
In Shoe Brakes in "N" version without self adjusting device the opening stroke of the brake Shoes increases during linings wear, so that there is a progressive loss of Braking Torque during the use of the Brake, for such reason it is necessary to screw periodically the upper tie rod of the Brake for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

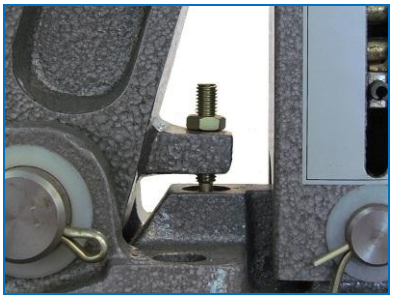
The function of this adjustment if to have an equal opening of the main levers.

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

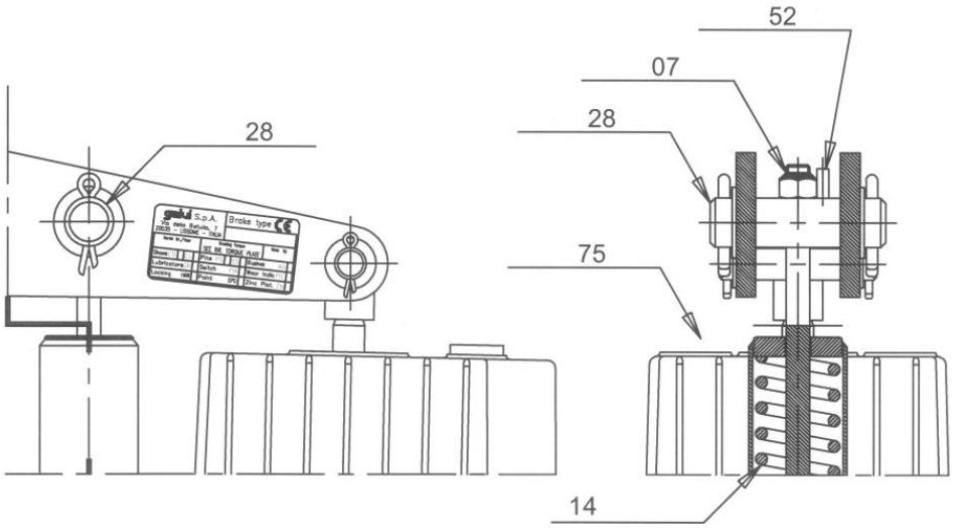
After installation, electrical connection and adjustment of opening strokes and balancing screws of the Brake it is necessary to proceed with the adjustment of the Braking Torque.

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).

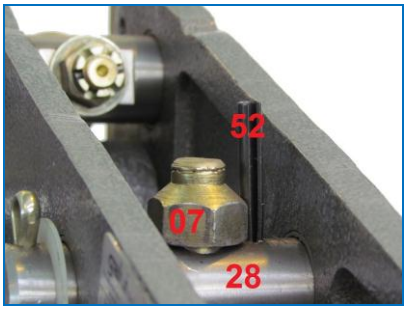
The adjustment of the Braking Torque is substantially made compressing the Brake's main spring item 14 by screwing the nut at the top of the main spring's tie rod item 07 (Drawing 11).

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.

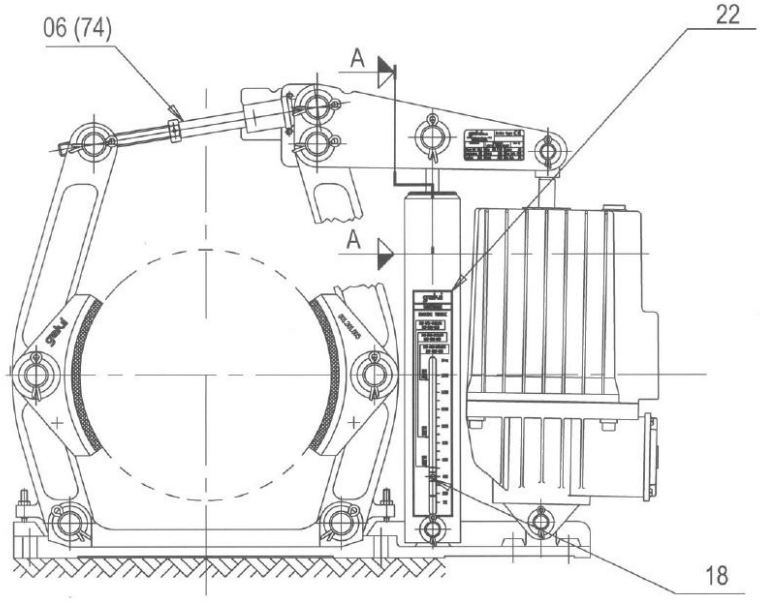


Drawing 11

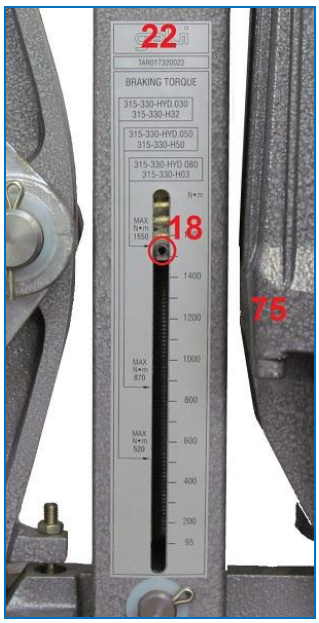


Picture 9

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



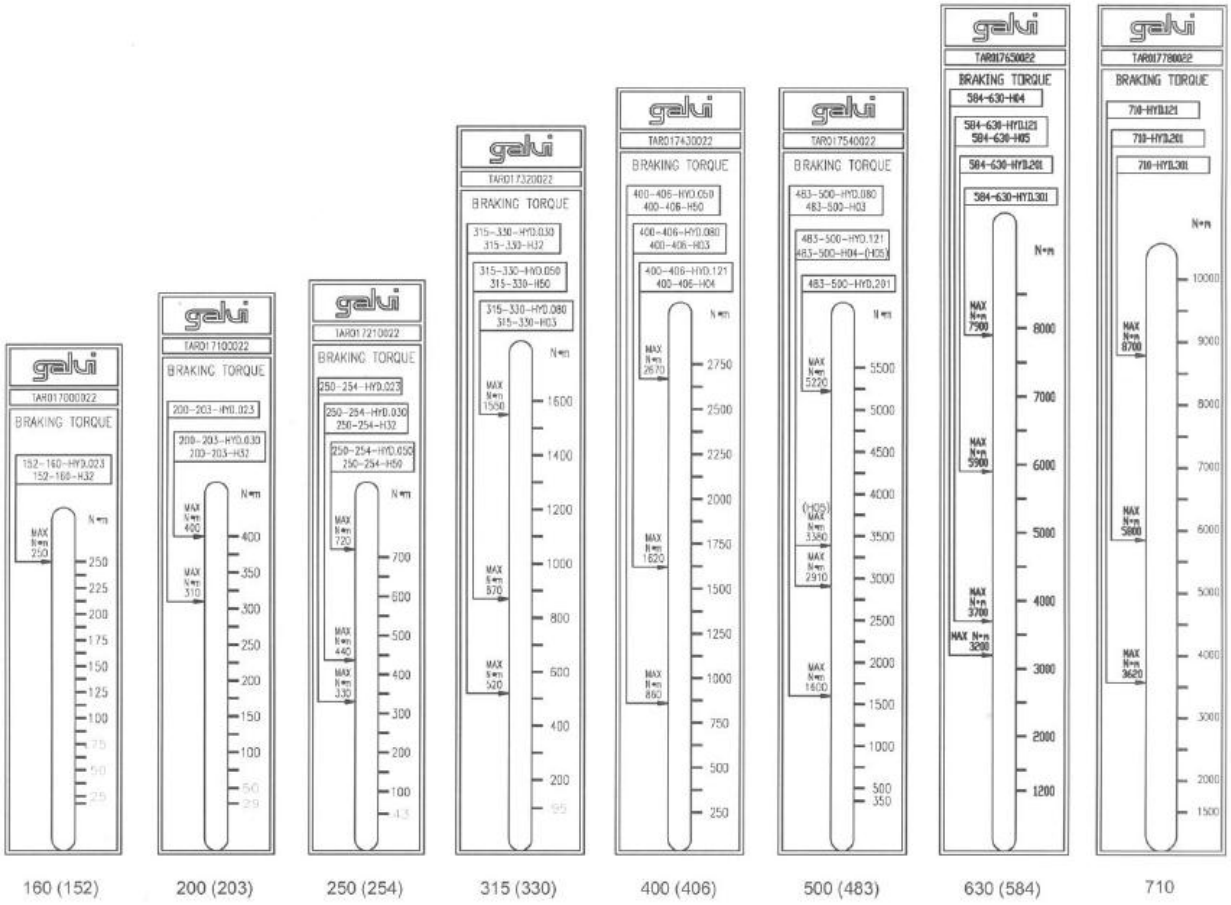
Picture 10

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

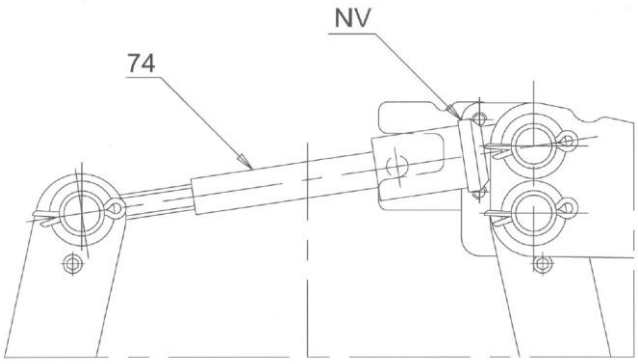
03.02 – SELF ADJUSTING DEVICE (NV)

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

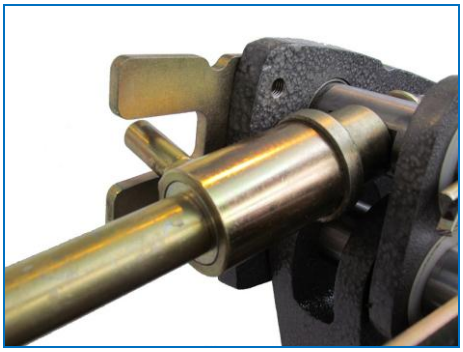
The self adjusting device is now installed on all GALVI Brakes and it is considered indispensable for all the hoist drive Brakes and for heavy duty Brakes.

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.

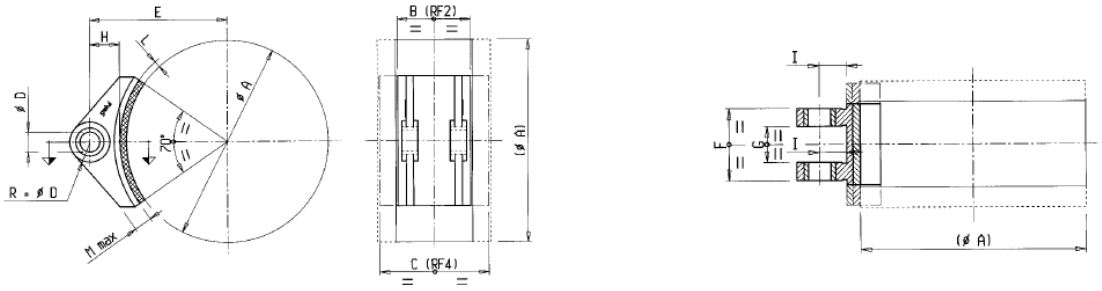
In case the Manufacturer has made the technical selection of the GALVI Shoe Brake it is possible that the brake Shoes item 05 1,5 times wider than DIN 15435 Standard brakes Shoes are indispensable for the service required by the Customer.

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.

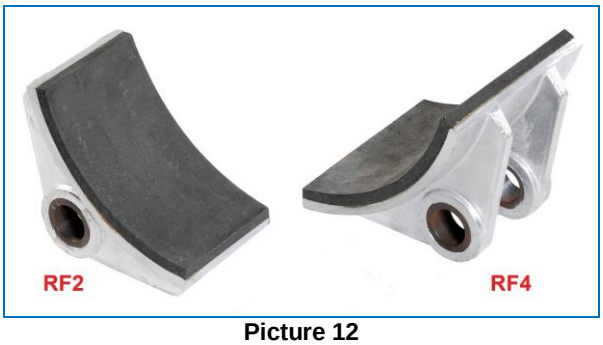
The DIN 15435 Standard brake Shoes item 05 are named "RF2" while the brakes Shoes 1,5 times wider than the DIN 15435 Standard brake Shoes are named "RF4".

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



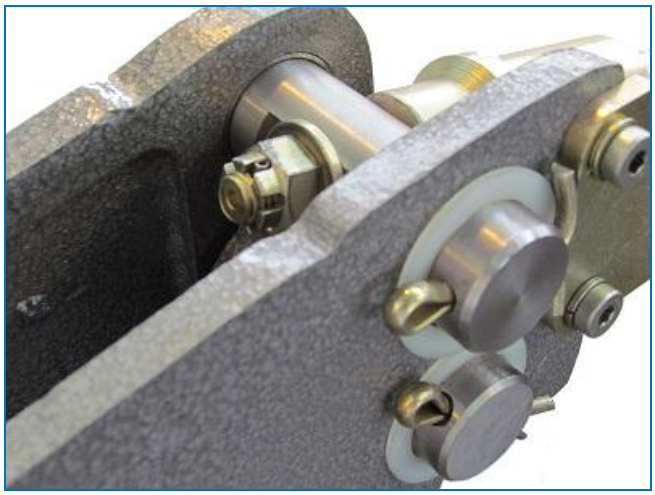
Picture 12
Standard brake Shoes "RF2" and 1,5 times wider brake Shoes "RF4"

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)

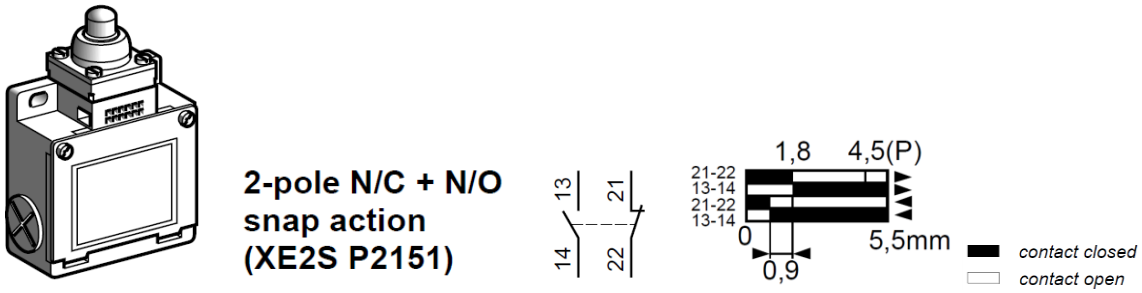
The GALVI Shoe Brakes with open position microswitch have "FIA" code.

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.

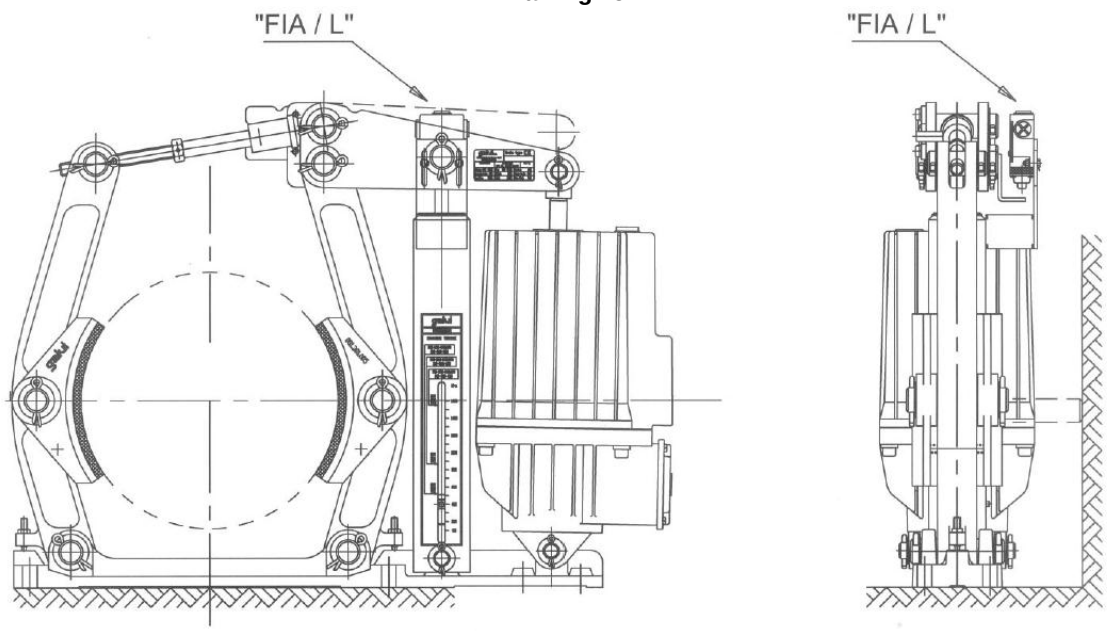
The option can be installed on left side ("FIA/L", Drawing 16) or on right side ("FIA/R"), in any case always opposite to eventual "HAN" option's side.

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.

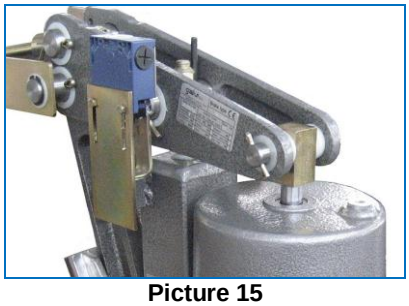
On request it is possible to supply also the cable gland, both Pg.11 and M20 x 1,5 mm, both in nylon and in stainless steel (Picture 16).



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)

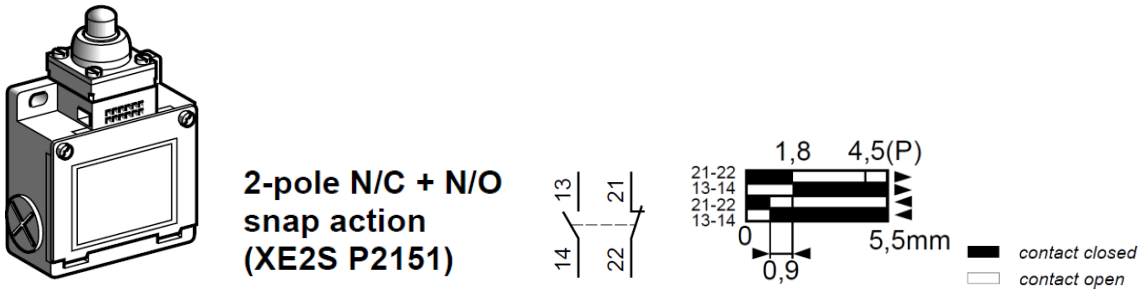
The GALVI Shoe Brakes with linings wear microswitch have "FIC" code.

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

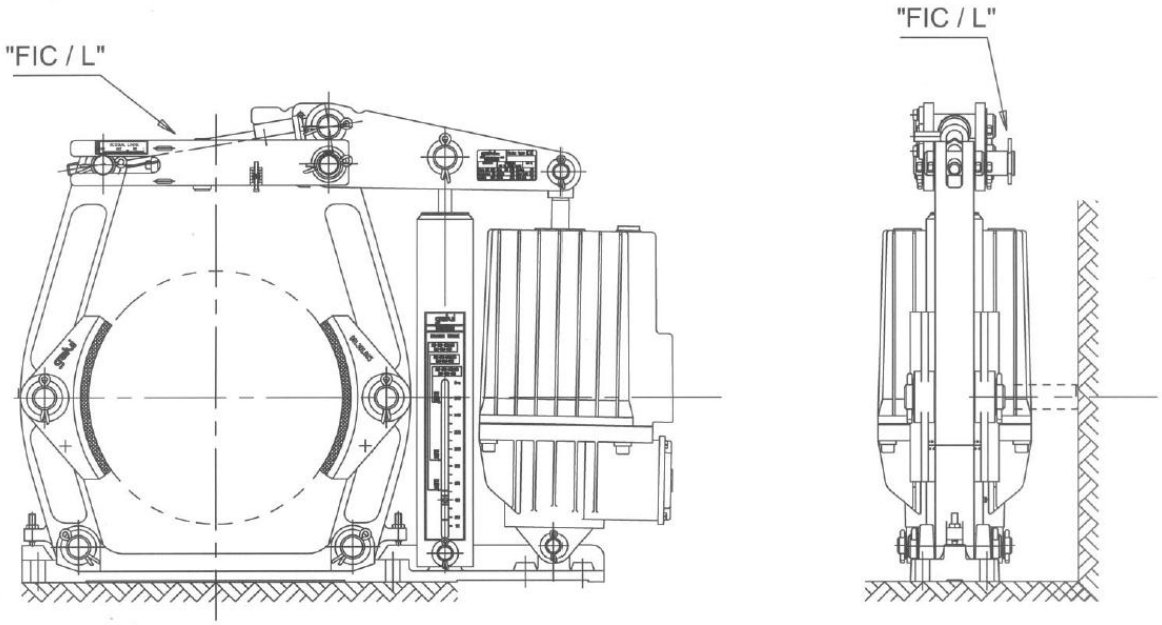
The option can be installed on left side ("FIC/L", Drawing 18) or on right side ("FIC/R").

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.

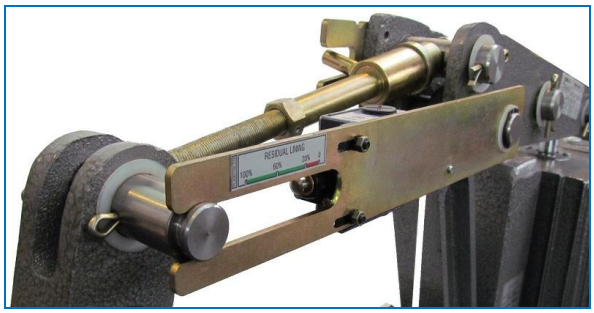
On request it is possible to supply also the cable gland, both Pg.11 and M20 x 1,5 mm, both in nylon and in stainless steel (Picture 18).



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.

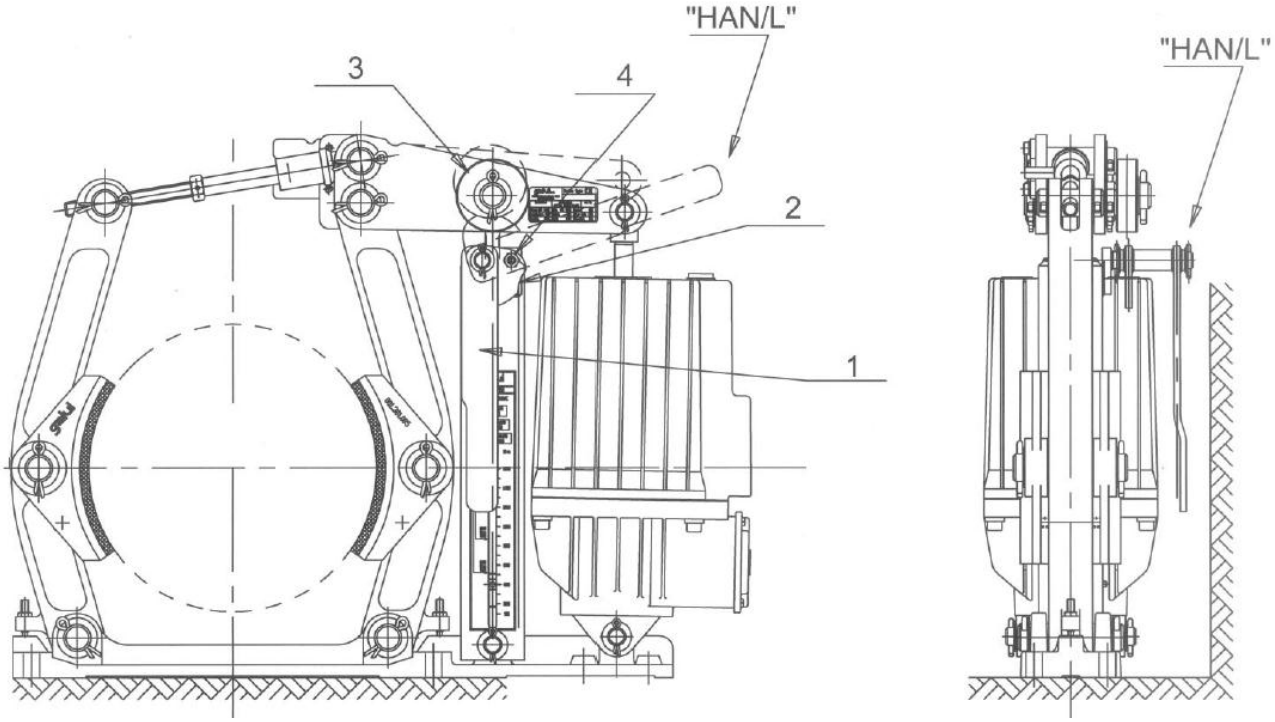
The manual opening system is an option suggested by the Manufacturer for facilitating maintenance and/or for some special installations which require the possibility to open the Brake manually and eventually to lock it in open position, as it happens with Brakes for boom rotation for port cranes.

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.

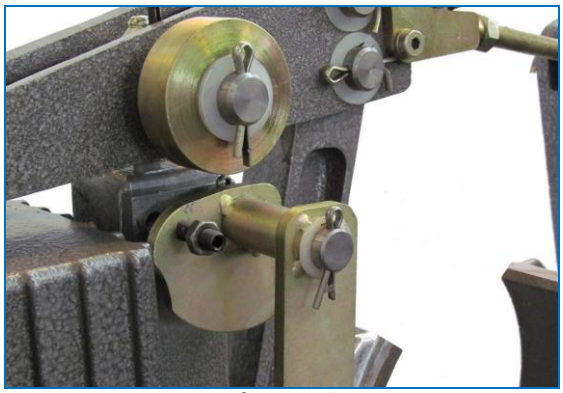
The option can be installed on left side (“HAN/L”, Drawing 19) or on right side (“HAN/R”).



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

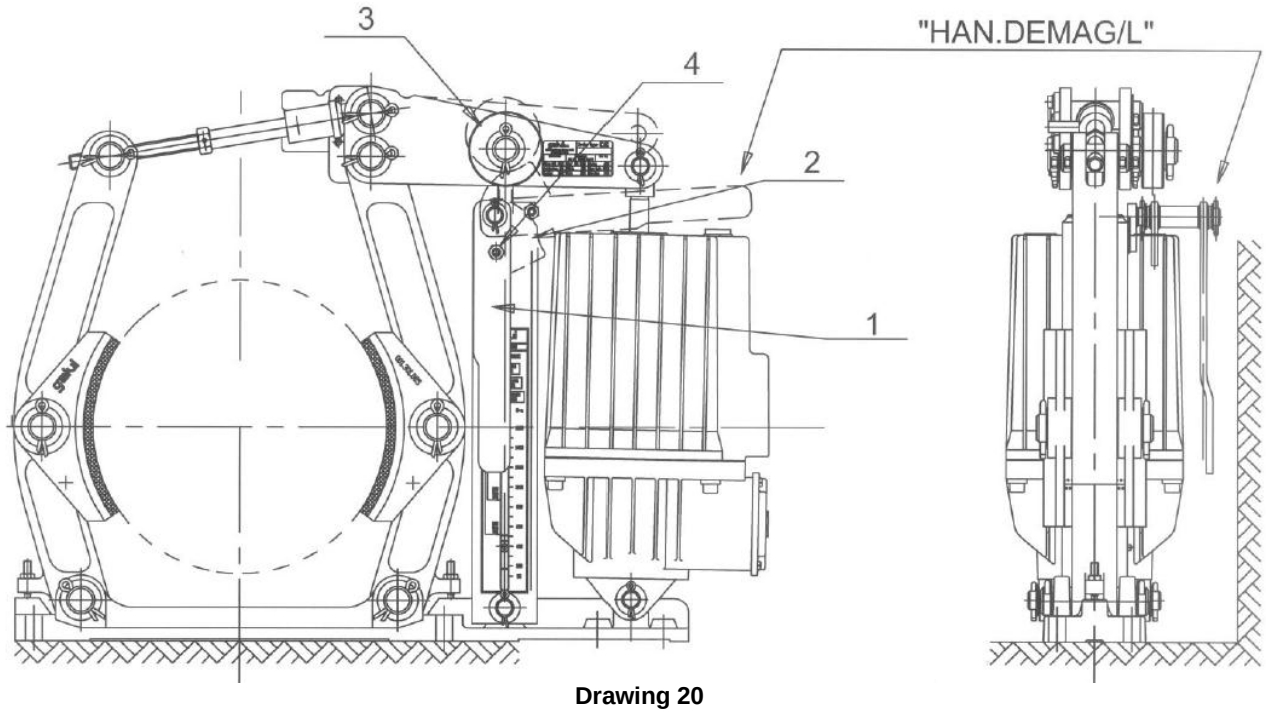
Table 25



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)

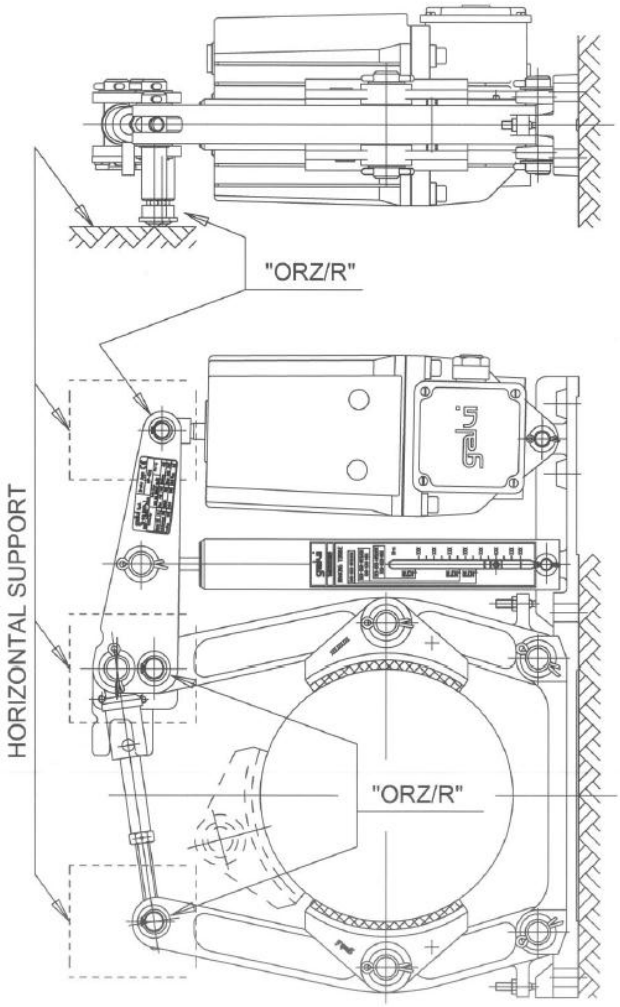
The GALVI Shoe Brakes with supporting spheres for vertical brake axis have "ORZ" code.

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".



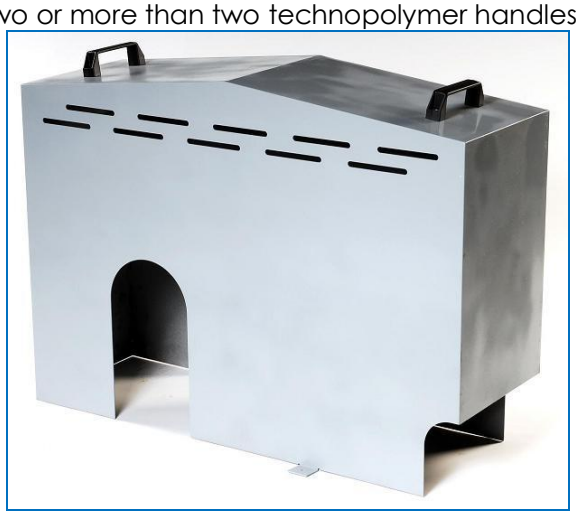
Drawing 21
Model shown NV.315.HYD.080/06.90.CD.42.PS.AU.ZN.ORZ/R

03.10 – PROTECTION COVER (COV)

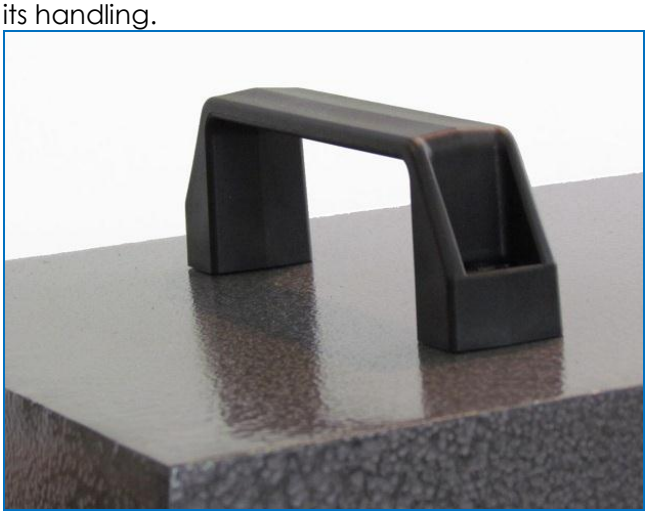
The protection cover is an option identified with "COV" code.

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"

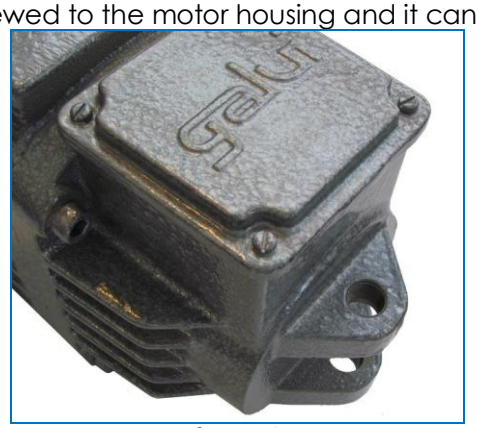
03.13 – FOOT ROTATED 90° FOR THRUSTER (90)

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.

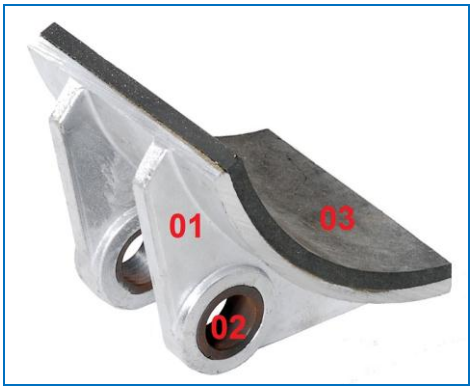
⚠	**Never wear totally the linings of the brake Shoes. Risk of accident. Inspect periodically the brake Shoes.**

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.

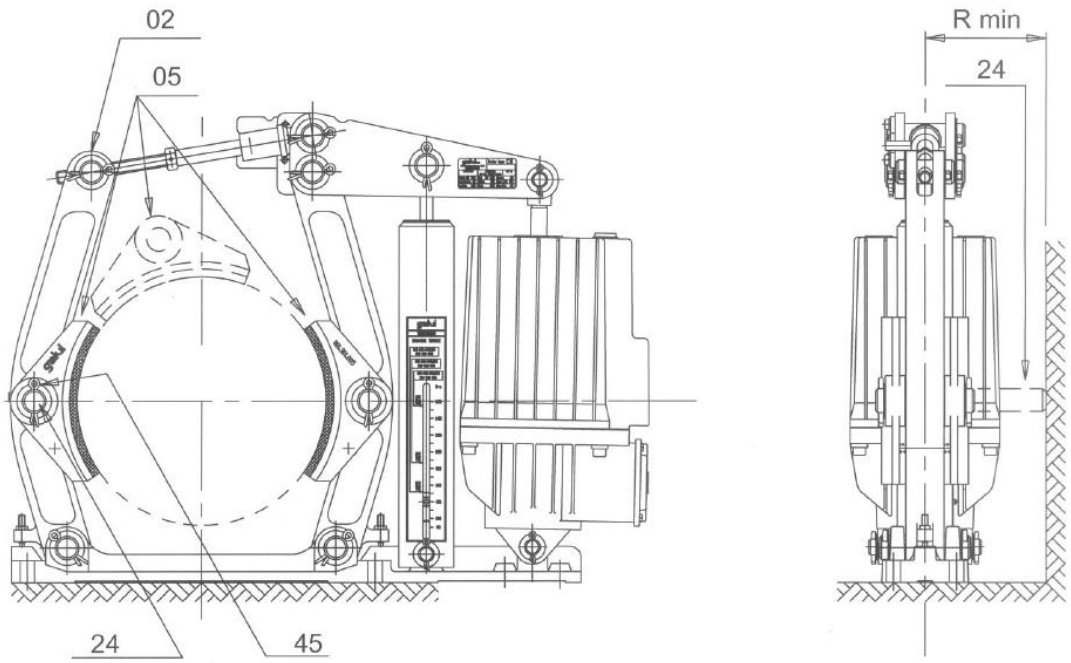
For replacing the brake Shoes item 05 it is in fact necessary to open the Brake, also using "HAN" option if installed, to remove the two split pins item 45 from their pin item 24 or the two seegers if the Brake has optional lubricators on main pins (GR), to remove pin item 24 in order to release the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

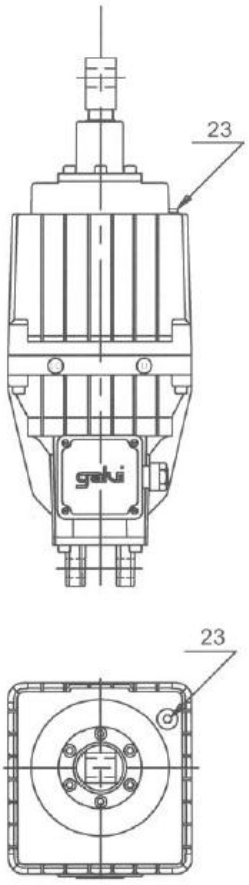
HL10, DIN 51524, part. 1
for Thrusters model HYD.121/06(12), 201/06(12), 301/06(12)

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.

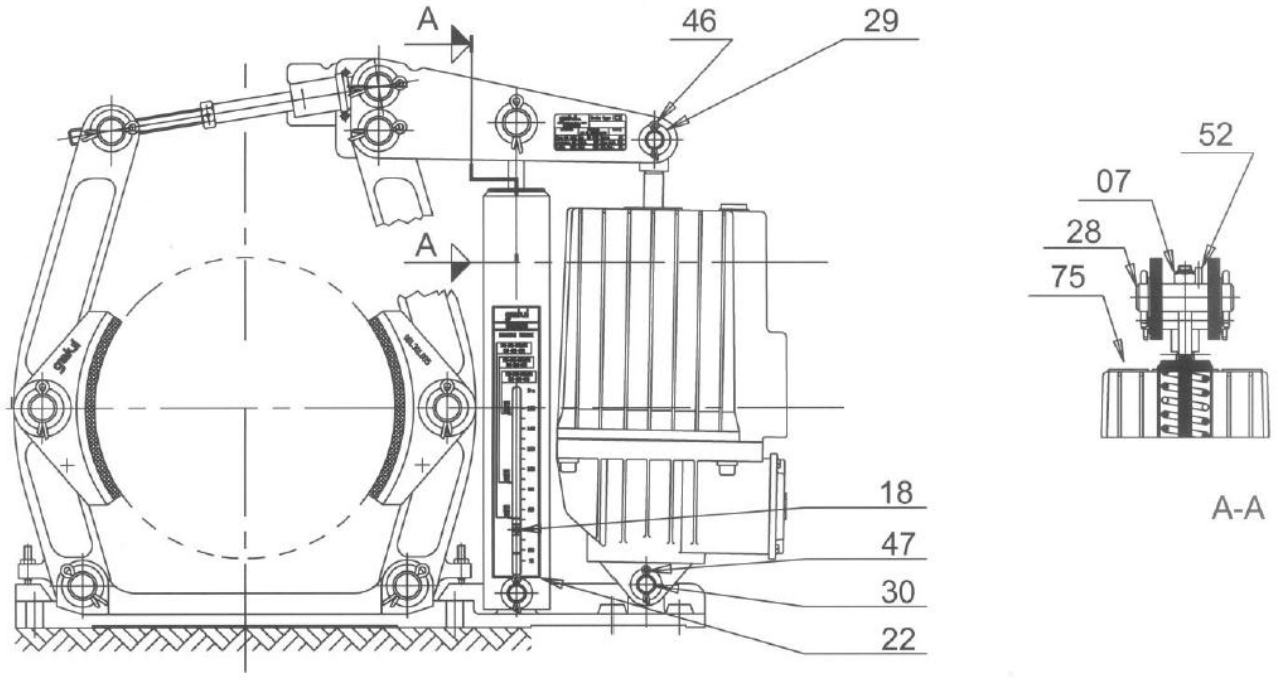
Remove temporarily the elastic pin item 52 from its hole in pin item 28 above the main spring set then rotate counterclockwise the nut at the top of the main spring tie rod item 07 until the pointer (elastic pin item 18) in the slit of the main spring set reaches the minimum Braking Torque value (Drawing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

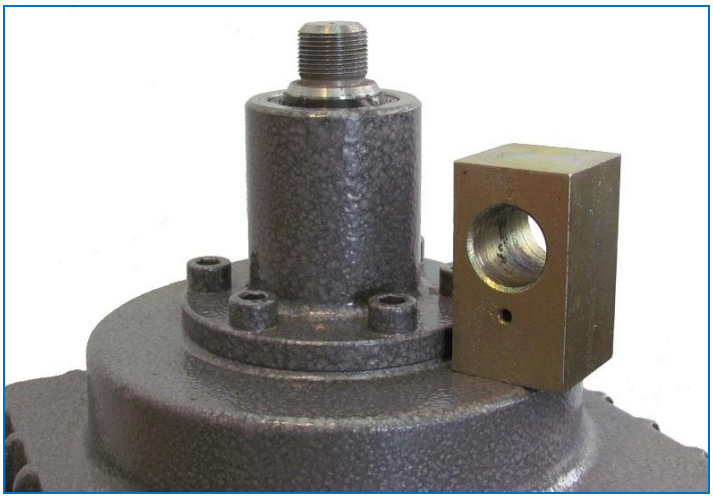
Table 31

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).

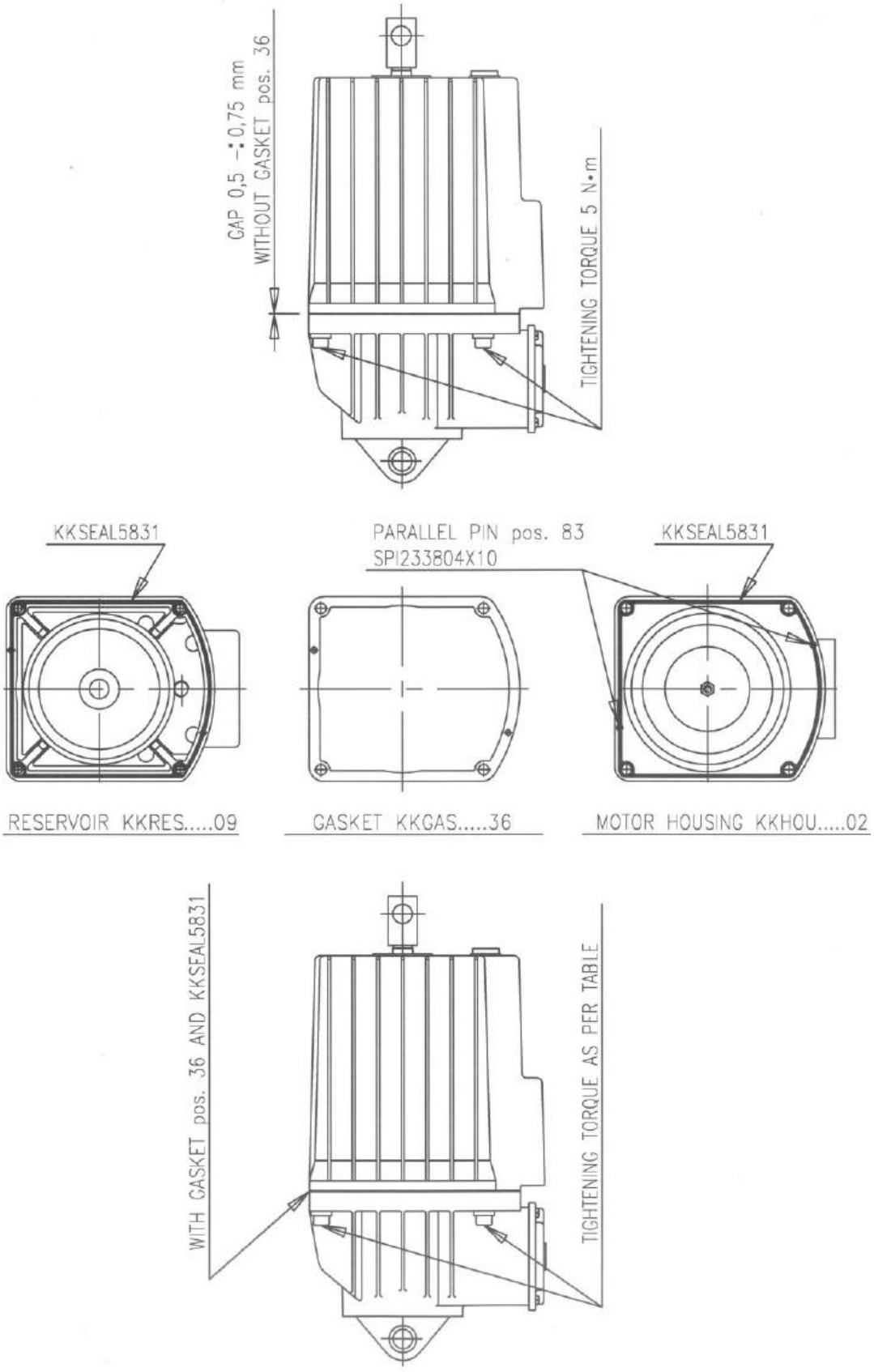


Picture 32
Thruster's shaft complete with push rod

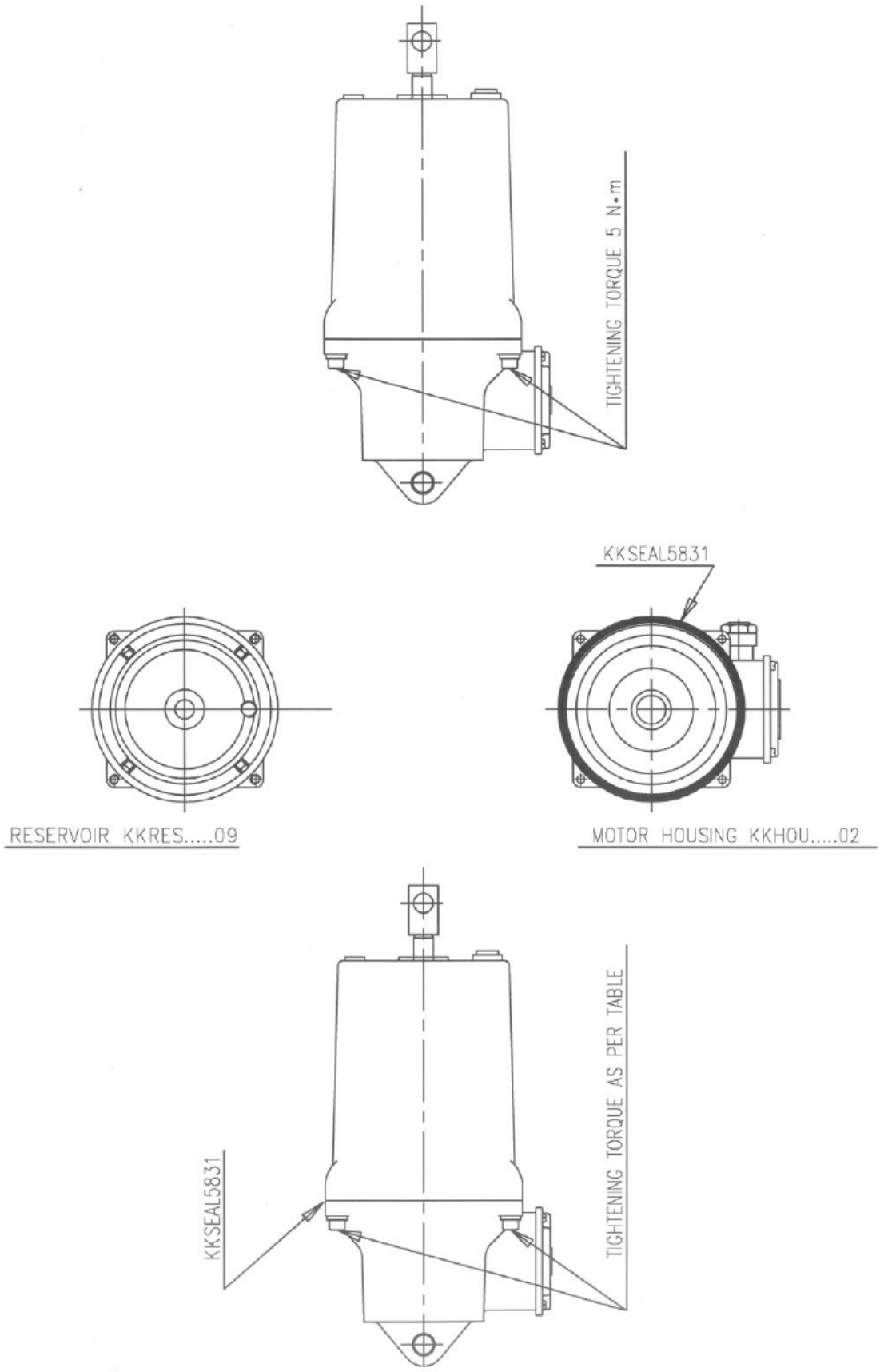


Picture 33
Thruster's shaft without push rod

⚠	**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
		

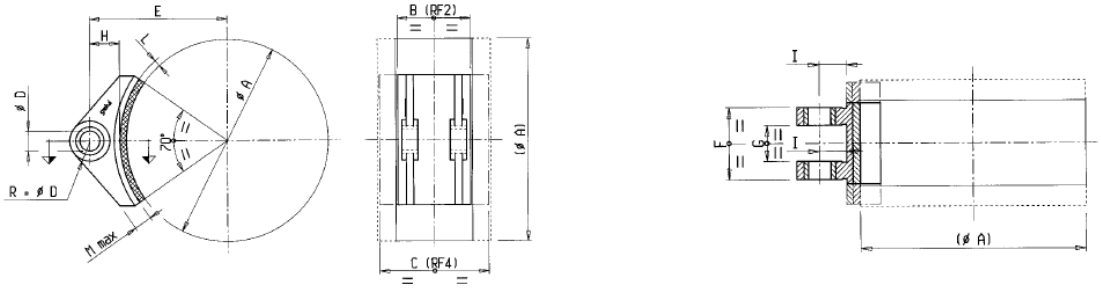
Table 32

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 :

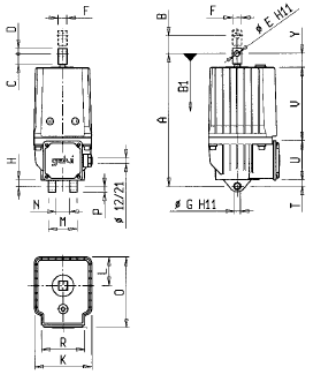


Ceppo freno tipo Brake Shoe type Sabots de frein type Bremsbacke Durchm. Typ		Ø A	B RF2	C [1] RF4	Ø D D10	E	F 0 - 0,2	G + 0,2 0	H	I	L	M max	Massa [2] Mass [2] Masse [2] Masse [2] [kg]	
CD	CL [1]												Ceppo DIN DIN Shoe Sabot DIN Backe DIN RF2	Ceppo largo [1] Extra-wide Shoe [1] Sabot large [1] 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

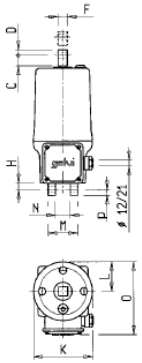
Table 33

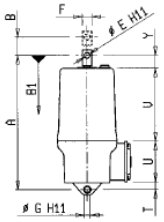
All the short stroke HYDRO GALVI Thrusters are listed in the following Table 34 taken from pages 30 and 31 of the GALVI Shoe Brakes Catalogue :

023-030-050-080

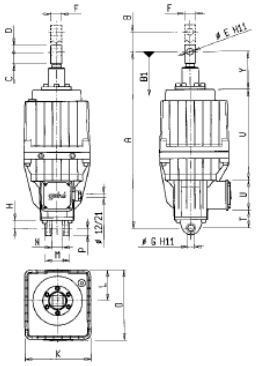


024-031-051-081





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

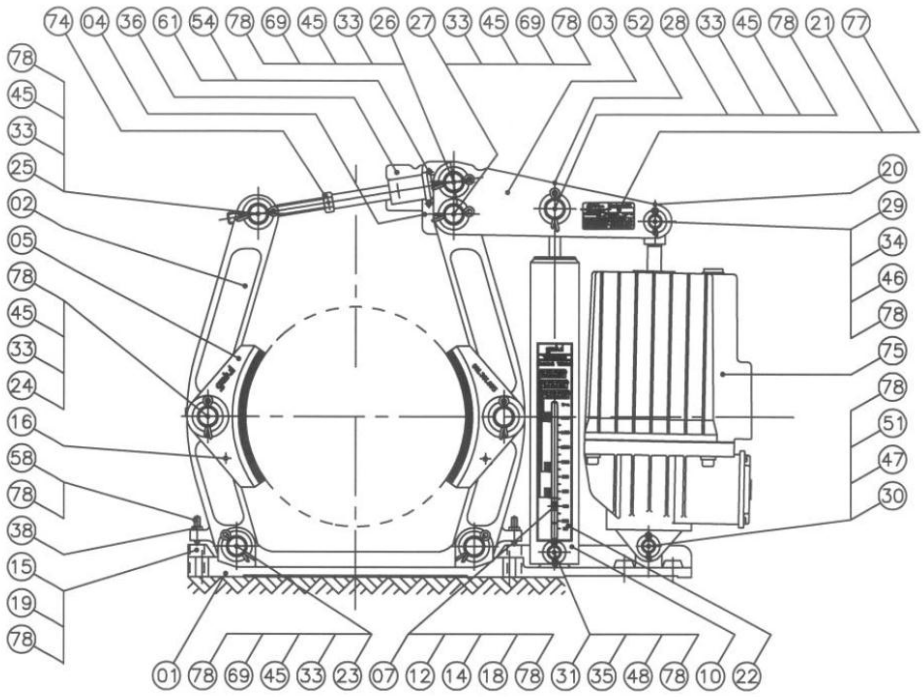
Table 34

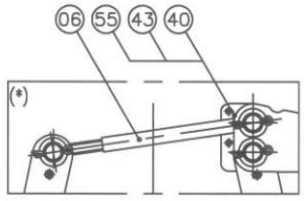
The Manufacturer suggests to use always and only HYDRO GALVI Thrusters.

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		–	–	–

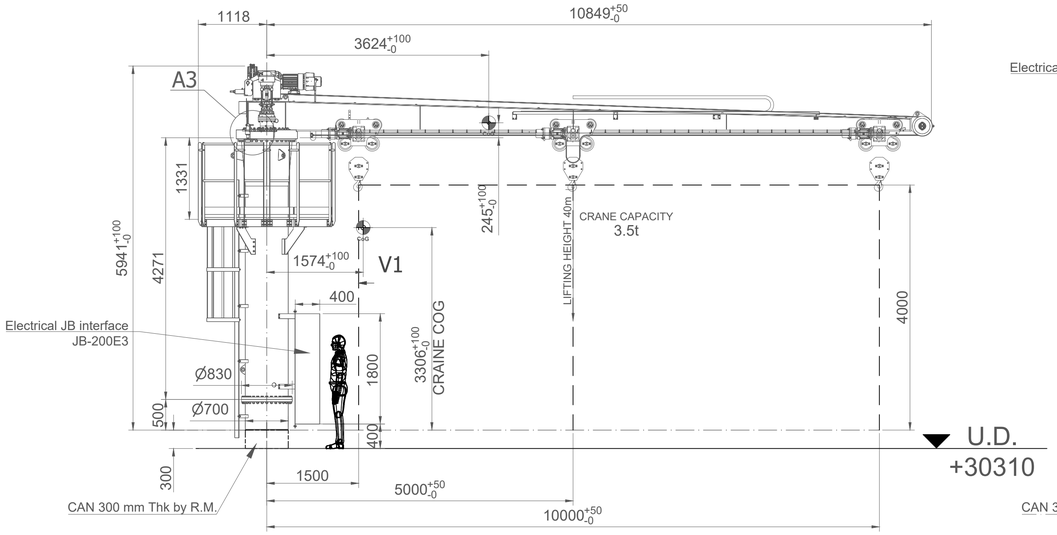
* = VALID ONLY "N" VERSION

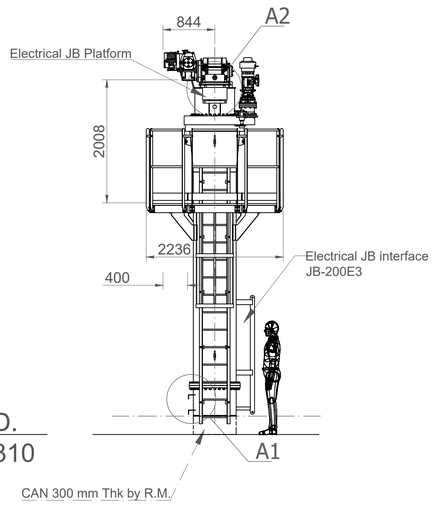
** = VALIDO ONLY FOR "NV" VERSION

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

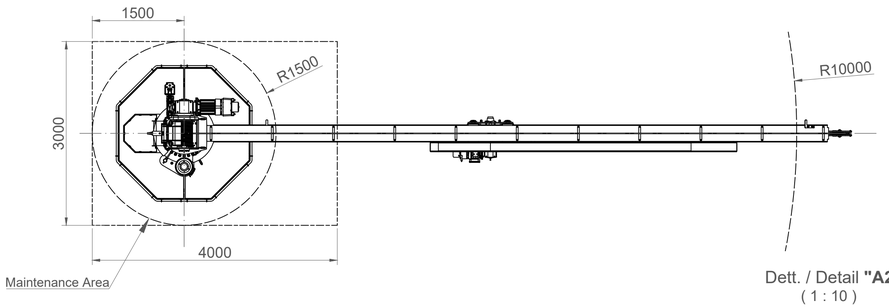
Drawing 27
Model shown NV.315.HYD.080/06.CD.42.PS.AU.ZN

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

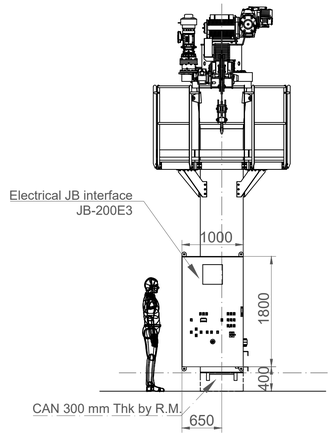




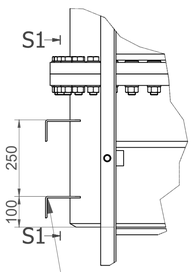
Vista da / View from **"V1"**
(1 : 50)



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

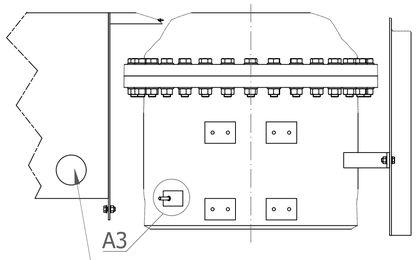


Dett. / Detail **"A1"**
(1 : 10)



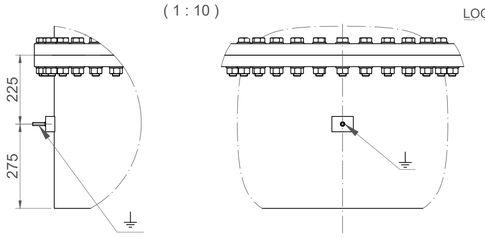
WELDED "L" PROFILE
For supports cable ladder

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

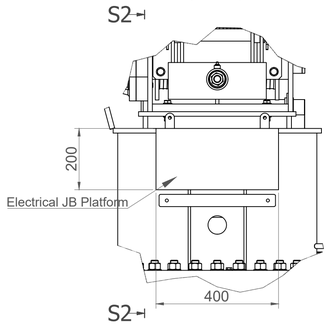


EL. CABLE IN
For cable by R.M.

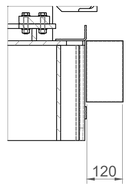
Dett. / Detail **"A3"**
(1 : 10)



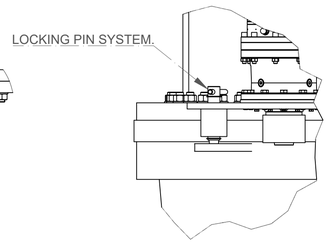
EARTING POINT
Threaded stud, ∅16mm, L.30mm, material S355J2+N

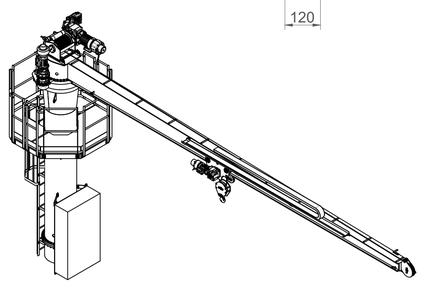


Sez. / Sec. **"S2-S2"**
(1 : 10)



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.**

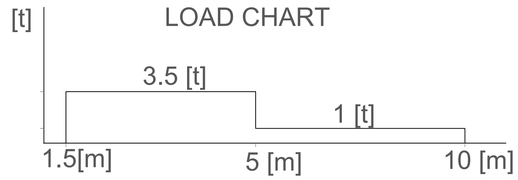
Load at deck interface

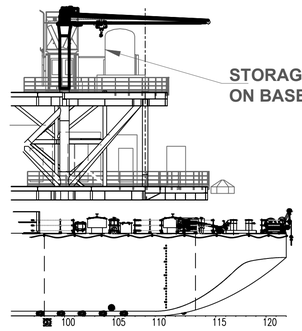
MAX FORCE ON DECK	
F_{Vmax}	-120[kN]
F_{Rmax}	15[kN]
M_{Zmax}	±45[kNm]
M_{Rmax}	520[kNm]

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:

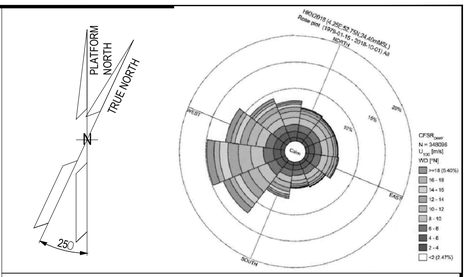
5.6[t]x5[m] - 1.6[t]x10[m]
in according to DNV-ST-0378 rules





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

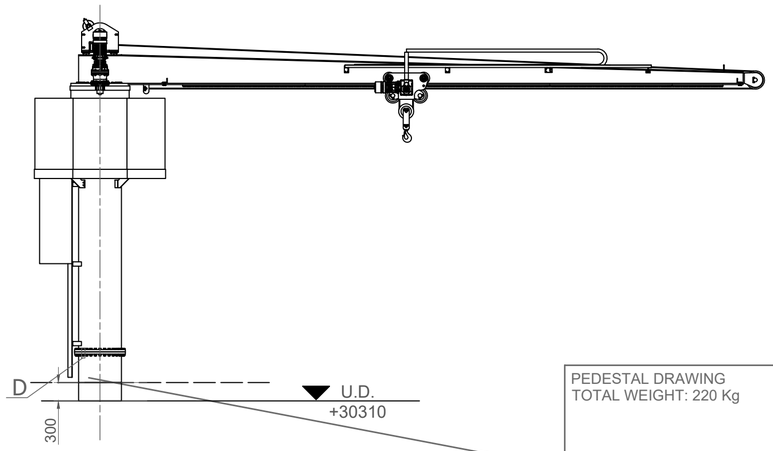
TITLE : 123A90A – Base Load Power Hub Platform
CRANE GENERAL ARRANGEMENT DRAWINGS
DAVIT CRANE

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

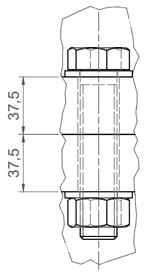
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DRAWING NO. 1724001010-MAC-DA-00010

REV. 1

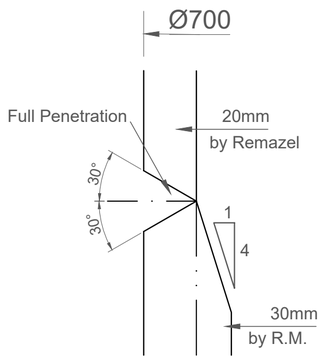


Dett. / Detail **"D"**
(1 : 2)

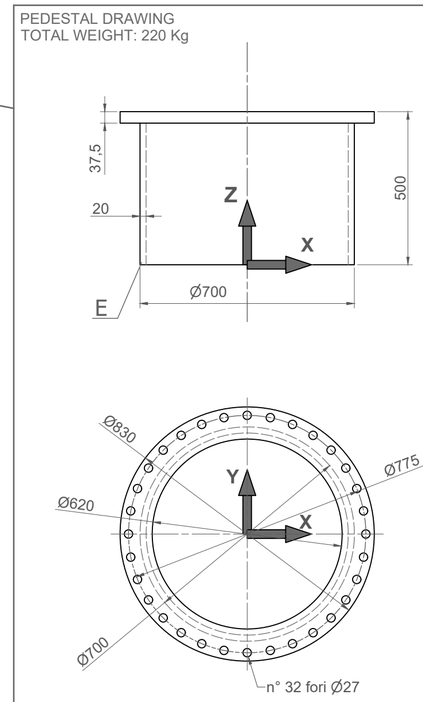


-n° 32 screws M24 - class 10.9

Dett. / Detail **"E"**



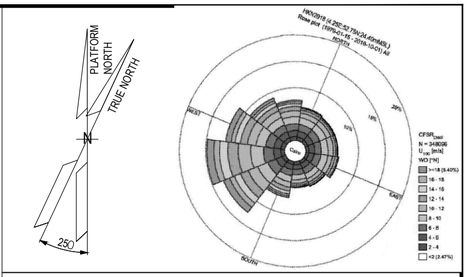
PEDESTAL DRAWING
TOTAL WEIGHT: 220 Kg



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)

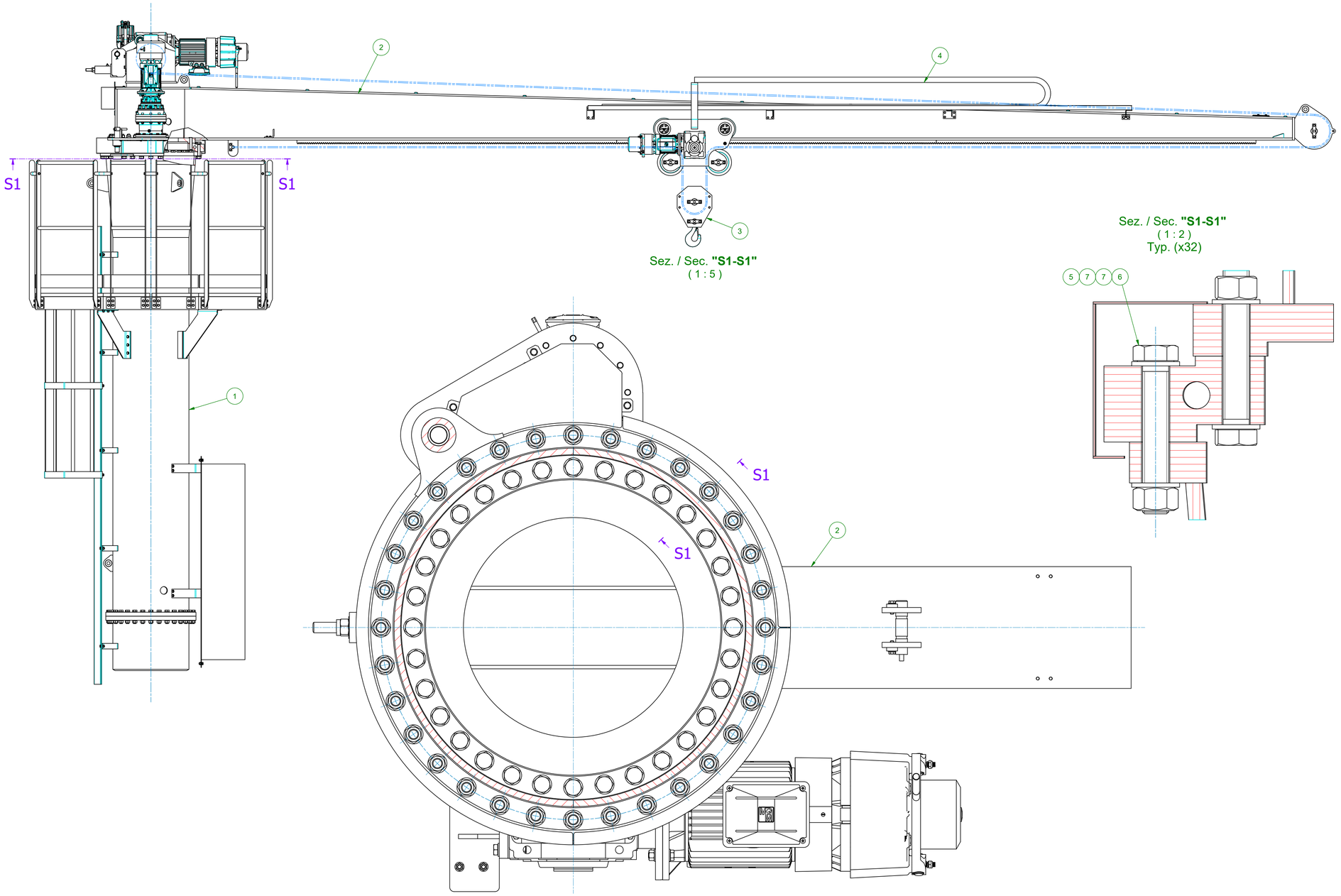
CROSSWIND

ROSETTI MARINO

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

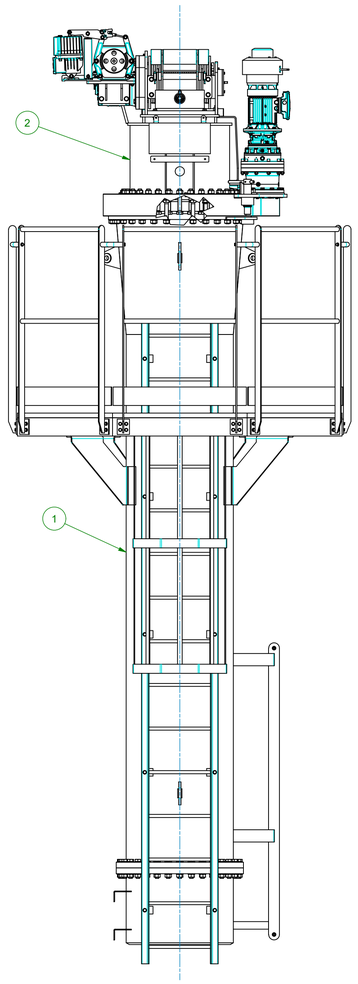
CONTRACT NO./TITLE	CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK		SCALE 1:50
DRAWN R.S.	CHECKED M.P.	APPROVED A.T.	DATE 18/06/24
A1	DRAWING NO. 1724001010-MAC-DA-00010	SHEET 001	REV. 1

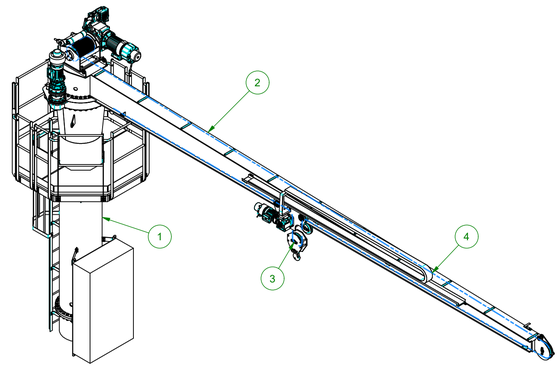
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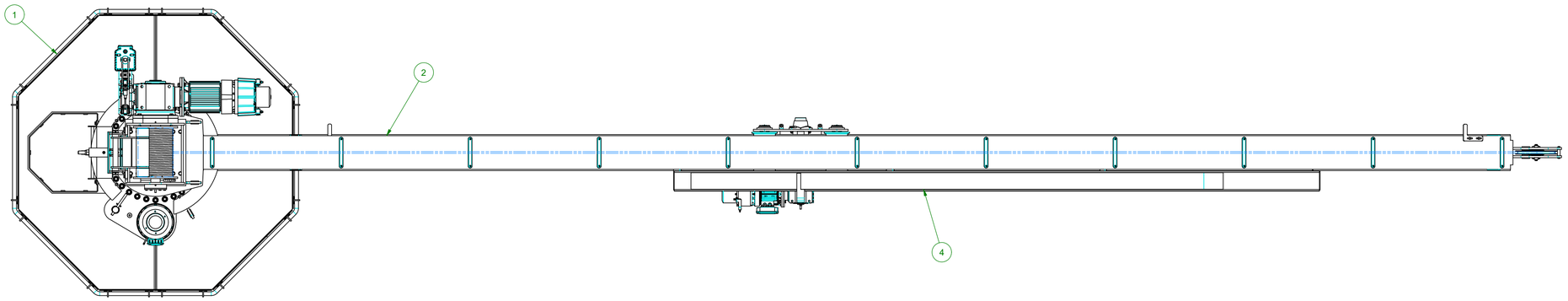


Sez. / Sec. **"S1-S1"**
(1 : 5)

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







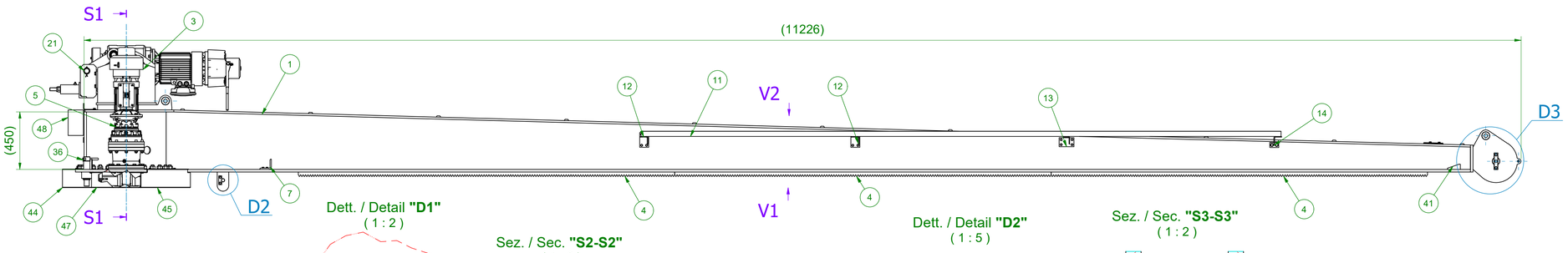
EL.	PART NUMBER	DESCRIPTION ENG	Q.TY	WEIGHT
7	004-0023-C0523	Plain washer	64	0 kg
6	004-0175-C0215	Hex head screw fully threaded	32	0,6 kg
5	DA CODIFICARE	Hexagonal nut	32	0,1 kg
4	R-000347885	Cable Tray	1	0 kg
1	C09-0001-A0006	Fixed Column Ass.	1	2722,9 kg
3	C09-0001-A0005	Travelling Trolley Assembly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

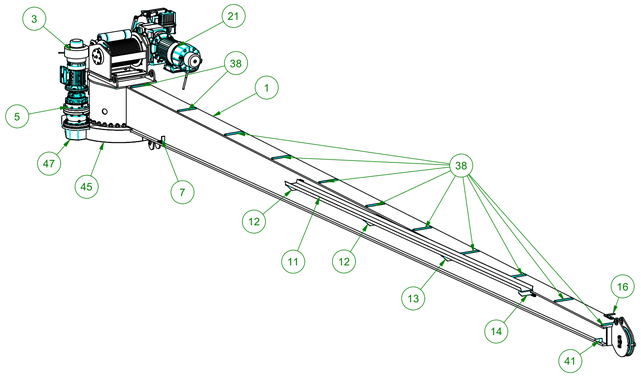
REV	DATE	DESCRIPTION	DRAFTMAN	DESIGNER	CALCULATION ENG.	P.E.
A	01/10/2024	Prima emissione / First issued	riccardo.sobani	Sobani R.	De Fazio F.	–

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

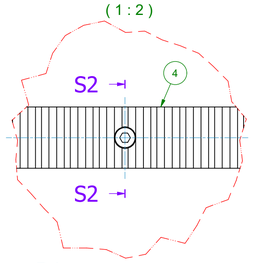
Project / Equipment : **C09-0001**
Weight : N/A
Title : Assieme Meccanico / Mechanical Assembly
Scale : 1 : 50
Sheet : 2 of 2
A1
Drawing State: **Work in Progress** / ***FOR CONSTRUCTION***
Q.C.L. : C3
Drawing N° : C09-0001-A0002
Revision : A

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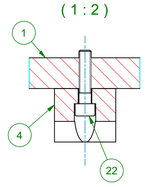




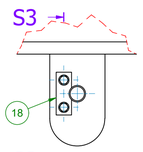
Dett. / Detail **"D1"**
(1 : 2)



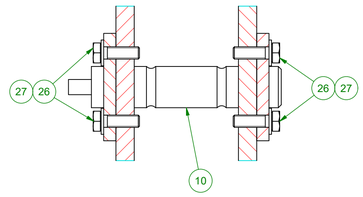
Sez. / Sec. **"S2-S2"**
(1 : 2)

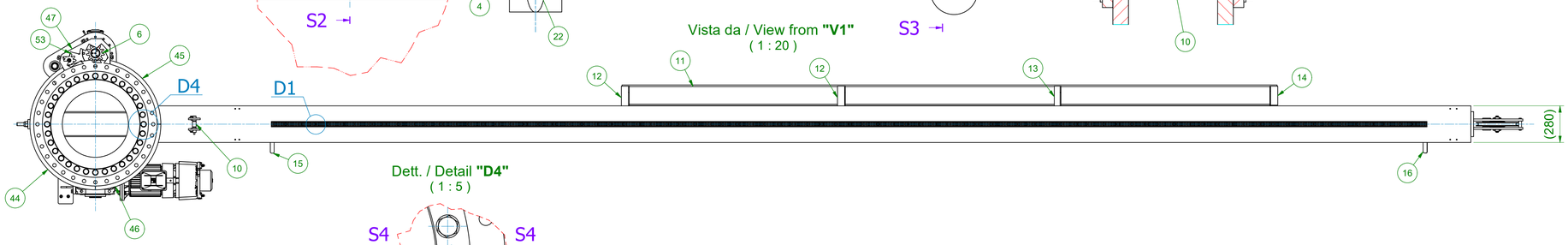


Dett. / Detail **"D2"**
(1 : 5)

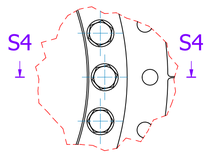


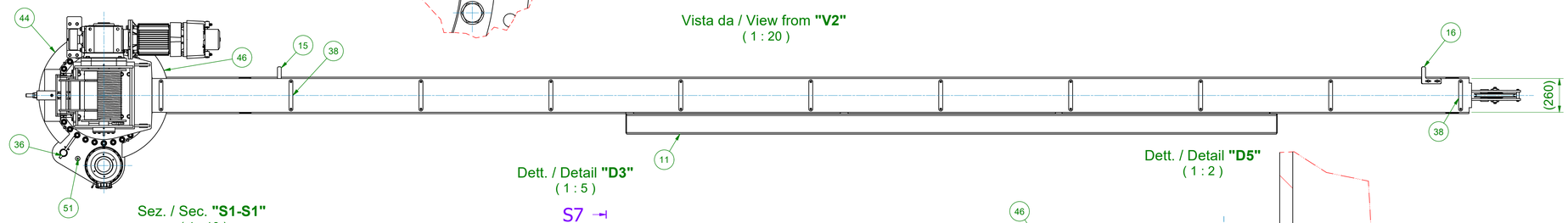
Sez. / Sec. **"S3-S3"**
(1 : 2)



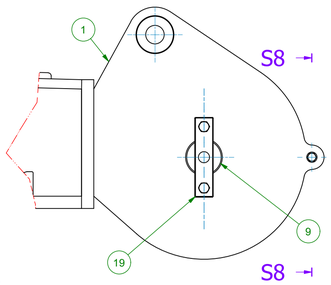


Dett. / Detail **"D4"**
(1 : 5)

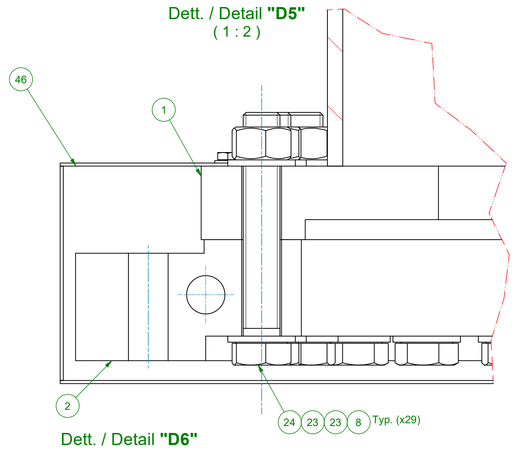




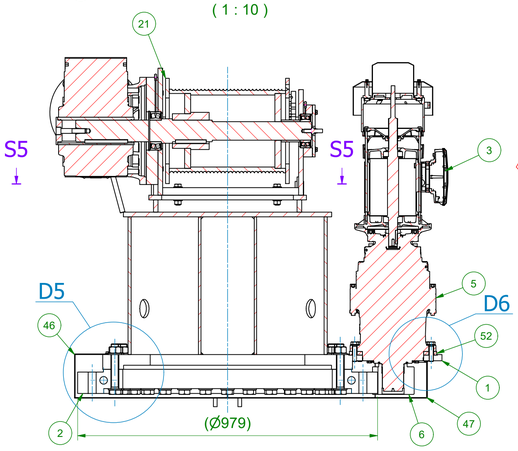
Dett. / Detail **"D3"**
(1 : 5)



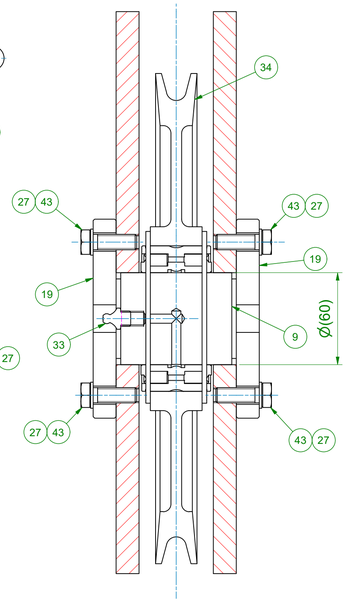
Dett. / Detail **"D5"**
(1 : 2)



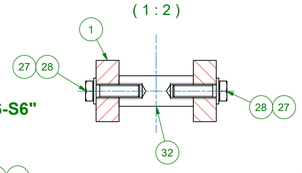
Sez. / Sec. **"S1-S1"**
(1 : 10)



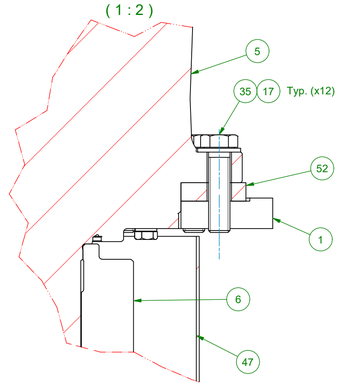
Sez. / Sec. **"S7-S7"**
(1 : 2)



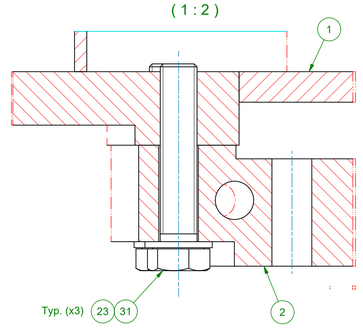
Sez. / Sec. **"S8-S8"**
(1 : 2)



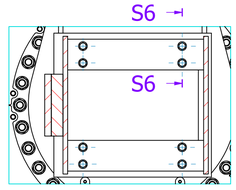
Dett. / Detail **"D6"**
(1 : 2)



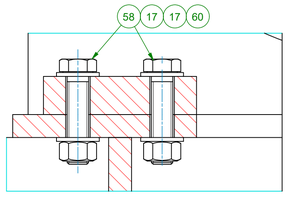
Sez. / Sec. **"S4-S4"**
(1 : 2)



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
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 4 of 6

A1

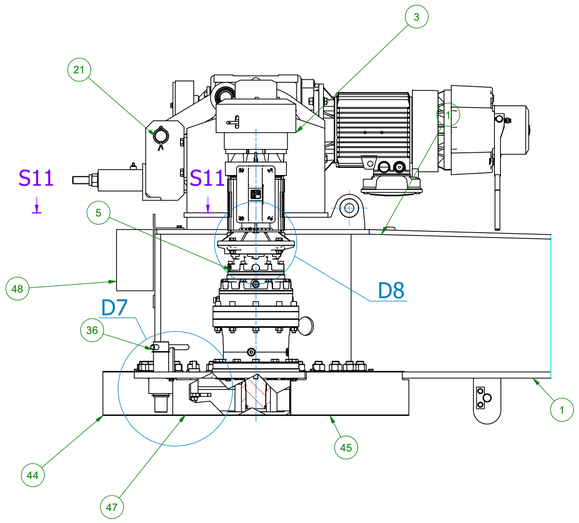
Drawing State: **Work in Progress** / ***FOR CONSTRUCTION***

Q.C.L. : C3

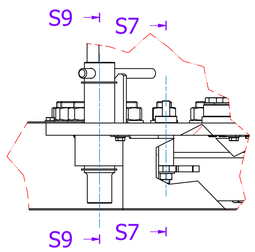
Drawing N° :
C09-0001-A0003

Revision :
A

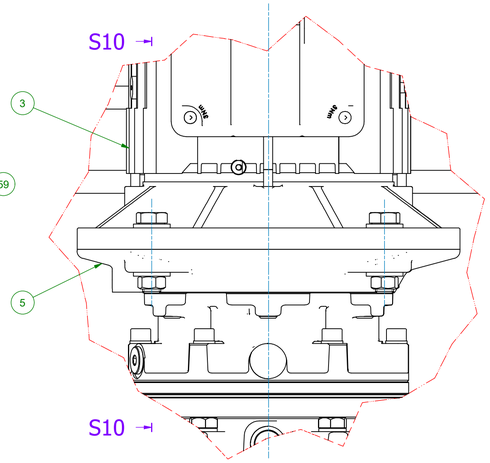
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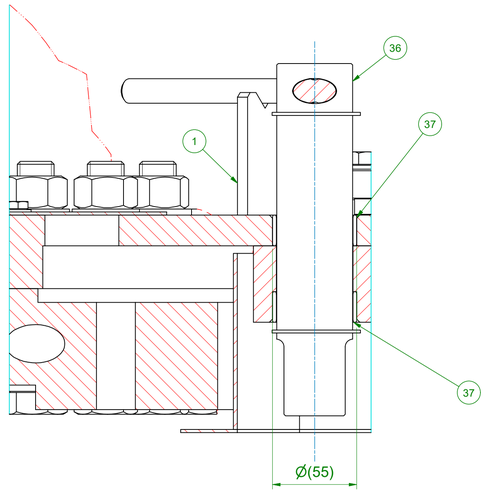
Dett. / Detail **"D7"**
(1 : 5)



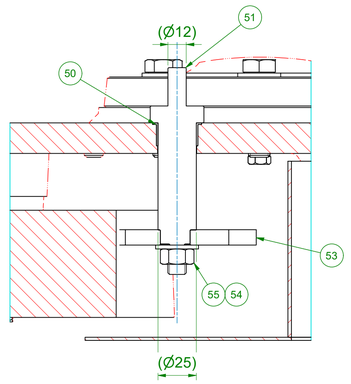
Dett. / Detail **"D8"**
(1 : 2)

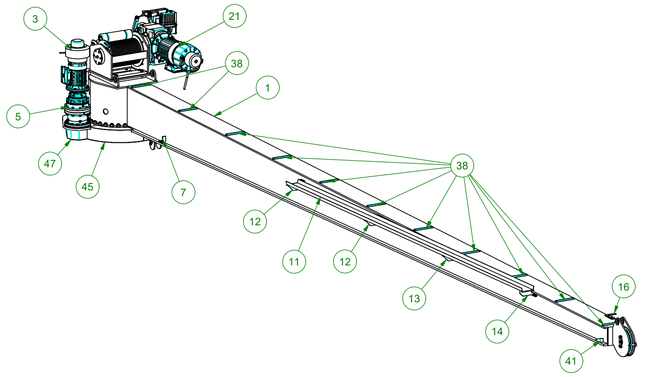


Sez. / Sec. **"S9-S9"**
(1 : 2)

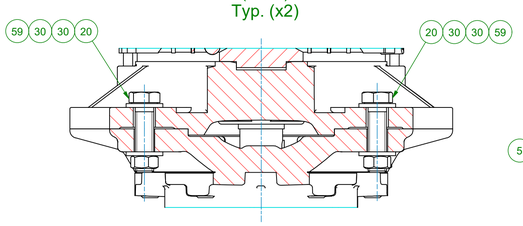


Sez. / Sec. **"S7-S7"**
(1 : 2)

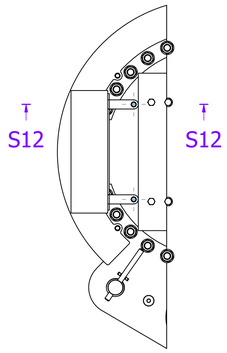




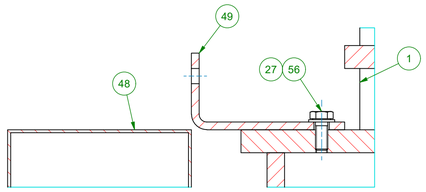
Sez. / Sec. **"S10-S10"**
(1 : 2)
Typ. (x2)

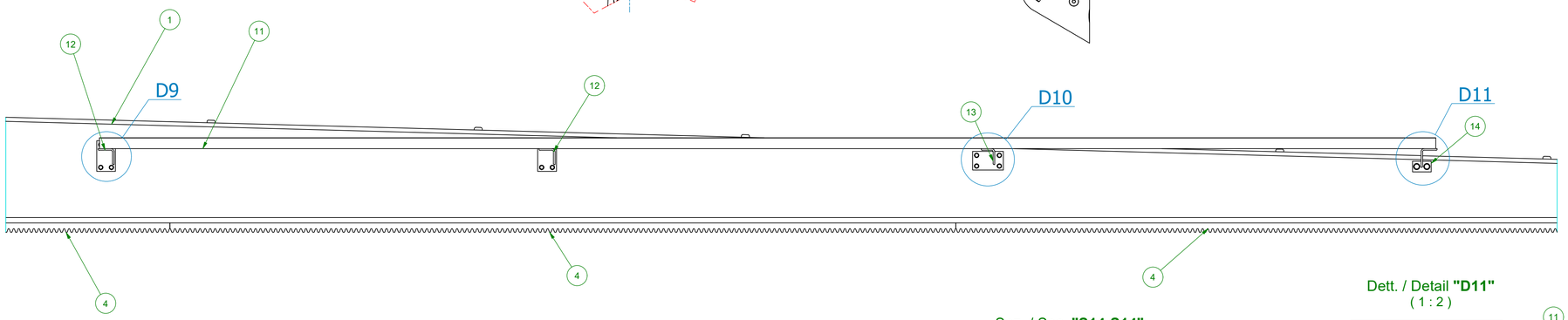


Sez. / Sec. **"S11-S11"**
(1 : 10)

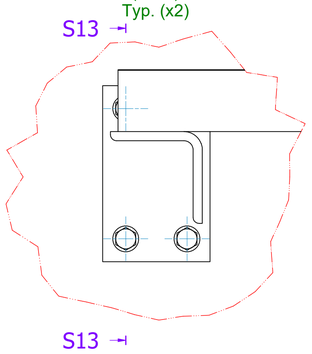


Sez. / Sec. **"S12-S12"**
(1 : 2)

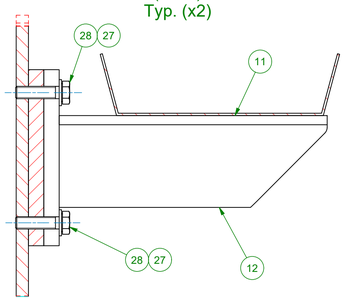




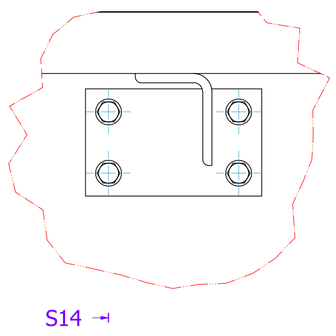
Dett. / Detail **"D9"**
(1 : 2)
Typ. (x2)



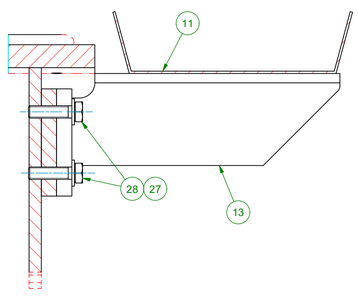
Sez. / Sec. **"S13-S13"**
(1 : 2)
Typ. (x2)



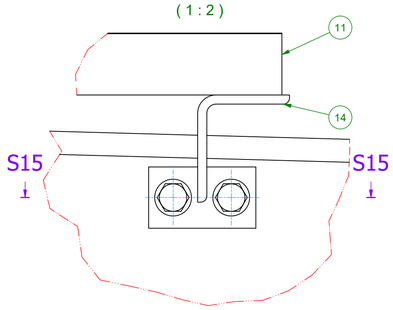
Dett. / Detail **"D10"**
(1 : 2)



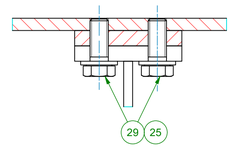
Sez. / Sec. **"S14-S14"**
(1 : 2)
Typ. (x2)



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



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



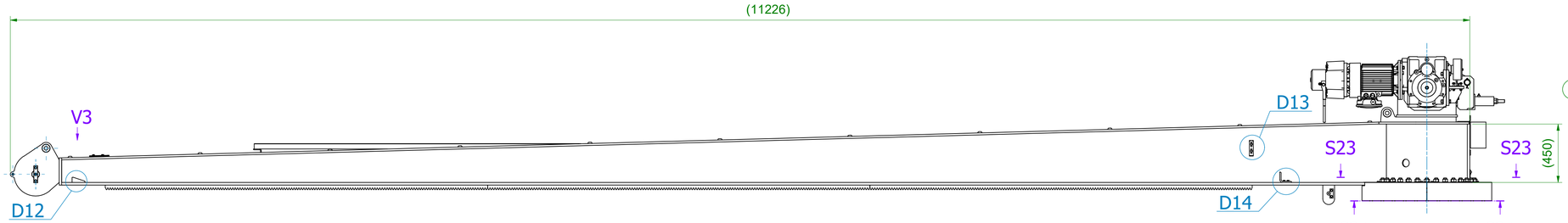
60	004-0147-C0021	Hexagonal nut	8	0 kg
59	004-0147-C0002	Hexagonal nut	4	0 kg
58	004-0149-C0138	Hex head screw fully threaded	8	0,1 kg
57	004-0011-C0040	Hex head screw fully threaded	3	0 kg
56	004-0011-C0012	Hex head screw fully threaded	11	0 kg
55	004-0021-C0007	Hexagonal nut	1	0 kg
54	004-0023-C0598	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

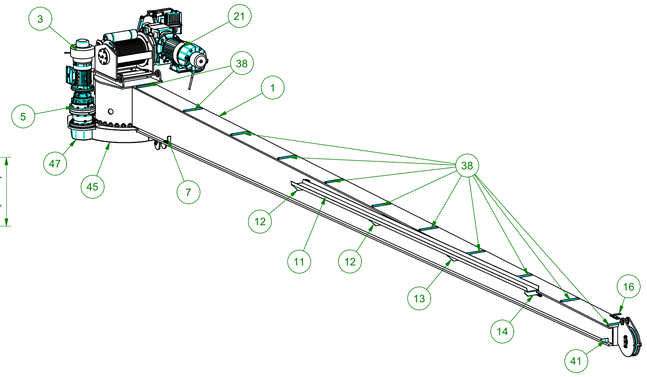
REV	DATE	DESCRIPTION	DRAFTMAN	DESIGNER	CALCULATION ENG.	P.E.
A	30/09/2024	Prima emissione / First issued	riccardo.sobani	Sobani R.	De Fazio F.	–

REMAZEL ENGINEERING
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

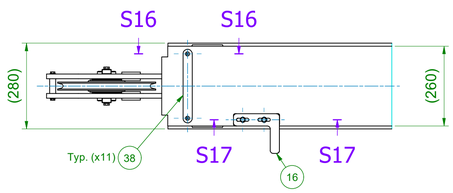
Project / Equipment : **C09-0001**
Weight : 2567,6 kg
Title : Assieme Braccio Boom Assembly
Scale : 1 : 33,3333
Sheet : 5 of 6
A1
Drawing State: **Work in Progress** / **FOR CONSTRUCTION**
Q.C.L. : C3
Drawing N° : C09-0001-A0003
Revision : A

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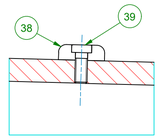




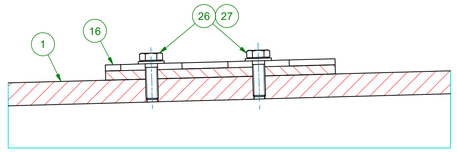
Vista da / View from **"V3"**
(1 : 10)



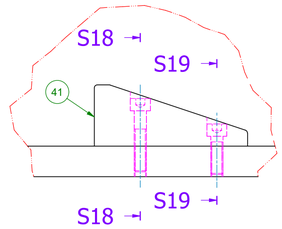
Sez. / Sec. **"S16-S16"**
(1 : 2)
Typ. (x2)



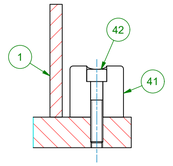
Sez. / Sec. **"S17-S17"**
(1 : 2)



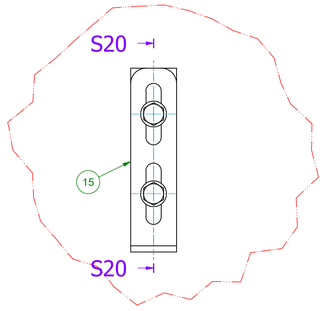
Dett. / Detail **"D12"**
(1 : 2)
Typ. (x2)



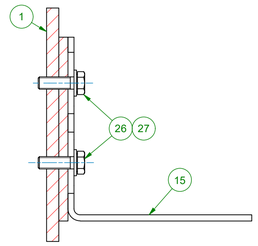
Sez. / Sec. **"S18-S18"**
(1 : 2)



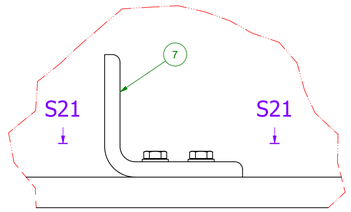
Dett. / Detail **"D13"**
(1 : 2)



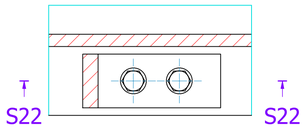
Sez. / Sec. **"S20-S20"**
(1 : 2)



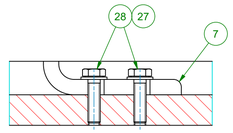
Dett. / Detail **"D14"**
(1 : 2)
Typ. (x2)



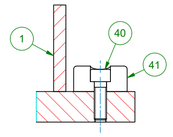
Sez. / Sec. **"S21-S21"**
(1 : 2)



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

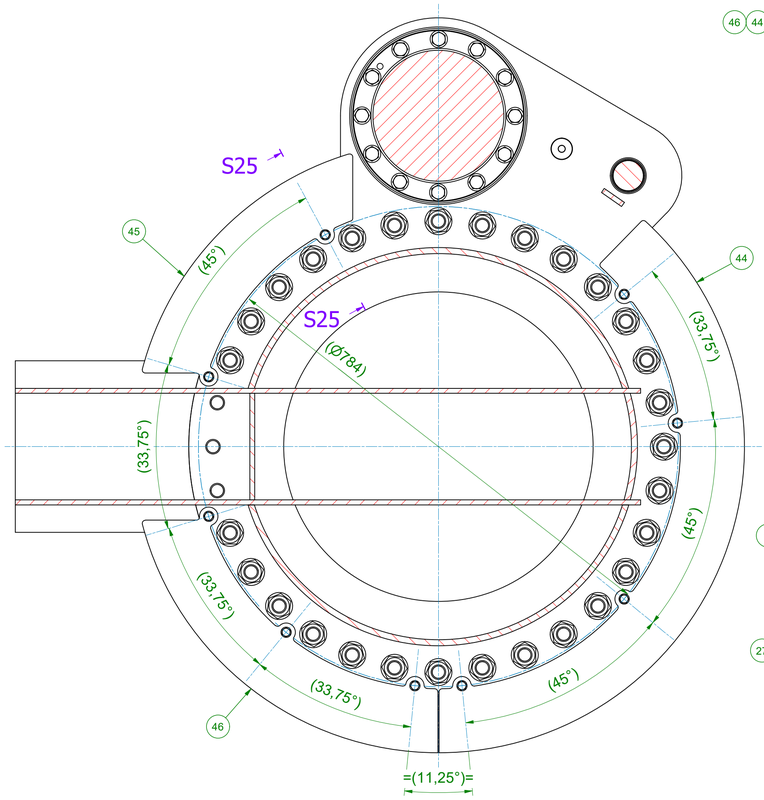


Sez. / Sec. **"S19-S19"**
(1 : 2)

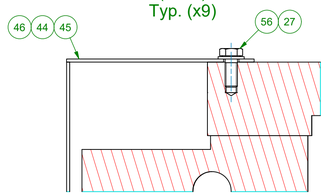


60	004-0147-C0021	Hexagonal nut	8	0 kg
59	004-0147-C0002	Hexagonal nut	4	0 kg
58	004-0149-C0138	Hex head screw fully threaded	8	0,1 kg
57	004-0011-C0040	Hex head screw fully threaded	3	0 kg
56	004-0011-C0012	Hex head screw fully threaded	11	0 kg
55	004-0021-C0007	Hexagonal nut	1	0 kg
54	004-0023-C0598	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

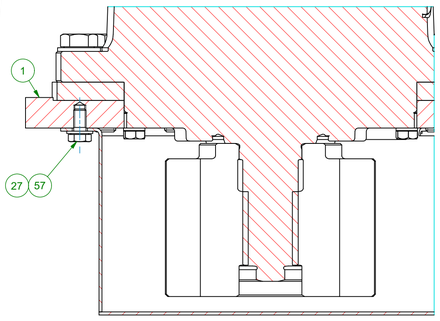
Sez. / Sec. **"S23-S23"**
(1 : 5)



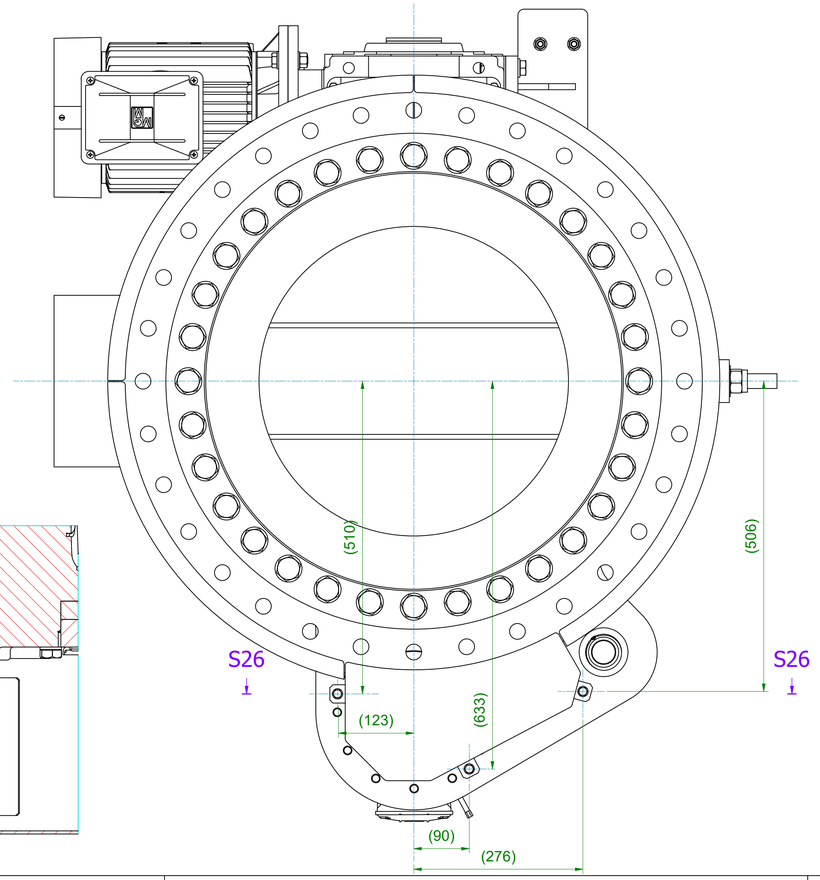
Sez. / Sec. **"S25-S25"**
(1 : 2)
Typ. (x9)



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



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

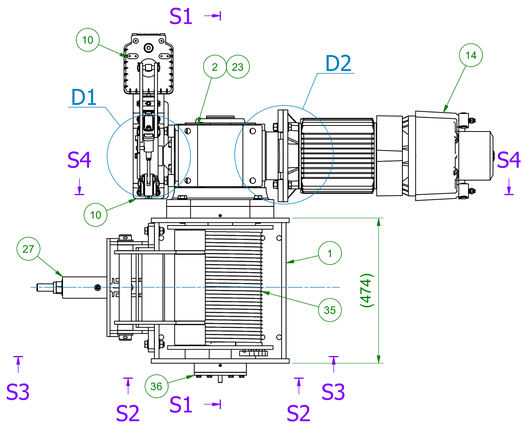


REV	DATE	DESCRIPTION	DRAFTMAN	DESIGNER	CALCULATION ENG.	P.E.
A	30/09/2024	Prima emissione / First issued	riccardo.sobani	Sobani R.	De Fazio F.	–

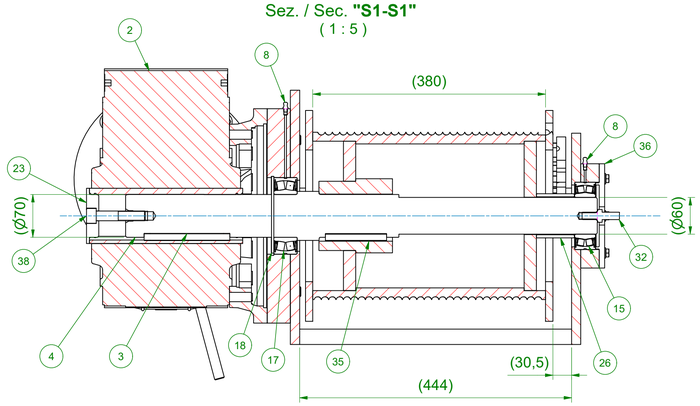
REMAZEL ENGINEERING
Chiuduno (BG) - 24060 - ITALY
Phone : +39-035-68.44.14 - Fax : +39-035-68.78.23
e-mail : info@remazel.com / website : www.remazel.com

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

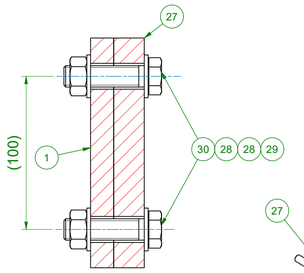
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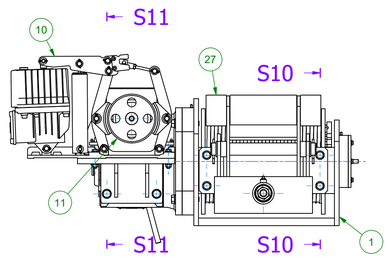


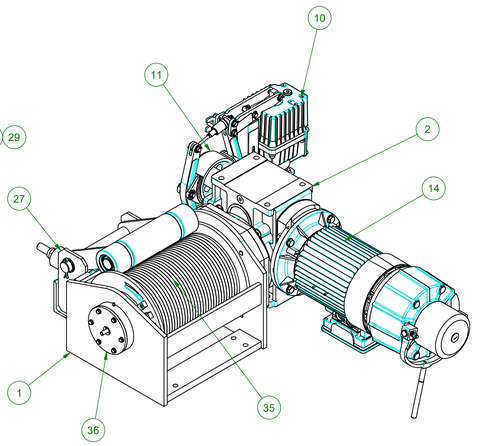
Sez. / Sec. **"S1-S1"**
(1 : 5)



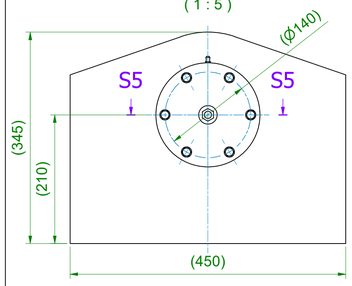
Sez. / Sec. **"S10-S10"**
(1 : 2)
Typ. (x2)



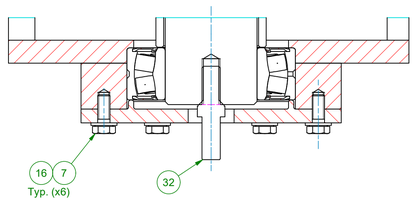




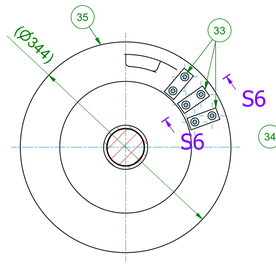
Sez. / Sec. **"S2-S2"**
(1 : 5)



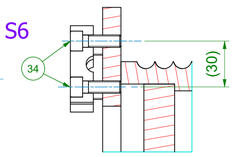
Sez. / Sec. **"S5-S5"**
(1 : 2)



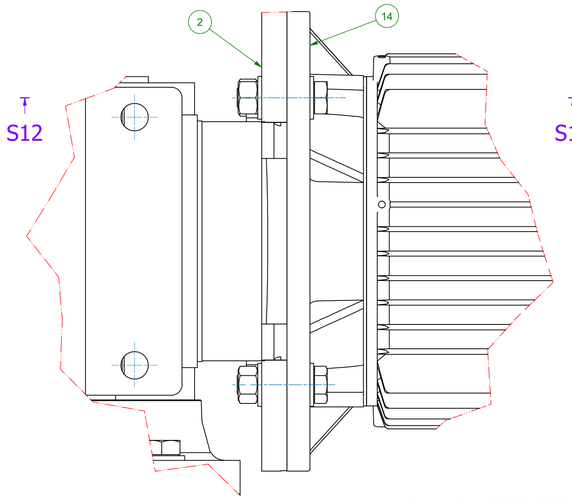
Sez. / Sec. **"S3-S3"**
(1 : 5)



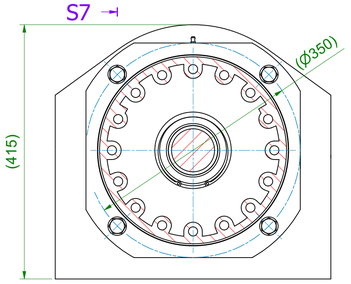
Sez. / Sec. **"S6-S6"**
(1 : 2)
Typ. (x3)



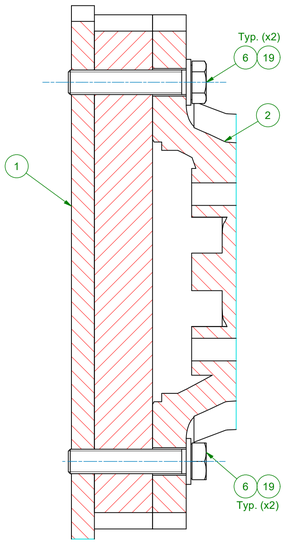
Dett. / Detail **"D2"**
(1 : 2)



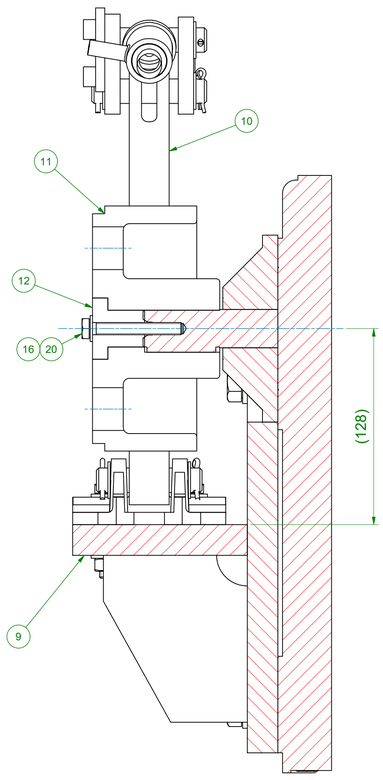
Sez. / Sec. **"S4-S4"**
(1 : 5)



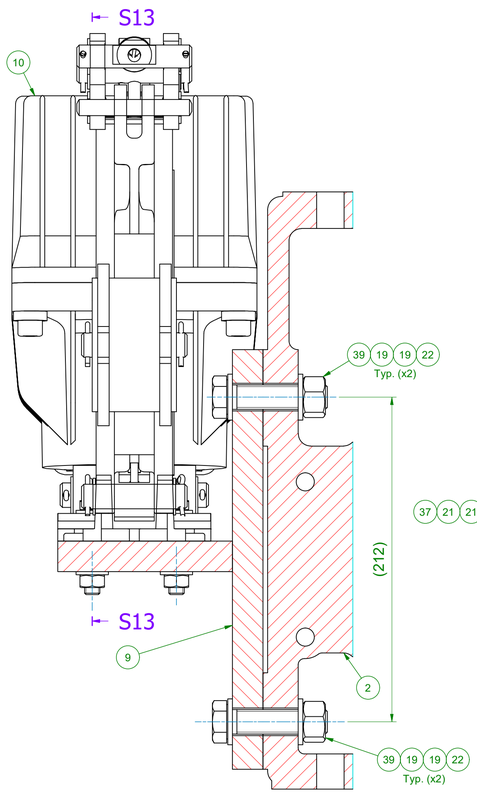
Sez. / Sec. **"S7-S7"**
(1 : 2)



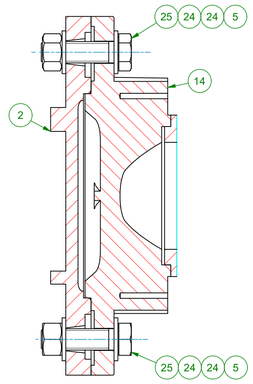
Sez. / Sec. **"S8-S8"**
(1 : 2)



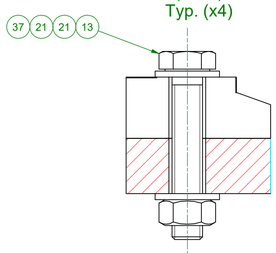
Sez. / Sec. **"S11-S11"**
(1 : 2)



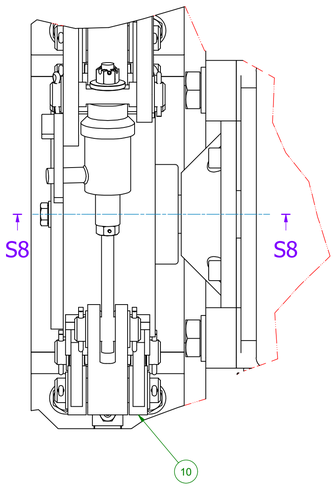
Sez. / Sec. **"S12-S12"**
(1 : 2)
Typ. (x2)



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



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



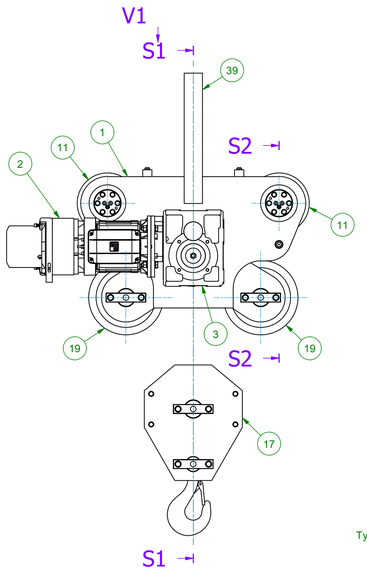
39	004-0147-C0001	Hexagonal nut	4	0 kg
38	004-0012-C0117	Hex socket head cap screw	1	0,2 kg
37	004-0147-C0002	Hexagonal nut	4	0 kg
36	C09-0001-P0087	Lateral Cap Winch	1	1,6 kg
35	C09-0001-P0085	Winch Box	1	64,1 kg
34	004-0012-C0006	Hex socket cilindrical head screw	6	0 kg
33	C09-0001-P0003	Stop rope	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.	–

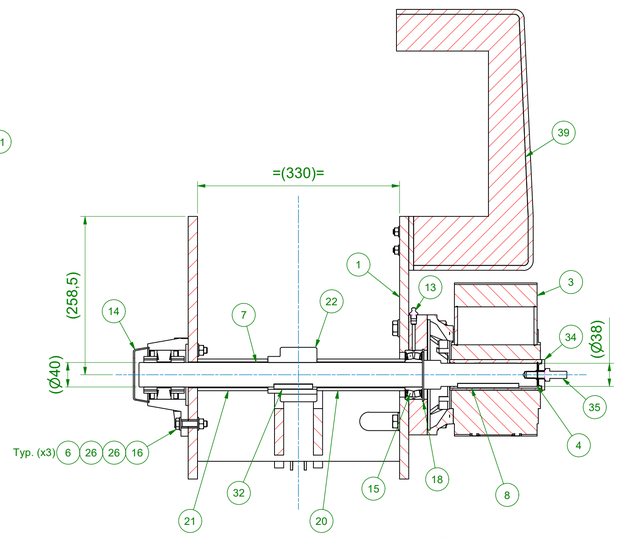
REMAZEL ENGINEERING
Chiuduno (BG) - 24060 - ITALY
Phone : +39-035-68.44.14 - Fax : +39-035-68.78.23
e-mail : info@remazel.com / website : www.remazel.com

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

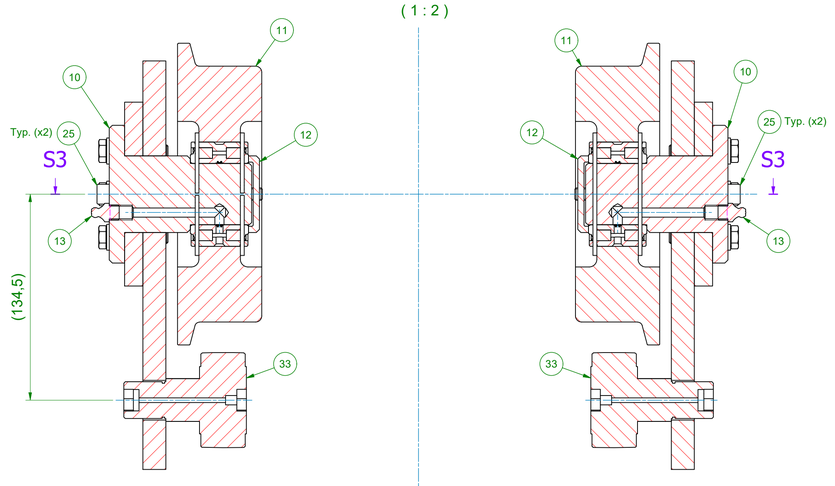
This drawing is property of REMAZEL ENGINEERING S.p.A. It is strictly forbidden to copy, reproduce, modify or distribute the drawing to third persons without owner's written permission.

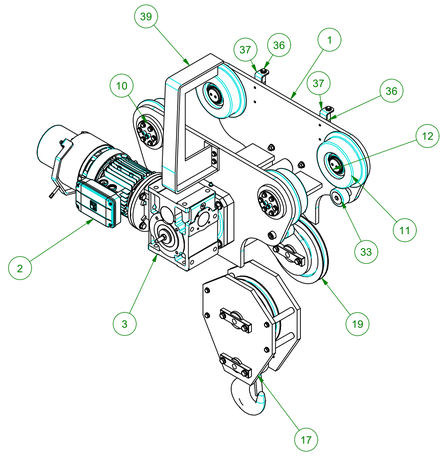


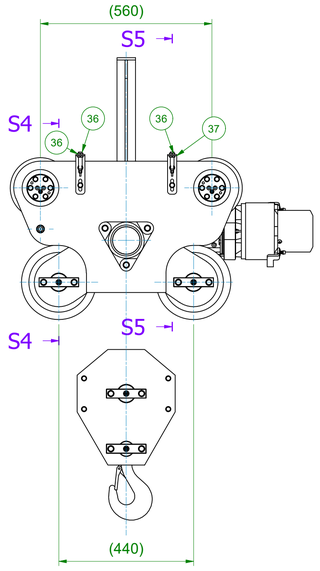
Sez. / Sec. **"S1-S1"**
(1 : 5)



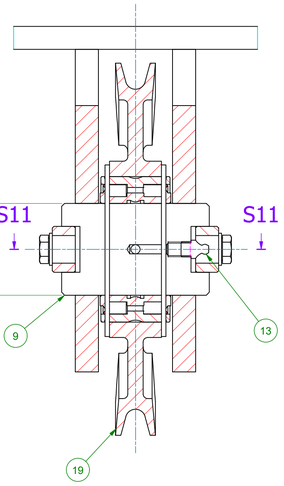
Sez. / Sec. **"S2-S2"**
(1 : 2)



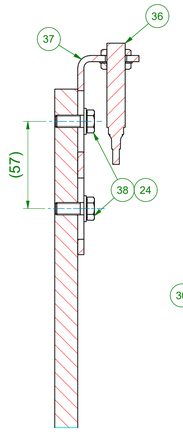




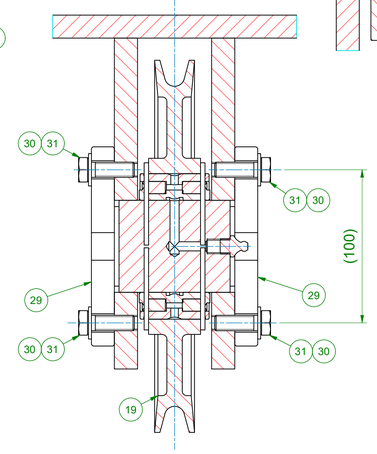
Sez. / Sec. **"S4-S4"**
(1 : 2)



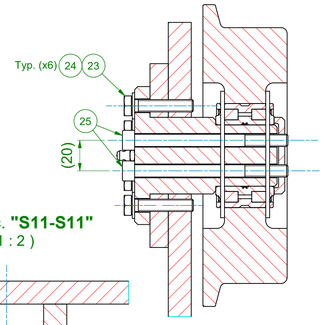
Sez. / Sec. **"S5-S5"**
(1 : 2)

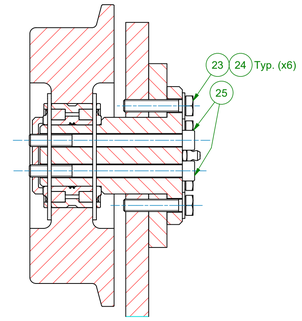


Sez. / Sec. **"S11-S11"**
(1 : 2)

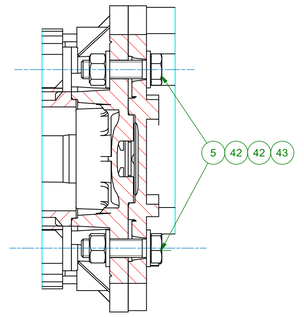


Sez. / Sec. **"S3-S3"**
(1 : 2)
Typ. (x2)

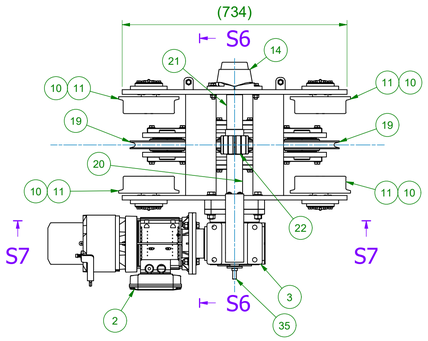




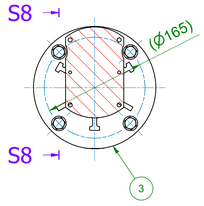
Sez. / Sec. **"S8-S8"**
(1 : 2)
Typ. (x2)



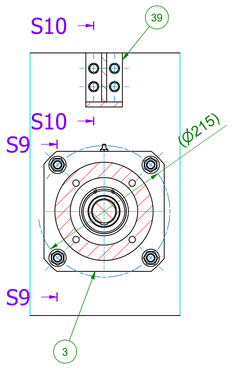
Vista da / View from **"V1"**
(1 : 10)



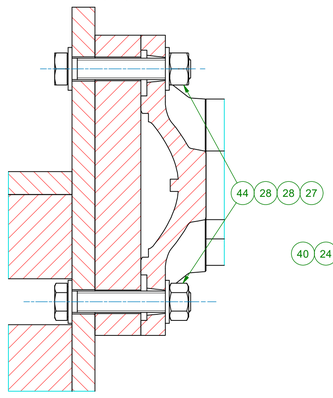
Sez. / Sec. **"S6-S6"**
(1 : 5)



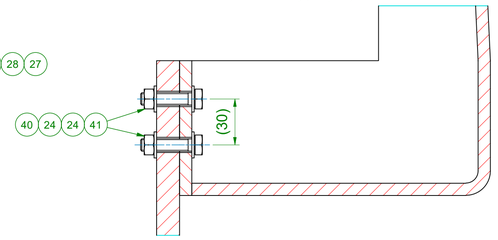
Sez. / Sec. **"S7-S7"**
(1 : 5)



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

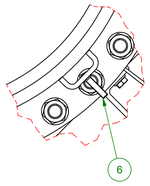
REV	DATE	DESCRIPTION	DRAFTMAN	DESIGNER	CALCULATION ENG.	P.E.
A		Prima emissione / First issued	riccardo.sobani	Sobani R.	De Fazio F.	–

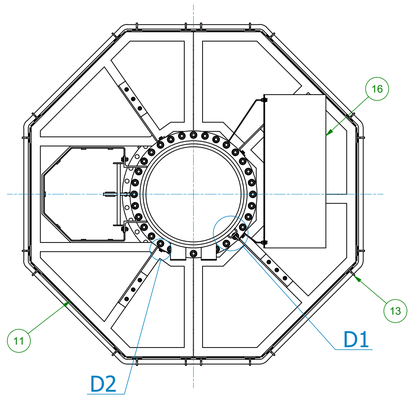
REMAZEL ENGINEERING
Chiuduno (BG) - 24060 - ITALY
Phone : +39-035-68.44.14 - Fax : +39-035-68.78.23
e-mail : info@remazel.com / website : www.remazel.com

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

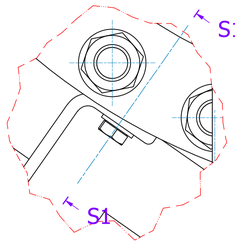
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Dett. / Detail **"D1"**
(1 : 5)

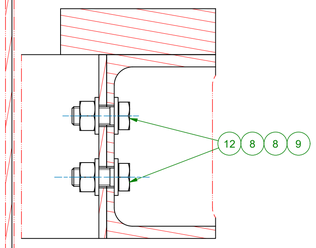


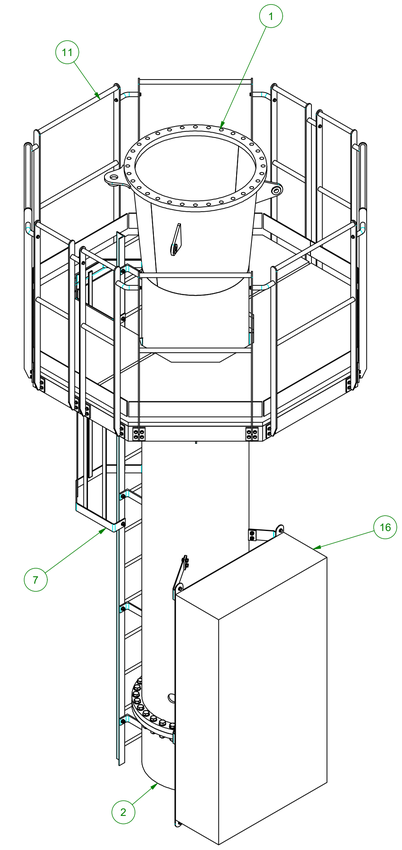


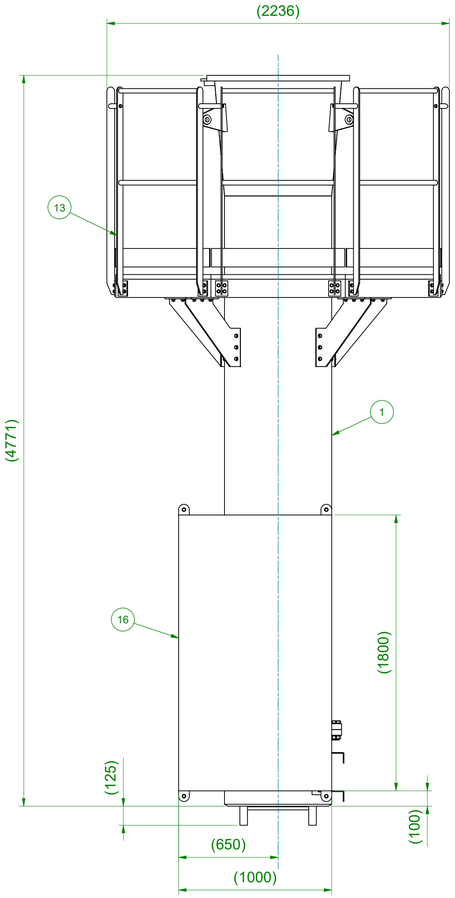
Dett. / Detail **"D2"**
(1 : 2)

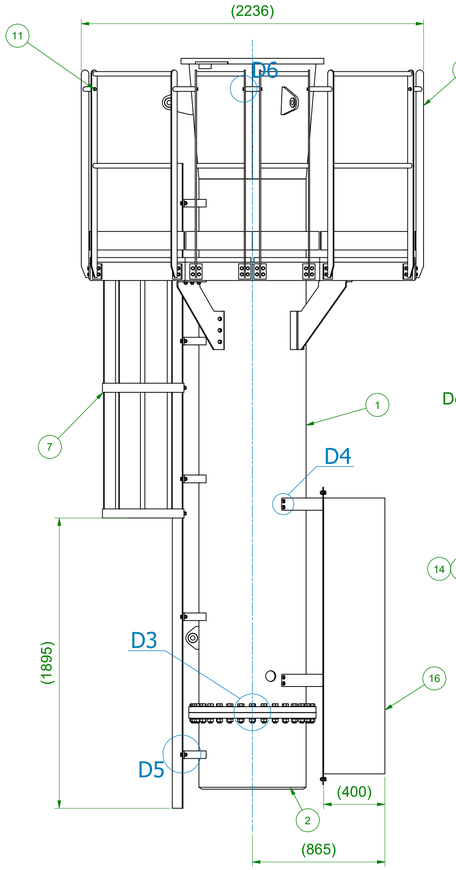


Sez. / Sec. **"S1-S1"**
(1 : 2)
Typ. (x4)

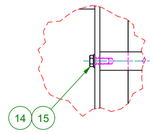


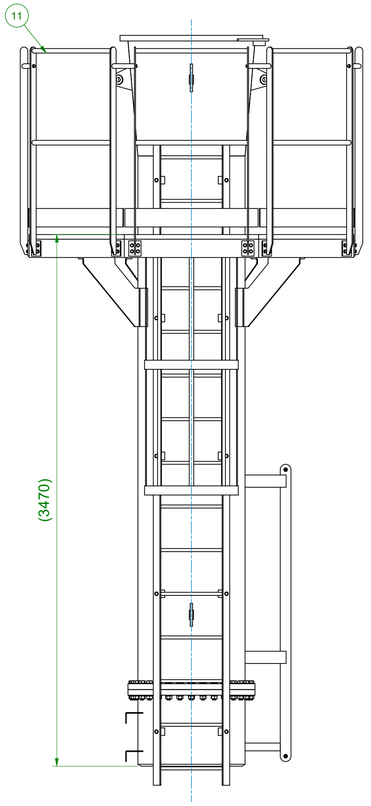


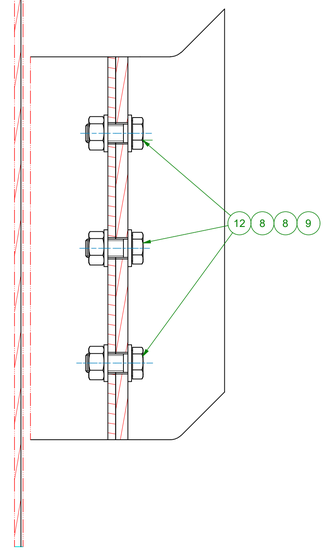




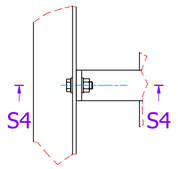
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(1 : 5)
Typ. (x2)



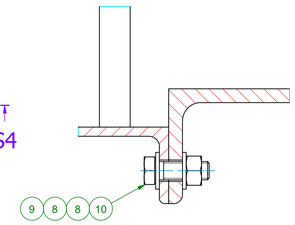




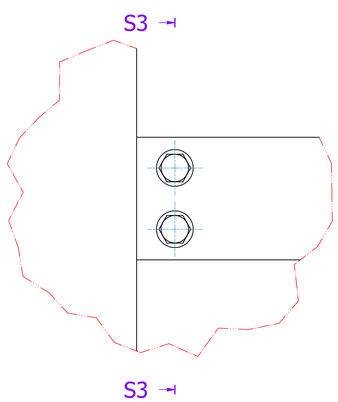
Dett. / Detail **"D5"**
(1 : 5)



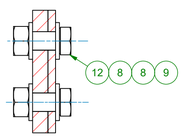
Sez. / Sec. **"S4-S4"**
(1 : 2)

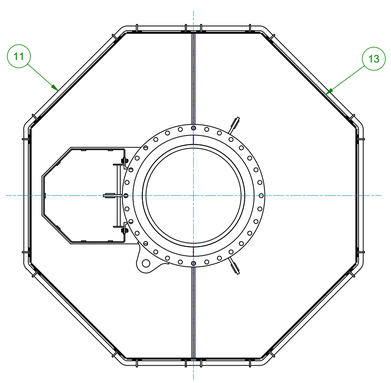


Dett. / Detail **"D4"**
(1 : 2)

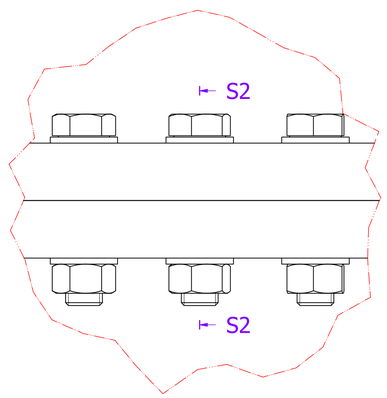


Sez. / Sec. **"S3-S3"**
(1 : 2)
Typ. (x4)

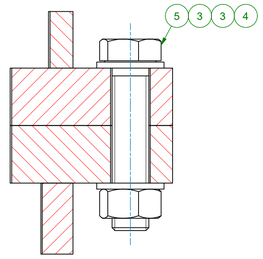




Dett. / Detail **"D3"**
(1 : 2)



Sez. / Sec. **"S2-S2"**
(1 : 2)
Typ. (x26)



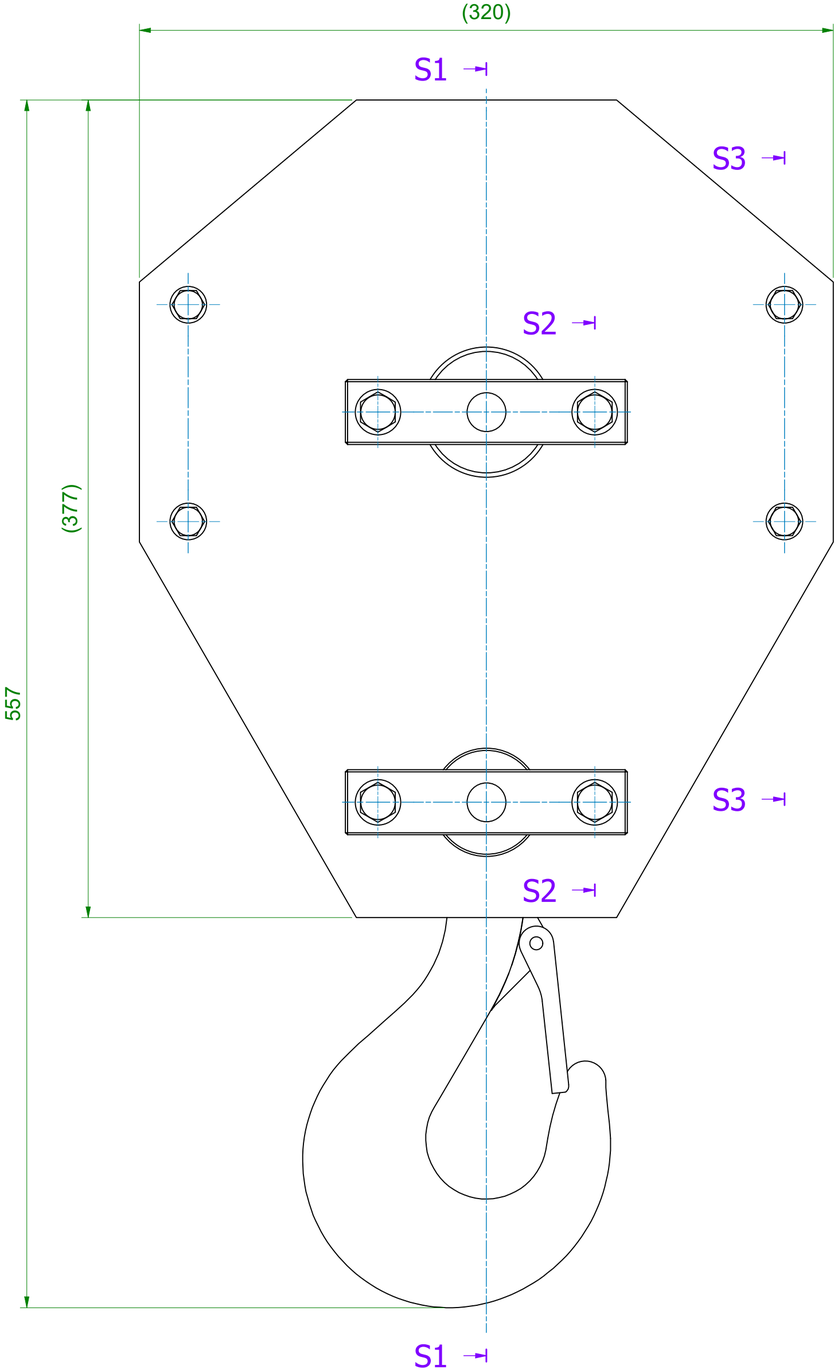
16	C09-0001-A0016	Eletric JB Assembly	1	88,7 kg
15	004-0011-C0008	Hex head screw fully threaded	2	0 kg
14	004-0023-C0082	Plain washer	2	0 kg
13	C09-0001-A0015	Fore Gangway Assembly	1	574,1 kg
12	004-0011-C0060	Hex head screw fully threaded	54	0 kg
11	C09-0001-A0010	Aft Gangway Assembly	1	487,4 kg
10	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.	–

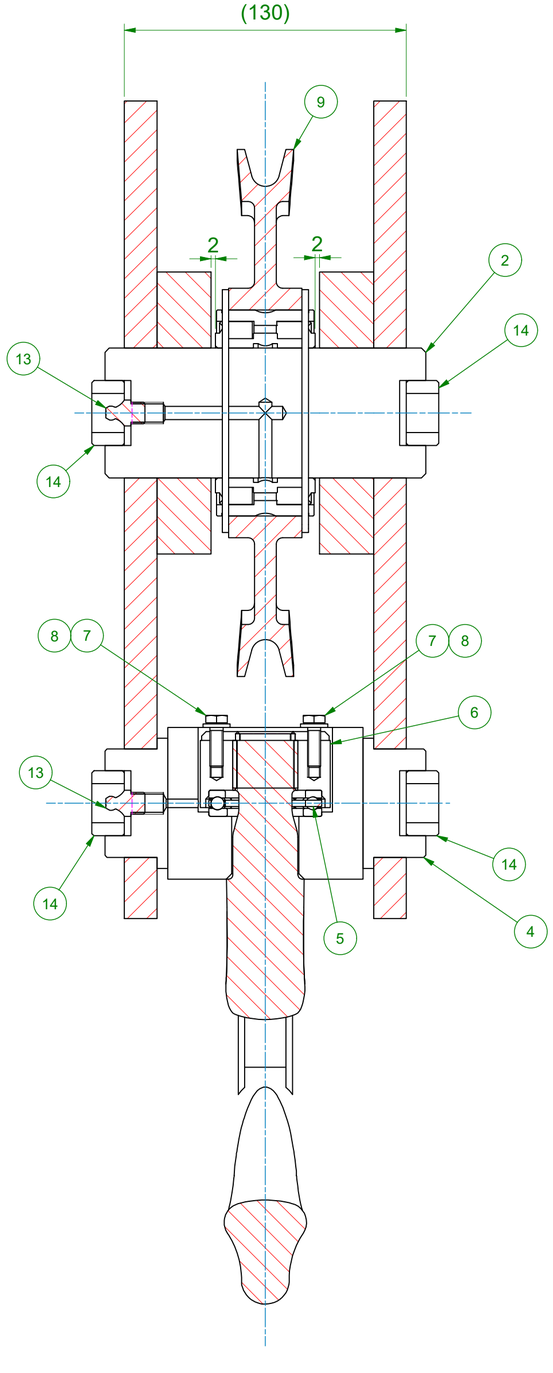
REMAZEL ENGINEERING
Chiuduno (BG) - 24060 - ITALY
Phone : +39-035-68.44.14 - Fax : +39-035-68.78.23
e-mail : info@remazel.com - website : www.remazel.com

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

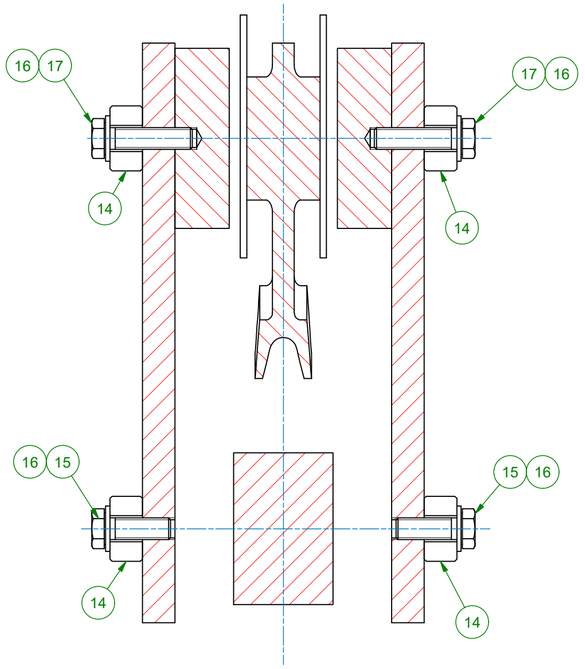
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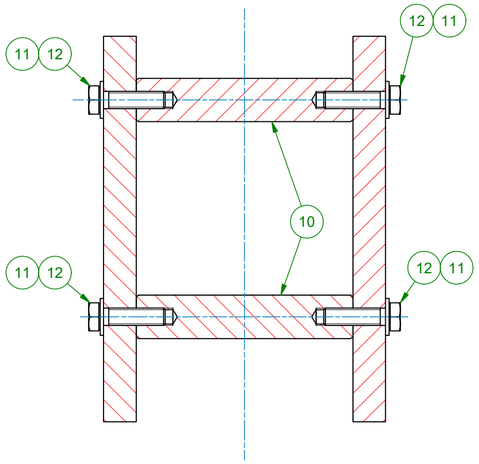
Sez. / Sec. **"S1-S1"**
(1 : 2)

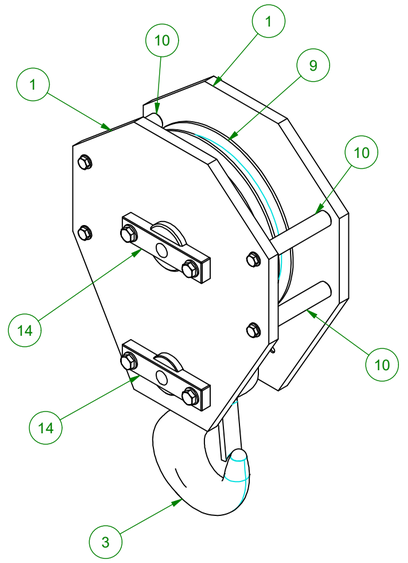


Sez. / Sec. **"S2-S2"**
(1 : 2)



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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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**

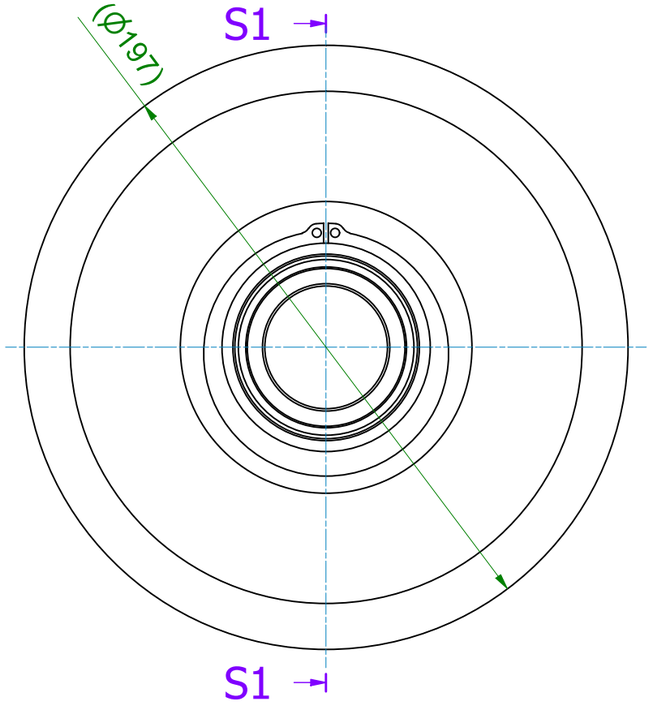
Drawing State: **Work in Progress** / ***FOR CONSTRUCTION***

Q.C.L. : C3

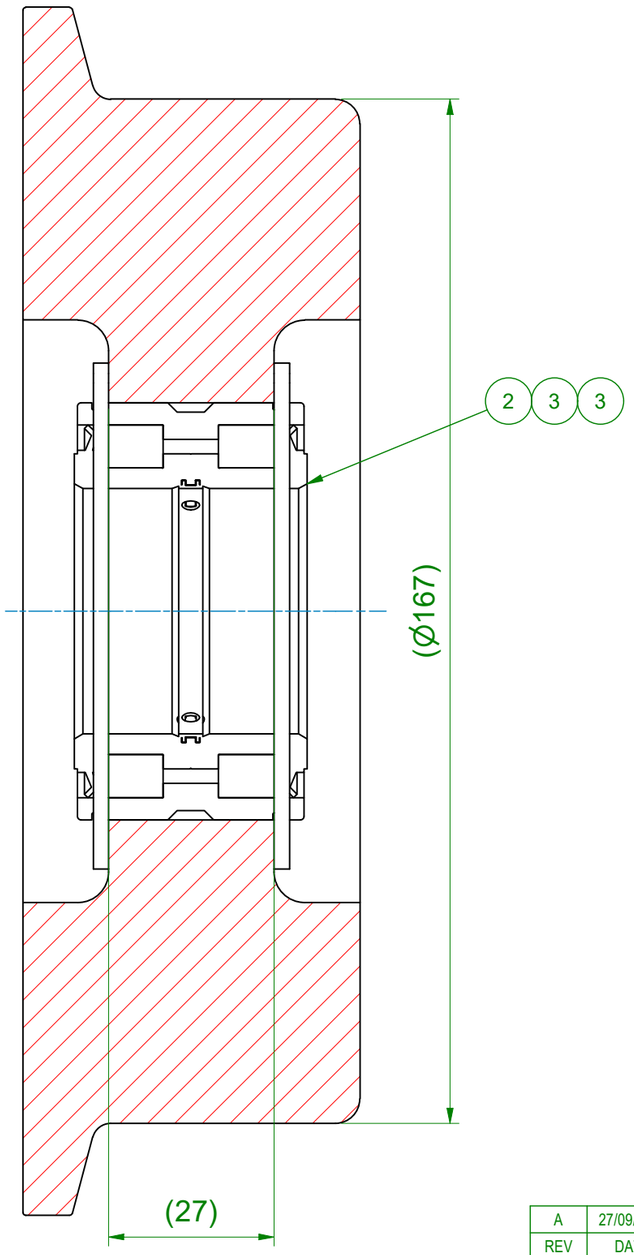
Drawing N° : C09-0001-A0007

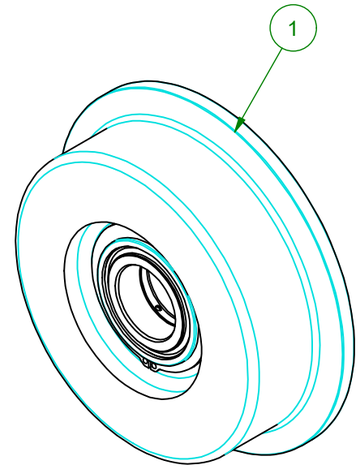
Revision : A

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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

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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

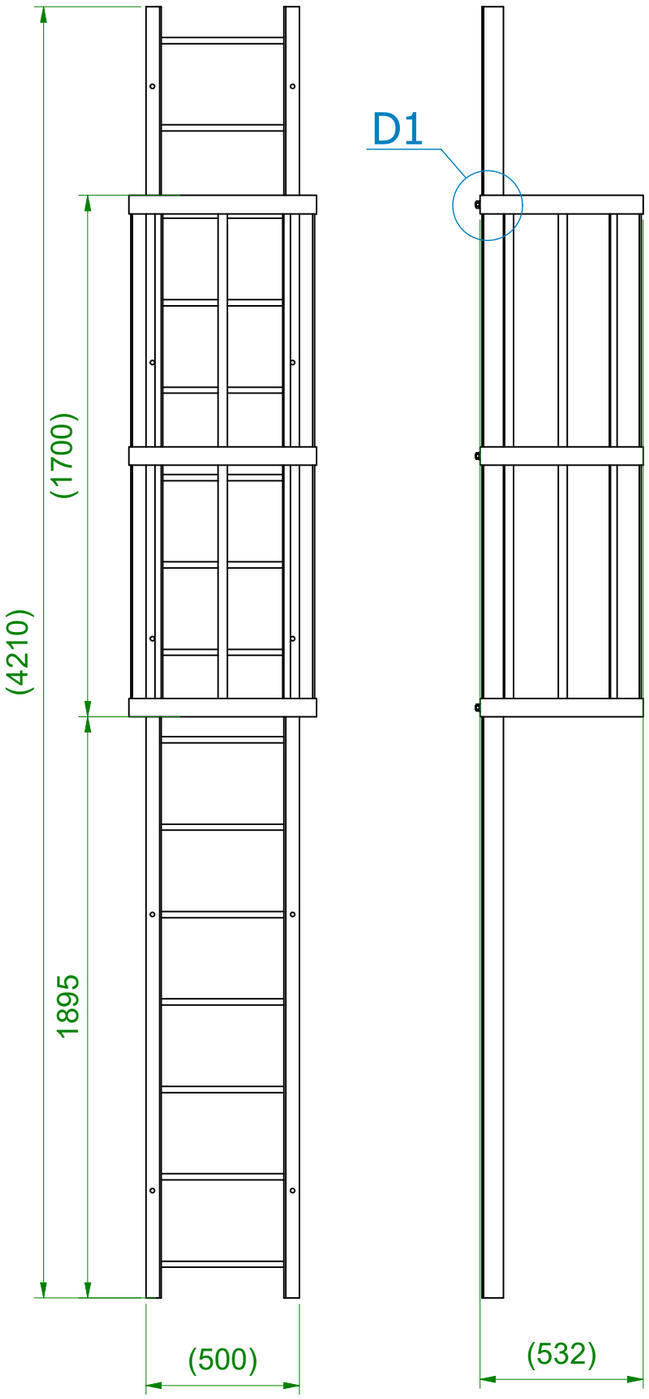
Drawing State:
Work in Progress
FOR CONSTRUCTION

Q.C.L. :
C3

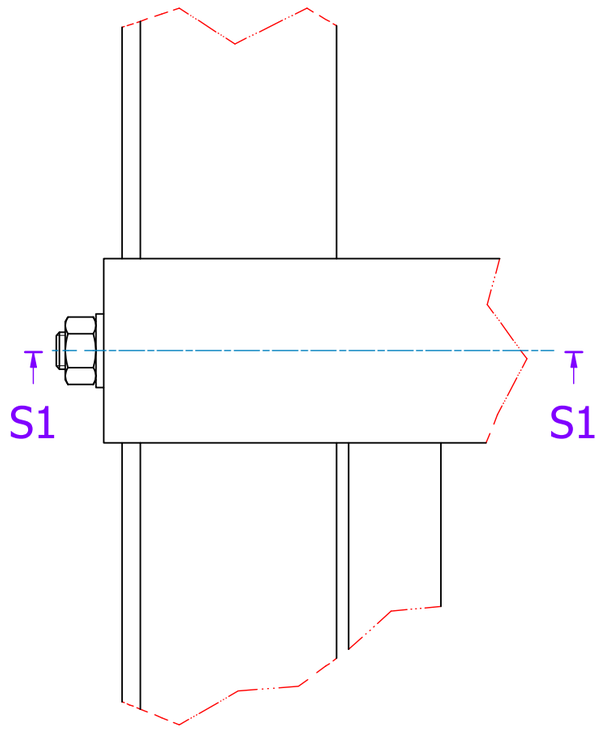
Drawing N° :
C09-0001-A0008

Revision :
A

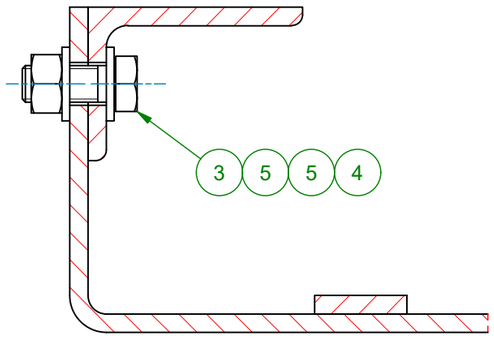
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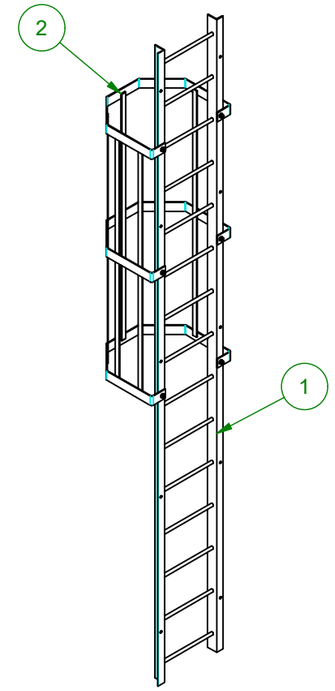


Dett. / Detail **"D1"**
(1 : 2)



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

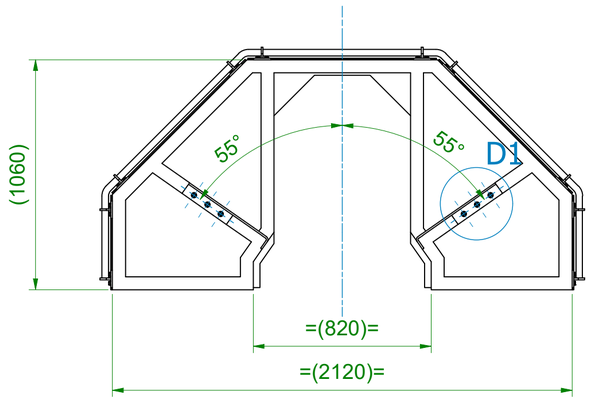
Drawing State:
Work in Progress
FOR CONSTRUCTION

Q.C.L. :
C3

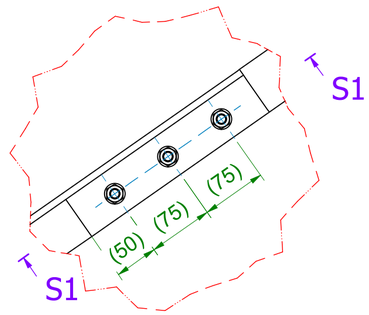
Drawing N° :
C09-0001-A0009

Revision :
A

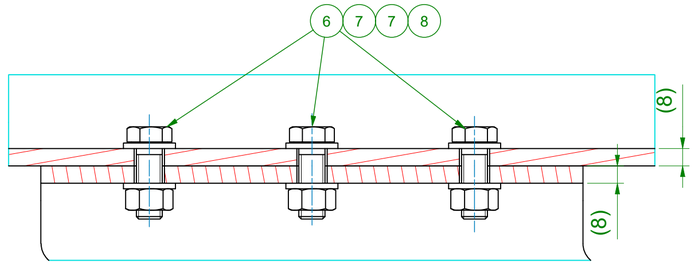
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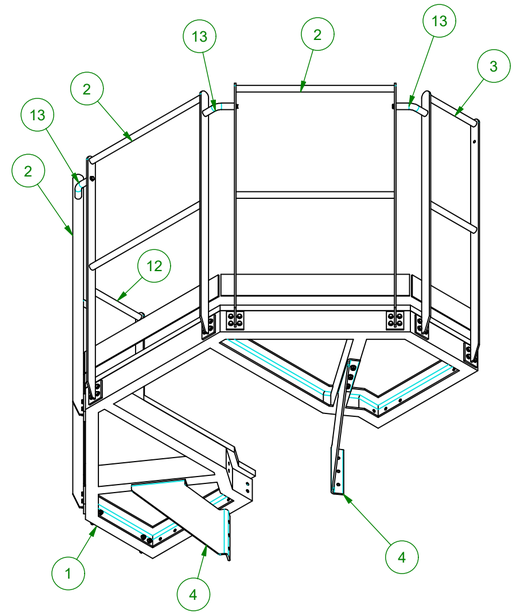


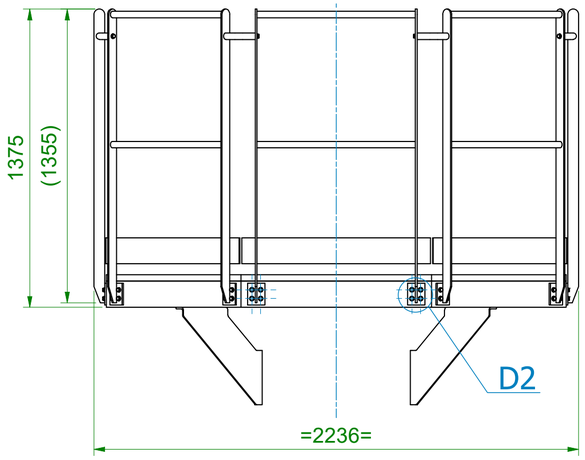
Dett. / Detail **"D1"**
(1 : 5)

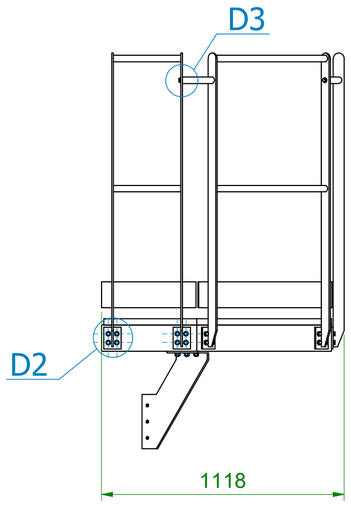


Sez. / Sec. **"S1-S1"**
(1 : 2)

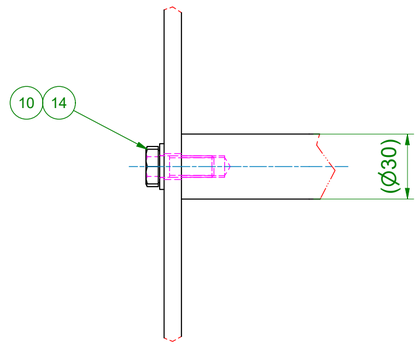




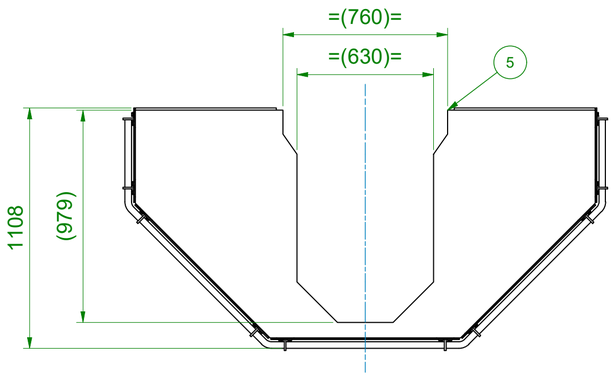




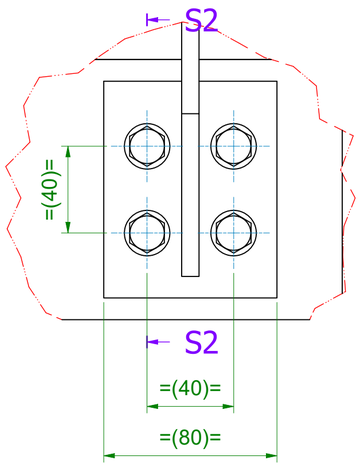
Dett. / Detail **"D3"**
(1 : 2)



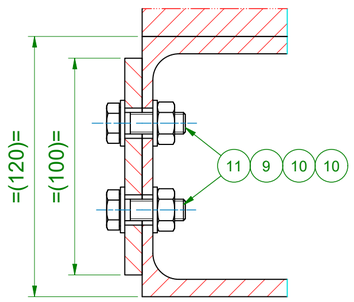
EL.	PART NUMBER	DESCRIPTION ENG	Q.TY	WEIGHT
14	004-0011-C0008	Hex head screw fully threaded	8	0 kg
13	C09-0001-P0079	Handrail Angular Fix	4	0,9 kg
12	C09-0001-P0078	Handrail 3	1	13,2 kg
11	004-0011-C0001	Hex head screw fully threaded	40	0 kg
10	004-0023-C0082	Plain washer	88	0 kg
9	004-0021-C0012	Hexagonal 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

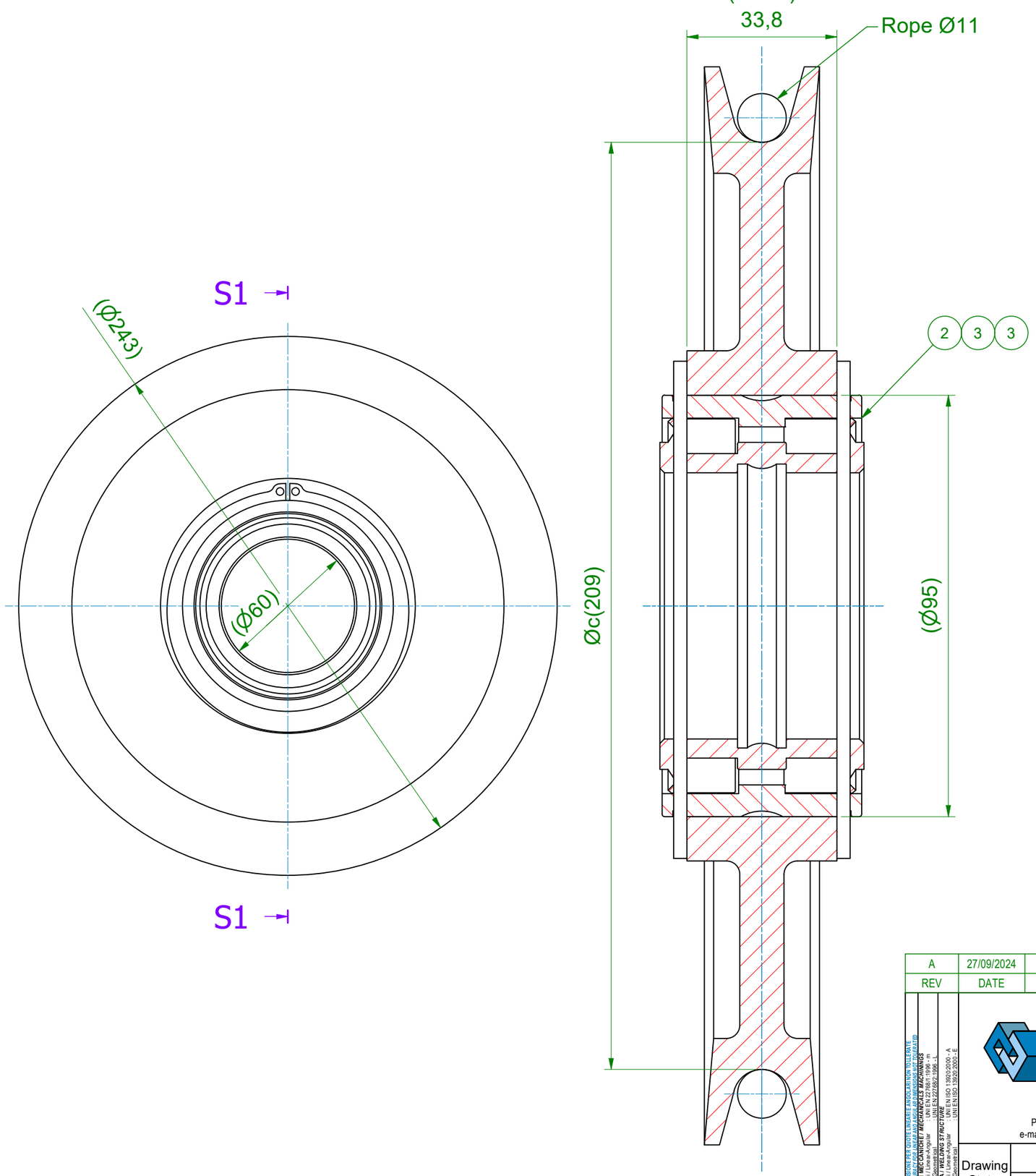
Q.C.L. :
C3

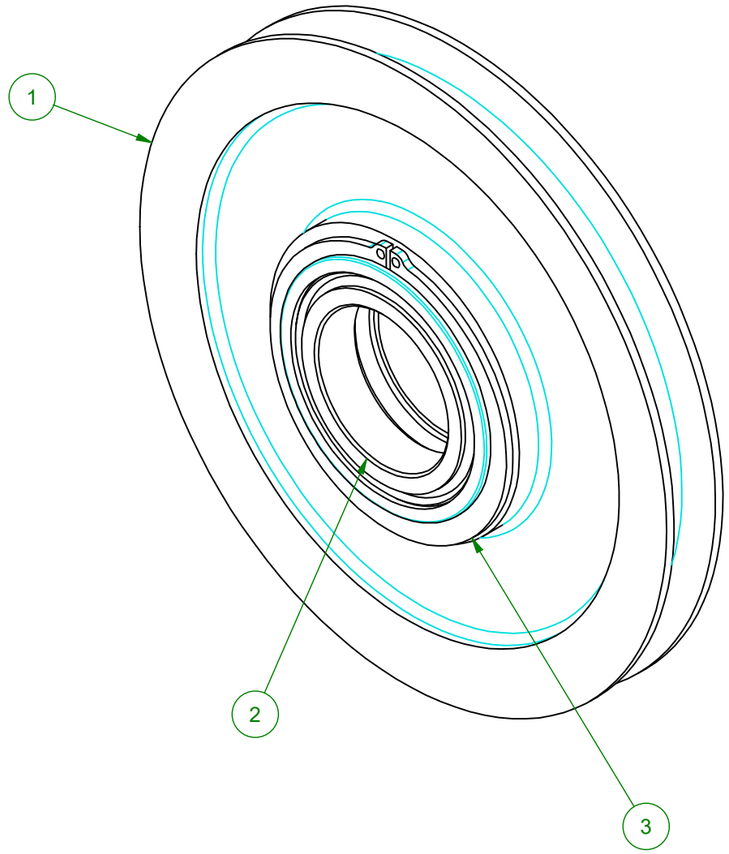
Drawing N° :
C09-0001-A0010

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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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

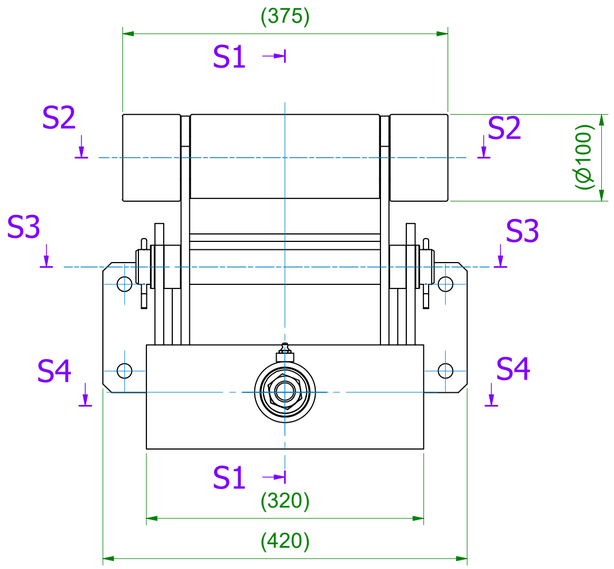
Drawing State:
Work in Progress
FOR CONSTRUCTION

Q.C.L. :
C3

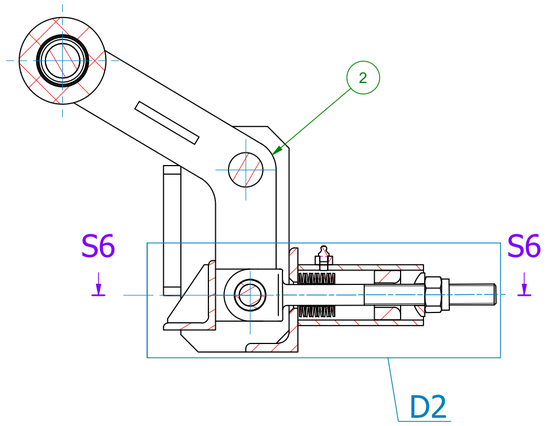
Drawing N° :
C09-0001-A0011

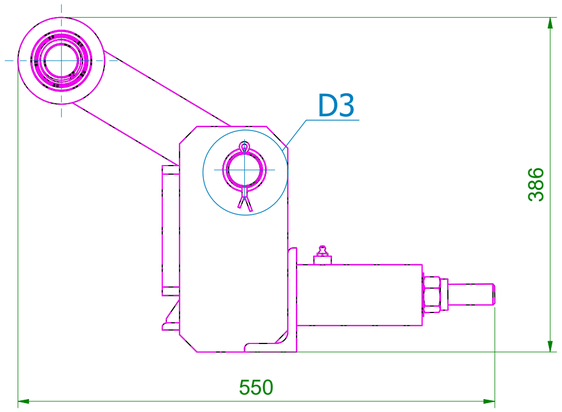
Revision :
A

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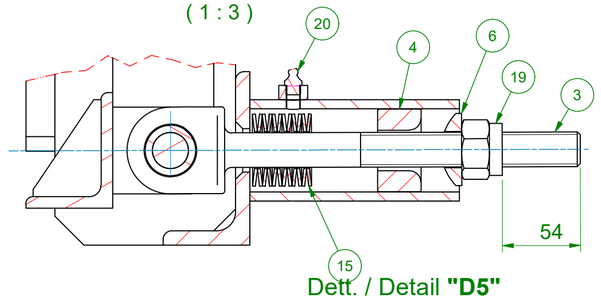


Sez. / Sec. **"S1-S1"**
(1 : 5)
ROPE PRESSING ROLLER ASSEMBLY
FIRST LAYER OF ROPE

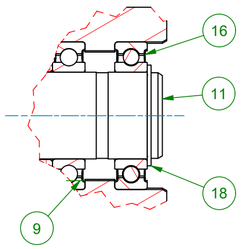




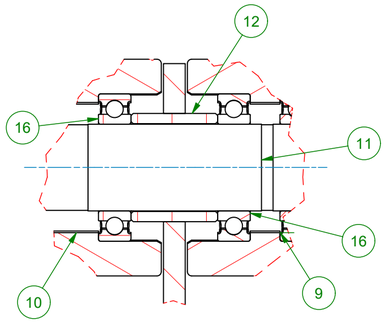
Dett. / Detail **"D2"**
(1 : 3)

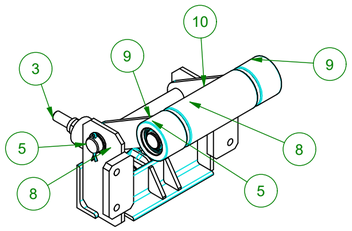


Dett. / Detail **"D4"**
(1 : 2)
Tipico / Typical

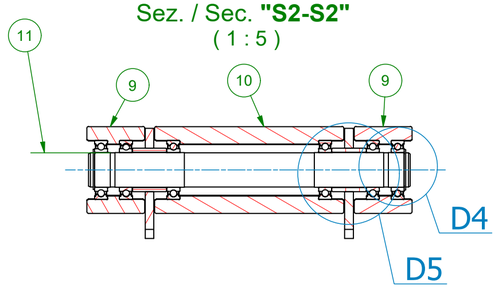


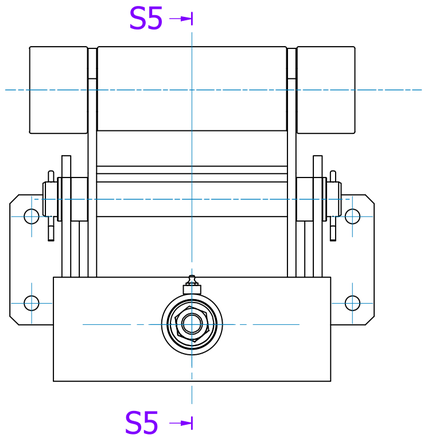
Dett. / Detail **"D5"**
(1 : 2)
Tipico / Typical



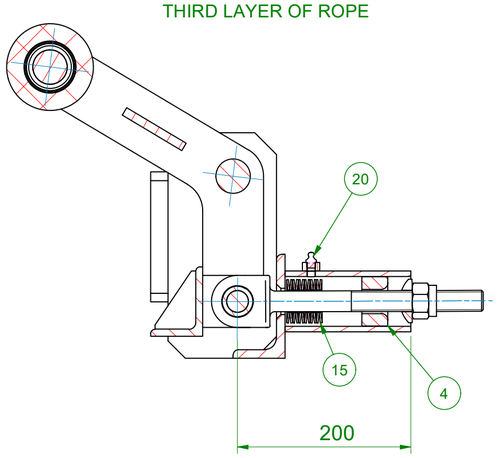


Sez. / Sec. **"S2-S2"**
(1 : 5)

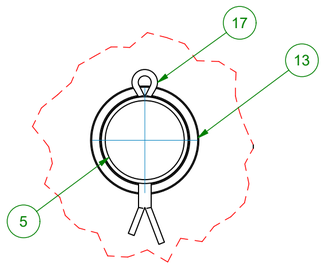




Sez. / Sec. **"S5-S5"**
(1 : 5)
ROPE PRESSING ROLLER ASSEMBLY
THIRD LAYER OF ROPE

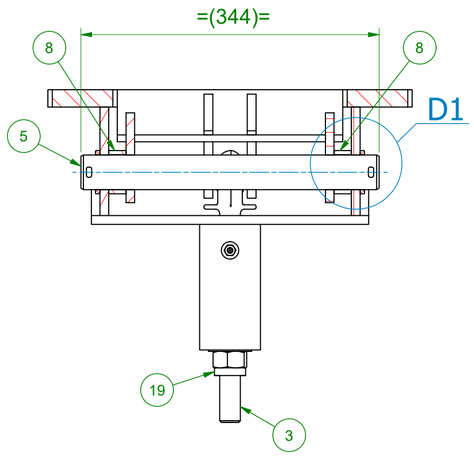


Dett. / Detail **"D3"**
(1 : 2)
Tipico / Typical

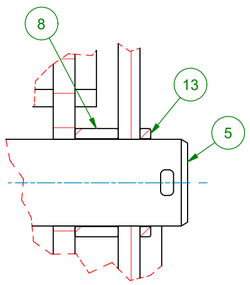


21	004-0029-C0090	Seeger ring for shaft	2	0 kg
20	004-0035-C0029	Greaser	1	0 kg
19	004-0032-C0060	Hexagonal nut	1	0,2 kg
18	004-0029-C0118	Seeger ring for shaft	2	0 kg
17	004-0028-C0120	Cotter pin	2	0 kg
16	R-000358589	Deep groove ball bearing	6	0,2 kg
15	R-000358588	Belleville Washer	12	0 kg
14	C09-0001-P0059	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

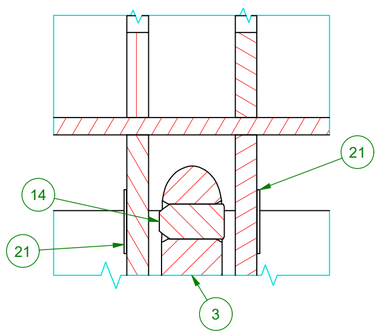
Sez. / Sec. **"S3-S3"**
(1 : 5)



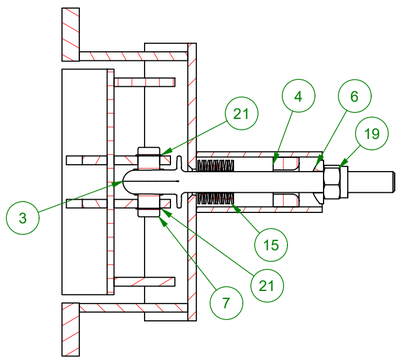
Dett. / Detail **"D1"**
(1 : 2)
Tipico / Typical



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



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

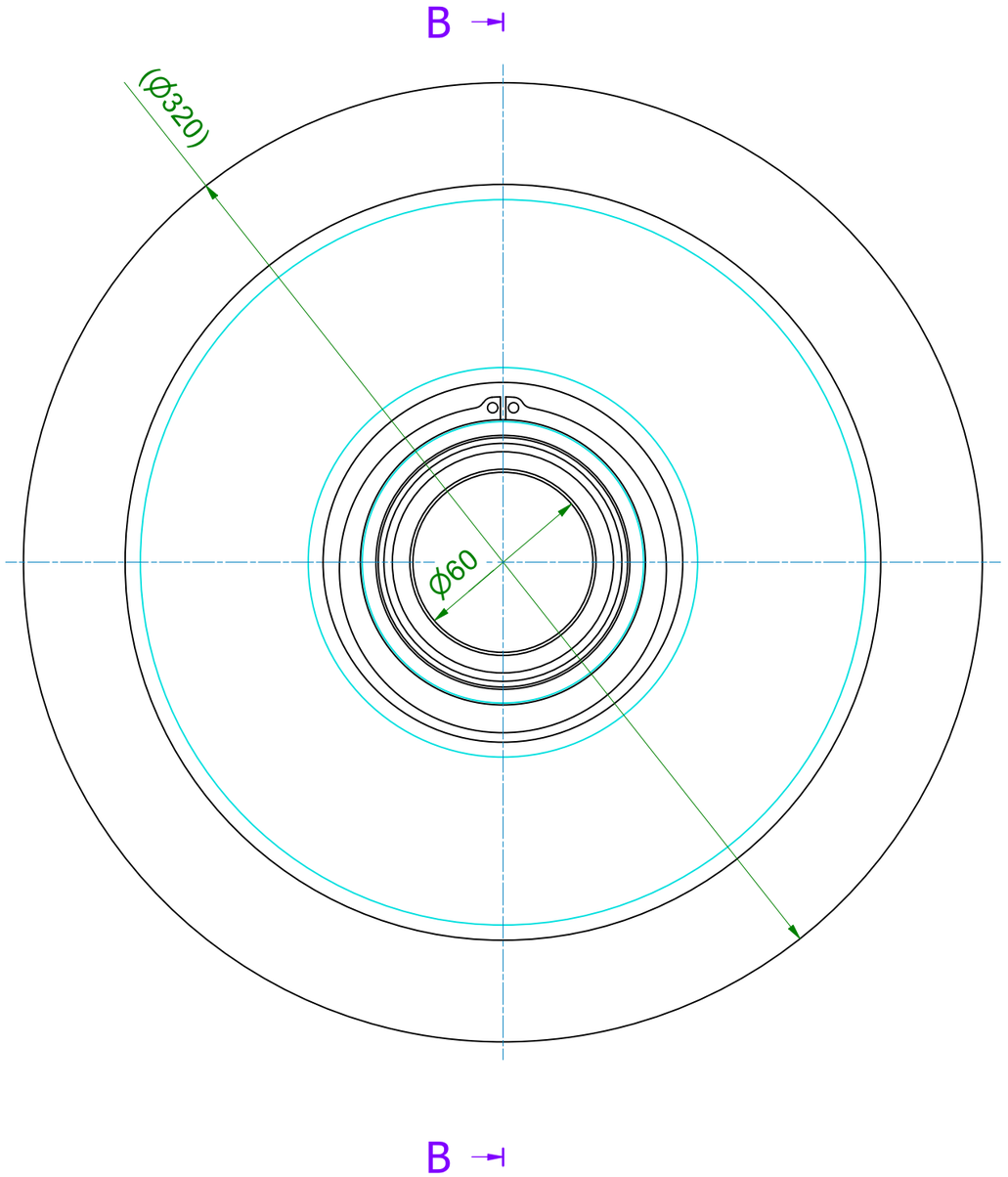


REV	DATE	DESCRIPTION	DRAFTMAN	DESIGNER	CALCULATION ENG.	
A	28/03/2022	Prima emissione / First issued	CONCRANESrl-Alppolit	Pittana A.	–	Boric M.

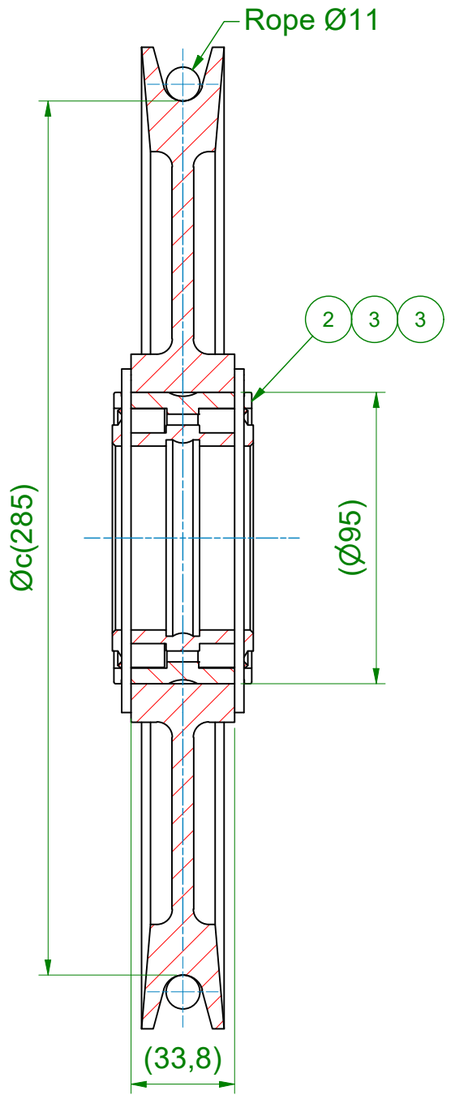
REMAZEL ENGINEERING
Chiuduno (BG) - 24060 - ITALY
Phone : +39-035-68.44.14 - Fax : +39-035-68.78.23
e-mail : info@remazel.com / website : www.remazel.com

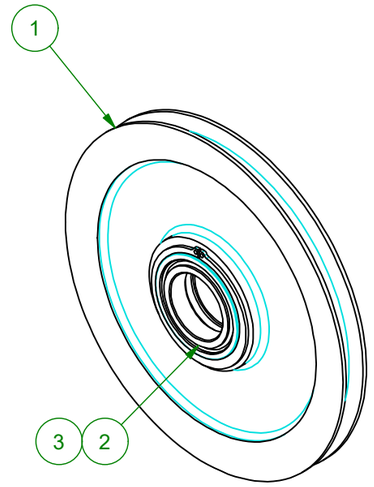
Project / Equipment : **C09-0001**
Weight : 38,4 kg
Title : Assieme premifune / Rope presser assembly
Scale : 1 : 5
Sheet : 2 of 2 — A2
Drawing State: **Work in Progress** / ***FOR CONSTRUCTION***
Q.C.L. : C3
Drawing N° : C09-0001-A0012
Revision : A

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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

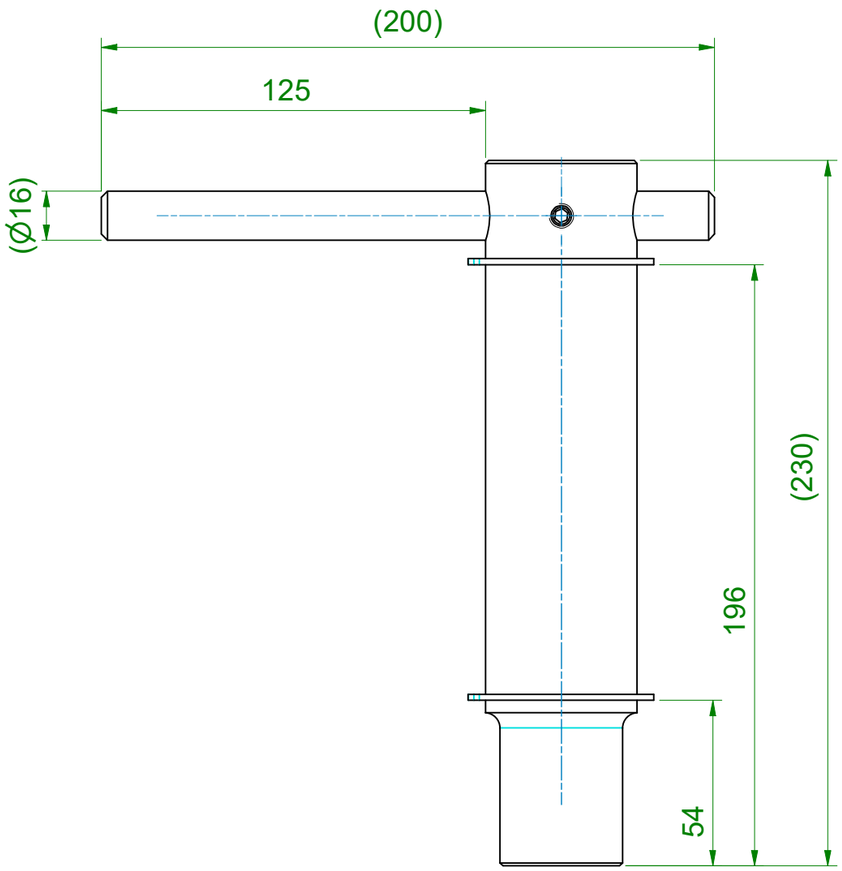
Drawing State:
Work in Progress
FOR CONSTRUCTION

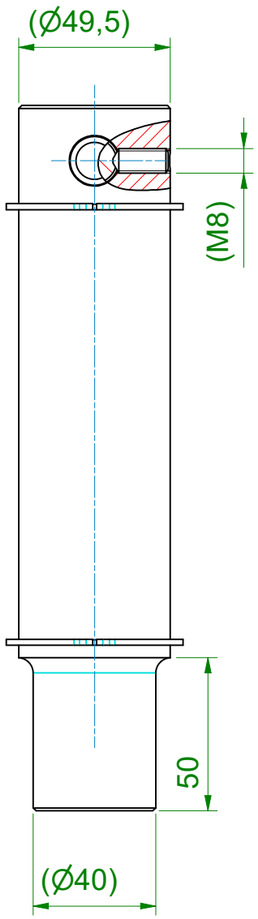
Q.C.L. :
C3

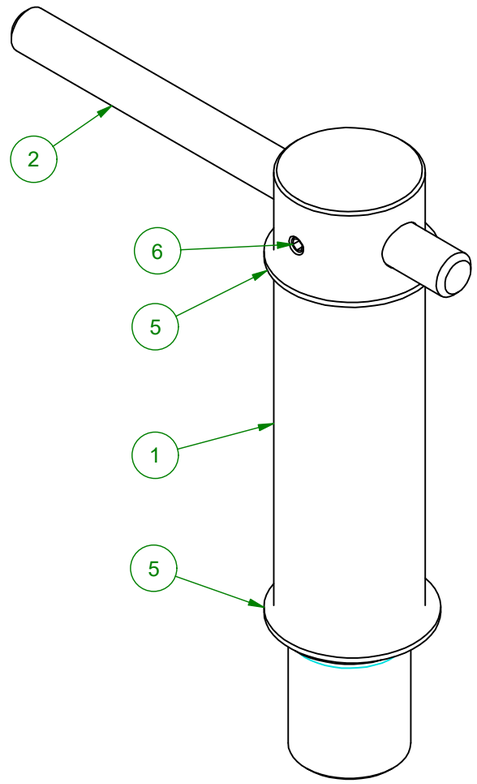
Drawing N° :
C09-0001-A0013

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

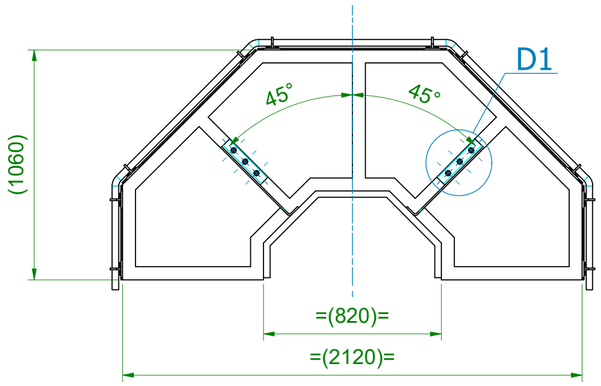
Drawing State:
Work in Progress
FOR CONSTRUCTION

Q.C.L. :
C3

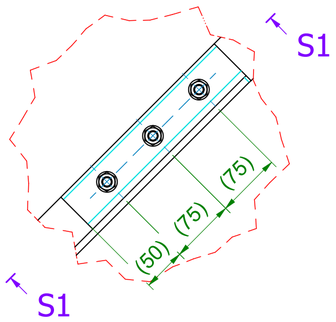
Drawing N° :
C09-0001-A0014

Revision :
A

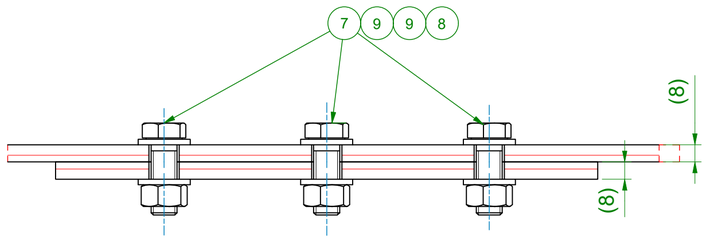
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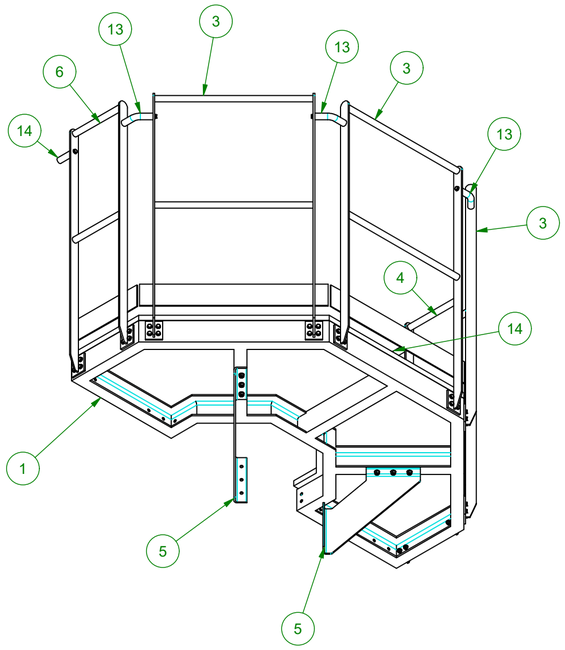


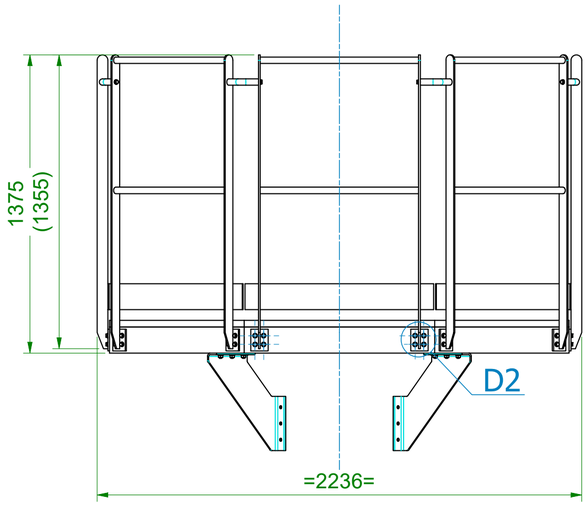
Dett. / Detail **"D1"**
(1 : 5)
Typ. (x2)

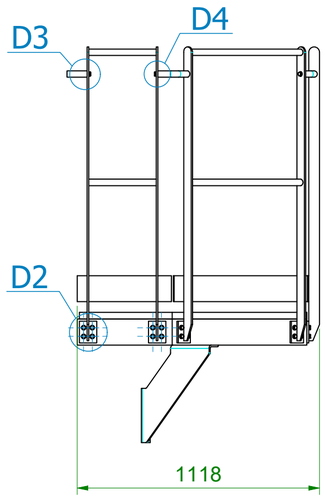


Sez. / Sec. **"S1-S1"**
(1 : 2)

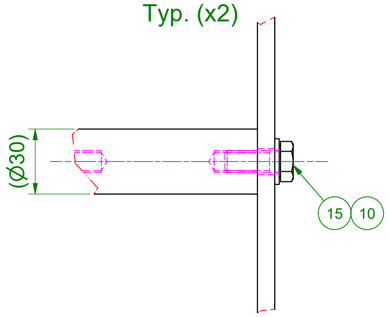




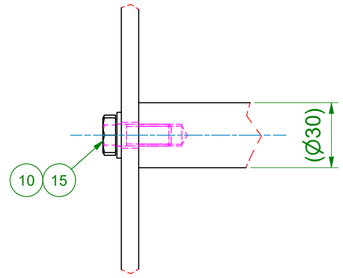


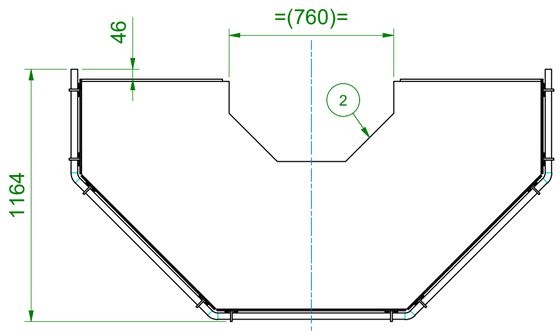


Dett. / Detail **"D3"**
(1 : 2)
Typ. (x2)

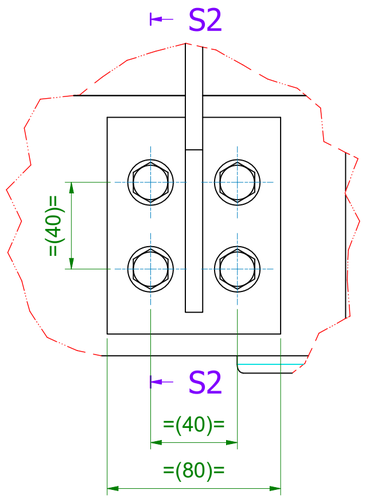


Dett. / Detail **"D4"**
(1 : 2)
Typ. (x8)

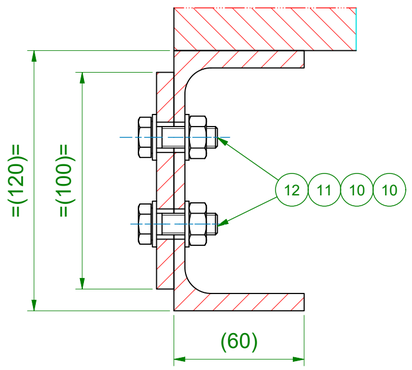




Dett. / Detail **"D2"**
(1 : 2)
Typ. (x10)



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



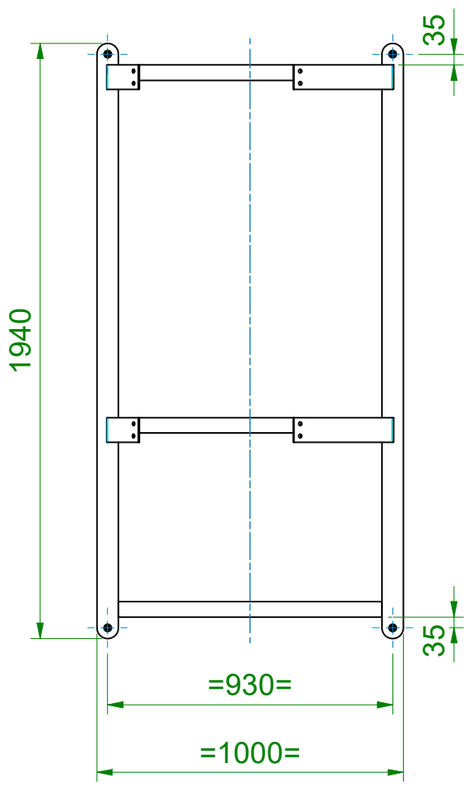
EL.	PART NUMBER	DESCRIPTION ENG	Q.TY	WEIGHT
15	004-0011-C0008	Hex head screw fully threaded	10	0 kg
14	C09-0001-P0080	Handrail Fix	2	0,5 kg
13	C09-0001-P0079	Handrail Angular Fix	4	0,9 kg
12	004-0011-C0001	Hex head screw fully threaded	40	0 kg
11	004-0021-C0012	Hexagonal nut	40	0 kg
10	004-0023-C0082	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

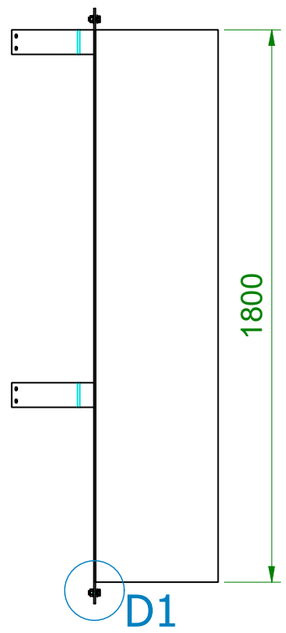
REV	DATE	DESCRIPTION	DRAFTMAN	DESIGNER	CALCULATION ENG.	P.E.
A	27/09/2024	Prima emissione / First issued	riccardo.sobani	Sobani R.	De Fazio F.	–

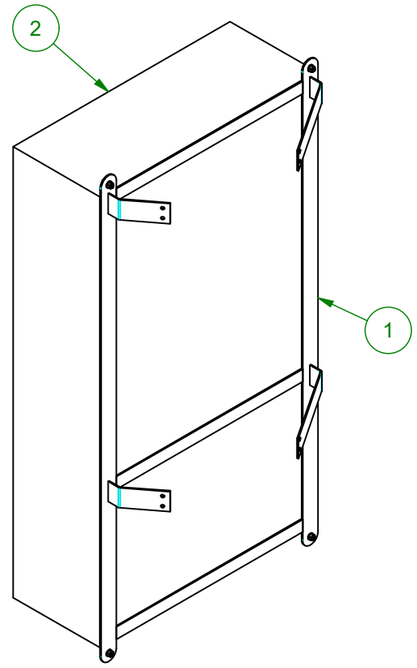
REMAZEL ENGINEERING
Chiuduno (BG) - 24060 - ITALY
Phone : +39-035-68.44.14 - Fax : +39-035-68.78.23
e-mail : info@remazel.com / website : www.remazel.com

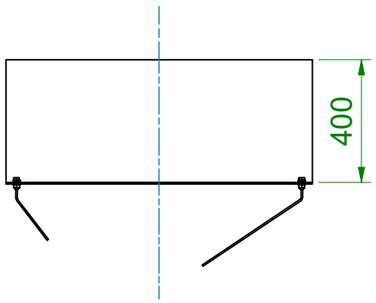
Project / Equipment : **C09-0001**
Weight : 574,1 kg
Title : Assieme Passerrella Anteriore / Fore Gangway Assembly
Scale : 1 : 20
Sheet : 2 of 2 **A2**
Drawing State: **Work in Progress** / ***FOR CONSTRUCTION***
Q.C.L. : C3
Drawing N° : C09-0001-A0015
Revision : A

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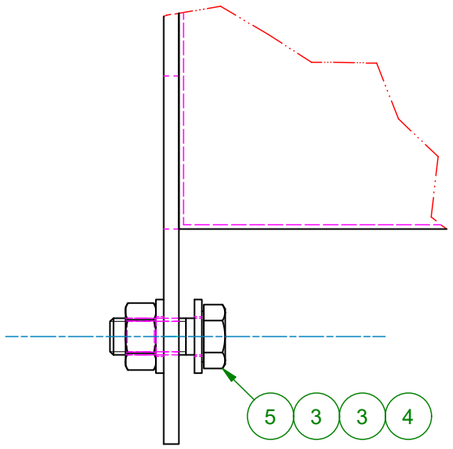








Dett. / Detail **"D1"**
(1 : 2)



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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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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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
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

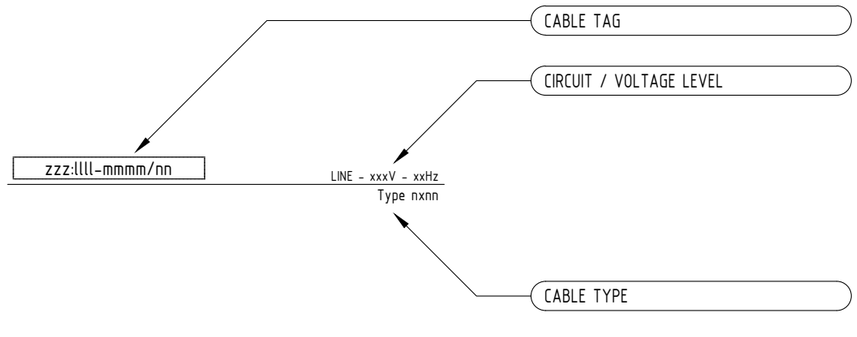
REV. 00

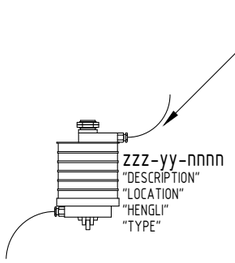
F.to UNI A3: 420mmx297mm

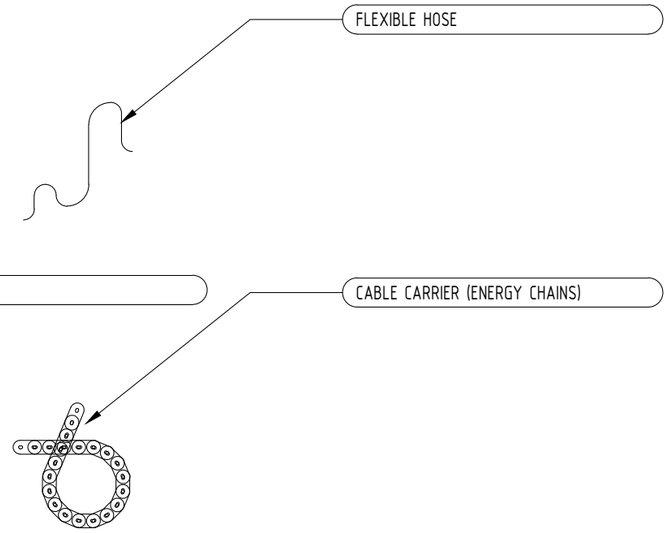
File Name : 24-27012-BD-001 Rev. 01

DAVIT CRANE: 24-27012
BLOCK DIAGRAM

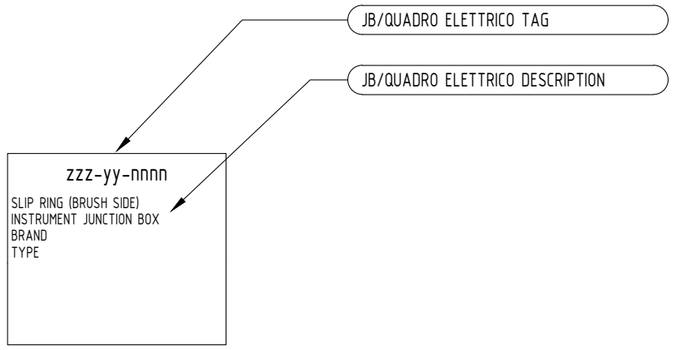
LEGEND SYMBOL

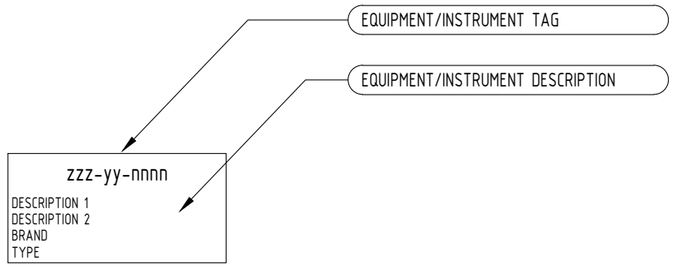


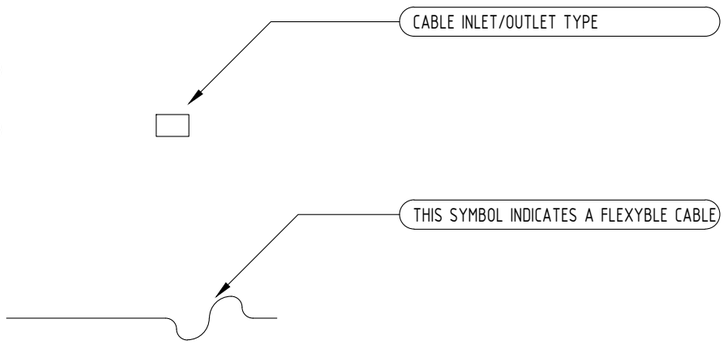




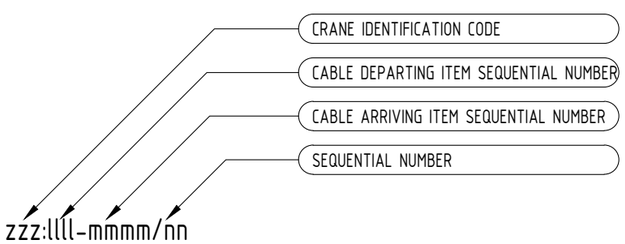
SHIPYARD SCOPE OF SUPPLY CABLE
CONNECTIONS TO BE MADE BY THE SHIPYARD



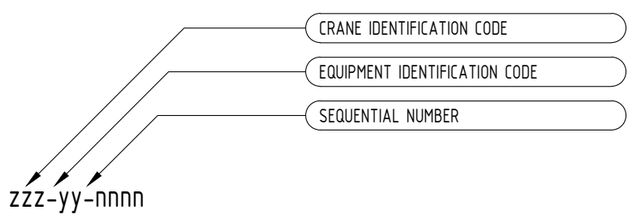




CABLE TAG LEGEND



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

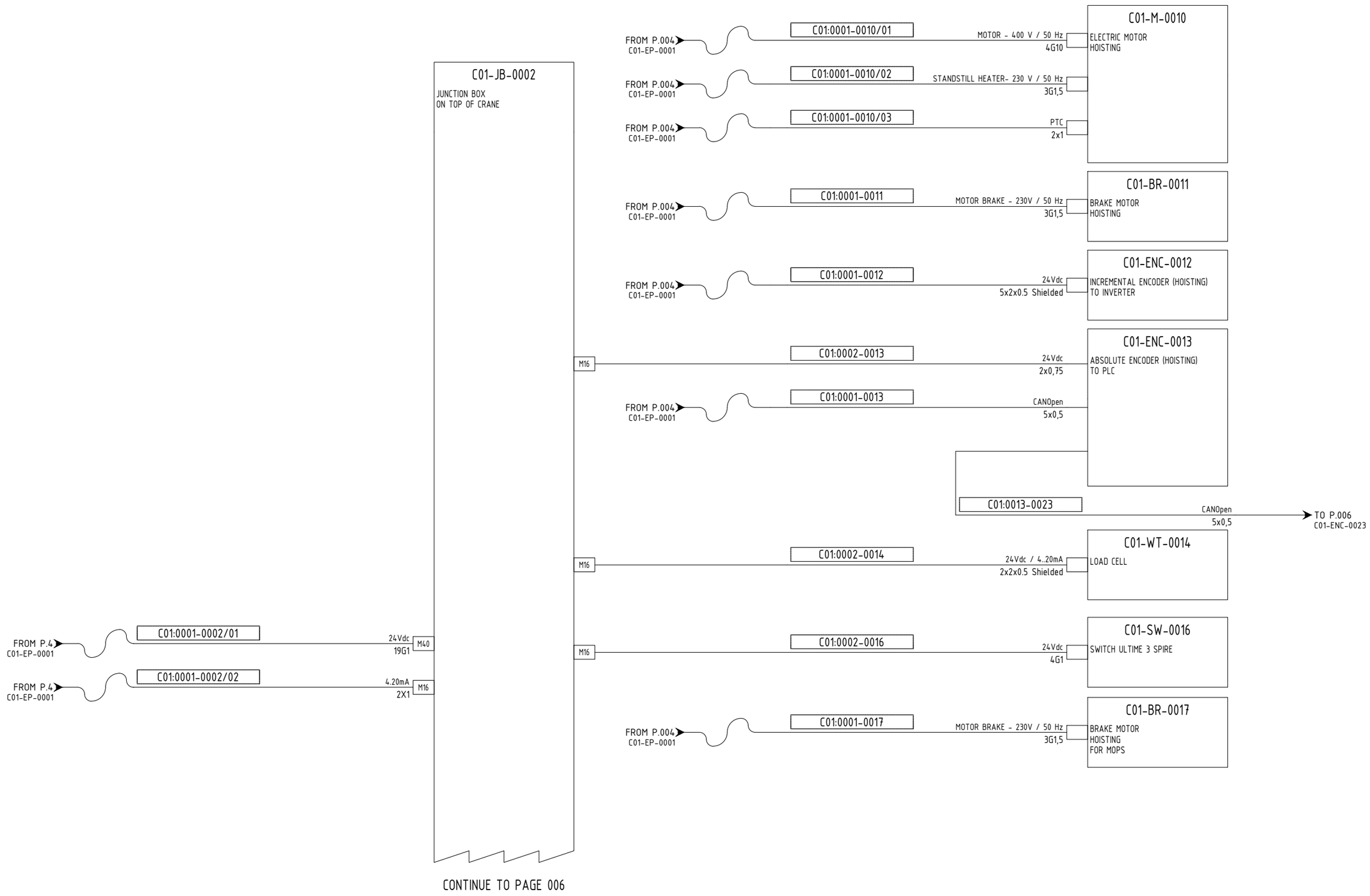
DRAWING NO. 24-27012-BD-001

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

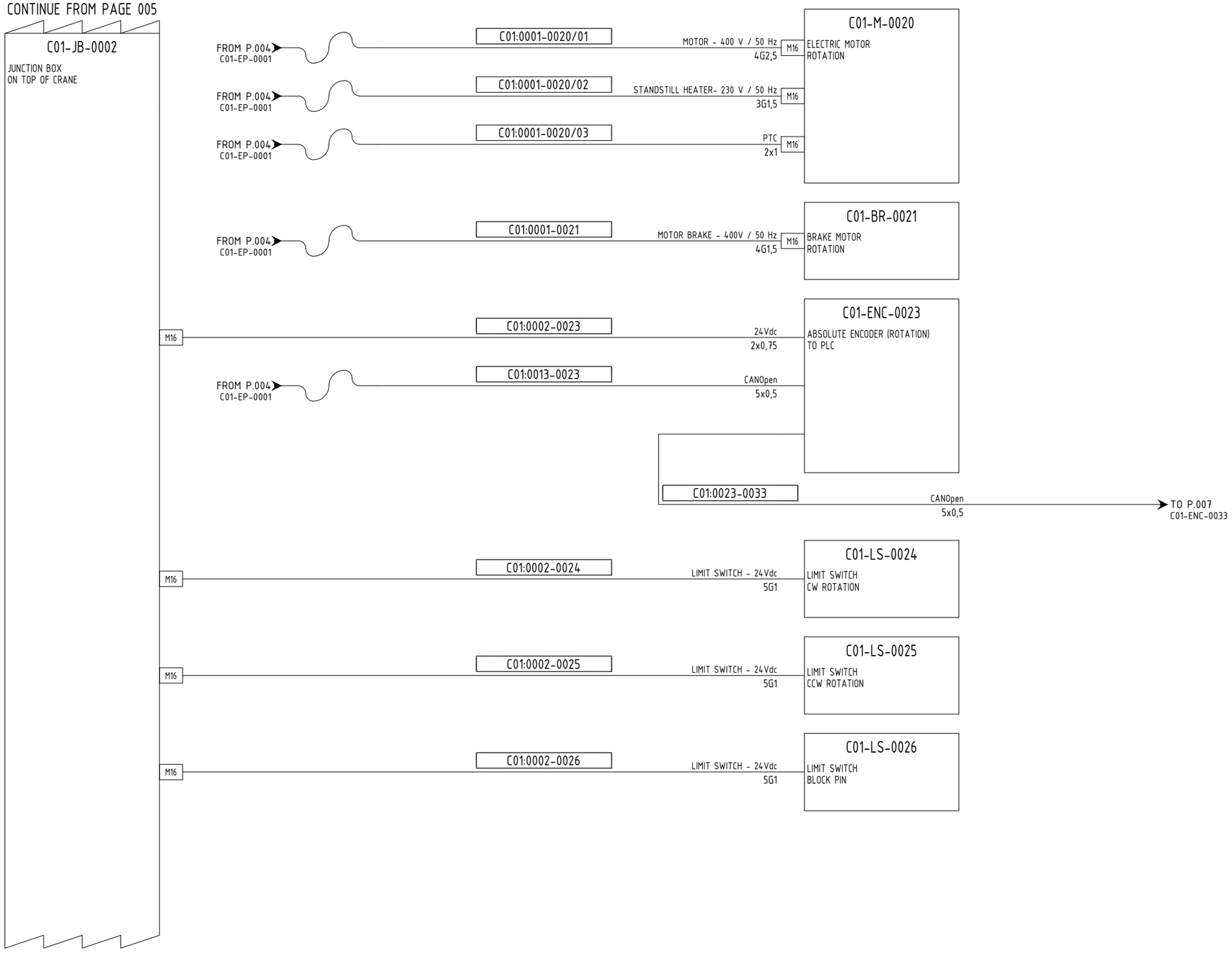
SHEET 005

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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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
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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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

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

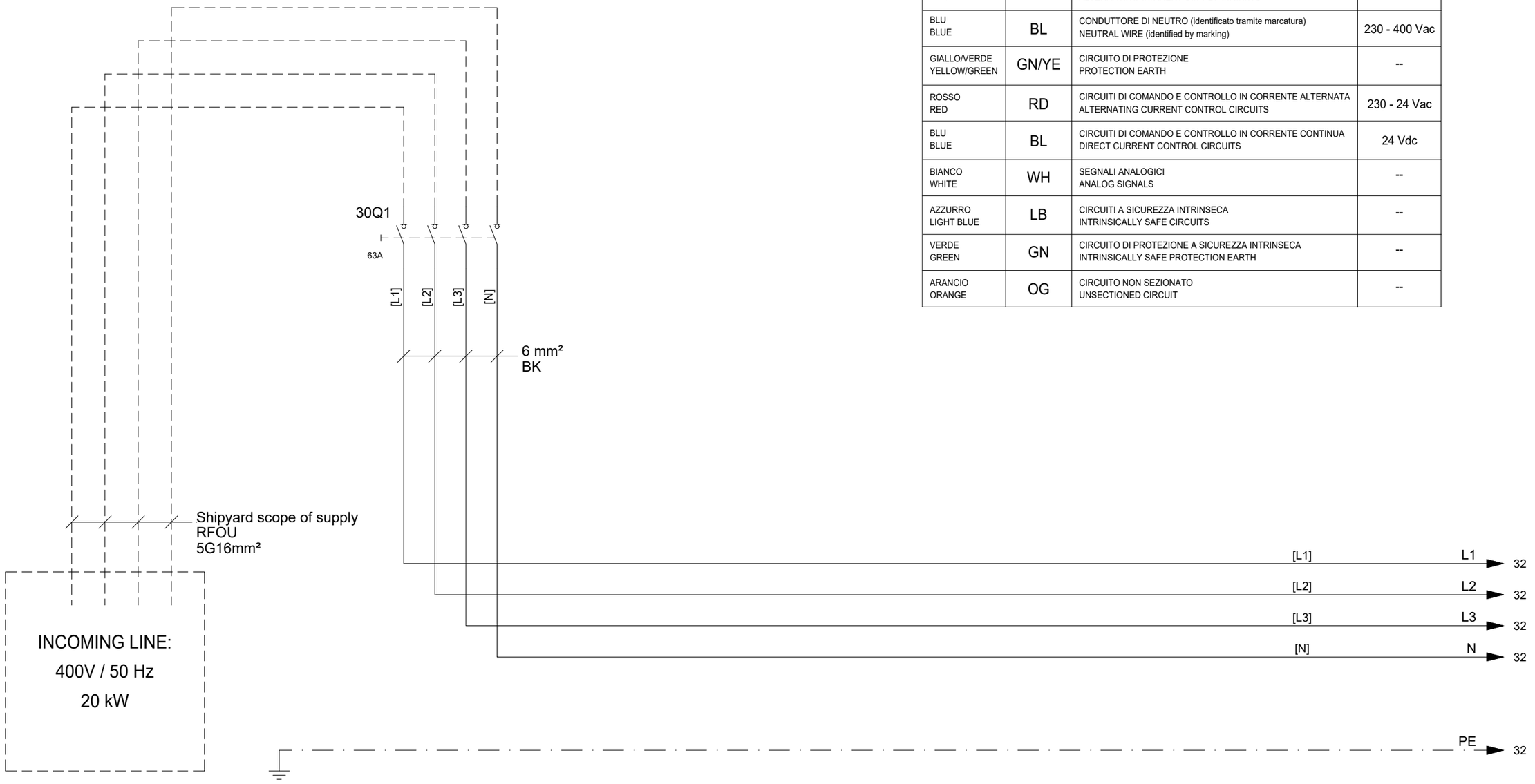
REV. 01

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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CROSSWIND
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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

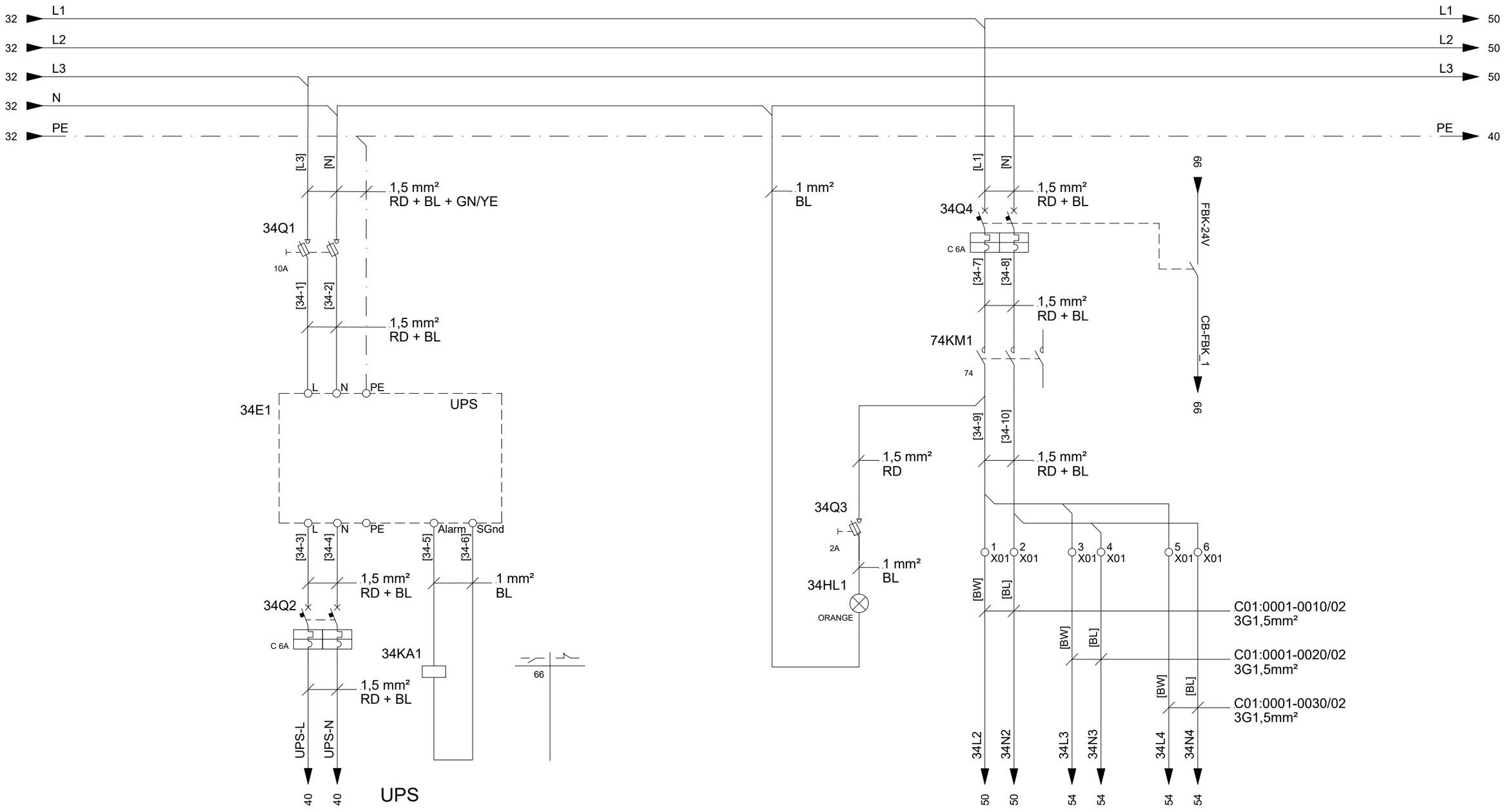
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SHEET 32

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

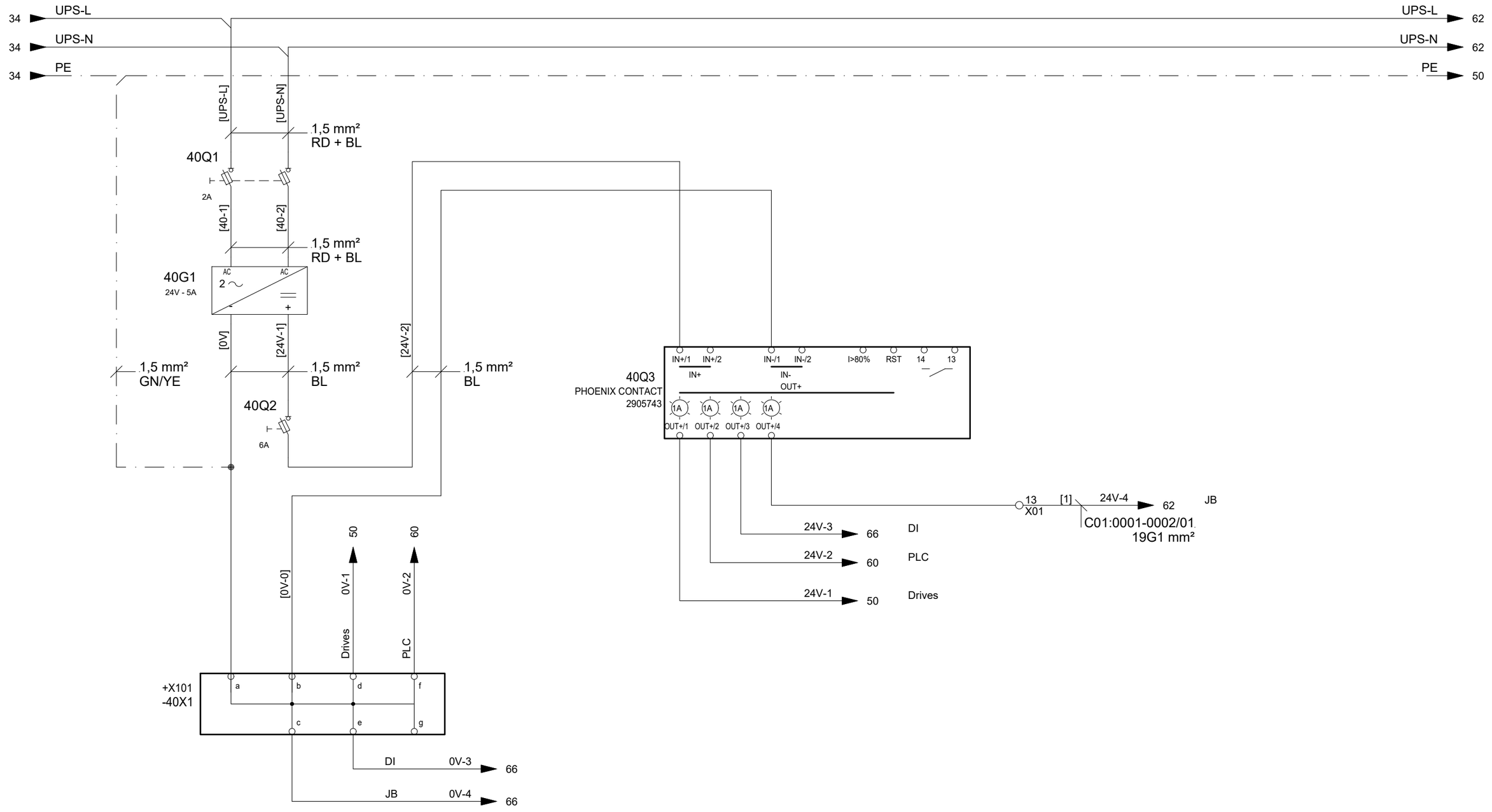
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SHEET 34

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

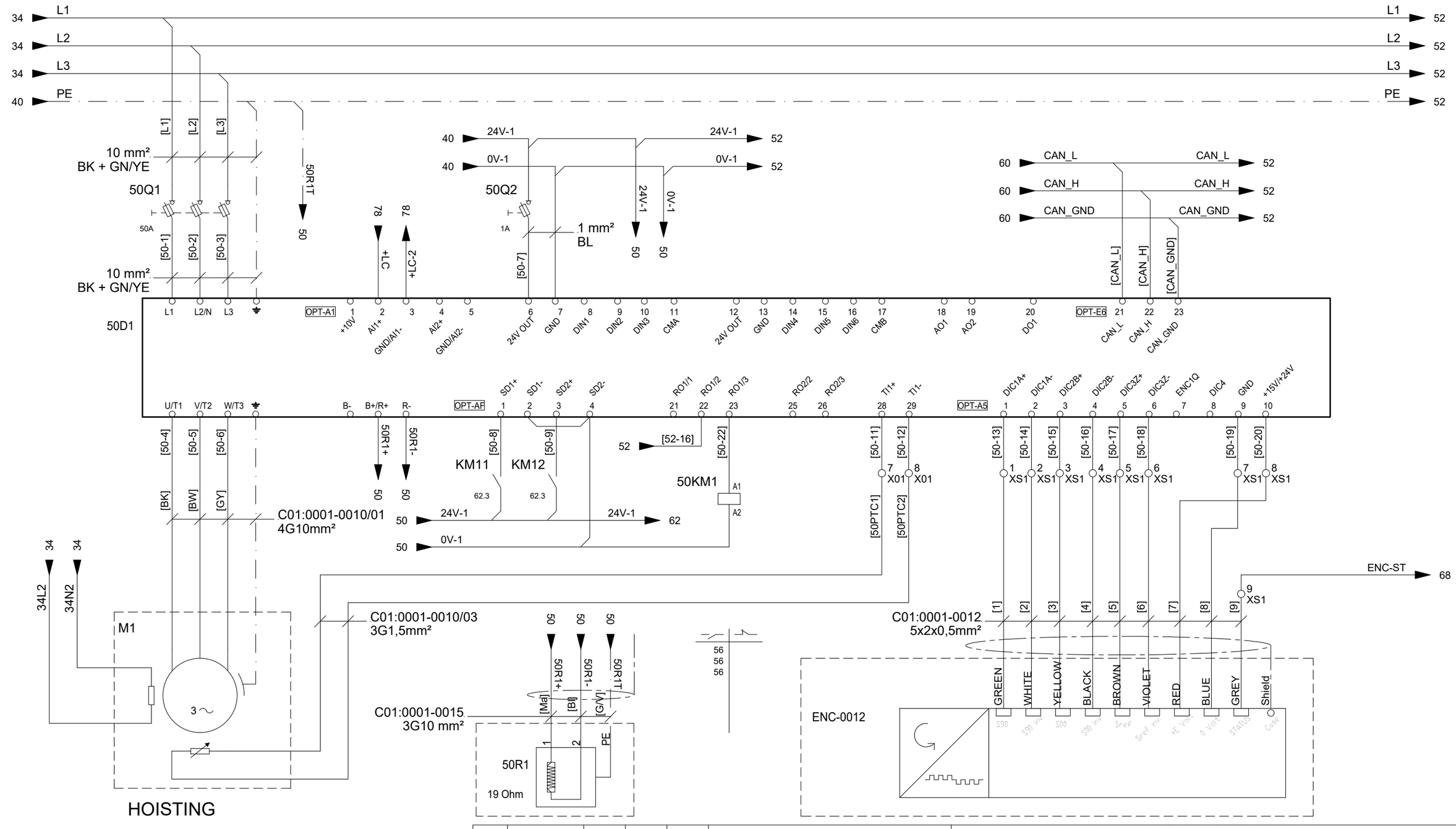
DRAWING NO. 1724001010-MAC-DG-00012

SHEET 40

REV. 01

File Name : 24-27012-WD-001 Rev. 00

F.to UNI A3: 420mmx297mm



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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
HOISTING VFD CONNECTIONS

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

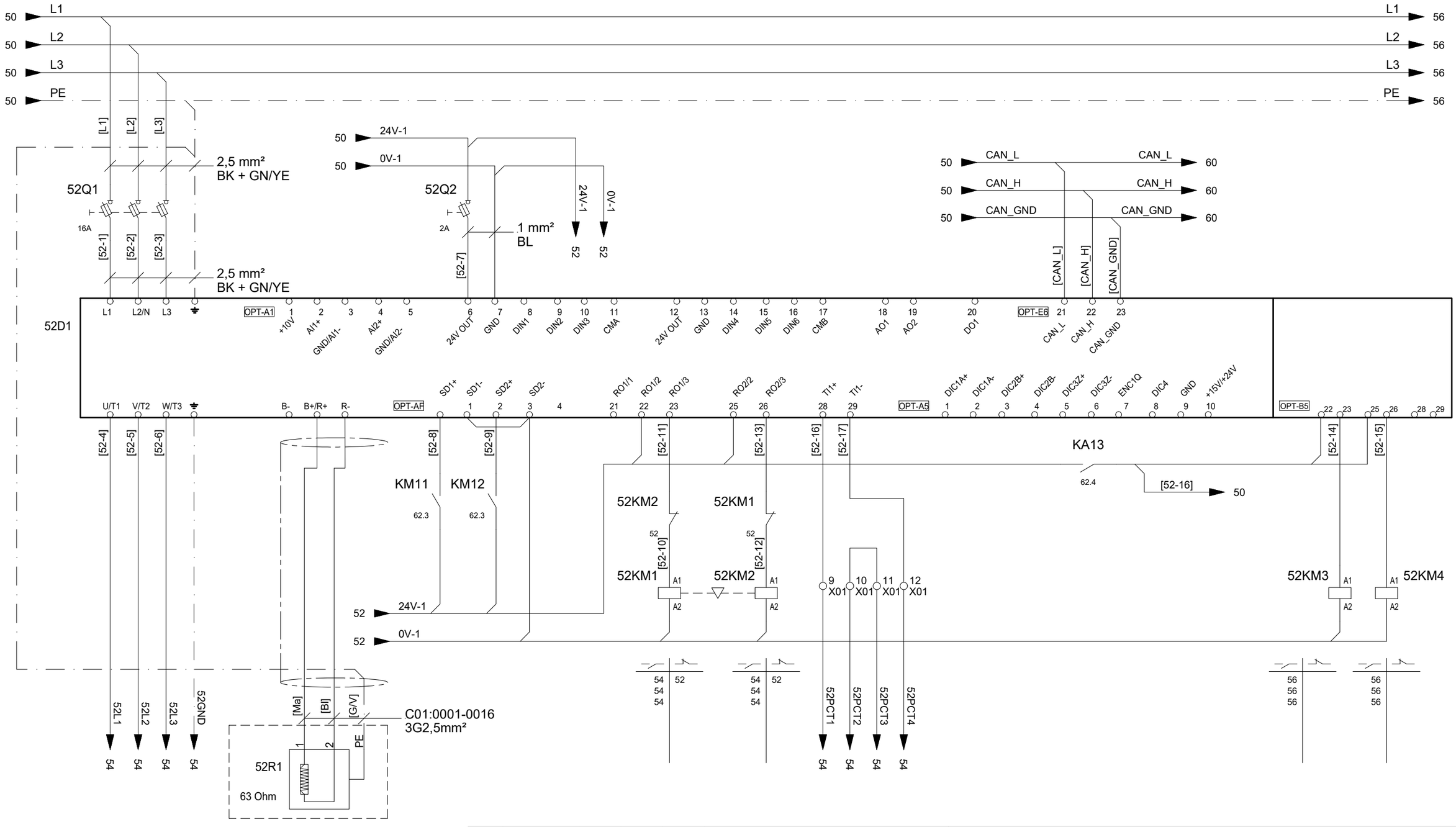
DRAWING NO. 1724001010-MAC-DG-00012

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

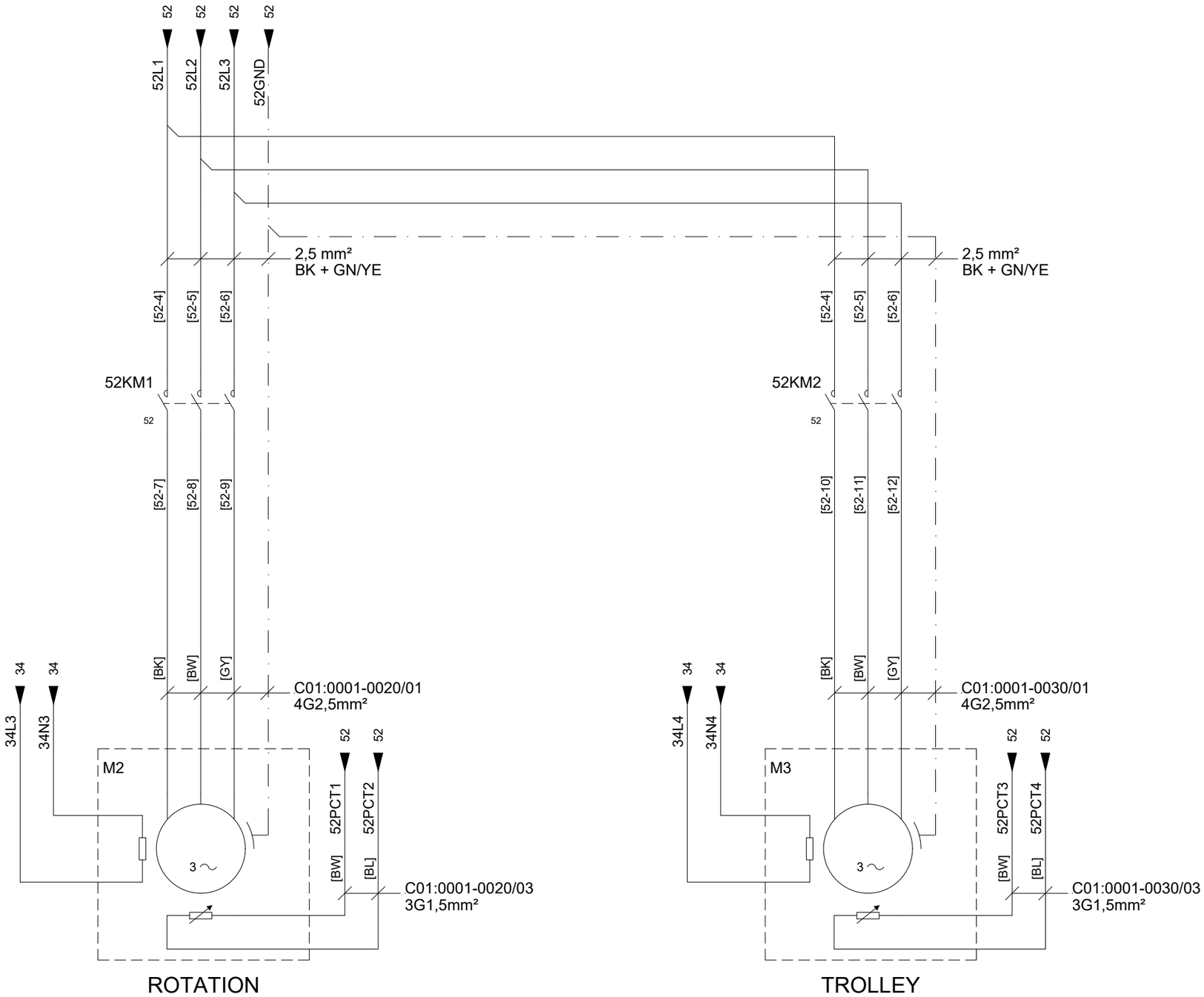
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SHEET 52

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

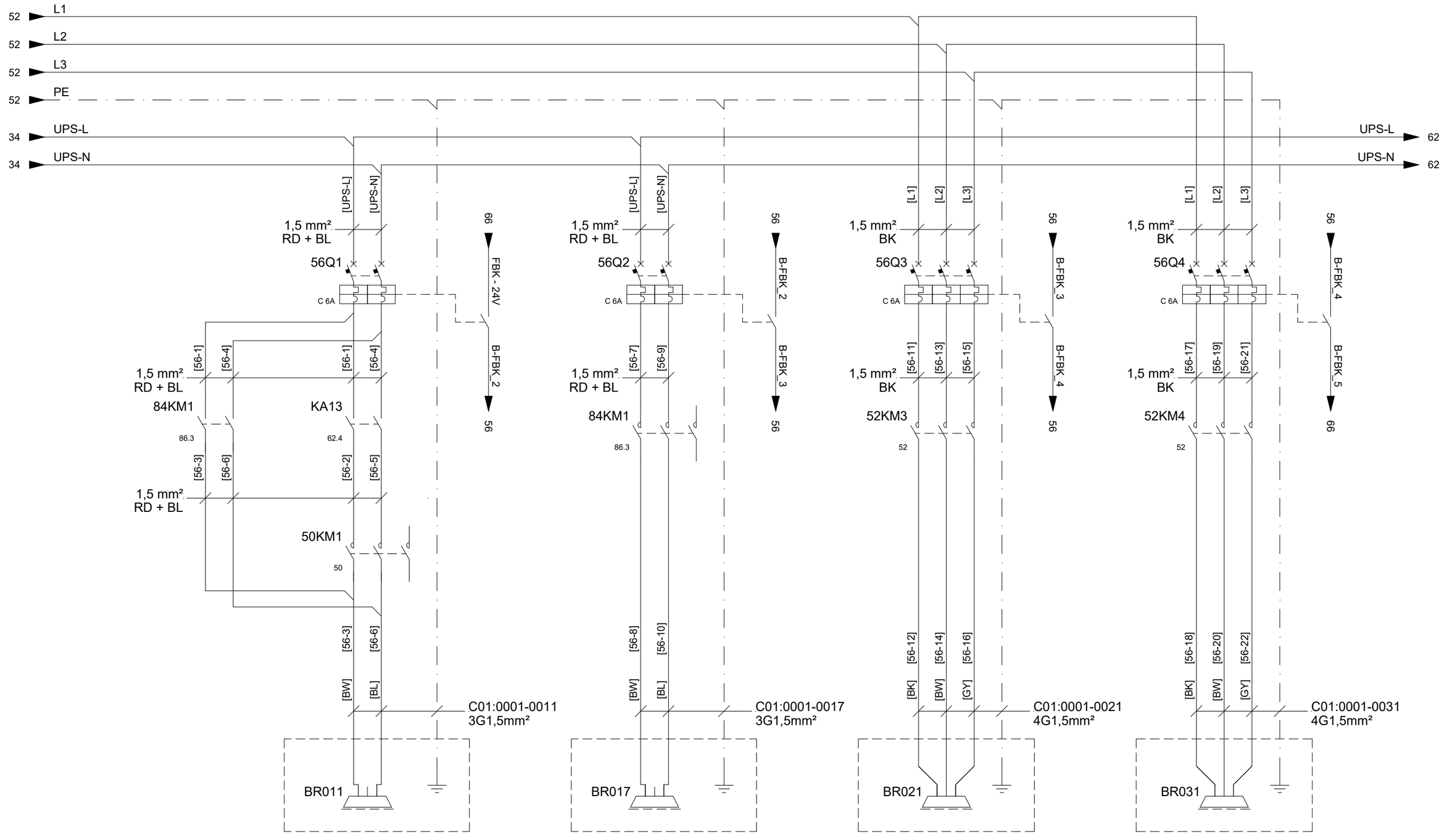
DRAWING NO. 1724001010-MAC-DG-00012

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

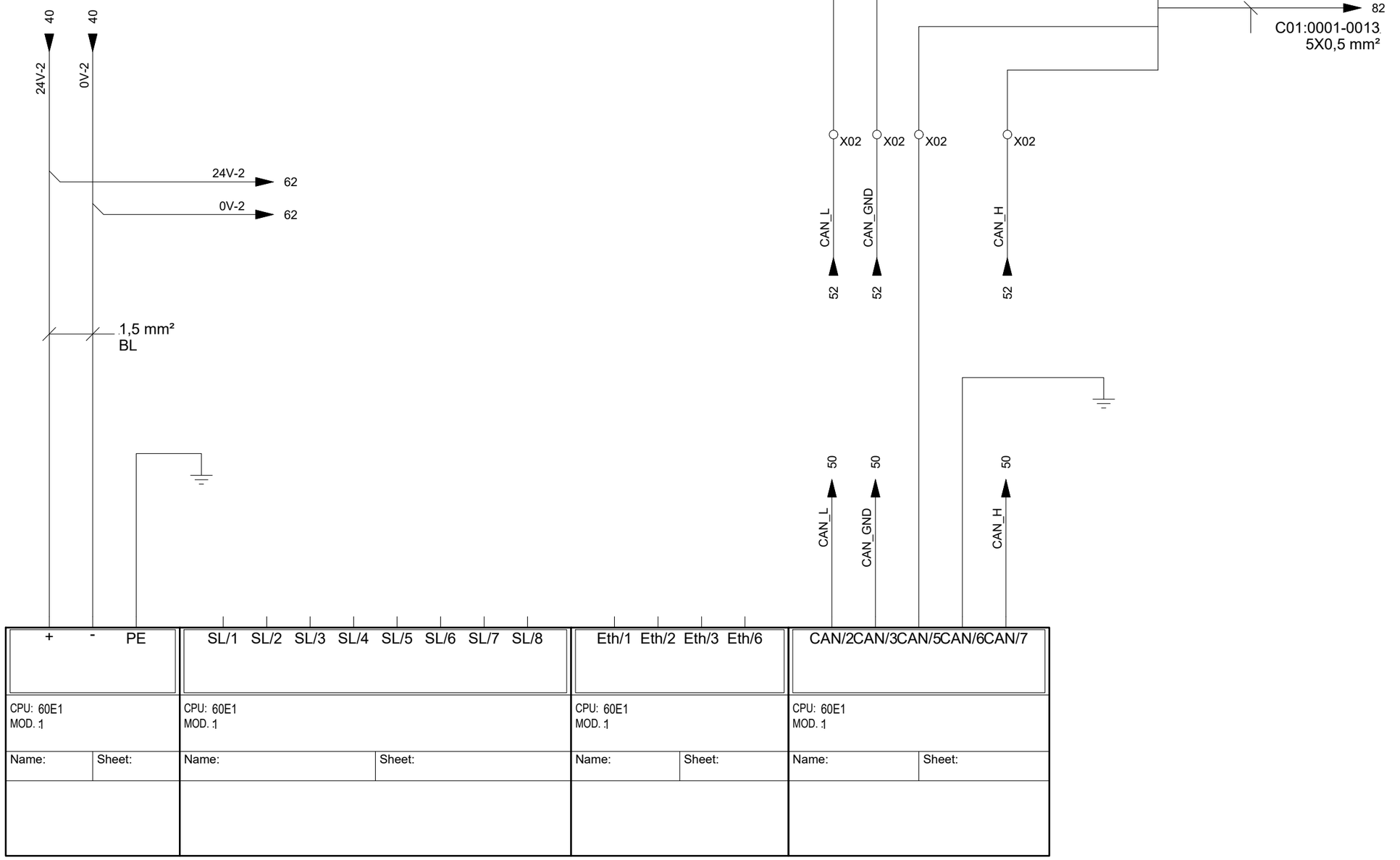
DRAWING NO. 1724001010-MAC-DG-00012

SHEET 56

REV. 01

File Name : 24-27012-WD-001 Rev. 00

F.to UNI A3: 420mmx297mm



CPU

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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)

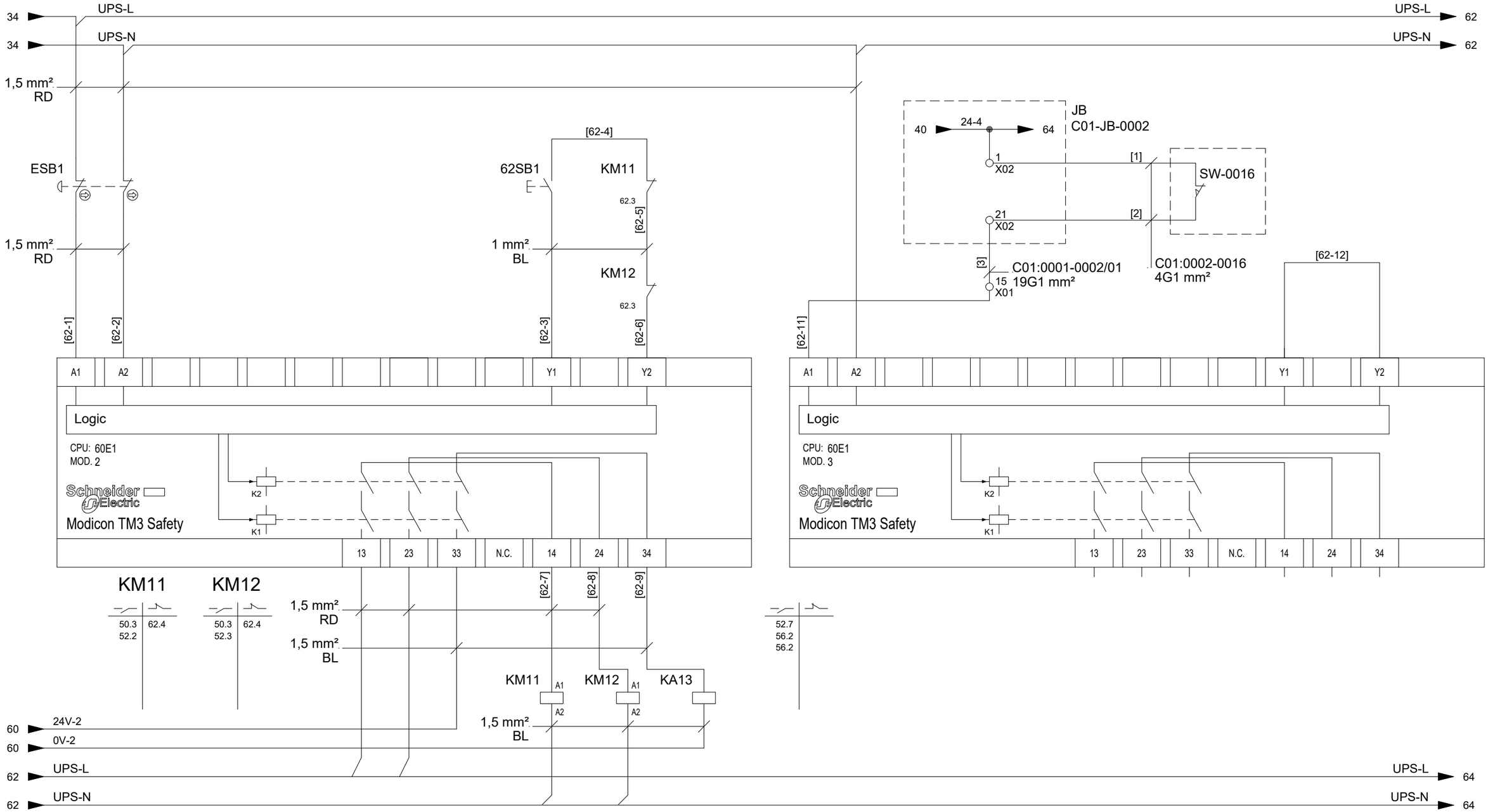
TITLE : BASE LOAD POWER HUB (BLPH)
DAVIT CRANE WIRING DIAGRAM
CPU

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

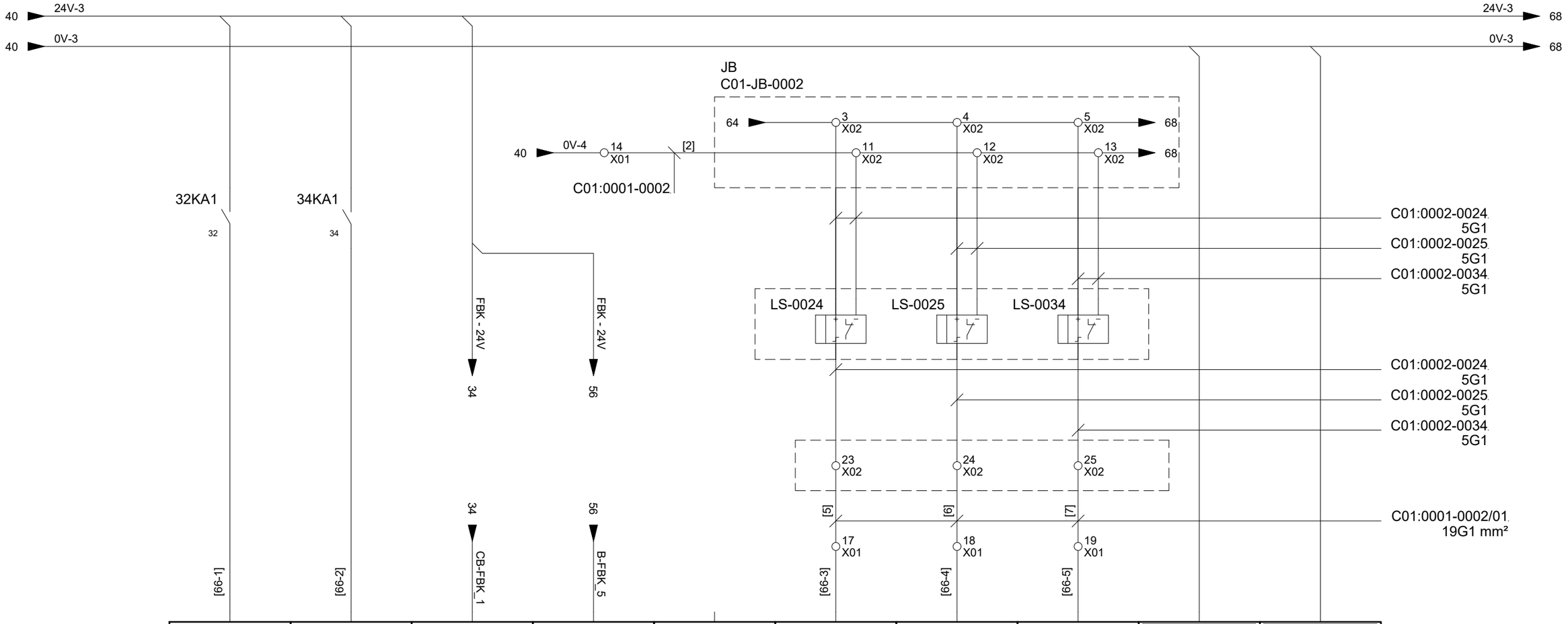
DRAWING NO. 1724001010-MAC-DG-00012

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)

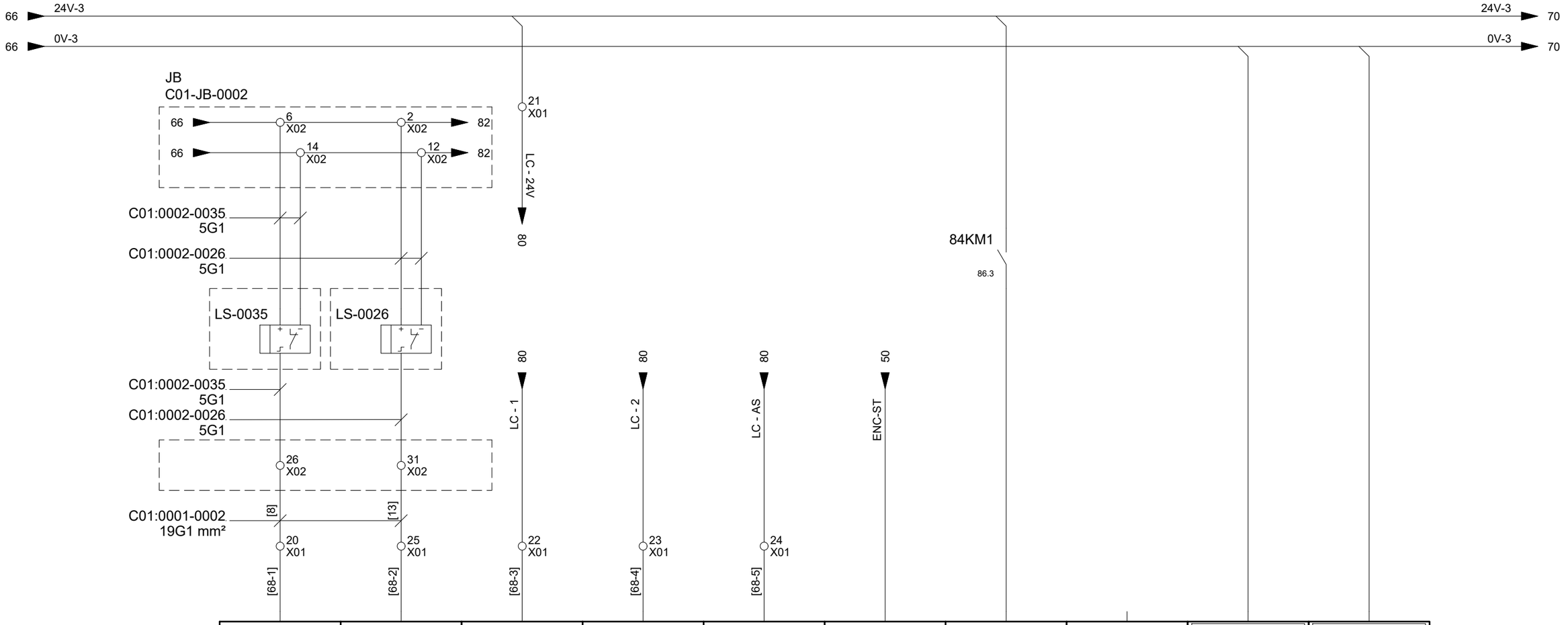
TITLE : BASE LOAD POWER HUB (BLPH)
DAVIT CRANE WIRING DIAGRAM
DIGITAL INPUT

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

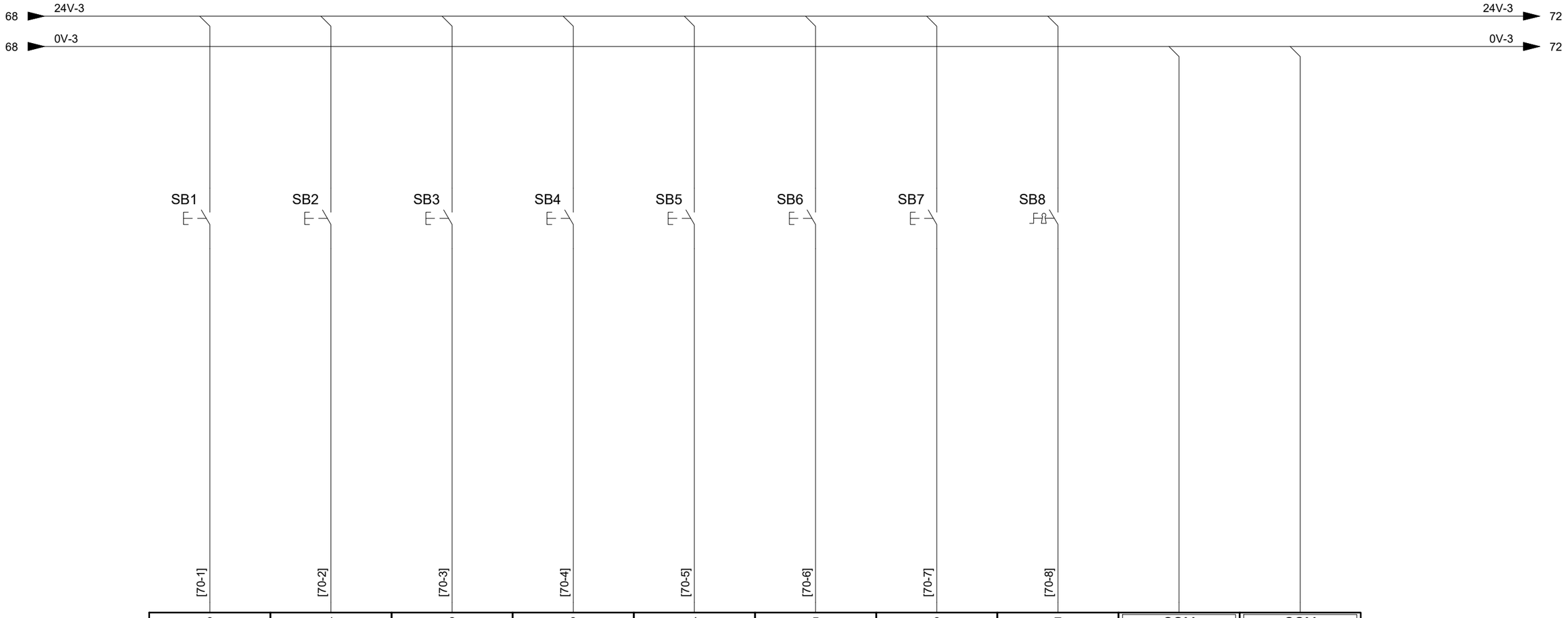
DRAWING NO. 1724001010-MAC-DG-00012

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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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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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

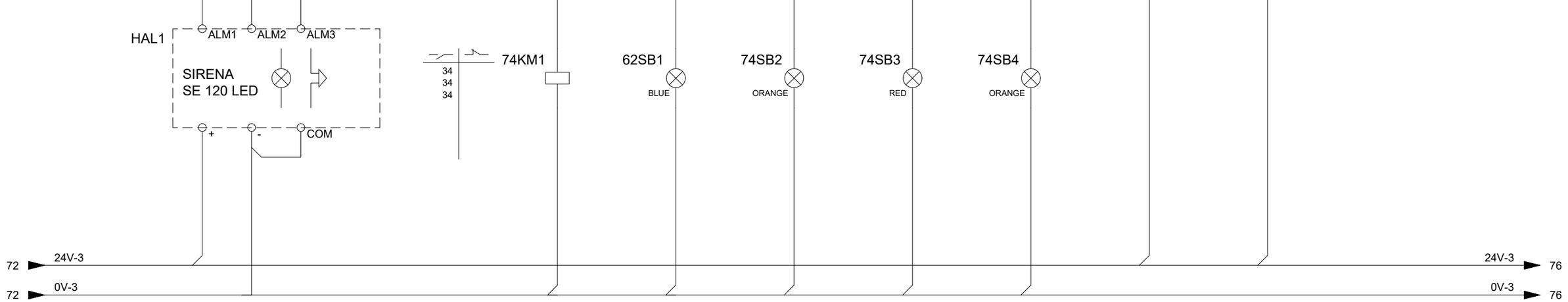
CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

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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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
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

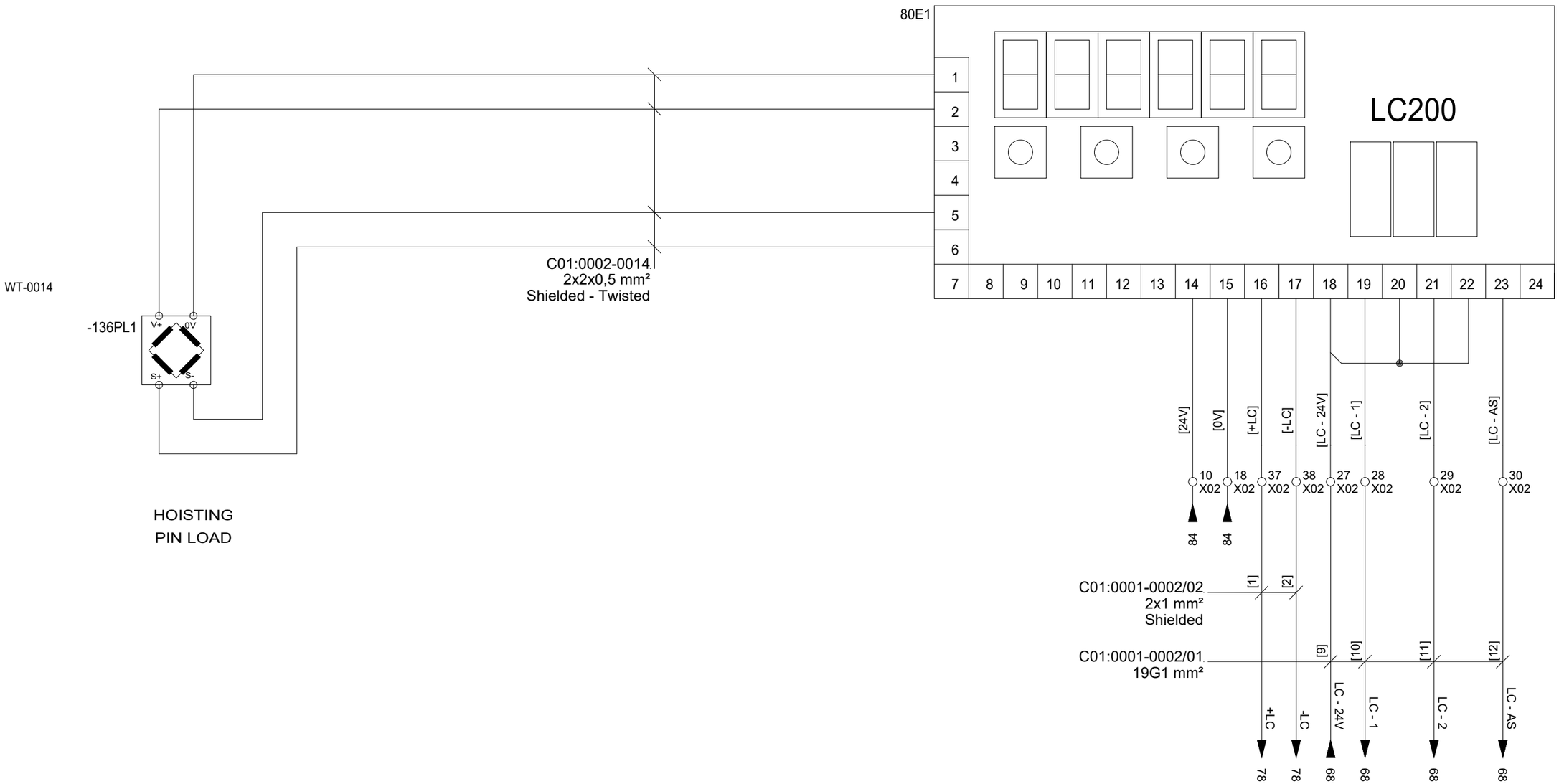
SHEET 78

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

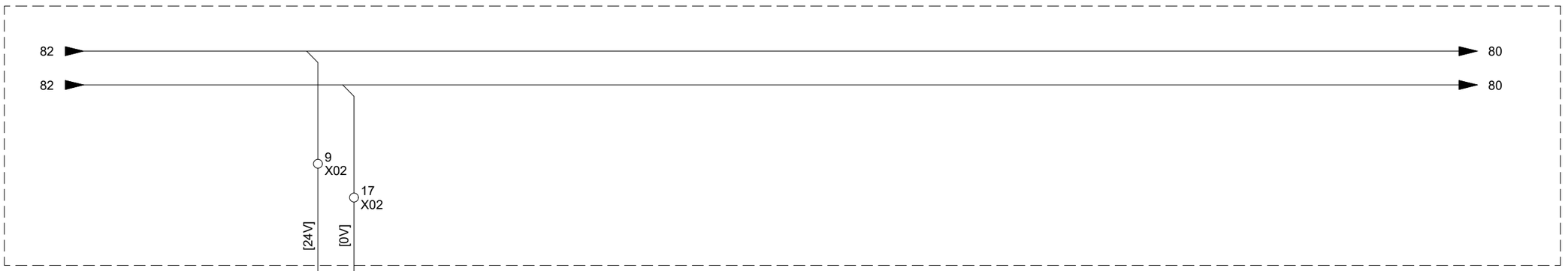
SHEET 82

REV. 01

File Name : 24-27012-WD-001 Rev. 00

F.to UNI A3: 420mmx297mm

JB
C01-JB-0002

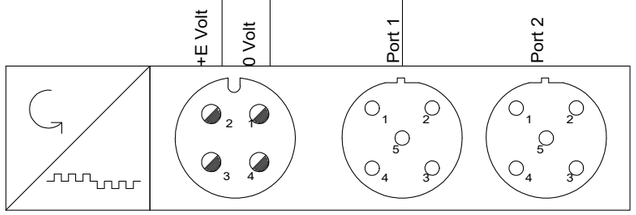


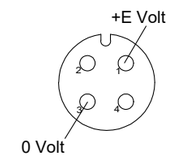
C01:0002-0033
2x0,75 mm²

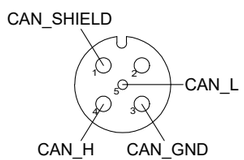
C01:0023-0033
5x0,5mm²

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

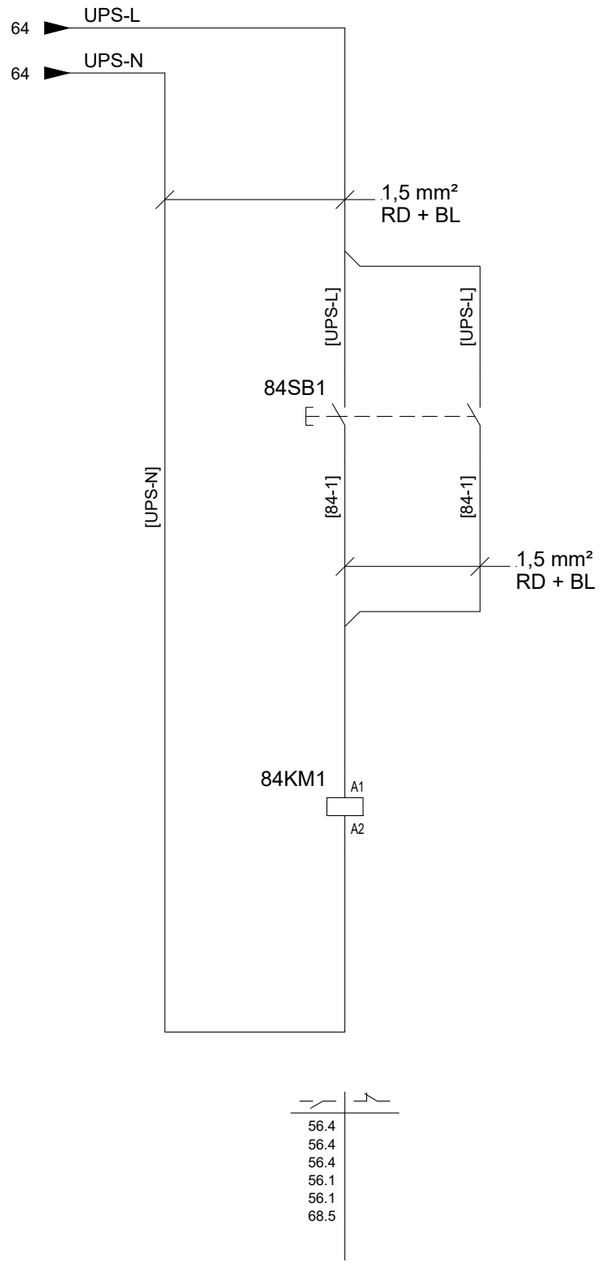
DRAWING NO. 1724001010-MAC-DG-00012

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

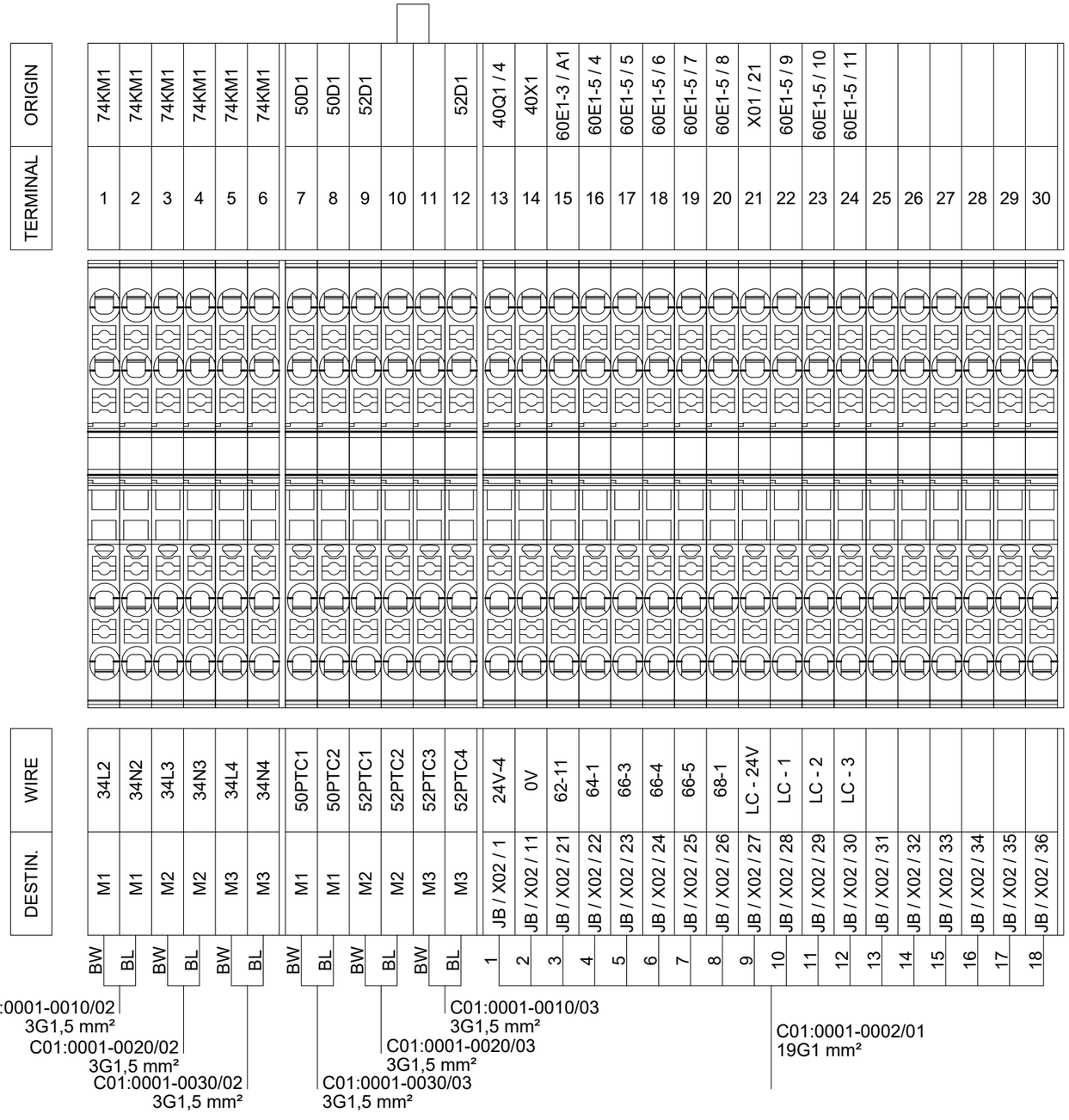
DRAWING NO. 1724001010-MAC-DG-00012

SHEET 86

REV. 01

File Name : 24-27012-WD-001 Rev. 00

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)

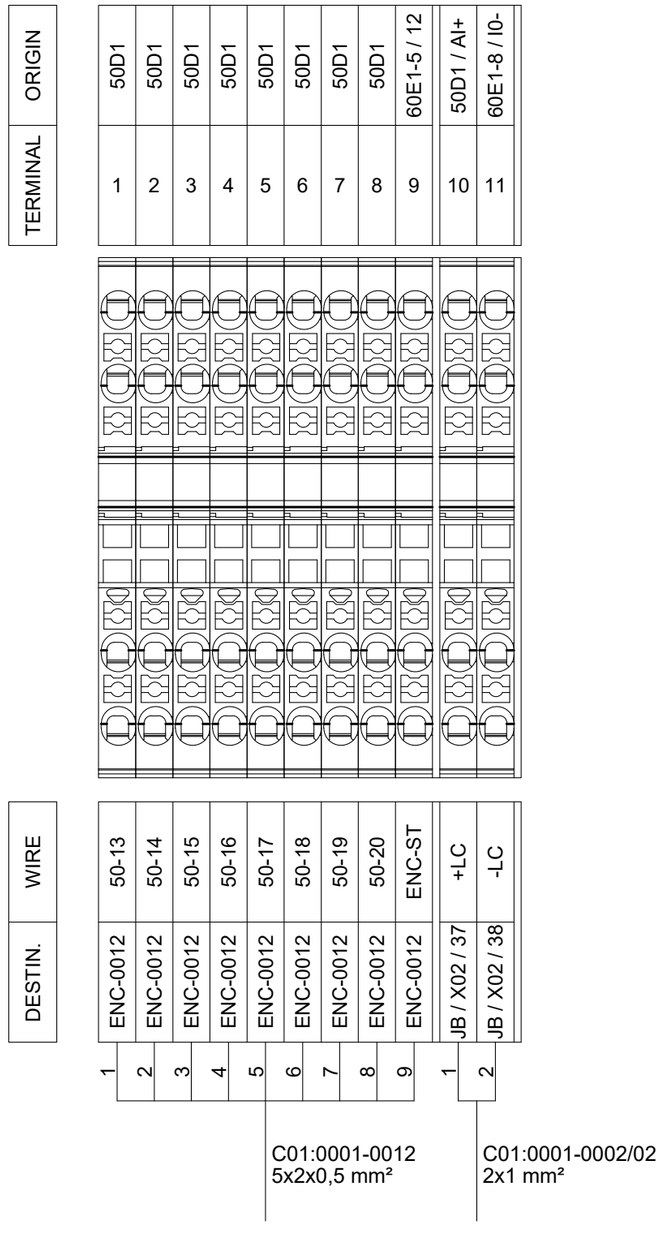
TITLE : BASE LOAD POWER HUB (BLPH)
DAVIT CRANE WIRING DIAGRAM
TERMINAL STRIP X01

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

F.to UNI A3: 420mmx297mm



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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 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
	LS-0026	24V-4
		24V-4
		24V-4
		24V-4
		24V-4
		24V-4
		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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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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