# Base Load Power Hub (BLPH)

MANUFACTURERS RECORD BOOK (FINAL DOSSIER) - CONTROL VALVES (AST)
25-FV-031, 25-FV-032, 25-FV-033, 25-FV-034, 25-FV-036, 25-FV-038, 25-PV-035, 25-PV-037, 25-PV-040, 25-PV-043, 25-PV-046, 25-PV-049, 25-PV-055A, 64-PV-031A, 64-PV-031B, 25-PV-055B

Document Number: 1724000740-QC-DB-00016

Document Class: 2

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| 01 | 09/07/2025 | Accepted for Construction (AFC) | BL | AC | BL |
| 00 | 20/03/2025 | Issue for Review (IFR) | BL | AC | BL |




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## Abbreviation table

TBA = To be advise

BLPH = Base load power hub

SMIR = Supplier master index register

PMI = Positive material identification

FAT = Factory acceptance test

NDE = Non destructive examination




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Base Load Power Hub (BLPH)

# MANUFACTURERS RECORD BOOK (FINAL DOSSIER) - INDEX - CONTROL VALVES (AST)
# 25-FV-031, 25-FV-032, 25-FV-033, 25-FV-034, 25-FV-036, 25-FV-038, 25-PV-035, 25-PV-037, 25-PV-040, 25-PV-043, 25-PV-046, 25-PV-049, 25-PV-055A, 64-PV-031A, 64-PV-031B, 25-PV-055B

Document Number: 1724000740-QC-LIS-00013

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| ROSETTI MARINO SpA<br>Stefano Linzi<br>Quality Control Dept. | 07/03/2025 |

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| 04 | 05/03/2025 | Approved For Construction (AFC) | BL | AC | BL |
| 03 | 13/11/2024 | Approved For Construction (AFC) | BL | AC | BL |
| 02 | 05/08/2024 | Approved For Construction (AFC) | BL | AC | BL |
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|---|---|---|
| Document Title: | MANUFACTURERS RECORD BOOK (FINAL DOSSIER) - INDEX - CONTROL VALVES (AST) | Sh. 2 of 4<br>Date: 05/03/2025<br>Rev. 04 |

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NDE = Non destructive examination




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# PART 1-DESIGN DOSSIER

# Section 1.1

Supplier master index register (SMIR)

# Base Load Power Hub (BLPH)

## CONTROL VALVES

## SUPPLIER MASTER INFORMATION REGISTER

Document Number: 1724000740-MD-LIS-00001

Document Class: 3

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| 02 | 13/06/2024 | Issue for Information (IFI) | BL | BL | AC |
| 01 | 08/05/2024 | Issue for Information (IFI) | BL | BL | AC |
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| | Ordine n°/*order nr.* | 1724000740 | | Fornitore/*Supplier* : | AST SpA | | | | | | | | | | |
| | data / *dated:* | 17/04/2024 | | Codice F./ *S. Code:* | | | | | | | | | | | |
| | Commessa / *Job:* | 123A90 CROSSWIND | | Indirizzo/ *address* : | Via R. Merendi 40 20007 Cornaredo (MI) | | | | | | | | | | |
| | Descrizione / *Description* | CONTROL VALVES | | Persona di riferim./ *contact person:* | Ms. Barbara Lo Re ( b.lore@astspa.it ) | | | | | | | | | | |
| | Macrofase / *Phase* | | | | | | | | | | | | | | |

| Pos. | Document nr. Client/CrossWind (1) | Doc Client/CrossWind Rev. (1) | Document nr. Internal (1) | Document nr. Internal Rev. (2) | Document nr. Supplier (3) | Doc Supplier Rev. (3) | Titolo Documento / *Document title* (4) | Disciplina / *Discipline* (5) | Blocco Classe / *Class Block* (6 ) | Docum. Format (7) | First Issue Date (8) | Third Party Approval (I/A) | KEY Document Ingegneria | Documents subject to liquidated damages | Document Approval (I/A) |
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| | | | | | | | *CONTROL DOCUMENTS* | | | | | | | | |
| 1 | 1724000740-MD-LIS-00001 | 00 | 1724000740-MD-LIS-00001 | 00 | CV2400221/SMIR | 00 | SUPPLIER MASTER INDEX REGISTER (SMIR) | INS | C | A3 | 24/04/2024 | | | | A |
| | | | | | | | *QUALITY DOCUMENTS* | | | | | | | | |
| 2 | 1724000740-QC-ITP-00002 | 00 | 1724000740-QC-ITP-00002 | 00 | CV2400221/ITP | 00 | INSPECTION AND TEST PLAN | QUA | C | A4 | 15/05/2024 | | X | x | A |
| | | | | | | | | | | | | | | | |
| 3 | 1724000740-IN-DS-00003 | 00 | 1724000740-IN-DS-00003 | 00 | CV2400221/CLC | 00 | SIZING CALCULATION SHEET (INCLUDING NOISE LEVEL DATA SHEETS, CONTROL VALVE CURVES) | INS | C | A4 | 15/05/2024 | | X | | A |
| 4 | 1724000740-IN-DA-00004 | 00 | 1724000740-IN-DA-00004 | 00 | CV2400221/GAD | 00 | GENERAL ARRANGEMENTS DRAWING (INCLUDING WEIGHT DATA SHEETS) VALVE+ACTUATOR+POSITIONER+ACCESSORIES | INS | I | A4 | 15/05/2024 | | X | X | A |
| 5 | 1724000740-IN-DD-00005 | 00 | 1724000740-IN-DD-00005 | 00 | CV2400221/DWG | 00 | DETAIL DRAWING INCLUDING NAMEPLATE DRAWING | INS | | A4 | 31/05/2024 | | | X | A |
| 6 | 1724000740-IN-DG-00006 | 00 | 1724000740-IN-DG-00006 | 00 | CV2400221/DIA | 00 | PNEUMATIC, SCHEMATIC and WIRING DIAGRAMS | INS | | A4 | 31/05/2024 | | | | A |
| 7 | 1724000740-IN-DS-00007 | 00 | 1724000740-IN-DS-00007 | 00 | CV2400221/IDS | 00 | INSTRUMENT AND VALVES DATA SHEETS | INS | I | A4 | 15/05/2024 | | X | | A |
| 8 | 1724000740-MAT-PRO-00008 | 00 | 1724000740-MAT-PRO-00008 | 00 | CV2400221/PAINT | 00 | SURFACE PREPARATION AND PAINTING PROCEDURES | QUA | I | A4 | 31/05/2024 | | | | A |
| 9 | 1724000740-NDT-PRO-00009 | 00 | 1724000740-NDT-PRO-00009 | 00 | CV2400221/NDT P | 00 | NDT PROCEDURES (INCLUDING PMI AND OPERATORS QUALIFICATIONS) | QUA | | A4 | 31/05/2024 | | | | A |
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| 11 | 1724000740-QC-PRO-00011 | 00 | 1724000740-QC-PRO-00011 | 00 | CV2400221/FAT P | 00 | FAT PROCEDURE | INS | I | A4 | 15/05/2024 | | X | | A |
| 12 | 1724000740-IN-LIS-00012 | 00 | 1724000740-IN-LIS-00012 | 00 | CV2400221/TAG | 00 | VENDOR ASSET AND TAG REGISTER | INS | ? | A4 | 19/07/2024 | | | | A |
| 13 | 1724000740-QC-LIS-00013 | 00 | 1724000740-QC-LIS-00013 | 00 | CV2400221/INDEX | 00 | MANUFACTURERS RECORD BOOK (FINAL DOSSIER) - INDEX | QUA | I | A4 | 31/05/2024 | | | | A |
| 14 | 1724000740-IN-PRO-00020 | 00 | | 00 | CV2400221/FET | 00 | FUGITIVE EMISSION PROCEDURE | QUA | I | A4 | 15/05/2024 | | | | A |
| | | | | | | | *CERTIFICATES* | | | | | | | | |
| 15 | 1724000740-QC-LIS-00014 | 00 | 1724000740-QC-LIS-00014 | 00 | CV2400221/Ex | 00 | Ex CERTIFICATION LIST | QUA | | A4 | 05/07/2024 | | | | A |
| 16 | 1724000740-IN-LIS-00015 | 00 | 1724000740-IN-LIS-00015 | 00 | CV2400221/ATEX | 00 | ATEX DOCUMENTATION | QUA | | A4 | 05/07/2024 | | | | A |
| 17 | 1724000740-QC-DB-00016 | 00 | 1724000740-QC-DB-00016 | 00 | CV2400221/MRB | 00 | MANUFACTURERS RECORD BOOK (FINAL DOSSIER) | CERT | I | A4 | 23/10/2024 | | X | | A |
| | | | | | | | *SPARES & MAINTENANCE DATA* | | | | | | | | |
| 18 | 1724000740-IN-MAN-00017 | 00 | 1724000740-IN-MAN-00017 | 00 | CV2400221/TOMM | 00 | TECHNICAL OPERATING AND MAINTENANCE MANUAL – COMPLETE (In English and Dutch language) | INS | I | A4 | 05/07/2024 | | | | I |
| 19 | 1724000740-COM-LIS-00018 | 00 | 1724000740-COM-LIS-00018 | 00 | CV2400221/SPIR | 00 | SPIR (COMMISSIONING, 2-YEARs OPERATION) | INS | C | A4 | 15/07/2024 | | X | | A |
| | | | | | | | *HANDLING, SHIPPING & SITE INSTALLATION* | | | | | | | | |
| 20 | 1724000740-QC-PRO-00019 | 00 | 1724000740-QC-PRO-00019 | 00 | CV2400221/PACK | 00 | PREPARATION FOR PACKING, SHIPPING INCLUDING HANDLING AND STORAGE PROCEDURES | LOG | I | A4 | 15/05/2024 | | | | I |

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# PART 1-DESIGN DOSSIER

# Section 2.1

Pneumatic, schematic and wiring diagrams

# Base Load Power Hub (BLPH)

## PNEUMATIC, SCHEMATIC and WIRING DIAGRAMS

Document Number: 1724000740-IN-DG-00006

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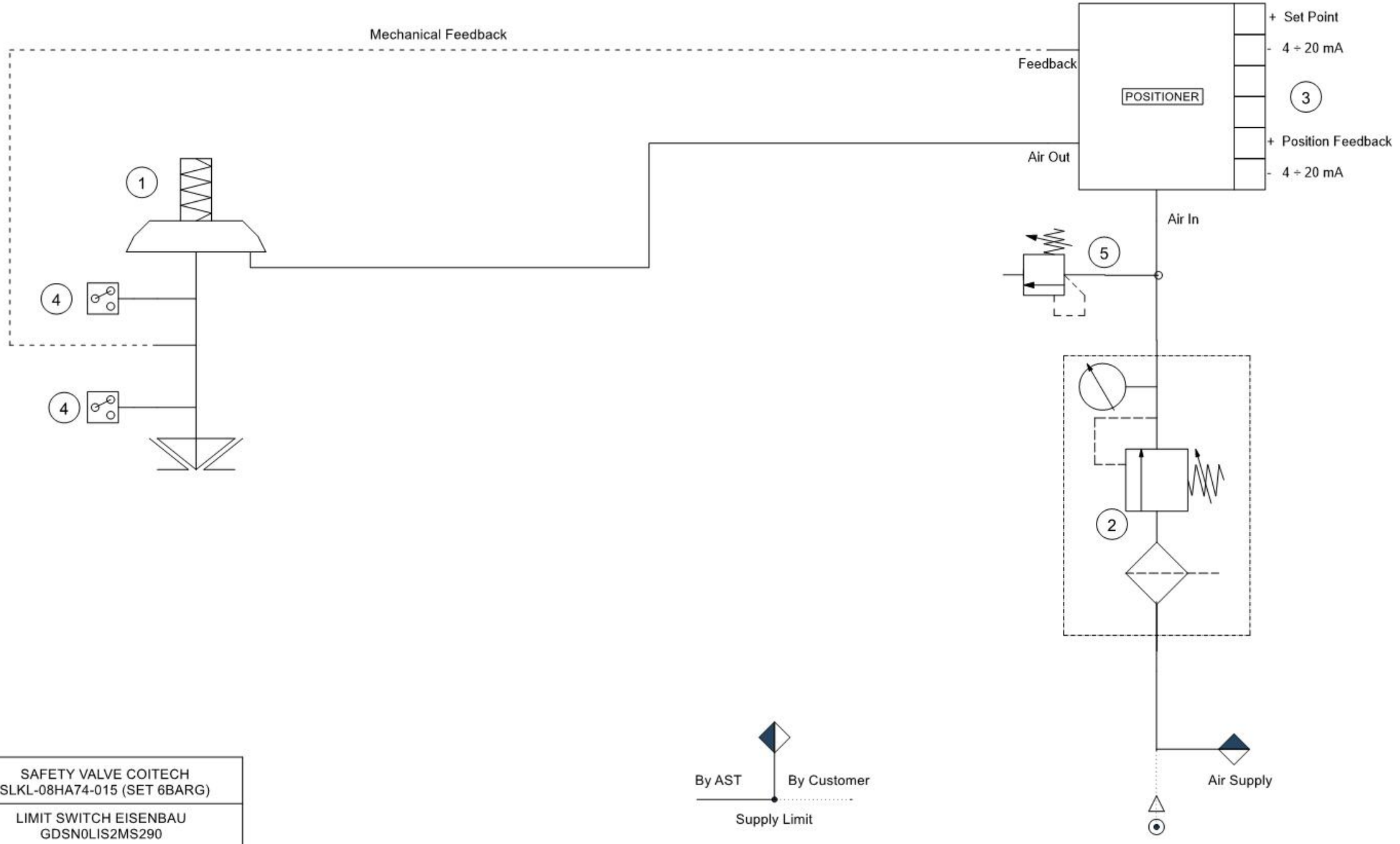


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| 5 | SAFETY VALVE COITECH<br>SLKL-08HA74-015 (SET 6BARG) |
| 4 | LIMIT SWITCH EISENBAU<br>GDSN0LIS2MS290 |
| 3 | POSITIONER TISSIN<br>TI-TS905LC41S30 |
| 2 | AIR SET FILTER + PRESSURE GAUGE<br>SITECNA FR044 |
| 1 | SINGLE EFFECT REVERSE ACTING<br>PNEUMATIC DIAPHRAM TYPE SD13R |
| ITEM | PART NAME |

By AST — By Customer

Supply Limit

| Rev. | Date | Revision Description | Issued by | Chk/Appr by |
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| 0 | 23/04/2024 | FIRST ISSUE | A.Tirabosch | A.Perego |
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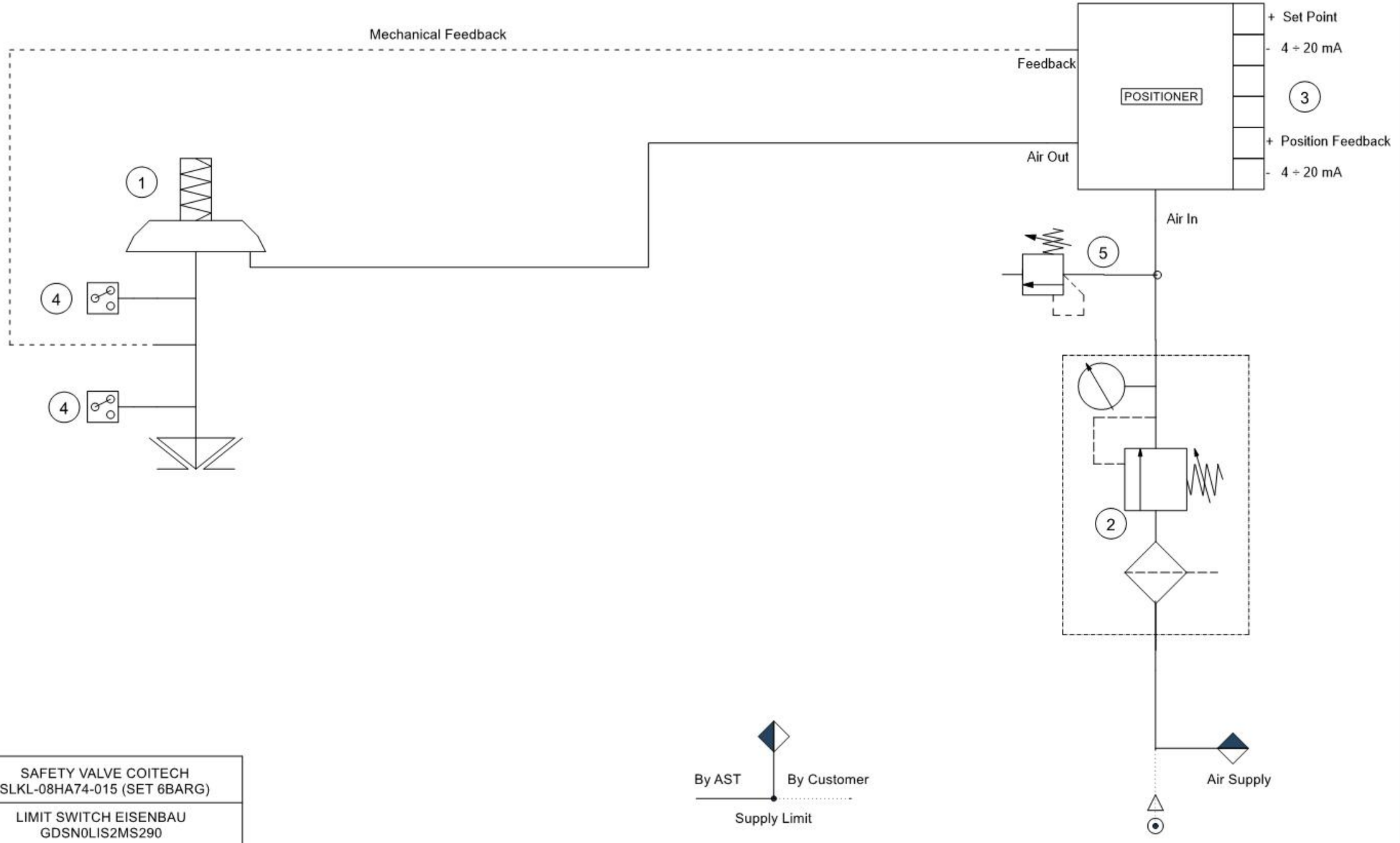
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Job: CV2400221
Code:
DRW N.: 240221-PS01
Sheet 01 of 01

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Bosch Rexroth Scheme Editor




| ITEM | PART NAME |
|---|---|
| 5 | SAFETY VALVE COITECH<br>SLKL-08HA74-015 (SET 6BARG) |
| 4 | LIMIT SWITCH EISENBAU<br>GDSN0LIS2MS290 |
| 3 | POSITIONER TISSIN<br>TI-TS905LC41S30 |
| 2 | AIR SET FILTER + PRESSURE GAUGE<br>SITECNA FR044 |
| 1 | SINGLE EFFECT REVERSE ACTING<br>PNEUMATIC DIAPHRAM TYPE SD13R |

| Rev. | Date | Revision Description | Issued by | Chk/Appr by |
|---|---|---|---|---|
| 0 | 23/04/2024 | FIRST ISSUE | A.Tirabosch | A.Perego |
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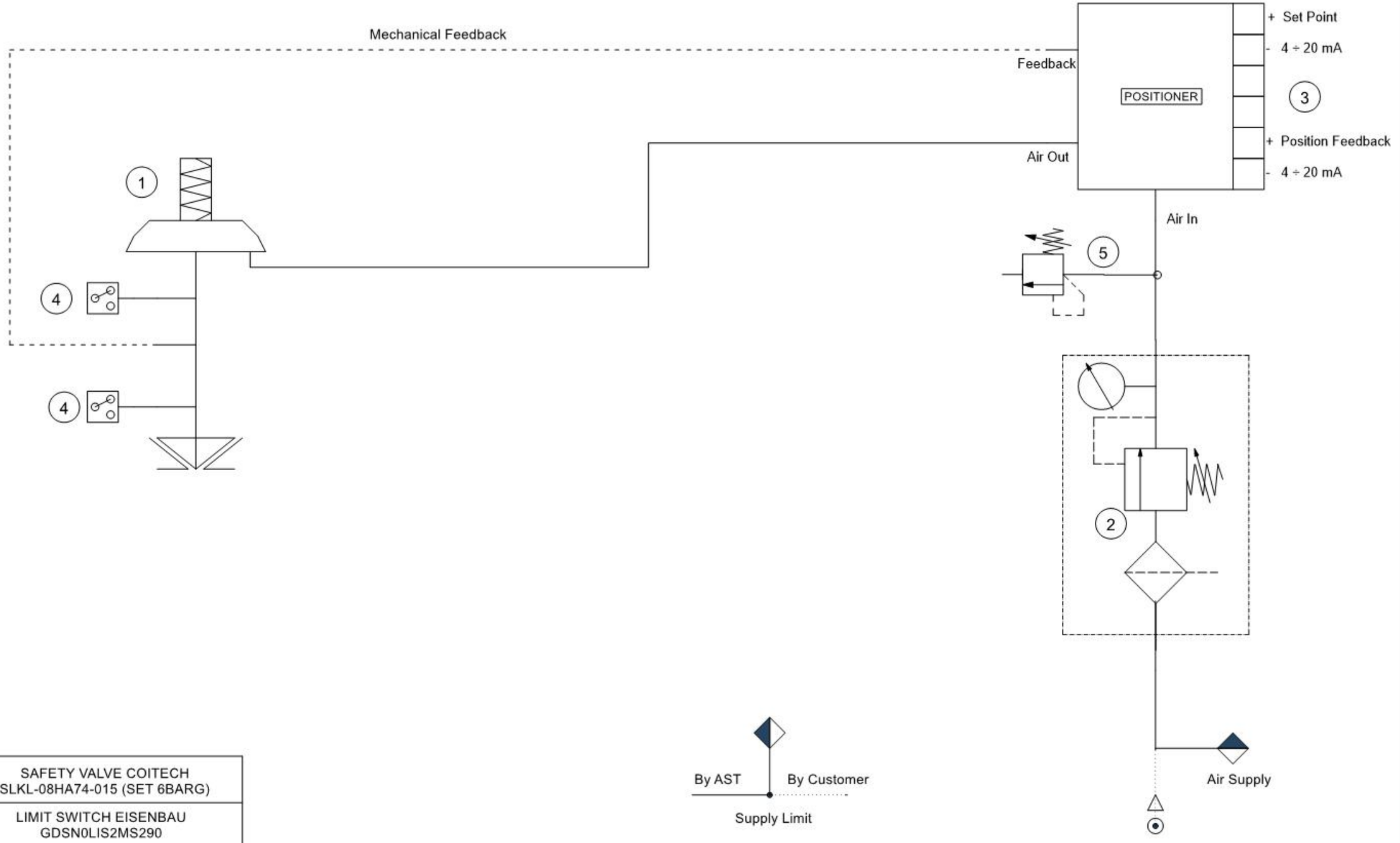
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| 3 | POSITIONER TISSIN<br>TI-TS905LC41S30 |
| 2 | AIR SET FILTER + PRESSURE GAUGE<br>SITECNA FR044 |
| 1 | SINGLE EFFECT REVERSE ACTING<br>PNEUMATIC DIAPHRAM TYPE SD11R |

| Rev. | Date | Revision Description | Issued by | Chk/Appr by |
|---|---|---|---|---|
| 0 | 23/04/2024 | FIRST ISSUE | A.Tirabosch | A.Perego |
| | | | Weight (KG) | Replace |

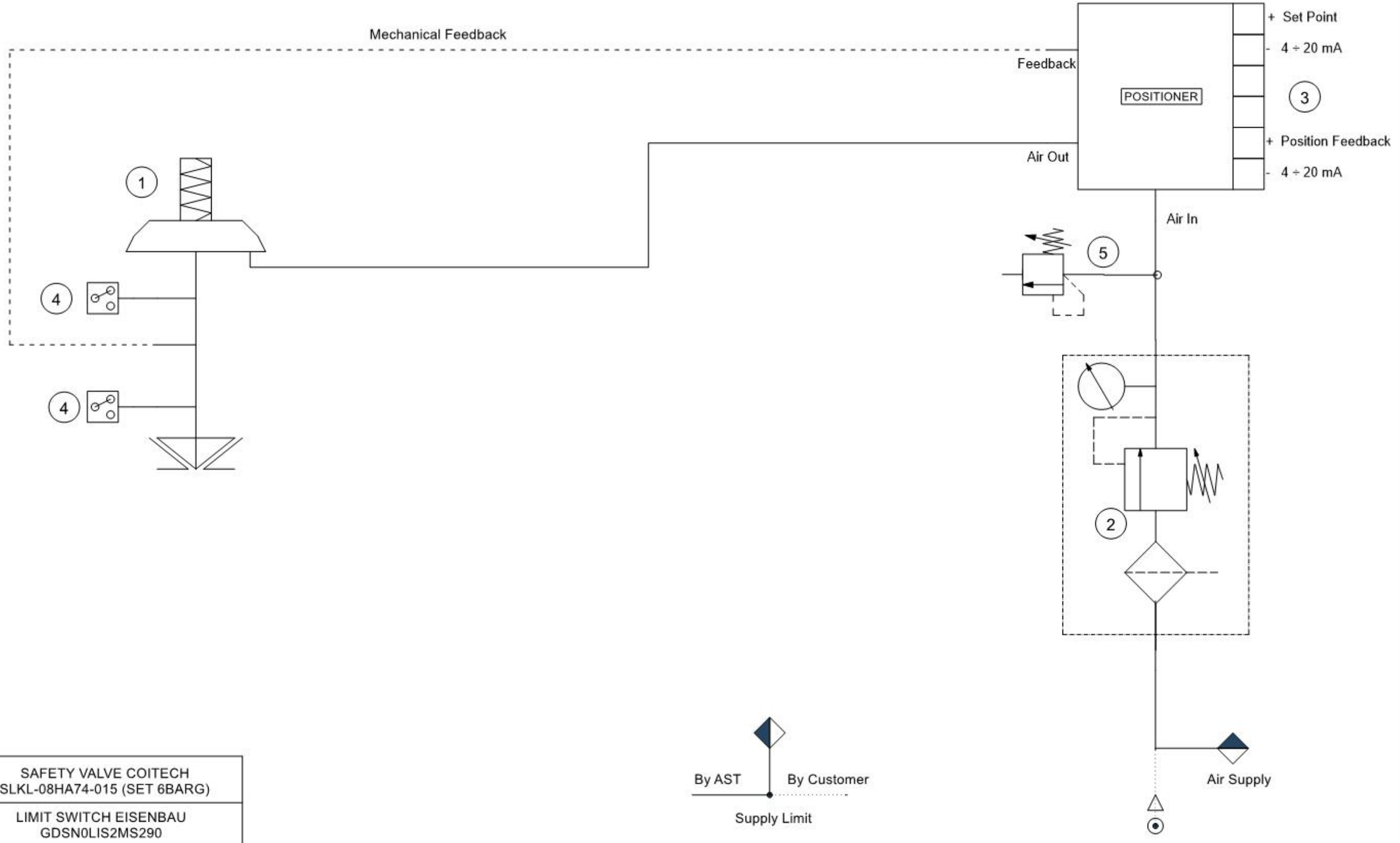
**25-PV-055A/B**

Job CV2400221
Code
DRW N. 240221-PS03
Sheet 01 of 01

PROPERTY AND REPRODUCTION ARE SUBJECTED TO THE LAW



Bosch Rexroth Scheme Editor




| ITEM | PART NAME |
|---|---|
| 5 | SAFETY VALVE COITECH<br>SLKL-08HA74-015 (SET 6BARG) |
| 4 | LIMIT SWITCH EISENBAU<br>GDSN0LIS2MS290 |
| 3 | POSITIONER TISSIN<br>TI-TS905LC41S30 |
| 2 | AIR SET FILTER + PRESSURE GAUGE<br>SITECNA FR044 |
| 1 | SINGLE EFFECT REVERSE ACTING<br>PNEUMATIC DIAPHRAM TYPE SD11R |

| Rev. | Date | Revision Description | Issued by | Chk/Appr by |
|---|---|---|---|---|
| 0 | 23/04/2024 | FIRST ISSUE | A.Tirabosch | A.Perego |
| | | | Weight (KG) | Replace |

**64-PV-031A/B**

Job CV2400221
Code
DRW N. 240221-PS04
Sheet 01 of 01

PROPERTY AND REPRODUCTION ARE SUBJECTED TO THE LAW



Bosch Rexroth Scheme Editor

# PART 1-DESIGN DOSSIER

# Section 3.1

General arrangements and drawings

(including weight and data sheets)

# Base Load Power Hub (BLPH)

## GENERAL ARRANGEMENTS DRAWING (INCLUDING WEIGHT DATA SHEETS) - CONTROL VALVES (AST)

Document Number: 1724000740-IN-DA-00004

Document Class: 2

ROSETTI MARINO

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

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

| Sign | Date |
|---|---|
| V. Barratta | 17-07-2024 |

| Rev. | Date | Description | Prepared | Reviewed | Approved |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| 02 | 02/07/2024 | Accepted for Construction (AFC) | AT | AP | AP |
| 01 | 14/06/2024 | Accepted for Construction (AFC) | AT | AP | AP |
| 00 | 10/05/2024 | Issue for Review (IFR) | AT | AP | AP |




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| 2 | Table of Contents | X | X | X | | | | | |
| 3 | Revision / Change Log | X | X | X | | | | | |
| 4 | References | X | X | X | | | | | |
| 5 | General Arrangements Drawing (including Weight Data Sheets) - CONTROL VALVES (AST) | X | X | X | | | | | |





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Revision / Change Log

| Rev. | Description |
|---|---|
| 00 | ISSUE FOR REVIEW (IFR) |
| 01 | ACCEPTED FOR CONSTRUCTION (AFC) |
| 02 | ACCEPTED FOR CONSTRUCTION (AFC) |
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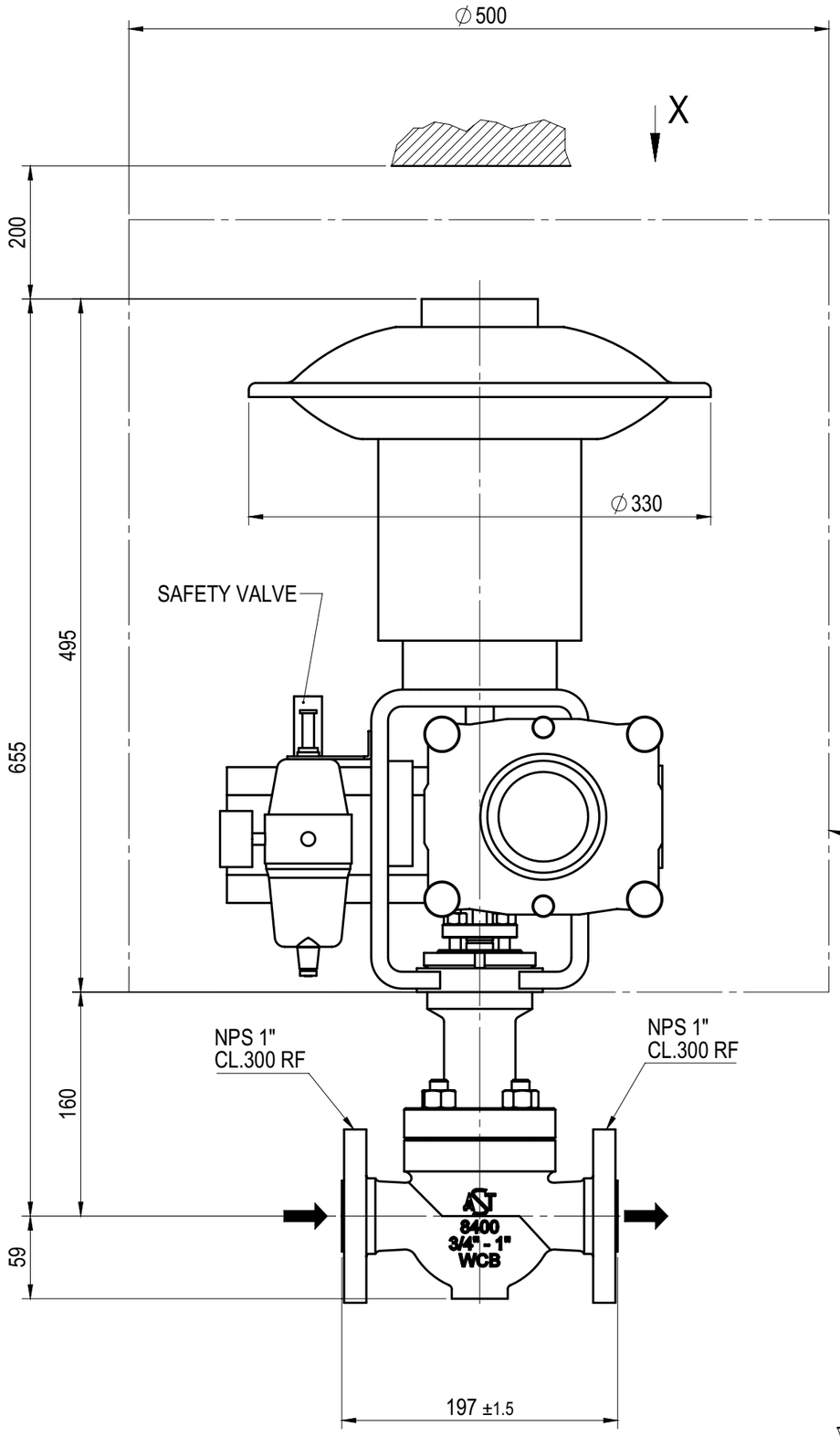


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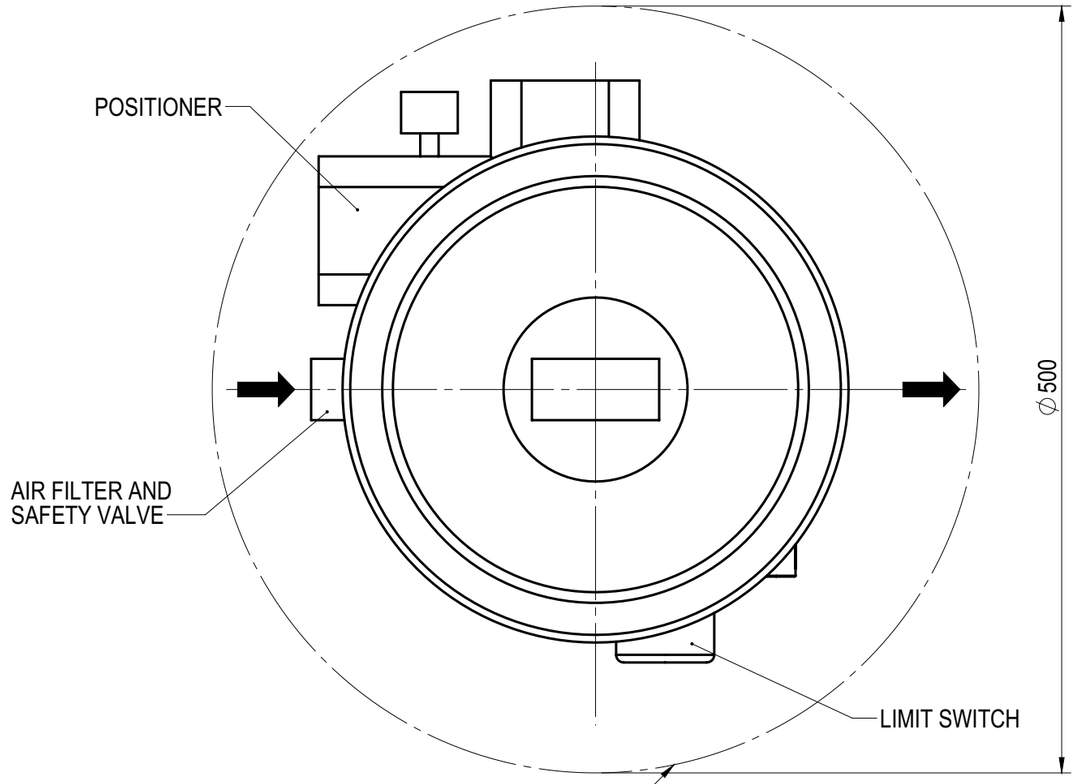
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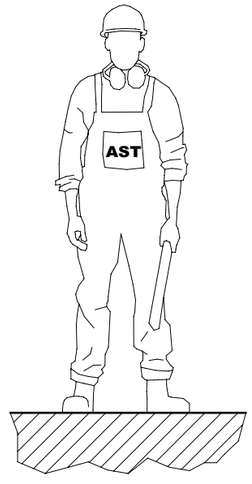

UPPER VIEW FROM "X"




MAXIMUM ACCESSORIES
OVERALL DIMENSION

POSITIONER ON BACK SIDE

MASS:
VALVE= ~ 12 kg
ACTUATOR= ~ 28 kg
TOTAL= ~ 40kg




General tolerances

For main components:
- up to 500mm ± 25
- over 500mm ± 50

For installed equipments / instrument / tubing:
- all dim. ± 100

| | |
|---|---|
| Cliente / Customer | ROSETTI MARINO S.P.A. |
| Ordine AST / AST job | CV2400221 |
| Sigle / Tags | 25-FV-031, 25-FV-032, 25-FV-033, 25-FV-034, 25-FV-036, 25-FV-038 |
| Matricole / Serials | 2400583, 2400584, 2400585, 2400586, 2400587, 2400588 |

Revision Description
ADDED ACCESSORIES AS PER CUSTOMER COMMENTS

| Drawn | ABD ELSALAM | Checked | PINI | Approval | PEREGO | Date | 29-05-24 |
|---|---|---|---|---|---|---|---|

PROPERTY AND REPRODUCTION ARE SUBJECTED TO THE LAW

Scale | Mass kg | CR 00298 | NOTE:

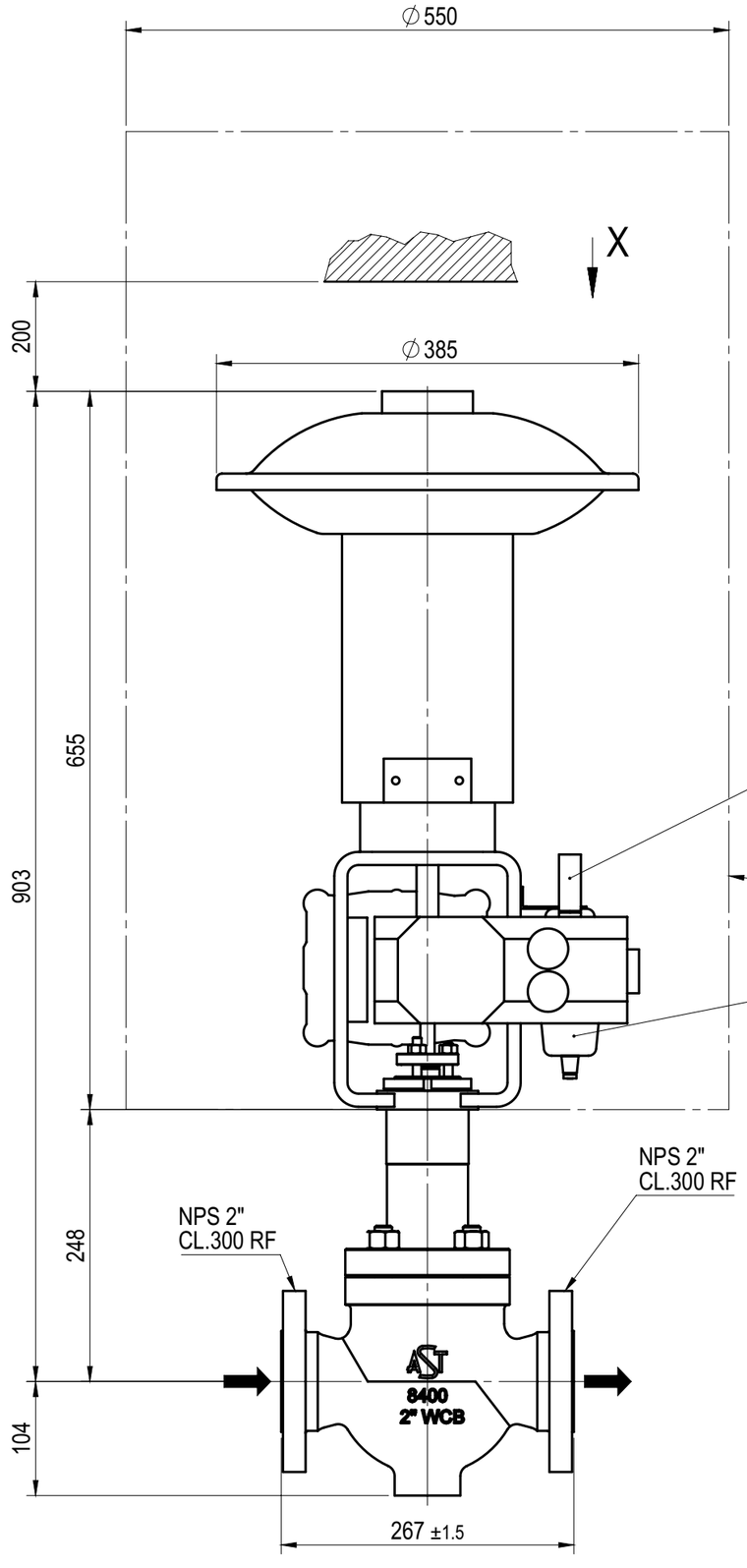
Description
CV-8407 OVERALL DIMENSION
NPS 1" PORT 1/4" CL. 300 RF
WITH SOFT SEATING

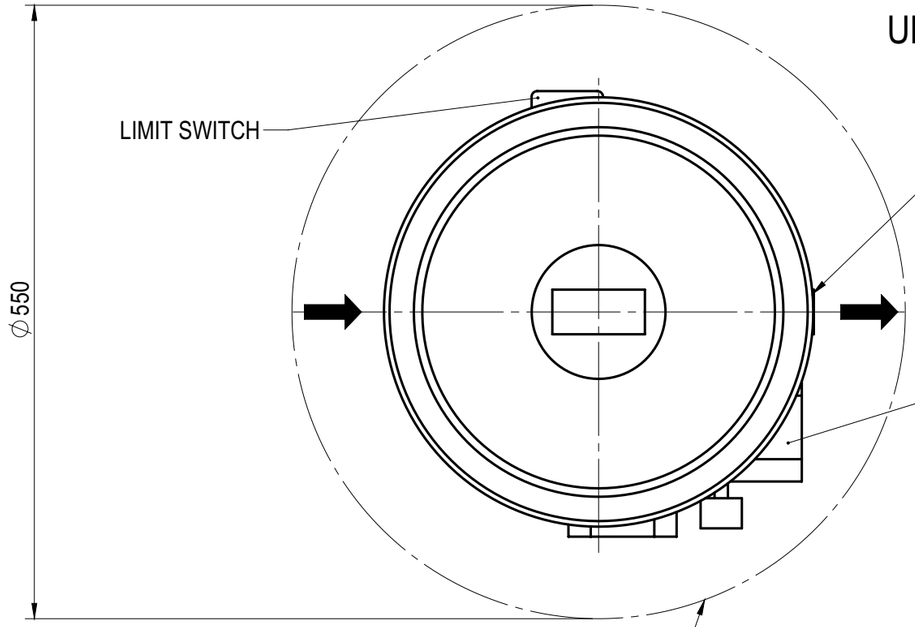
Dwg No
240221-0100OD

Rev. 1 | Sheet 1 of 1



A3 - AST S.p.A. Via R. Merendi, 40 - 20010 Cornaredo (Mi) - Tel.02 934848.1 - Control valve division



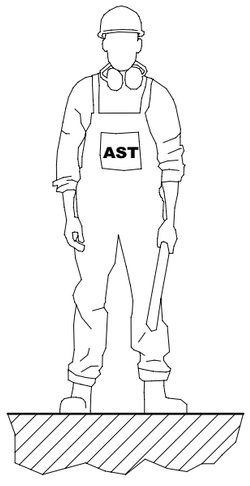

SAFETY VALVE

MAXIMUM ACCESSORIES
OVERALL DIMENSION

AIR FILTER

POSITIONER ON FRONT SIDE

MASS:
VALVE= ~ 30 kg
ACTUATOR= ~ 45 kg
TOTAL= ~ 75 kg




General tolerances

For main components:
- up to 500mm ± 25
- over 500mm ± 50

For installed equipments / instrument / tubing:
- all dim. ± 100

| | |
|---|---|
| Cliente / Customer | ROSETTI MARINO S.P.A. |
| Ordine AST / AST job | CV2400221 |
| Sigle / Tags | 25-PV-035, 25-PV-037, 25-PV-040, 25-PV-043, 25-PV-046, 25-PV-049 |
| Matricole / Serials | 2400589, 2400590, 2400591, 2400592, 2400593, 2400594 |

Revision Description
ADDED ACCESSORIES AS PER CUSTOMER COMMENTS

| Drawn | ABD ELSALAM | Checked | PINI | Approval | PEREGO | Date | 29-05-24 |
|---|---|---|---|---|---|---|---|

PROPERTY AND REPRODUCTION ARE SUBJECTED TO THE LAW

Scale

Mass kg

CR 00299

NOTE:

Description
CV-8407 OVERALL DIMENSION
NPS 2" PORT 1" CL. 300 RF
WITH SOFT SEATING

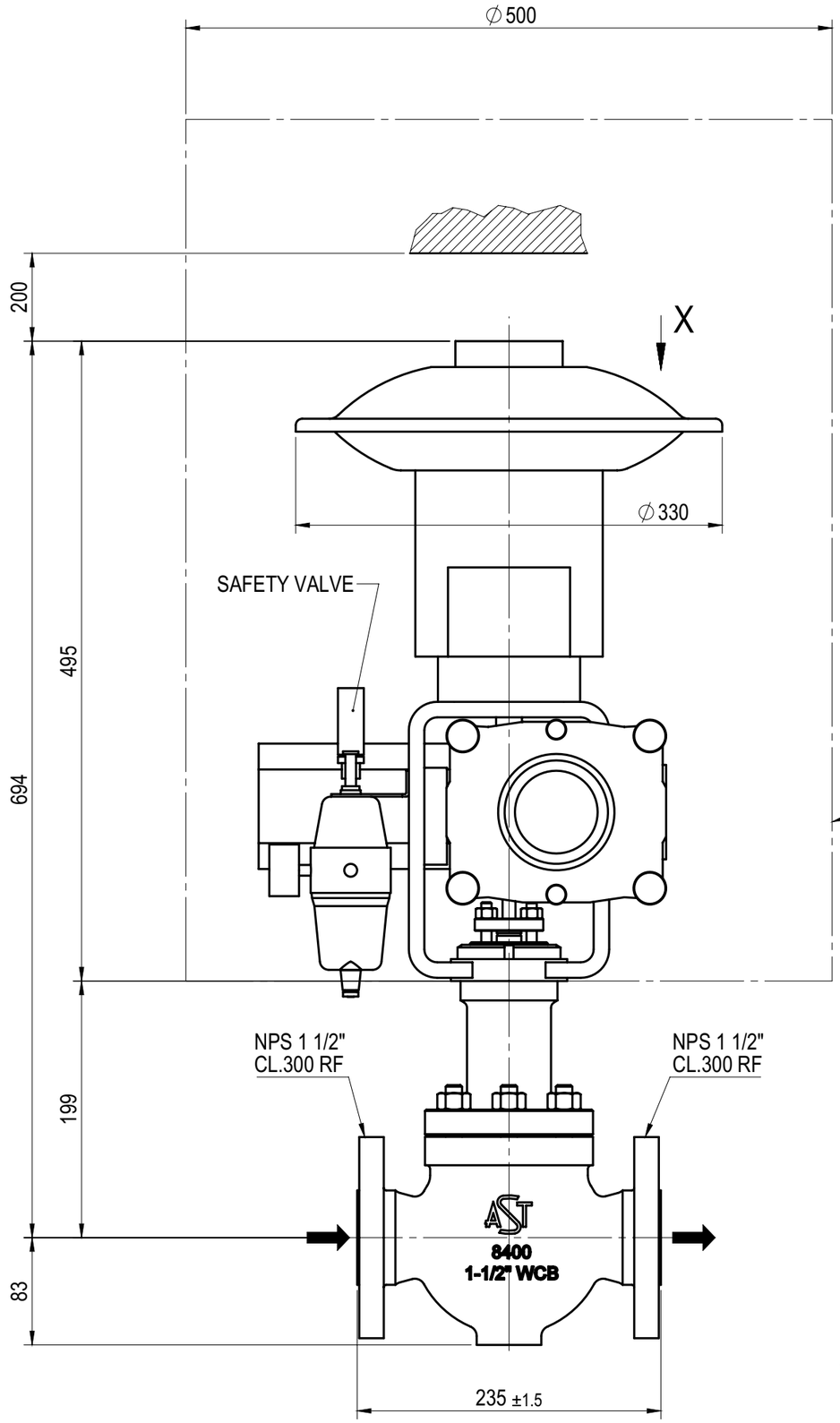
Dwg No
240221-0200OD

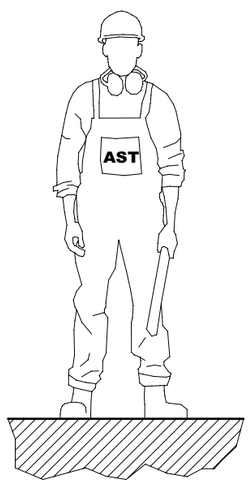
Rev. 1

Sheet 1 of 1

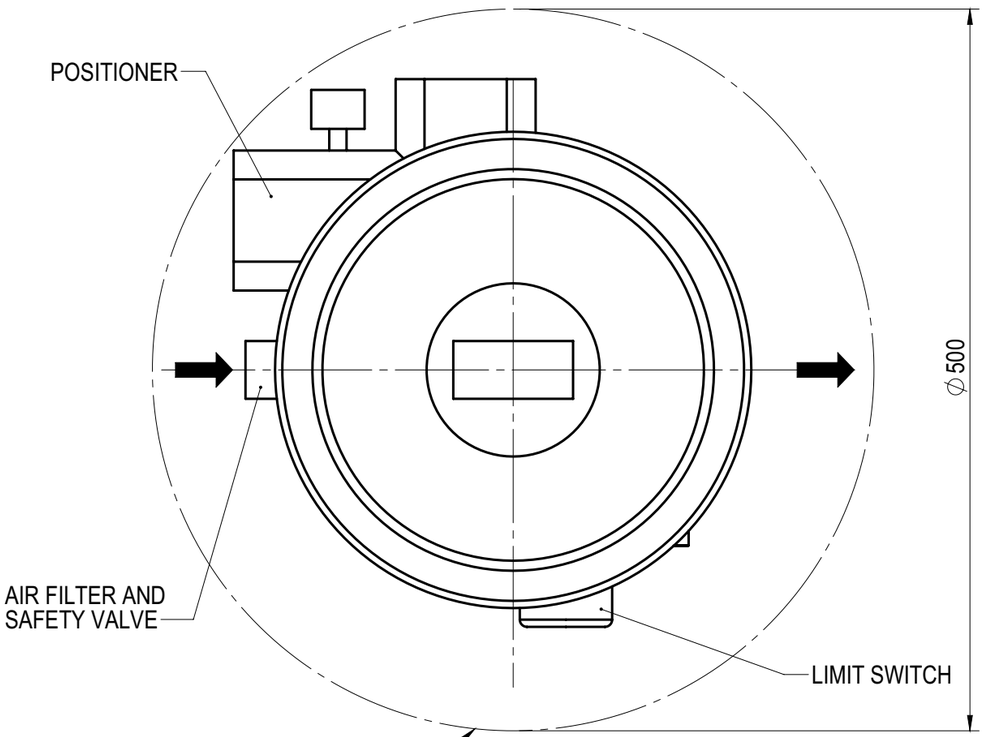
1724000740-QC-DB-00016_01

A3 - AST S.p.A. Via R. Merendi, 40 - 20010 Cornaredo (MI) - Tel.02 934848.1 - Control valve division




UPPER VIEW FROM "X"




POSITIONER ON BACK SIDE

MASS:
VALVE= ~ 20 kg
ACTUATOR= ~ 28 kg
TOTAL= ~ 48 kg

General tolerances

For main components:
- up to 500mm ± 25
- over 500mm ± 50

For installed equipments / instrument / tubing:
- all dim. ± 100

| | |
|---|---|
| Cliente / Customer | ROSETTI MARINO S.P.A. |
| Ordine AST / AST job | CV2400221 |
| Sigle / Tags | 25-PV-055A |
| Matricole / Serials | 2400595 |

Revision Description
MODIFIED PORT FOR TAG 25-PV-055B AS PER CUSTOMER COMMENTS

| Drawn | ABD ELSALAM | Checked | PINI | Approval | PEREGO | Date | 07-06-24 |
|---|---|---|---|---|---|---|---|

PROPERTY AND REPRODUCTION ARE SUBJECTED TO THE LAW

Scale

Mass kg

CR 00303

NOTE:

Description
CV-8407 OVERALL DIMENSION
NPS 1 1/2" PORT 1" CL.300 RF
WITH SOFT SEATING

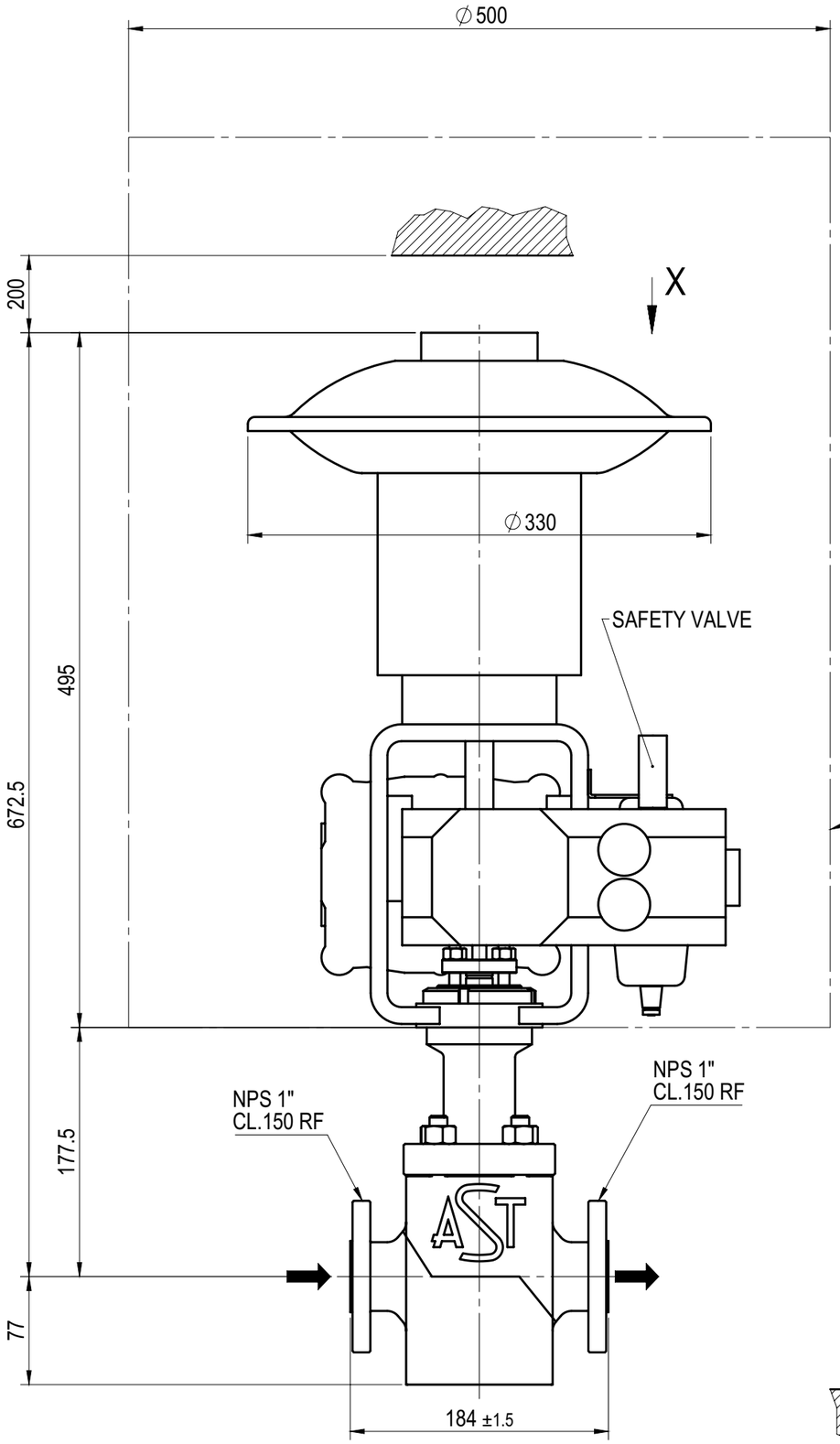
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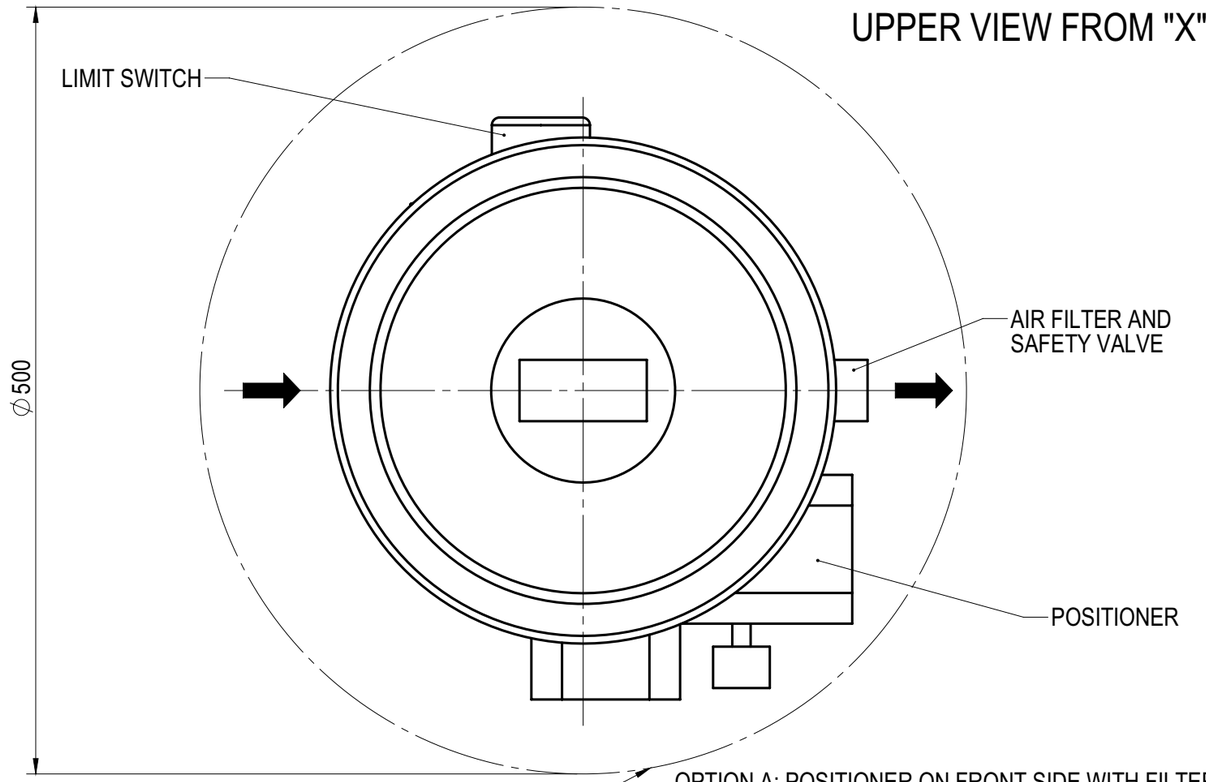
Rev. 2

Sheet 1 of 1

1724000740-QC-DB-00016 01

A3 - AST S.p.A. Via R. Merendi, 40 - 20010 Cornaredo (MI) - Tel.02 934848.1 - Control valve division




MAXIMUM ACCESSORIES
OVERALL DIMENSION

OPTION A: POSITIONER ON FRONT SIDE WITH FILTER ON RIGHT SIDE (AS REPRESENTED)

OPTION B: POSITIONER ON BACK SIDE WITH FILTER ON LEFT SIDE

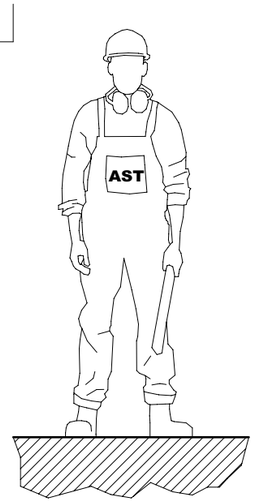
| TAG | SN | OPTION |
|---|---|---|
| 64-PV-031A | 2400597 | A |
| 64-PV-031B | 2400598 | B |

MASS:
VALVE= ~ 20 kg
ACTUATOR= ~ 28 kg
TOTAL= ~ 48 kg

General tolerances

For main components:
- up to 500mm ± 25
- over 500mm ± 50

For installed equipments / instrument / tubing:
- all dim. ± 100




| | |
|---|---|
| Cliente / Customer | ROSETTI MARINO S.P.A. |
| Ordine AST / AST job | CV2400221 |
| Sigle / Tags | 64-PV-031A, 64-PV-031B |
| Matricole / Serials | 2400597, 2400598 |

Revision Description
ADDED ACCESSORIES AS PER CUSTOMER COMMENTS

| Drawn | ABD ELSALAM | Checked | PINI | Approval | PEREGO | Date | 29-05-24 |
|---|---|---|---|---|---|---|---|

PROPERTY AND REPRODUCTION ARE SUBJECTED TO THE LAW

Scale

Mass kg

CR 00304

NOTE:

Description
CV-8407 OVERALL DIMENSION
NPS 1" PORT 3/8" CL. 150 RF

Dwg No
240221-0400OD

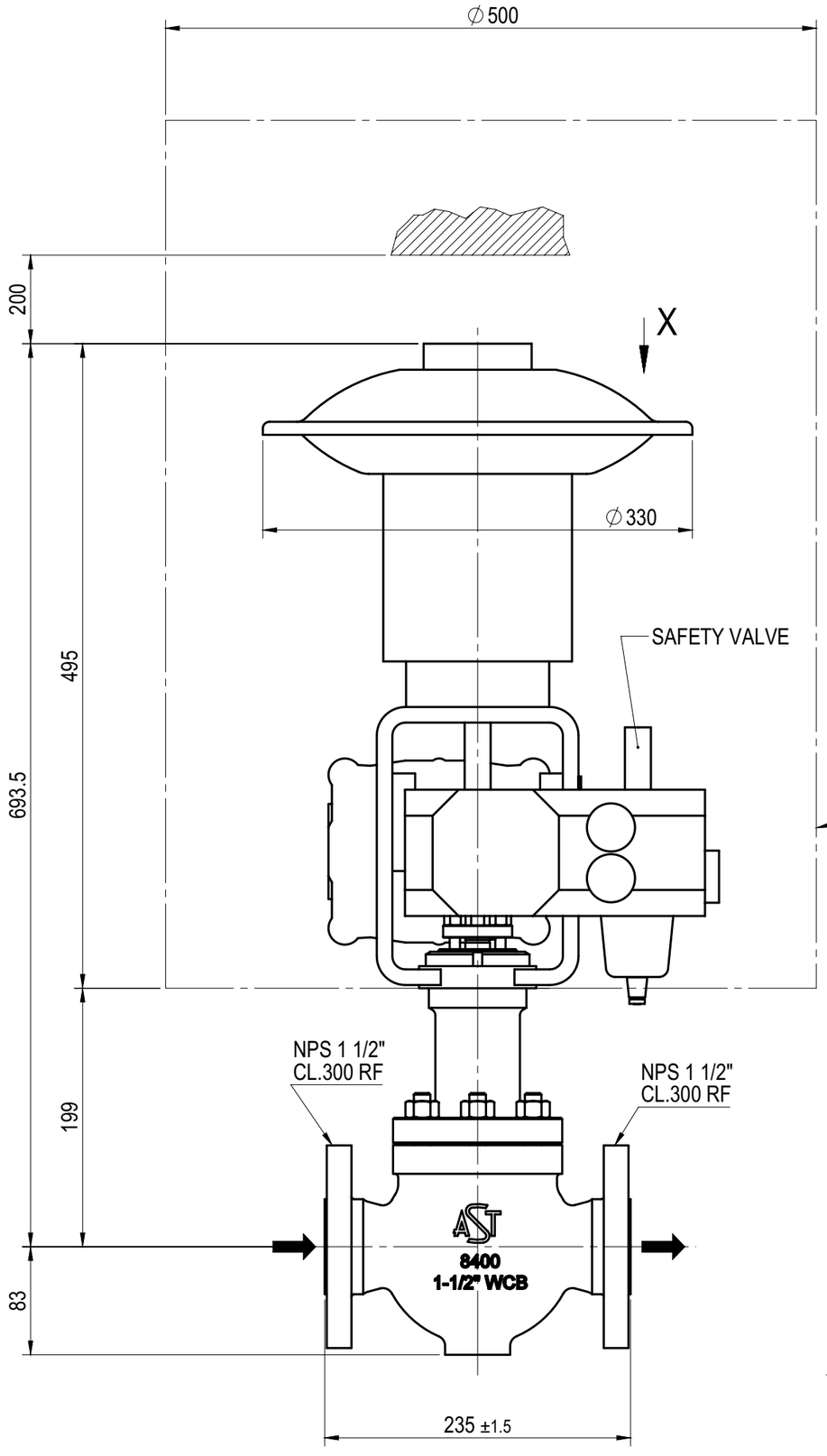
Rev. 2

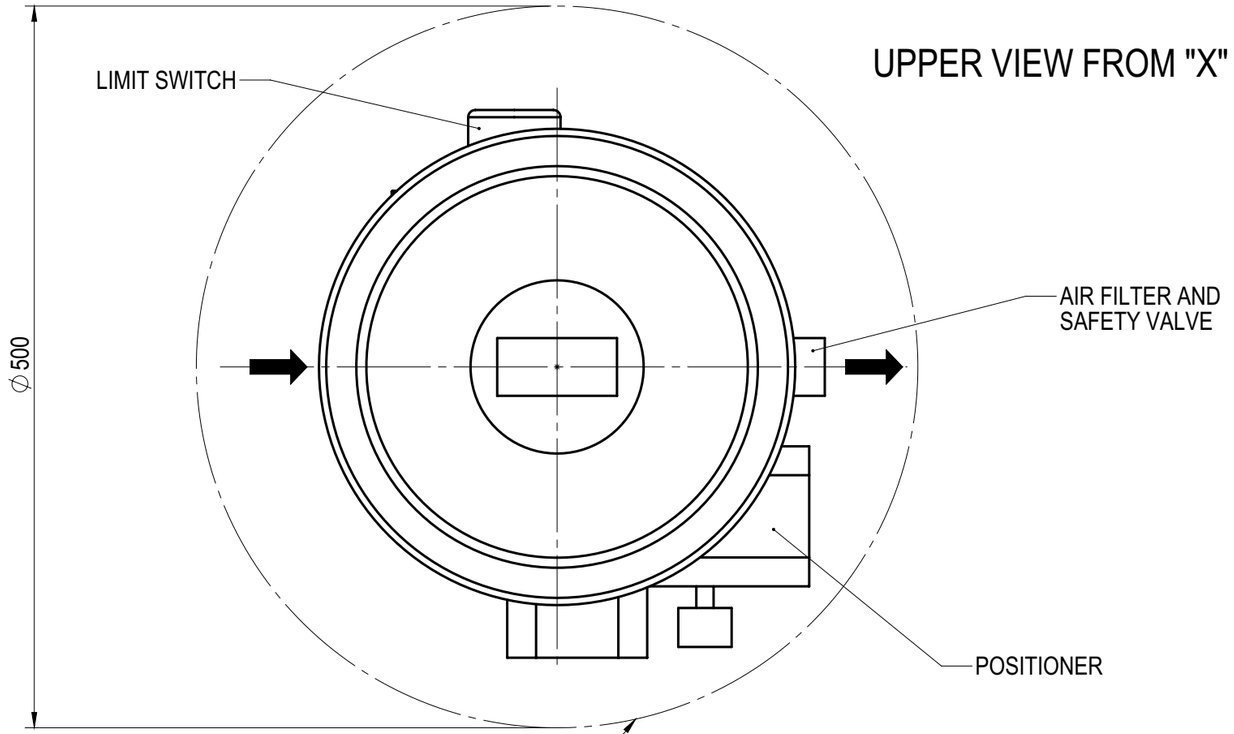
Sheet 1 of 1

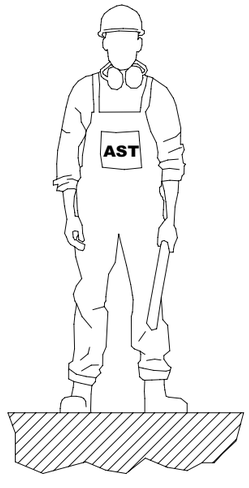


A3 - AST S.p.A. Via R. Merendi, 40 - 20010 Cornaredo (MI) - Tel.02 934848.1 - Control valve division

1724000740-QC-DB-00016 01




POSITIONER ON FRONT SIDE

MASS:
VALVE= ~ 20 kg
ACTUATOR= ~ 28 kg
TOTAL= ~ 48 kg

General tolerances

For main components:
- up to 500mm ± 25
- over 500mm ± 50

For installed equipments / instrument / tubing:
- all dim. ± 100

| | |
|---|---|
| Cliente / Customer | ROSETTI MARINO S.P.A. |
| Ordine AST / AST job | CV2400221 |
| Sigle / Tags | 25-PV-055B |
| Matricole / Serials | 2400596 |

Revision Description
ISSUED

| Drawn | ABD ELSALAM | Checked | PINI | Approval | PEREGO | Date | 07-06-24 |
|---|---|---|---|---|---|---|---|

PROPERTY AND REPRODUCTION ARE SUBJECTED TO THE LAW

Scale | Mass kg | CR 00303 | NOTE:

Description
CV-8407 OVERALL DIMENSIONS
NPS 1 1/2" PORT 5/32" CL. 300
RF WITH SOFT SEATING

Dwg No
240221-0500OD

Rev. 0 | Sheet 1 of 1

A3 - AST S.p.A. Via R. Merendi, 40 - 20010 Cornaredo (Mi) - Tel.02 934848.1 - Control valve division

1724000740-QC-DB-00016 01

# PART 1-DESIGN DOSSIER

# Section 3.2

Detail drawing including nameplate drawing

Base Load Power Hub (BLPH)

# DETAIL DRAWING INCLUDING NAMEPLATE DRAWING - CONTROL VALVES (AST)

Document Number: 1724000740-IN-DD-00005

Document Class: 2

ROSETTI MARINO

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

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

| Sign | Date |
|---|---|
| V. Barratta | 30-08-2024 |

| Rev. | Date | Description | Prepared | Reviewed | Approved |
|---|---|---|---|---|---|
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| | | | | | |
| 03 | 27/08/2024 | Accepted for Construction (AFC) | AT | AP | AP |
| 02 | 05/08/2024 | Accepted for Construction (AFC) | AT | AP | AP |
| 01 | 28/06/2024 | Issue for Review (IFR) | AT | AP | AP |
| 00 | 10/05/2024 | Issue for Review (IFR) | AT | AP | AP |




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| 2 | Table of Contents | X | X | X | X | | | | |
| 3 | Revision / Change Log | X | X | X | X | | | | |
| 4 | Detail Drawing including Nameplate Drawing | X | X | X | X | | | | |





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| Rev. | Description |
|---|---|
| 00 | ISSUE FOR REVIEW (IFR) |
| 01 | ISSUE FOR REVIEW (IFR) |
| 02 | ACCEPTED FOR CONSTRUCTION (AFC) |
| 03 | ACCEPTED FOR CONSTRUCTION (AFC) |
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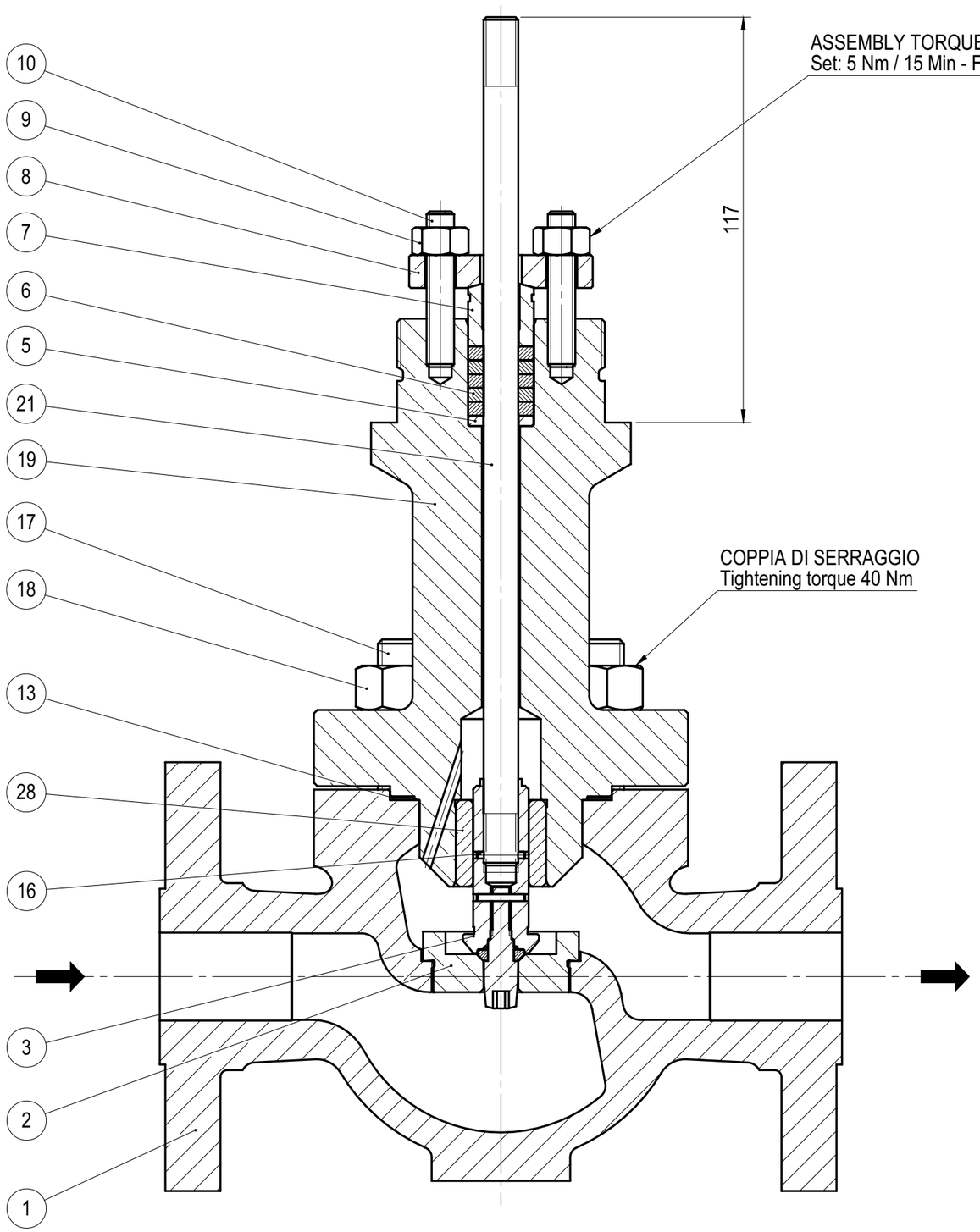
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Stroke: 13mm

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| Ordine AST / AST job | CV2400221 |
| Sigle / Tags | 25-FV-031, 25-FV-032, 25-FV-033, 25-FV-034, 25-FV-036, 25-FV-038 |
| Matricole / Serials | 2400583, 2400584, 2400585, 2400586, 2400587, 2400588 |

FOR STEM AND PLUG MOUNTING




ACTUATOR TYPE
SD11 REVERSE ACTING SPRING RANGE 15÷30 psi

| ITEM | QTY | DWG | DESCRIPTION | MATERIAL |
|---|---|---|---|---|
| 1 | 1 | 84025121 | BODY | ASTM A351 CF3M |
| 2 | 1 | 240221-0100SE | SEAT | ASTM A479 316/316L |
| 3 | 1 | 240221-0100PL | PLUG | ASTM A479 316/316L + PTFE |
| 5 | 1 | UNCV0045-B0 | FINAL PACKING RING | ASTM A479 316/316L |
| 6 | 5 | UNCV0034-B0 | PACKING RING | PTFE (VTG) |
| 7 | 1 | UNCV0025-B0 | FOLLOWER | ASTM A479 316/316L |
| 8 | 1 | UNCV0023-B0 | PACKING FLANGE | ASTM A479 316/316L |
| 9 | 2 | UN0015-5/16 | NUT | ASTM A194 8M |
| 10 | 2 | 20TC08045 | STUD | ASTM A193/A320 B8M Cl.1 |
| 13 | 1 | UN0014-064 | GASKET | Graphite with AISI 316 reinforcement |
| 16 | 1 | UNCV0301-Z h=14 | PIN | ASTM A479 316/316L |
| 17 | 4 | 20TC12055 | STUD | ASTM A193/A320 B8M Cl.2 |
| 18 | 4 | UN0015-1/2 | NUT | ASTM A194 8M |
| 19 | 1 | 8407BN-001 | BONNET | ASTM A479 316/316L |
| 21 | 1 | 80ST03100245 | STEM | ASTM A479 316/316L |
| 28 | 1 | UN0278 | GUIDE BUSHING | ASTM A479 S21800 (NITRONIC 60) |

Revision Description
ISSUED

| Drawn | PINI | Checked | OLDANI | Approval | PEREGO | Date | 30-04-24 |
|---|---|---|---|---|---|---|---|

PROPERTY AND REPRODUCTION ARE SUBJECTED TO THE LAW

Scale

Mass kg 11.64

CR 00298

NOTE:

Description
CV-8407 VALVE ASSEMBLY
NPS 1" PORT 1/4" CL. 300 RF
WITH SOFT SEATING

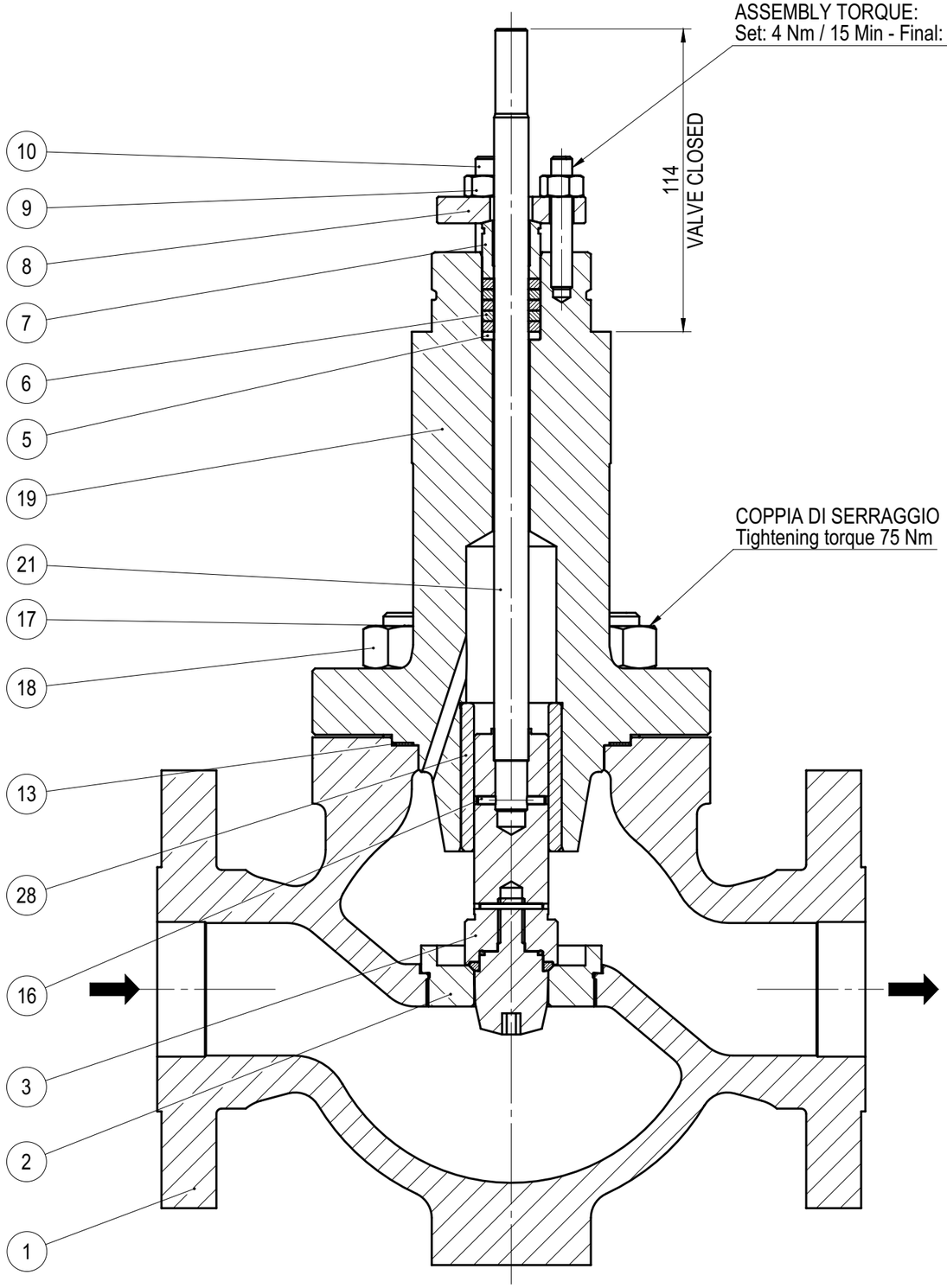
Dwg No
240221-0100AA

Rev. 0

Sheet 1 of 1

A3 - AST S.p.A. Via R. Merendi, 40 - 20010 Cornaredo (Mi) - Tel.02 934848.1 - Control valve division

Stroke: 25mm




| Cliente / Customer | ROSETTI MARINO S.P.A. |
|---|---|
| Ordine AST / AST job | CV2400221 |
| Sigle / Tags | 25-PV-035, 25-PV-037, 25-PV-040, 25-PV-043, 25-PV-046, 25-PV-049 |
| Matricole / Serials | 2400589, 2400590, 2400591, 2400592, 2400593, 2400594 |

FOR STEM AND PLUG MOUNTING

ACTUATOR TYPE
SD13 REVERSE ACTING SPRING RANGE 20÷44 psi

| ITEM | QTY | DWG | DESCRIPTION | MATERIAL |
|---|---|---|---|---|
| 1 | 1 | 84.50.121 | BODY | ASTM A351 CF3M |
| 2 | 1 | 240221-0200SE | SEAT | ASTM A479 316/316L |
| 3 | 1 | 240221-0200PL | PLUG | ASTM A479 316/316L + PTFE |
| 5 | 1 | UNCV0045-C0 | FINAL PACKING RING | ASTM A479 316/316L |
| 6 | 5 | UNCV0034-C0 | PACKING RING | Graphite (VF1) |
| 7 | 1 | UNCV0025-C0 | FOLLOWER | ASTM A479 316/316L |
| 8 | 1 | UNCV0023-C0 | PACKING FLANGE | ASTM A479 316/316L |
| 9 | 3 | UN0015-5/16 | NUT | ASTM A194 8M |
| 10 | 3 | 20TC08050 | STUD | ASTM A193/A320 B8M Cl.1 |
| 13 | 1 | UNCV0160-090-074 △1 | GASKET | PTFE △1 |
| 16 | 1 | UNCV0301-A h=26 | PIN | ASTM A479 316/316L |
| 17 | 4 | 20T (20TC16065) | STUD | ASTM A193/A320 B8M Cl.2 |
| 18 | 4 | UN0015-5/8 | NUT | ASTM A194 8M |
| 19 | 1 | 8407BN-007 | BONNET | ASTM A479 316/316L |
| 21 | 1 | 80ST03110295 | STEM | ASTM A479 316/316L |
| 28 | 1 | UN0237 | GUIDE BUSHING | ASTM A479 S21800 (NITRONIC 60) |

Revision Description
MODIFIED ITEM 13 △1

| Drawn | PINI | Checked | OLDANI | Approval | PEREGO | Date | 16-05-24 |
|---|---|---|---|---|---|---|---|

PROPERTY AND REPRODUCTION ARE SUBJECTED TO THE LAW

Scale

Mass kg 29.9

CR 00299

NOTE:

Description
CV-8407 VALVE ASSEMBLY
NPS 2" PORT 1" CL. 300 RF
WITH SOFT SEATING

Dwg No
240221-0200AA

Rev. 1

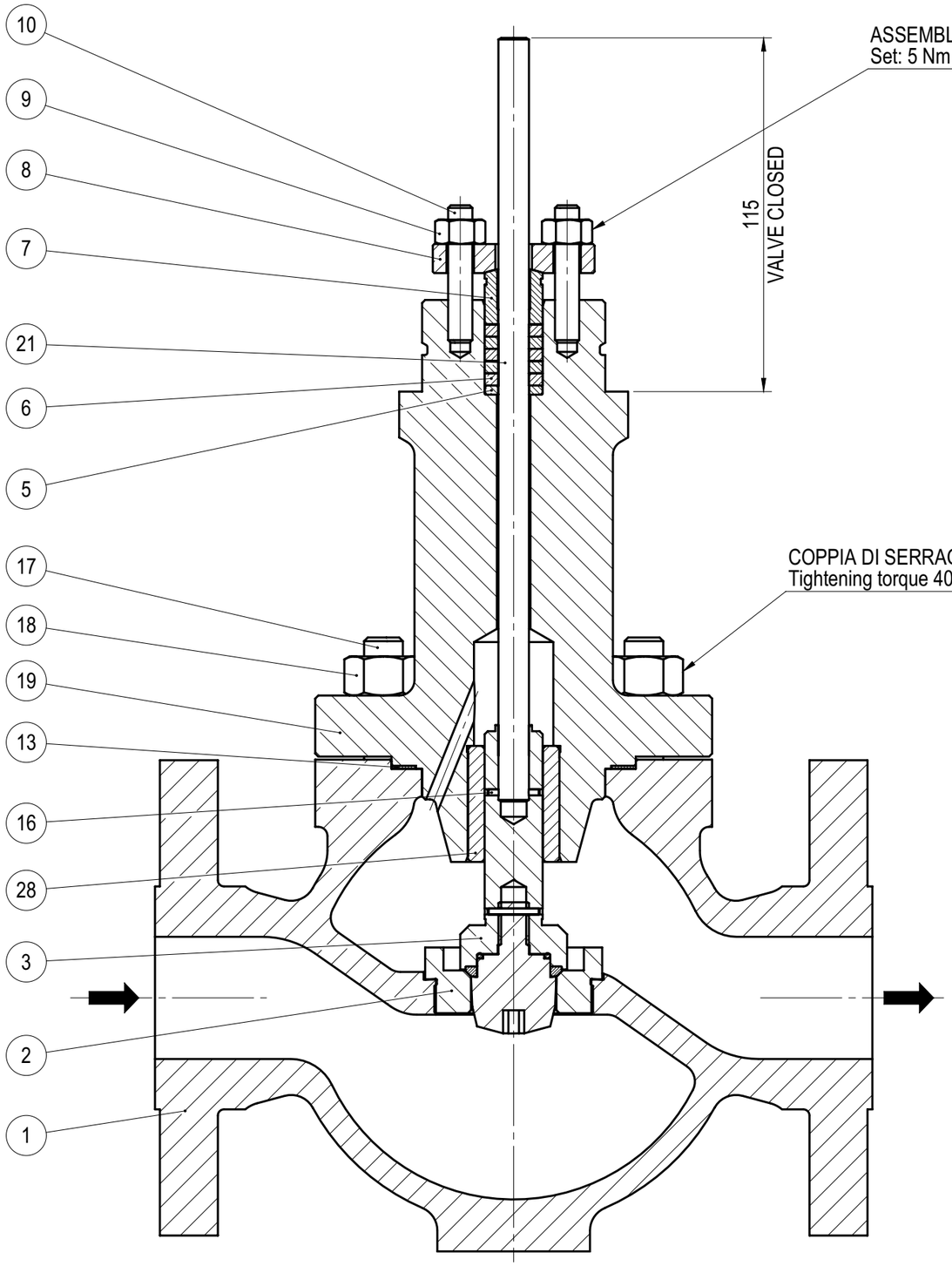
Sheet 1 of 1

A3 - AST S.p.A. Via R. Merendi, 40 - 20010 Comaredo (Mi) - Tel.02 934848.1 - Control valve division

Stroke: 20mm

| | |
|---|---|
| Cliente / Customer | ROSETTI MARINO S.P.A. |
| Ordine AST / AST job | CV2400221 |
| Sigle / Tags | 25-PV-055A |
| Matricole / Serials | 2400595 |

FOR STEM AND PLUG MOUNTING




ACTUATOR TYPE
SD11 REVERSE ACTING SPRING RANGE 20÷44 psi

| ITEM | QTY | DWG | DESCRIPTION | MATERIAL |
|---|---|---|---|---|
| 1 | 1 | 84.40.121 | BODY | ASTM A351 CF3M |
| 2 | 1 | 240221-0300SE | SEAT | ASTM A479 316/316L |
| 3 | 1 | 240221-0300PL | PLUG | ASTM A479 316/316L + PTFE |
| 5 | 1 | UNCV0045-B0 | FINAL PACKING RING | ASTM A479 316/316L |
| 6 | 5 | UNCV0034-B0 | PACKING RING | Graphite (VF1) |
| 7 | 1 | UNCV0025-B0 | FOLLOWER | ASTM A479 316/316L |
| 8 | 1 | UNCV0023-B0 | PACKING FLANGE | ASTM A479 316/316L |
| 9 | 2 | UN0015-5/16 | NUT | ASTM A194 8M |
| 10 | 2 | 20TC08045 | STUD | ASTM A193/A320 B8M Cl.1 |
| 13 | 1 | UNCV0160-080-064 △1 | GASKET | PTFE △1 |
| 16 | 1 | UNCV0301-Z h=17 | PIN | ASTM A479 316/316L |
| 17 | 6 | 20TC12055 | STUD | ASTM A193/A320 B8M Cl.2 |
| 18 | 6 | UN0015-1/2 | NUT | ASTM A194 8M |
| 19 | 1 | 8407BN-004 | BONNET | ASTM A479 316/316L |
| 21 | 1 | 80ST03100250 | STEM | ASTM A479 316/316L |
| 28 | 1 | UN0350 | GUIDE BUSHING | ASTM A479 S21800 (NITRONIC 60) |

Revision Description
MODIFIED ITEM 13 AND PORT FOR TAG 25-PV-055B AS PER CUSTOMER COMMENTS △1

| Drawn | PINI | Checked | OLDANI | Approval | PEREGO | Date | 07-06-24 |
|---|---|---|---|---|---|---|---|

PROPERTY AND REPRODUCTION ARE SUBJECTED TO THE LAW

| Scale | Mass kg | CR | NOTE: |
|---|---|---|---|
| 1:1.75 | 19.81 | 00303 | |

Description
CV-8407 VALVE ASSEMBLY
NPS 1 1/2" PORT 1" CL.300 RF
WITH SOFT SEATING

Dwg No
240221-0300AA

Rev. 1

Sheet 1 of 1



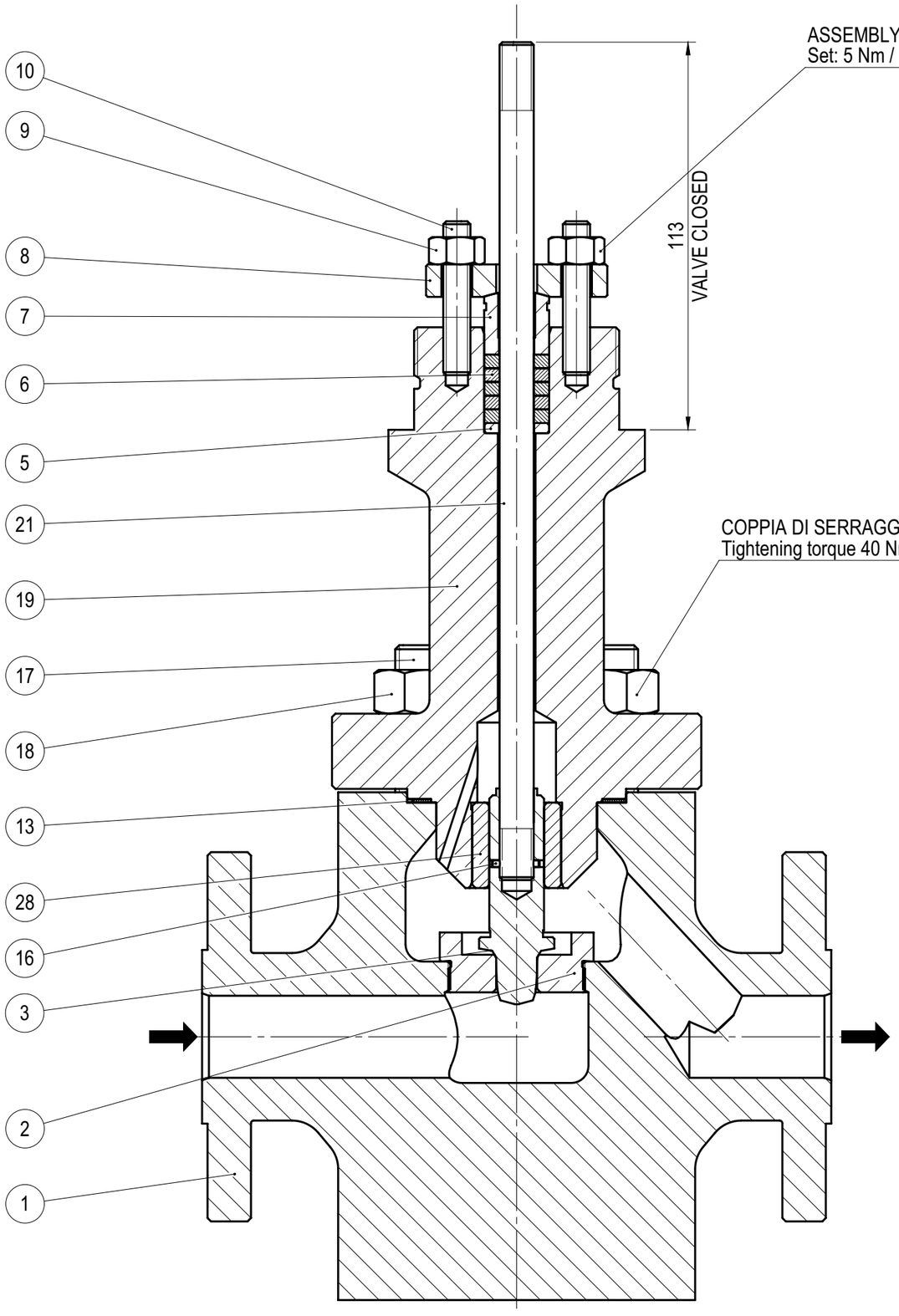
A3 - AST S.p.A. Via R. Merendi, 40 - 20010 Cornaredo (Mi) - Tel.02 934848.1 - Control valve division

1724000740-QC-DB-00016 01

Stroke: 13mm

| | |
|---|---|
| Cliente / Customer | ROSETTI MARINO S.P.A. |
| Ordine AST / AST job | CV2400221 |
| Sigle / Tags | 64-PV-031A, 64-PV-031B |
| Matricole / Serials | 2400597, 2400598 |

FOR STEM AND PLUG MOUNTING




ACTUATOR TYPE
SD11 REVERSE ACTING SPRING RANGE 15÷30 psi

| ITEM | QTY | DWG | DESCRIPTION | MATERIAL |
|---|---|---|---|---|
| 1 | 1 | 8407BD-007 (RF) | BODY | ASTM A350 LF2 Cl. 1 |
| 2 | 1 | 8407SE-009 | SEAT | ASTM A479 316/316L+ CoCr-A H.F. |
| 3 | 1 | 8407PL-080 | PLUG | ASTM A479 316/316L+ CoCr-A H.F. |
| 5 | 1 | UNCV0045-B0 | FINAL PACKING RING | ASTM A479 316/316L |
| 6 | 5 | UNCV0034-B0 | PACKING RING | PTFE (VTG) |
| 7 | 1 | UNCV0025-B0 | FOLLOWER | ASTM A479 316/316L |
| 8 | 1 | UNCV0023-B0 | PACKING FLANGE | ASTM A479 316/316L |
| 9 | 2 | UN0015-5/16 | NUT | ASTM A194 8M |
| 10 | 2 | 20TC08045 | STUD | ASTM A193/A320 B8M Cl.1 |
| 13 | 1 | UN0014-064 | GASKET | Graphite with AISI 316 reinforcement |
| 16 | 1 | UNCV0301-Z h=14 | PIN | ASTM A479 316/316L |
| 17 | 4 | 20TC12055 | STUD | ASTM A193/A320 B8M Cl.2 |
| 18 | 4 | UN0015-1/2 | NUT | ASTM A194 8M |
| 19 | 1 | 8407BN-001 | BONNET | ASTM A350 LF2 Cl. 1 |
| 21 | 1 | 80ST03100245 | STEM | ASTM A479 316/316L |
| 28 | 1 | UN0278 | GUIDE BUSHING | ASTM A479 410 35÷38 HRC |

Revision Description
MODIFIED PORT AND ITEM 2 AND 3

| Drawn | ABD ELSALAM | Checked | PINI | Approval | PEREGO | Date | 27-05-24 |
|---|---|---|---|---|---|---|---|

PROPERTY AND REPRODUCTION ARE SUBJECTED TO THE LAW

Scale

Mass kg 20.97

CR 00304

NOTE:

Description
CV-8407 VALVE ASSEMBLY
NPS 1" PORT 3/8" CL. 150 RF

Dwg No
240221-0400AA

Rev. 1

Sheet 1 of 1

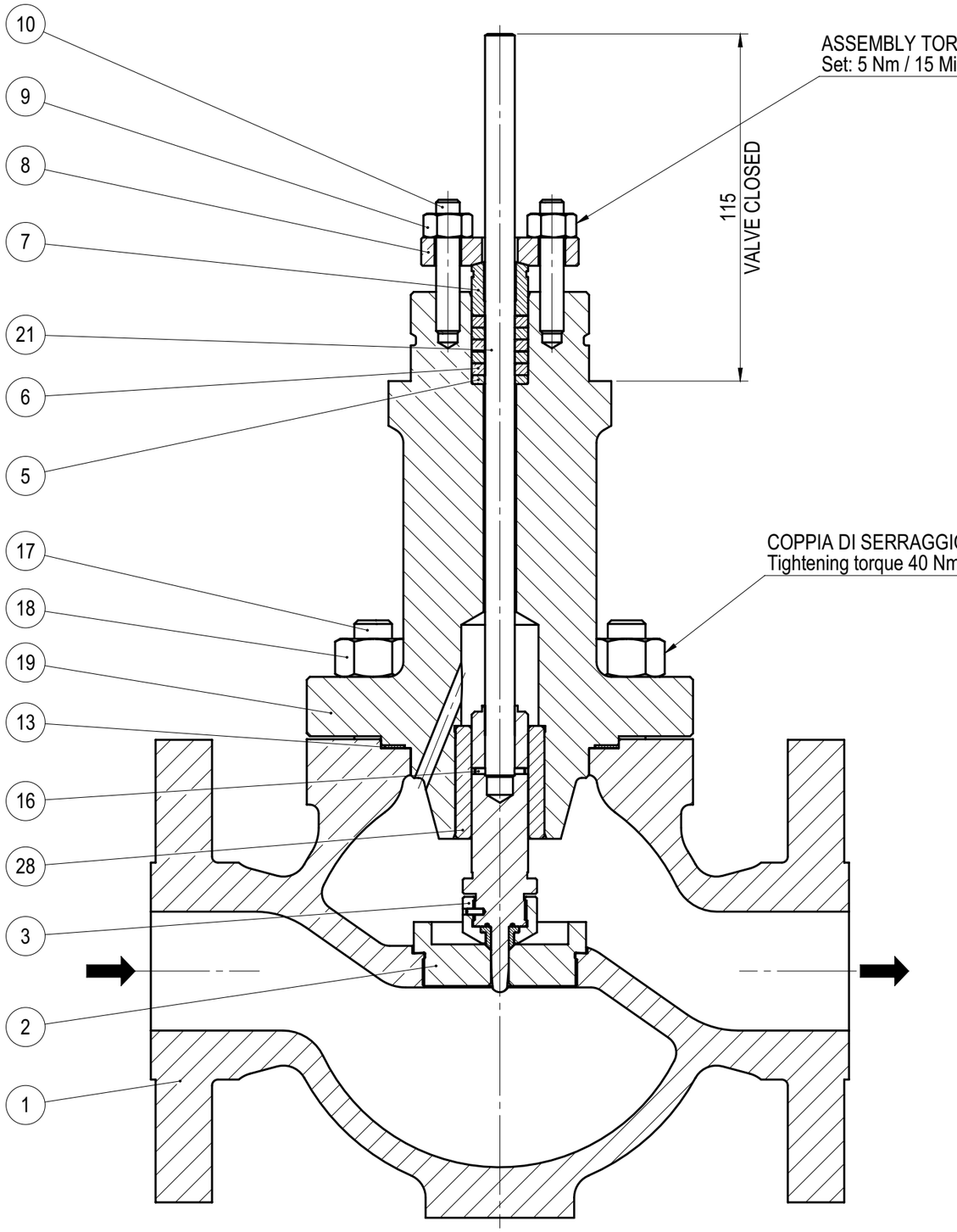
A3 - AST S.p.A. Via R. Merendi, 40 - 20010 Cornaredo (Mi) - Tel.02 934848.1 - Control valve division

1724000740-QC-DB-00016 01

Stroke: 13mm

| | |
|---|---|
| Cliente / Customer | ROSETTI MARINO S.P.A. |
| Ordine AST / AST job | CV2400221 |
| Sigle / Tags | 25-PV-055B |
| Matricole / Serials | 2400596 |

FOR STEM AND PLUG MOUNTING




ACTUATOR TYPE
SD11 REVERSE ACTING SPRING RANGE 20-36 psi
(OBTAINABLE FROM SD11R / 20-44 psi Stroke 20)

| ITEM | QTY | DWG | DESCRIPTION | MATERIAL |
|---|---|---|---|---|
| 1 | 1 | 84.40.121 | BODY | ASTM A351 CF3M |
| 2 | 1 | 240221-0500SE | SEAT | ASTM A479 316/316L |
| 3 | 1 | 240221-0500PL | PLUG | ASTM A479 316/316L + PTFE |
| 5 | 1 | UNCV0045-B0 | FINAL PACKING RING | ASTM A479 316/316L |
| 6 | 5 | UNCV0034-B0 | PACKING RING | Graphite (VF1) |
| 7 | 1 | UNCV0025-B0 | FOLLOWER | ASTM A479 316/316L |
| 8 | 1 | UNCV0023-B0 | PACKING FLANGE | ASTM A479 316/316L |
| 9 | 2 | UN0015-5/16 | NUT | ASTM A194 8M |
| 10 | 2 | 20TC08045 | STUD | ASTM A193/A320 B8M Cl.1 |
| 13 | 1 | UNCV0160-080-064 | GASKET | PTFE |
| 16 | 1 | UNCV0301-Z h=17 | PIN | ASTM A479 316/316L |
| 17 | 6 | 20TC12055 | STUD | ASTM A193/A320 B8M Cl.2 |
| 18 | 6 | UN0015-1/2 | NUT | ASTM A194 8M |
| 19 | 1 | 8407BN-004 | BONNET | ASTM A479 316/316L |
| 21 | 1 | 80ST03100250 | STEM | ASTM A479 316/316L |
| 28 | 1 | UN0350 | GUIDE BUSHING | ASTM A479 S21800 (NITRONIC 60) |

Revision Description
ISSUED

| Drawn | PINI | Checked | OLDANI | Approval | PEREGO | Date | 07-06-24 |
|---|---|---|---|---|---|---|---|

PROPERTY AND REPRODUCTION ARE SUBJECTED TO THE LAW

Scale

Mass kg 19.75

CR 00303

NOTE:

Description
CV-8407 VALVE ASSEMBLY
NPS 1 1/2" PORT 5/32" CL.300
RF WITH SOFT SEATING

Dwg No
240221-0500AA

Rev. 0

Sheet 1 of 1



A3 - AST S.p.A. Via R. Merendi, 40 - 20010 Cornaredo (Mi) - Tel.02 934848.1 - Control valve division

1724000740-QC-DB-00016 01

| Rev | Data *Date* | Descrizione *Description* | Redatto *Edited* | Controllato *Checked* | Approvato *Approved* |
|---|---|---|---|---|---|
| 1 | 24/07/2023 | Updated nameplate and added field description | T. PINI | A. PEREGO | A. PEREGO |
| 0 | 14/04/2023 | First issue | T. PINI | A. PEREGO | A. PEREGO |

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2. REFERENCE....3
3. DATA PLATE LIST....3


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## 1. SCOPE

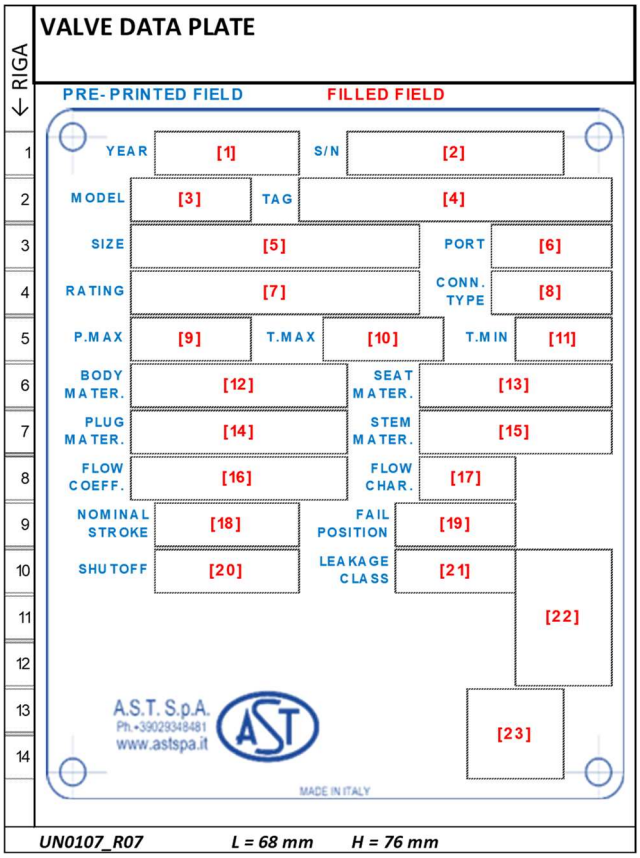
Present document reports layout and fields description of data plates to be applied on AST pressure equipment other than safety valves and changeover.
Data plates reported in this document are compliant to applicable European Directives and EN 19 standard.
Following instructions apply to control and on-off motorized valves, manual valves, check valves, desuperheaters, heating jacketing and pneumatic actuators.
The completed data plates must be affixed to all AST pressure equipment unless otherwise specified in the official documentation.

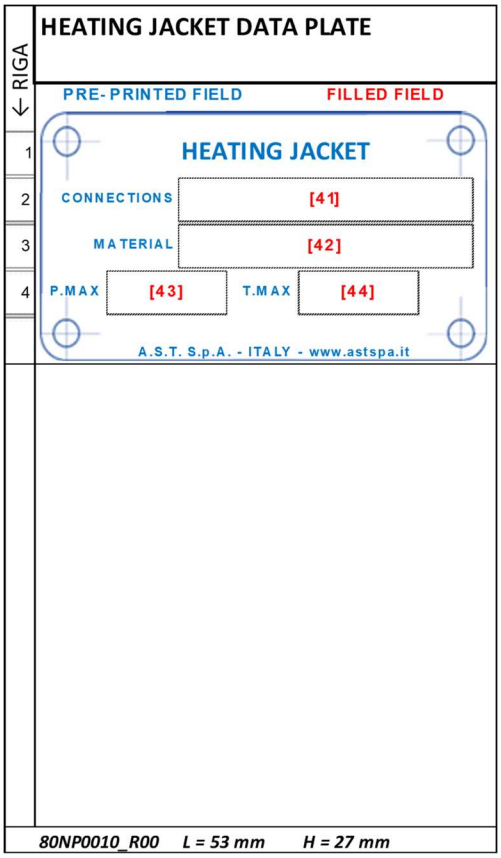
## 2. REFERENCE

EN 19_2016 - Industrial valves - Marking of metallic valves
Directive 2014/68/EU - Pressure Equipment Directive (PED)
Directive 2014/34 EU - Equipment for potentially explosive atmospheres (ATEX)

## 3. DATA PLATE LIST

| # | DESCRIPTION | DRAWING NUMBER |
|---|---|---|
| **1.** | VALVE DATA PLATE | ***UN0107_R07*** |
| **2.** | HEATING JACKET DATA PLATE | ***80NP0010_R00*** |
| **3.** | PNEUMATIC ACTUATOR DATA PLATE (ASSEMBLED WITH AST VALVE) | ***UN7049_R04*** |
| **4.** | PNEUMATIC ACTUATOR DATA PLATE (SUPPLIED ALONE) | ***80NP0300_R00*** |
| **5.** | NOT ACTUATED DESUPERHEATER DATA PLATE | ***NP00-000-0049_R01*** |
| **6.** | FLOW DIRECTION ARROW (To be installed on all valves, desuperheaters and check valves) | ***20AA01401-B_R00*** |




[1] Year of production
[2] Serial number
[3] Model (see TEC800)
[4] Tag number
[5] Nominal Dimension DN/NPS / Inlet/Outlet
[6] Seat nominal diameter
[7] Pressure Class Inlet/Outlet
[8] Connection Type / Inlet/Outlet
[9] Design Pressure
[10] Maximum Design Temperature
[11] Minimum Design Temperature
[12] Material of Body / Bonnet
[13] Material of Seat
[14] Material of Plug
[15] Material of Stem
[16] Rated Flow Coefficient
[17] Flow Characteristic
[18] Valve Nominal Stroke
[19] Fail Position in Lack of Energy / Air
[20] Shutoff Pressure
[21] Leakage Class
[22] MARKING
[23] ADDITIONAL MARKING
[24]
[25]

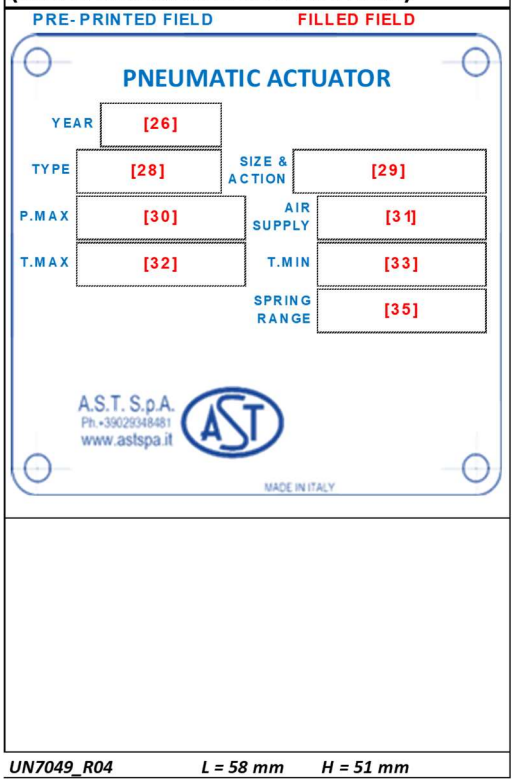
[41] Nominal dimension / Rating / Connection finishing in/out
[42] Heating jacket material
[43] Heating jacket design pressure
[44] Heating jacket design temperature
[45]

***Applies to:***
Control valves
On-off valves
Manual valves
Actuated desuperheaters (DS-3700)
Check valves

***Applies to:***
Heating jacketing and on valve bodies

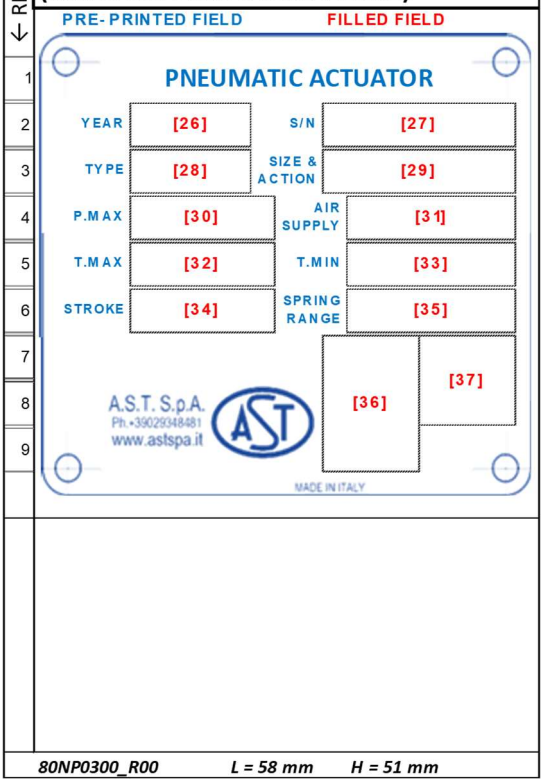
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**PNEUMATIC ACTUATOR DATA PLATE (WHEN ASSEMBLED WITH A VALVE)**




*UN7049_R04* *L = 58 mm* *H = 51 mm*

**PNEUMATIC ACTUATOR DATA PLATE (WHEN SUPPLIED STAND ALONE)**



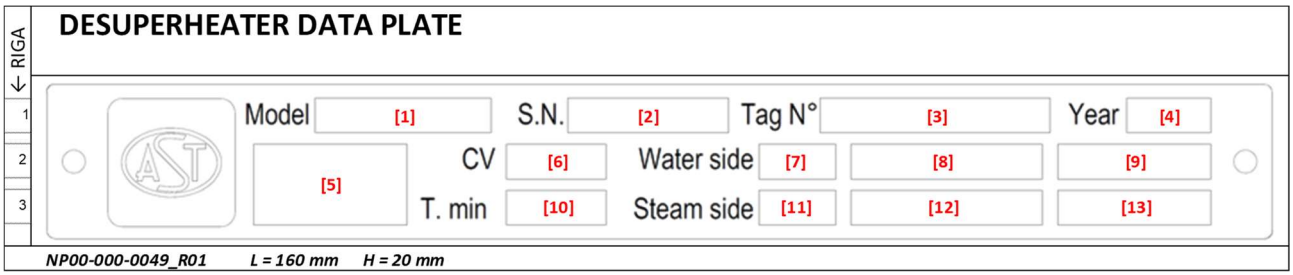

*80NP0300_R00* *L = 58 mm* *H = 51 mm*

[26] Year of production
[27] No if mounted on valve
[28] SD or MD or ...
[29] 9- 11- 13- 15- 18- 24- 18L- 24L- 335- 505- 505T+DIR/ REV
[30] Maximum design pressure
[31] Nominal supply pressure (Set AFR)
[32] Maximum temperature ALLOWED in operating environment
[33] Minimum temperature ALLOWED in operating environment
[34] No if mounted on valve (field [18] valve data plate)
[35] Actuator spring range
[36] No if mounted on valve
[37] No if mounted on valve
[38]
[39]
[40]

[26] Year of production
[27] Serial number
[28] SD or MD or ...
[29] 9- 11- 13- 15- 18- 24- 18L- 24L- 335- 505- 505T+DIR/ REV
[30] Maximum design pressure
[31] Nominal supply pressure (Set AFR)
[32] Maximum temperature ALLOWED in operating environment
[33] Minimum temperature ALLOWED in operating environment
[34] Actuator nominal stroke
[35] Actuator spring range
[36] MARKING
[37] ADDITIONAL MARKING
[38]
[39]
[40]

Data plate DWG 80NP0300 can be obtained from label plate DWG UN7049 by adding missing fields [27] [34] [36] [37]

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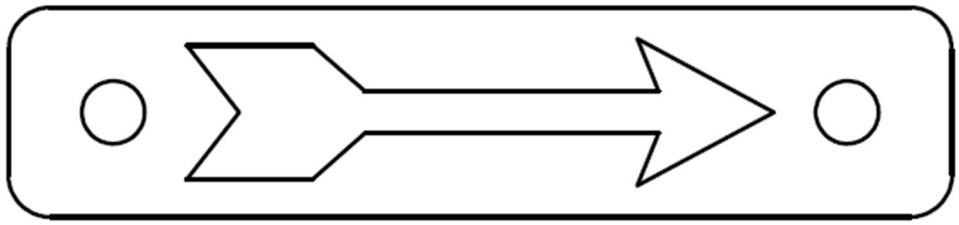



[1] Model (see TEC800)
[2] Serial number
[3] Year of production
[4] Year of production
[5] ADDITIONAL MARKING
[6] Rated Flow Coefficient
[7] Water connection Nominal Diameter
[8] Water connection Type and Rating
[9] Water connection material
[10] Minimum Design Temperature
[11] Steam connection Nominal Diameter
[12] Steam connection Type and Rating
[13] Steam connection material
[14]
[15]

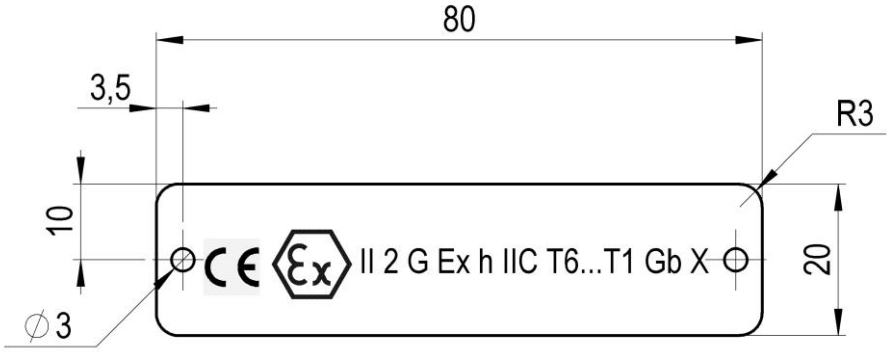
***Applies to:***
Not actuated steam desuperheaters

## FLOW DIRECTION ARROW

*To be installed on all valves, desuperheaters and check valves*



***20AA01401-B*** ***L = 45 mm*** ***H = 10 mm***




**SPESSORE / THICKNESS = 0.5mm**
**MATERIALE / MATERIAL = AISI 316**
**ALTEZZA CARATTERI DI STAMPA 3,5mm / *HEIGHT OF PRINTED TEXT* 3,5mm**

| | | | | | |
|---|---|---|---|---|---|
| 2 | 21/04/2021 | Revisione / Revision | Fabbricanti | Silvestri | Consonni |
| 1 | 04/03/2015 | Revisione / Revision | Fabbricanti | Silvestri | Consonni |
| 0 | 29/08/2012 | Emissione / First issue | Fabbricanti | Silvestri | Consonni |
| **Rev** *Iss* | **Data** *Date* | **Descrizione** *Description* | **Redatto** *Edited* | **Controllato** *Checked* | **Approvato** *Approved* |

# PART 1-DESIGN DOSSIER

# Section 4.1

NDT procedures (including PMI and operators qualifications)

Base Load Power Hub (BLPH)

NDT PROCEDURES (INCLUDING PMI AND OPERATPRS QUALIFICATIONS)

Document Number: 1724000740-NDT-PRO-00009

Document Class: 2

ROSETTI MARINO

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

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

| Sign | Date |
|---|---|
| Comandini Massimo<br>Level III NDT<br>EN - ISO9712<br>WI CSWIP 3.1 | 19-07-2024 |

| | | | | | |
|---|---|---|---|---|---|
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| | | | | | |
| | | | | | |
| 01 | 18/07/2024 | Approved for Construction (AFC) | EM | EM | LP |
| 00 | 31/05/2024 | Issue for Review (IFR) | EM | EM | LP |
| Rev. | Date | Description | Prepared | Reviewed | Approved |




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| 2 | Table of Contents | X | X | | | | | | |
| 3 | Revision / Change Log | X | X | | | | | | |
| 4 | References | X | X | | | | | | |
| 5 | NDT Procedures (including PMI and Operators Qualifications) | X | X | | | | | | |





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Revision / Change Log

| Rev. | Description |
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| 00 | ISSUE FOR REVIEW (IFR) |
| 01 | APPROVED FOR CONSTRUCTION (AFC) |
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| Rev | DATA Date | DESCRIZIONE Description | PREPARATA Prepared By | VERIFICATA Verified By | APPROVATA Approved By |
|---|---|---|---|---|---|
| 4 | 13/07/2021 | Revisione Generale – General Revision | A. Ibba | E. Minelli | F. Chiatto |
| 3 | 30/07/2020 | Revisione Generale – aggiunti paragrafi su componenti da testare, estensione test, eccezioni. Rivista accettabilità<br>General Revision – added par. on tested components, extent for test, exceptions. Revised acceptance criteria | A. Lapenna | A. Ibba | E. Minelli |
| 2 | 14/12/2015 | Sostituito strumento Niton XLT con Olympus DE-2000.<br>Replaced instrument Niton XLT with Olympus DE-2000. | A. Ibba | E. Minelli | A. Ibba |
| 1 | 04/05/2012 | Revisione generale. Allegato A sostituito.<br>General revision. Attachment A changed. | E. Radice | A. Consonni | E. Minelli |
| 0 | 01/09/2008 | Prima Emissione Bilingue<br>First Bilingual Issue | L. Fornaro | C. Daldossi | U. De Girolamo |


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# 1 SCOPO

Lo scopo di questa procedura è descrivere il metodo per identificare i materiali (PMI) verificando il tipo di lega e/o grado e i leganti presenti mediante tecnica di fluorescenza dei raggi X.
Si precisa che il PMI non sostituisce l'analisi chimica dei materiali, per la quale occorre richiedere test specifico da effettuarsi presso laboratorio qualificato.
Il test PMI deve essere eseguito da personale addestrato all'uso della strumentazione qui sotto indicata.

# 2 RIFERIMENTI NORMATIVI

Solo per analisi chimica del materiale:

- ASTM
- ASME II
- ASME VIII

# 3 TIPO DI STRUMENTO

Analizzatore XRF portatile modello DE-2000, produttore OLYMPUS con fonte di eccitazione costituito da tubo a raggi X con anodo di Ag, Rh, Au o Ta da 4 W.
L' intervallo di temperatura di utilizzo è da −10 °C a 50 °C.

# 4 SALUTE, SICUREZZA ED AMBIENTE

## 4.1 PRESCRIZIONI GENERALI

Il presente capitolo deve essere letto attentamente al fine di ridurre il rischio di possibili conseguenze alla salute del personale coinvolto ed assicurare l'integrità dell'ambiente di lavoro.
Tutte le operazioni descritte nella presente procedura devono essere eseguite da personale competente che ha ricevuto adeguate istruzioni e specifico addestramento, osservando le disposizioni legislative in vigore nel paese in cui le valvole vengono provate e quanto prescritto dalle norme internazionali e procedure interne in ambito di salute, sicurezza e ambiente. AST è responsabile per le sole operazioni effettuate dal proprio personale.
Non è possibile elencare tutte le possibili condizioni che possono mettere in pericolo la salute e la sicurezza dei lavoratori, in ogni caso raccomandiamo le seguenti precauzioni:
- Conoscere ed osservare tutte le regole generali sulla sicurezza vigenti nell'area alla quale si deve accedere ed operare;
- Valutare attentamente le conseguenze di tutte le azioni che si intendono effettuare;
- Indossare sempre idonei dispositivi di sicurezza, come minimo scarpe antinfortunistiche, guanti, occhiali di protezione e otoprotettori;
- Maneggiare la strumentazione con attenzione e mai in condizioni di alterazione fisica e mentale;
- Per qualsiasi dubbio circa l'utilizzo, il Manuale dello strumento è sempre disponibile per la consultazione.

## 4.2 PRESCRIZIONI RELATIVE ALL'USO DELLO STRUMENTO

L' OLYMPUS DE-2000 è stato progettato in modo che praticamente nessuna radiazione misurabile possa uscire verso l'esterno quando l'otturatore è chiuso. L'analizzatore OLYMPUS DE-2000 contiene un tubo a raggi X, che non emette radiazioni a meno che l'utente non lo alzi verso l'alto.


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L'esposizione umana alle radiazioni è tipicamente misurata in REM o in un millesimo di REM, chiamato milliREMs (mREM). Per una determinata sorgente di radiazione, tre fattori determineranno la dose di radiazioni che si ricevono dall'apparecchio:

**a) Durata di esposizione**
Più a lungo il corpo è esposto ad una sorgente di radiazione, più le dosi di radiazioni ricevute saranno maggiori. Il dosaggio aumenta in modo direttamente proporzionale alla durata dell'esposizione.

**b) Distanza dalla sorgente**
Più si è vicini ad una sorgente di radiazione, più le radiazioni colpiscono.
Il dosaggio aumenta esponenzialmente in relazione alla distanza dalla sorgente delle radiazioni. Per questo motivo è necessario prestare attenzione a non indirizzare la parte anteriore dell'analizzatore verso il corpo quando l'otturatore è aperto, in modo da minimizzare l'esposizione.

**c) Schermatura**
Lo strumento non emette radiazioni a meno che il tubo radiogeno non sia acceso. Le emissioni sono minime con il tubo a raggi X chiuso durante la calibrazione. Quando il tubo radiogeno è acceso e l'otturatore è aperto, come durante una misurazione, l'analizzatore emette un fascio di radiazione diretta. Tenere sempre lo strumento in modo da evitare il fascio di radiazioni.

**d) Come utilizzare in sicurezza l'OLYMPUS DE-2000**
Il produttore dello strumento assicura che OLYMPUS DE-2000 è stato progettato per essere il più sicuro possibile. Si consiglia tuttavia di seguire queste precauzioni per assicurare la sicurezza di chi effettua il test e quella di eventuali terze persone presenti.
Durante il test, un forte fascio di radiazione è continuamente emesso attraverso la finestra kapton nella parte anteriore dell'analizzatore.
Ci potrebbero essere alcune radiazioni anche sulla parte anteriore e superiore-frontale dell'analizzatore.

# 5 COMPONENTI DA TESTARE

I componenti oggetto del test e l'estensione del controllo vengono contrattualmente concordati e riportati nell'ITP oppure in apposito addendum emesso e allegato alla presente procedura.
Lo strumento PMI non rileva il contenuto di Carbonio; qualora fosse richiesto contrattualmente si dovrà procedere ad un controllo con spettrometro di massa presso laboratori esterni utilizzando la procedura del fornitore.

# 6 CALIBRAZIONE DELLO STRUMENTO

La calibrazione dello strumento va eseguita utilizzando il blocco campione marcato OLYMPUS in UNS S31600.

# 7 VERIFICA DELLA PRECISIONE DELLO STRUMENTO

AST verifica annualmente la precisione dello strumento utilizzando due campioni primari di riferimento aventi analisi chimica certificata da laboratori accreditati.
I risultati della verifica vengono registrati nel rapporto di taratura dello strumento indicando le deviazioni riscontrate per ogni singolo elemento individuato in % rispetto al valore certificato dai laboratori, con uno scostamento massimo ammesso del ±5%.

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# 8 PREPARAZIONE DELLA SUPERFICIE

La superficie dei componenti da testare deve essere priva di tracce di grassi, olii, vernici, ossidi e calamina che possono eventualmente essere rimossi mediante molatura, sgrassaggio e/o lavorazione meccanica.

# 9 ESECUZIONE DEL TEST

Lo strumento PMI viene posizionato sulla superficie del componente da analizzare e tramite l'analisi dei raggi X emessi genera il risultato individuando il materiale con la relativa composizione chimica.
Gli elementi chimici trovati fuori dai range definiti dalle norme di riferimento (ASTM, ASME) vengono evidenziati in rosso dallo strumento.

La tabella 1 riporta la lista degli elementi chimici individuabili dallo strumento per ogni tipologia di materiale.

# 10 ACCETTABILITA'

Un componente è considerato accettabile se tutti gli elementi chimici rilevati risultano all'interno del range definito dalle norme di riferimento con una tolleranza di ± 5% per ogni elemento.

# 11 REGISTRAZIONE DEI RISULTATI E DOCUMENTAZIONE

Il risultato della prova PMI per il materiale conforme all'esame sarà segnalato sul Certificato PMI (vedi esempio allegato A).
Il rapporto comprende i seguenti dati:

- Identificazione cliente e numero ordine cliente
- Data dell'esame del PMI
- Descrizione del metodo/strumento utilizzati
- Matricola Strumento
- Descrizione del particolare/dei particolari esaminati
- Descrizione del materiale esaminato
- Numero di colata
- Numero di serie valvola
- Risultati dell'esame di PMI
- Firma Controllo Qualità per approvazione

# 1 SCOPE

The scope of this procedure is to describe the method for the material identification (PMI) verifying the alloy and/or grade type and the binders present by X-ray fluorescence technique.
Note that the PMI does not replace the chemical analysis of materials that (if requested) shall be carried out in a qualified laboratory.
The PMI test must be performed by personnel trained in the use of the equipment below indicated.

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# 2 NORMATIVE REFERENCES

Only for chemical analysis of tested components:

- ASTM
- ASME II
- ASME VIII

# 3 TYPE OF INSTRUMENT

Portable XRF Alloy Analyzer Model: DE-2000, Manufacturer: OLYMPUS with excitation source consisting of an X-ray tube with 4 W Ag, Rh, Au or Ta anode.
The temperature range of use is from −10 ° C to 50 ° C.

# 4 HEALTH, SAFETY AND ENVIRONMENT

## 4.1 GENERAL RULES

This chapter must be read carefully in order to reduce the risk of possible health and safety consequences for the personnel involved and to ensure the integrity of the working environment.
All operations described in this procedure must be carried out by competent personnel who have received appropriate instructions and specific training, observing the legal provisions in force in the country in which the valves are tested and the requirements of international standards and internal procedures in the field of health, safety and the environment. AST is responsible only for operations carried out by its own personnel.
It is not possible to list and evaluate all the possible conditions that may endanger the health and safety of workers, in any case we recommend the following precautions:
- Know and observe all the general safety rules in force in the area to which you must access and work.
- Carefully evaluate the consequences of all the actions you intend to carry out.
- Always wear suitable safety equipment, such as at least safety shoes, gloves, sight and hearing protection.
- Handle all machinery with care and never in conditions of psycho-physics alteration;
- In case of any doubt related to the instrument use, PMI manual is always available for consultation.

## 4.2 SPECIFIC RULES FOR THE INSTRUMENT USE

PMI analyzer OLYMPUS DE-2000 has been designed so that virtually no measurable radiation can escape to the outside when the shutter is closed. The OLYMPUS DE-2000 contains an X-ray tube, which does not emit radiation unless the user lifts it up.
Human exposure to radiation is typically measured in REMs, or in one-thousandths of REM, called milliREMs (mREM). For a given source of radiation, three factors will determine the radiation dose the operator may receive from the source:

a) **Duration of Exposure**
The longer the user is exposed to a source of radiation, the more radiation strikes the body, and the greater dose is received. Dosage increases in direct proportion to the length of exposure.

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**b) Distance from the source**

The closer you are to a source of radiation the more radiation strikes you. The dosage increases in inverse-squared relation to your distance from the source of radiation. Keep your hand all body parts away from the front end of the analyzer when the shutter is open to minimize your exposure.

**c) Shielding**

The analyzer emits no radiation at all unless the x-ray tube is turned on, and virtually no radiation with the x-ray tube on and the internal shutter closed as during calibration. When the x-ray tube is on and the shutter is open, as during a measurement, the analyzer emits a directed radiation beam. Always hold your analyzer tight so that you avoid the radiation beam.

**d) How to safety use your OLYMPUS DE-2000**

The OLYMPUS DE-2000 was designed to be as safe as possible. However, we strongly recommend that you follow these precautions to ensure your safety and the safety of those around you.
During the test, a strong beam of radiation is continuously emitted through the kapton window at the front of the analyzer. There will be some radiation at the front and top-front of the analyzer.

# 5 COMPONENTS TO BE TESTED

The components to be tested and the control extension are contractually agreed and reported in the ITP or in a specific addendum issued and attached to this procedure.
The PMI instrument does not detect the Carbon content; if contractually agreed, a test with a mass spectrometer must be carried out at external laboratories using their procedure.

# 6 INSTRUMENT CALIBRATION

OLYMPUS DE-2000 calibration is required automatically by the instrument and must be carried out using the sample block marked OLYMPUS in UNS S31600.

# 7 INSTRUMENT VERIFICATION / RE CALIBRATION

AST annually verifies the instrument accuracy using two primary reference samples having chemical analysis certified by accredited laboratories.
The results of the verification are recorded in the instrument calibration report indicating the deviations found for each single element identified in % compared to the certified value by the laboratories, with a maximum tolerance of ± 5%.

# 8 SURFACE PREPARATION

The surface of the components to be tested must be free of greases, oils, paints, oxides and calamine which could be removed by grinding, degreasing and/or machining.

# 9 TEST EXECUTION

The PMI instrument shall be positioned on the component surface to be analyzed and through the emitted X-ray generates the result identifying the material with the chemical composition.
Chemical elements found out of the ranges defined by the reference standards (ASTM, ASME) are highlighted in red by the instrument.

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Table 1 shows the list of chemical elements identifiable by the instrument for each type of material.

# 10 ACCEPTABILITY

A component is considered acceptable if all the chemical elements detected are within the range defined by the reference standards with a tolerance of ± 5% for each element.

# 11 RECORDING OF THE RESULTS AND DOCUMENTATION

PMI result for the component subject to the test shall be reported on a PMI Report Form (see sample attachment A) The report includes all following data:

- Customer's name and PO number
- Date of PMI examination
- Description of method/instrument used
- Instrument ID number
- Description of examined item/s
- Material description
- Heat number
- Valve Serial Number
- Results of PMI examination
- Quality control signature for approval

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## 12 ALLEGATO A / ATTACHMENT A

| | | |
|---|---|---|
| | **RAPPORTO DI IDENTIFICAZIONE DEL MATERIALE** *POSITIVE MATERIAL IDENTIFICATION REPORT (PMI)* | **PMI-CVXXXXXXX** |

| Cliente / Customer | Ordine / Order | Commessa / Job | TAG |
|---|---|---|---|
| | | | |

| Tipo Valvola – Valve type |
|---|
| |

| | |
|---|---|
| **Tipo Apparecchiatura Equipment Type** | Analizzatore XRF portatile OLYMPUS DE-2000 /Portable XRF analyzer) |
| | **Matr. / ID number: 580719** |

| Materiale in esame / Material in test | N° Colata / Heat Nr. | Valve Serial Number |
|---|---|---|
| SEE LIST | SEE LIST | |

| Particolare/ Part Name | Materiale/ Material | Colata/ Heat | Risultato / Result | |
|---|---|---|---|---|
| | | | Positive | Negative |
| | | | ☐ | ☐ |
| | | | ☐ | ☐ |
| | | | ☐ | ☐ |
| | | | ☐ | ☐ |
| | | | ☐ | ☐ |
| | | | ☐ | ☐ |
| | | | ☐ | ☐ |
| | | | ☐ | ☐ |
| | | | ☐ | ☐ |

SAMPLE

NOTE

ESITO / Result: POSITIVO / satisfactory ☐ NEGATIVO / not satisfactory ☐

NOTE:

| AST Q.C. Department | Customer's Inspector | Third Party Inspection |
|---|---|---|
| | | |
| ***Data*** | **Data** | **Data** |



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# 13 TABELLA 1 / TABLE 1

| Tipo di materiale / Material Type | Elementi Chimici / Chemical Elements | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Cr | Ni | Mo | Nb | Ti | Cu | Fe | Mn | Al |
| Austenitic SS | x | x | x | | | x | x | x | |
| Martensitic SS | x | | | | | | | | |
| Duplex SS | x | x | x | | | x | x | x | |
| Super Duplex SS | x | x | x | | | | x | x | |
| 6Mo | x | x | x | | | | x | x | |
| Nickel Alloy | x | x | x | x | | x | x | x | |
| Nickel / Copper Alloy | x | x | | | x | x | x | x | x |
| Titanium | | | | | x | | | | |

* Lo strumento è in grado di fornire la lettura di altri materiali alto legati
PMI instrument is also able to detect other high alloy materials


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Titolo:

# PROCEDURA GENERALE PER IL CONTROLLO CON LIQUIDI PENETRANTI

Title:

# LIQUID PENETRANT TEST PROCEDURE

| | | | | | |
|---|---|---|---|---|---|
| 2 | 23/02/2024 | Revisione generale<br>*General revision* | A.Ibba | L.Pressato | G.Luoni |
| 1 | 01/10/2014 | Revisione generale con aggiornamenti normative e traduzione in lingua inglese<br>*General revision with standard updating and English translation* | M.Cilio | A.Ibba | M.Galli |
| **Rev.** | **Data<br>Date** | **Descrizione<br>Description** | **Redatto<br>Edited** | **Controllato<br>Checked** | **Approvato<br>Approved** |

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## 1. Scopo

Lo scopo di questa procedura è stabilire i requisiti di base, le modalità operative ed i criteri di accettabilità per il controllo con liquidi penetranti (PT).
Questa procedura fornisce un metodo per la rilevazione di discontinuità superficiali.

## 2. Campo di applicazione

Questa procedura è applicabile su tutti i tipi di materiale, in particolare fusioni, barre, forgiati, saldature, etc. in condizioni grezze o lavorate.

## 3. Riferimenti

-ASME section V art. 6 edizione 2023
-ASTM E165-2023 (applicabile solo per l'esecuzione dei PT sulle fusioni in riferimento all'ASME B16.34).
-ASME section VIII div. 1 app. 8, 2023 Ed.
-ASME B16.34 app. III 2020 Ed.
-ASME B31.1 136.4.4 2020 Ed.
-ASME B31.3 344.4.2 2020 Ed.
-UNI EN ISO9712: 2022 Ed.
-ASNT SNT-TC-1A, 2020 Ed. and ASME section V Art. 1
-PND001/QP/E rev. 1 Written Practice per l'addestramento, la qualifica e la certificazione del personale addetto ai CND
-Documenti del Cliente (se richiesti ed applicabili)

## 4. Ambiente, salute e sicurezza

### 4.1 Ambiente

I reflui, le bombolette scariche ed i contenitori vuoti dei prodotti impiegati per il controllo con liquidi penetranti vengono raccolti in appositi contenitori e smaltiti a cura di un fornitore specializzato.

### 4.2 Salute

I prodotti per il controllo con liquidi penetranti sono materiali volatili, infiammabili e presentano un certo grado di tossicità. Se inalati a lungo possono dar luogo ad intossicazioni.
Se a contatto con la pelle possono provocare irritazioni cutanee e reazioni allergiche.
Il contatto accidentale del liquido con la pelle si evita indossando guanti di gomma.
Nel caso di contaminazione della pelle, rimuovere ogni traccia del liquido con acqua e sapone.
Gli sviluppatori, di norma, non sono ritenuti tossici ma è bene evitarne l'aspirazione. A tal fine indossare mascherine antipolvere.
È vietato fumare in tutte le aree di lavoro.
In definitiva è sufficiente operare in ambiente ben areato ed indossare la mascherina nel momento dell'applicazione dei prodotti.
Presso l'area dei test sono disponibili le schede di sicurezza di tutti i prodotti utilizzati.

### 4.3 Sicurezza

Oltre a quanto riportato al par. 4.2, è necessario porre attenzione ai seguenti rischi specifici:
-trasporto e movimentazione di materiali (indossare scarpe di sicurezza e guanti protettivi);
-se si utilizzano le bombolette spray tenere presente che bisogna operare sempre in ambiente ben areato

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(ventilazione naturale e/o forzata) e lontano da fonti di calore;
-vanno inoltre rispettate tutte le prescrizioni di sicurezza in vigore nel luogo di esecuzione dei controlli.

## 5. Responsabilità e personale

Il Responsabile del controllo qualità (QC) ha la responsabilità della verifica della corretta esecuzione delle attività in accordo a questa procedura.
I controlli effettuati secondo questa procedura sono condotti da personale certificato UNI EN ISO 9712 o SNT-TC-1A (secondo la richiesta del cliente):
-almeno di I livello per l'esecuzione del controllo sotto la supervisione di un II livello;
-almeno di II livello per l'esecuzione dell'esame (o la supervisione di un I livello quando impiegato), l'interpretazione, la valutazione dei risultati e la stesura dei rapporti di prova.

## 6. Tecnica di controllo

Questa procedura è applicabile per la tecnica a contrasto di colore (visibile alla luce bianca) lavabile con acqua (variabili essenziali di cui alla tabella T-621).
Questa procedura è valida solo per i penetranti lavabili con acqua e/o solvente, di cui al comma 673.1 ASME sezione V. art. 6 e secondo il paragrafo 8.6.1 di ASTM E165 (metodo A).

## 7. Prodotti

I prodotti generalmente utilizzati sono i seguenti:
-Produttore: CGM
-Solvente: Velnet Solnet
-Penetrante rosso: Red WW
-Sviluppatore: Rotrivel "U" / White
Possono essere utilizzati prodotti equivalenti anche se di brand diverso. Non è ammesso l'impiego nello stesso controllo di prodotti di diversi gruppi/fornitori.
I prodotti vengono controllati al ricevimento verificando la conformità delle prove effettuate dal fornitore di cui al comma T-641 di ASME Sezione V - Art.6 quando vengono utilizzati su leghe a base di nichel, austenitici duplex o acciai inox e titanio.
L'acqua utilizzata per la pulizia dei pezzi, che sia da rubinetto, potabile, confezionata in bottiglia, distillata o deionizzata, non richiede analisi aggiuntive.
Ogni altro tipo di acqua dovrà essere analizzata in riferimento alla ASTM D1253 ed alla SD-516; il contenuto di Cloro e Zolfo non dovranno superare lo 0,1% in peso.

## 8. Procedura

### 8.1 Preparazione delle superfici

La superficie da esaminare e tutte le aree adiacenti, per una distanza minima di 25 mm, deve essere asciutta e priva di grasso, spruzzi di saldatura, olio, vernice, sporcizia, scaglie, ruggine e altri corpi estranei che possono interferire con l'esame.
Lo sgrassaggio e la pulizia devono essere effettuati utilizzando il solvente di cui al paragrafo 7. Qualora sia necessaria la pulizia meccanica, deve essere eseguita mediante spazzolatura o molatura. La sabbiatura non è permessa.

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**8.2 Asciugatura dopo la preparazione**
Se vengono utilizzati solventi per la pulizia, è necessario asciugare la superficie da ispezionare con un panno asciutto o carta assorbente e consentendo almeno 5 minuti per l'evaporazione naturale.

**8.3 Applicazione del penetrante**
Le superfici da controllare devono avere una temperatura tra 5 °C e 52 °C quando si applica ASME V Art. 6 e tra 4 °C e 52 °C quando si applica ASTM E165-18.
Quando questo non è possibile, è necessario che la procedura di esame sia qualificata utilizzando un blocco di riferimento come descritto al paragrafo T-653 della sezione ASME V.
L'applicazione del penetrante è effettuata a spruzzo o a pennello subito dopo il lavaggio e asciugatura.
Il tempo minimo di penetrazione non deve essere inferiore a 10 minuti e non deve eccedere 2 ore. Durante questo tempo il penetrante non deve seccare.

**8.4 Rimozione dell'eccesso di penetrante**
Dopo il tempo di penetrazione, il penetrante in eccesso sulla superficie deve essere rimosso con acqua a spruzzo nebulizzata oppure mediante carta o panni puliti, avendo cura di ridurre al minimo la rimozione del penetrante dalle discontinuità.
La pressione dell'acqua non deve superare 40 psi e la temperatura deve essere tra 10 °C a 38 °C.
I componenti devono essere asciugati mediante esposizione a temperatura ambiente o dall'utilizzo di un panno pulito, asciutto e privo di pelucchi o carta assorbente.

**8.5 Applicazione del rivelatore**
I rivelatori non acquosi vengono applicati a spruzzo. Per penetranti lavabili ad acqua o post-emulsionabili, lo sviluppatore deve essere applicato su superficie asciutta.
Il rivelatore va applicato nel più breve tempo possibile dopo l'asportazione del penetrante (massimo 10 minuti). Il rivelatore va applicato a spruzzo (prima dell'applicazione il contenitore deve essere agitato in modo da disperdere adeguatamente le particelle in sospensione), in più passate leggere piuttosto che in una singola passata abbondante, ad una distanza di 20-30 cm dalla superficie, in modo da creare un velo sottile ed uniforme di spessore sufficiente per creare un buon contrasto per i liquidi a contrasto di colore.
Il tempo di sviluppo inizia appena il rivelatore si è asciugato.

**8.6 Interpretazione / lettura**
La superficie deve essere esaminata subito dopo l'applicazione del rivelatore per osservare la formazione di eventuali indicazioni.
L'interpretazione finale va eseguita non prima che siano trascorsi 10 minuti e non protratta oltre 60 minuti al termine dell'applicazione del rivelatore.

**8.7 Condizioni di illuminazione**
Durante l'ispezione la minima intensità luminosa deve essere 1076 Lux. Le condizioni di illuminamento vengono verificate con un luxmetro tarato almeno una volta ogni 12 mesi, appoggiandolo sulla superficie di prova.

**8.8 Valutazione delle indicazioni**
Le indicazioni appariranno come macchie di colore sullo sfondo bianco creato dal rivelatore.
Indicazioni di un colore rosa chiaro possono indicare eccessiva pulizia. Pulizia inadeguata, invece, può lasciare uno sfondo eccessivo rendendo difficile l'interpretazione.

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Irregolarità superficiali localizzate dovute a segni di lavorazione o altre condizioni di superficie possono produrre false indicazioni.
Ampie aree di pigmentazione, che potrebbero mascherare segni di discontinuità sono inaccettabili e tali superfici devono essere pulite e riesaminate secondo questa procedura. Qualsiasi indicazione deve essere valutata in accordo al criterio di accettabilità stabilito.

## 9. Criteri di accettabilità

Un'indicazione si dice lineare quando la sua lunghezza è superiore a tre volte la sua larghezza. In caso contrario è considerata tondeggiante.
L'indicazione può avere dimensioni maggiori della discontinuità che l'ha causata, tuttavia, la dimensione dell'indicazione è la base della valutazione.
I criteri di accettabilità sono in accordo alla sezione del Codice applicabile o come richiesto dal Cliente.
Per informazione sono riportati i seguenti criteri di accettabilità:

### 9.1 ASME VIII Div.1 MANDATORY APPENDIX 8

Tutte le superfici da esaminare non dovranno presentare le seguenti indicazioni:
(a) Indicazioni lineari;
(b) Indicazioni tondeggianti maggiori di 5 mm di diametro;
(c) Quattro o più indicazioni tondeggianti allineate distanziate meno di 1,5 mm dai bordi.
Non vengono prese in considerazione indicazioni inferiori ad 1,5 mm.

### 9.2 ASME B16.34 MANDATORY APPENDIX III

**Fusioni**
Le massime indicazioni accettabili sono come segue:
(a) Indicazioni lineari:
-Lunghezza 8 mm per materiali con spessore fino a 13 mm;
-Lunghezza 13 mm per materiali con spessore fino a 25 mm;
-Lunghezza 18 mm per materiali sopra i 25 mm di spessore.
Per le indicazioni lineari, l'indicazione deve essere separata da una distanza maggiore rispetto alla lunghezza di un'indicazione accettabile ad essa vicina.
(b) Indicazioni tondeggianti:
-Diametro 8 mm per materiali fino a 13 mm di spessore;
-Diametro 13 mm per materiali con spessore maggiore di 13 mm.
Quattro o più indicazioni tondeggianti in linea separate da non più di 1,5 mm da bordo a bordo sono considerate non accettabili.
**Forgiati**
Le massime indicazioni accettabili sono come segue:
(a) Indicazioni lineari:
-Lunghezza 5 mm per materiali con spessore fino a 13 mm;
-Lunghezza 10 mm per materiali con spessore sopra i 13 mm ed inferiore a 25 mm;
-Lunghezza 15 mm per materiali sopra i 25 mm di spessore.
Per le indicazioni lineari, l'indicazione deve essere separata da una distanza maggiore rispetto alla lunghezza di un'indicazione accettabile ad essa vicina.
(b) Indicazioni tondeggianti:
-Diametro 5 mm per materiali fino a 13 mm di spessore;

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-Diametro 8 mm per materiali sopra i 13 mm di spessore.
Quattro o più indicazioni tondeggianti in linea separate da non più di 1,5 mm da bordo a bordo sono considerate non accettabili.

**9.3 ASME B31.1**

(1) Le discontinuità meccaniche in superficie saranno indicate dalla fuoriuscita del penetrante; tuttavia le imperfezioni superficiali localizzate, come quelle che possono originarsi da segni di lavorazione o altre condizioni superficiali, possono produrre indicazioni simili che non sono rilevanti al fine dell'individuazione di discontinuità inaccettabili.
(2) Qualsiasi indicazione ritenuta non pertinente deve essere considerata un difetto e deve essere riesaminata per verificare se siano presenti o meno difetti reali. Indicazioni non rilevanti e ampie aree di pigmentazione che maschererebbero indicazioni e/o difetti sono inaccettabili.
(3) Le indicazioni le cui dimensioni maggiori sono superiori a 1,5 mm sono considerate rilevanti.
Le seguenti indicazioni rilevanti sono inaccettabili:
-Eventuali cricche o indicazioni lineari;
-Indicazioni arrotondate con dimensioni maggiori di 5 mm;
-Quattro o più indicazioni tondeggianti in una linea separata da 1,5 mm o meno da bordo a bordo;
-Dieci o più indicazioni tondeggianti in 3 870 $mm^2$ di superficie con la dimensione maggiore di tale area non superiore a 150 mm con la superficie localizzata nella posizione più sfavorevole rispetto alle indicazioni oggetto di valutazione.

**9.4 ASME B31.3**

Tutte le superfici da esaminare devono essere prive di:
-Indicazioni lineari rilevanti;
-Indicazioni tondeggianti maggiori di 5,0 mm;
-Quattro o più indicazioni tondeggianti rilevanti in linea separata da 1,5 mm o meno, da un bordo all'altro.

## 10. Pulizia dopo il controllo

Dopo l'ispezione, la superficie dovrà essere pulita strofinando con un panno oppure utilizzando acqua asciugando successivamente.

## 11. Rimozione dei difetti

I difetti inaccettabili devono essere riparati.
Se il difetto è riparato da scavatura o molatura e la successiva saldatura non è necessaria, l'area scavata deve essere mascherata con la superficie circostante in modo da eliminare spigoli vivi, fessure o angoli.
Qualora sia necessaria la saldatura dopo l'asportazione del difetto, la superficie deve essere pulita e la saldatura eseguita con procedimento qualificato.
Non sono ammesse riparazioni mediante riporti di saldatura su fucinati, laminati, trafilati, rullati e bulloneria.
Tutte le zone riparate devono essere successivamente riesaminate applicando la medesima tecnica utilizzata per il rilevamento di difetti.

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## 12. Rapporto di prova

Nel rapporto di prova vanno indicate le seguenti informazioni:
-identificazione del prodotto sottoposto al controllo;
-tipo di materiale e numero di colata;
-riferimento a questa procedura e revisione;
-riferimento alla norma applicata e criteri di accettabilità;
-estensione del controllo;
-tipo di liquidi penetranti (visibili o fluorescenti);
-numero di identificazione di ogni prodotto utilizzato: solvente, penetrante e rivelatore;
-equipaggiamento per l'illuminazione;
-registrazione, descrizione, classificazione e mappatura delle indicazioni: numero, posizione, orientamento e dimensione;
-esito della prova;
-data di esecuzione dell'esame;
-nominativo del tecnico che ha eseguito la prova e qualifica.

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## 1. Scope

The scope of this procedure is to establish the basic requirements, operating methods and the acceptance criteria for the liquid penetrant examination (PT).
This procedure provides a method for detecting surface discontinuities.

## 2. Field of application

This procedure is applicable on all types of material, in particular castings, bars, forgings, welds etc. in raw or machined condition.

## 3. Normative reference

-ASME section V art. 6 edition 2023
-ASTM E165-2023 (applicable only for the execution of PT on castings in reference to ASME B16.34).
-ASME section VIII div. 1 app. 8, 2023 Ed.
-ASME B16.34 app. III 2020 Ed.
-ASME B31.1 136.4.4 2020 Ed.
-ASME B31.3 344.4.2 2020 Ed.
-UNI EN ISO9712: 2022 Ed.
-ASNT SNT-TC-1A, 2020 Ed. and ASME section V Art. 1
-PND001/QP/E rev. 1 Written Practice for the training, qualification and certification of NDT personnel.
-Customer documents (if required and applicable).

## 4. Environment, health and safety

### 4.1 Environment

The wastewater, empty cans and containers from the products used for the liquid penetrant examination are collected in specific containers and disposed by a specialized supplier.

### 4.2 Health

Liquid penetrant examination products are volatile, flammable and have a certain degree of toxicity. If inhaled for a long time they can cause intoxication.
Skin contact may cause skin irritation and allergic reactions.
Accidental skin contact can be avoided by wearing rubber gloves.
In case of skin contamination, remove all traces of the liquid with soap and water.
Developers are normally not considered toxic, but it is best to avoid inhaling it. A dust mask must be worn for this purpose.
Smoking is forbidden in all the working areas.
It is sufficient to operate in a well-ventilated environment and wear the mask during the products application.
The safety data sheets for all the products used are available in the testing area.

### 4.3 Safety

In addition to what is reported in par. 4.2, it is necessary to pay attention to the following specific risks:
-transport and materials handling (use safety shoes and protective gloves);
-during the use of spray cans, operate in a well-ventilated environment (natural and/or forced ventilation) and away from heat sources;

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-all safety rules in effect at the place where the checks are carried out must be respected.

## 5. Responsibilities and personell

The quality control Manager (QC) is responsible for checking the correct execution of the activities according to this procedure.
The checks according to this procedure are carried out by UNI EN ISO 9712 or SNT-TC-1A certified personnel (depending by the customer's request):
-at least level I for the execution of the control under the supervision of a level II;
-at least level II for the execution of the test (or the supervision of a level I when employed), the interpretation and evaluation of the results and the issuing of the test reports.

## 6. Test technique

This procedure is applicable for the color contrast technique (visible under white light) washable with water (essential variables referred to in table T-621).
This procedure is valid only for penetrants washable with water and/or solvent, referred to the paragraph 673.1 of ASME section V. art. 6 and according to paragraph 8.6.1 of ASTM E165 (method A).

## 7. Products

The products generally used are the following:
-Manufacturer: CGM
-Solvent: Velnet Solnet
-Red penetrant: Red WW
-Developer: Rotrivel "U" / White
Equivalent products can be used even if they are of different brands. The use of products from different supplier/groups in the same test is not allowed.
The products are checked upon receipt by verifying the conformity of the tests carried out by the supplier referred to the paragraph T-641 of ASME Section V - Art.6 when they are used on nickel-based alloys, duplex austenitics or stainless steels and titanium.
The water used to clean the components, whether tap water, drinkable, bottled, distilled or deionized, does not require additional analysis.
Any other type of water must be analyzed with reference to ASTM D1253 and SD-516; the Chlorine and Sulfur content must not exceed 0.1% by weight.

## 8. Procedure

### 8.1 Surface preparation

The surface to be examined and all adjacent areas within at least 25 mm shall be dry and free of grease, welding spatter, oil, paint, dirt, scales, rust and other extraneous matter that may interfere with the exam.
Degreasing and cleaning must be carried out using the solvent referred to the paragraph 7. If mechanical cleaning is necessary, it must be carried out by brushing or grinding. Sandblasting is not allowed.

### 8.2 Drying after preparation

If solvents are used to clean, it is necessary to dry the surface to be inspected with a dry cloth or absorbent paper. At least 5 minutes shall be must be guaranteed for allowing normal evaporation.

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**8.3 Penetrant application**

The surfaces to be checked shall have a temperature between 5 °C and 52 °C when ASME V section Art. 6 is applied and between 4 °C and 52 °C when ASTM E165-18 is applied.
When this is not possible, the examination procedure must be qualified using a reference block as described in paragraph T-653 of ASME section V.
The application of the penetrant is carried out by spraying or brushing right after the washing and drying fase.
The minimum penetration time shall not be less than 10 minutes and must not exceed two hours. During this period the penetrant must not dry out.

**8.4 Removal of excess penetrant**

After the dwell time, the excess of penetrant on the surface must be removed with spryed mist water or with paper or cloths, taking care to minimize the removing of penetrant from discontinuities.
The water pressure must not exceed 40 psi and the temperature shall be between 10 °C to 38 °C.
The components must be dried by exposure to room temperature or by wiping a clean, dry, lint free cloth or absorbent paper.

**8.5 Application of the developer**

Non-aqueous developers are applied by spray. For water-washable or post-emulsifiable penetrants, the developer must be applied to a dry surface.
The developer must be applied as soon as possible after removing the penetrant (maximum 10 minutes).
The developer must be applied by spraying (before application the container must be shaken in order to adequately disperse the suspended particles), in several light layers rather than in a single heavy layer, at a distance from the surface of 20-30 cm, in order to create a thin and consisted film with a thickness suited to create a good contrast with the dye liquid penetrant.
The development time begins as soon as the developer has dried.

**8.6 Interpretation / reading**

The surface shall be examined immediately after application of the developer to observe the formation of any indications.
The final interpretation must be carried out not before 10 minutes and must not exeed 60 minutes after the application of the developer.

**8.7 Lighting conditions**

During the inspection the minimum light intensity must be 1076 Lux. The lighting conditions are checked with a luxmeter calibrated at least once every 12 months by placing it on the test surface.

**8.8 Evaluation of indications**

The indications will appear as dye spots on the white background created by the developer.
Indications of a light pink colour may indicate excessive cleaning. Inadequate cleaning can leave an excessive background making interpretation difficult.
Localized surface irregularities caused by machining marks or other surface conditions may produce false indications.
Large areas of pigmentation, which may mask discontinuities are unacceptable and such surfaces shall be cleaned and re-examined according to this procedure. Any indication must be evaluated in accordance with the established acceptance criteria.

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## 9. Acceptance criteria

An indication is linear when its length is more than three times its width otherwise it is considered rounded. The indication may be larger than the discontinuity that caused it, however, the size of the indication is the basis of the evaluation.
Acceptance criteria are in accordance with the applicable Code section or as requested by the Customer.
For information, the following acceptability criteria are reported:

### 9.1 ASME VIII Div.1 MANDATORY APPENDIX 8

All surfaces to be examined must not present the following indications:
(a) Linear indications;
(b) Rounded indications greater than 5 mm in diameter;
(c) Four or more aligned rounded indications spaced less than 1.5 mm from the edges.
Indications smaller than 1.5 mm are not taken into consideration.

### 9.2 ASME B16.34 MANDATORY APPENDIX III

**Castings**
The maximum acceptable indications are as follow:
(a) Linear indications:
-8 mm long for materials up to 13 mm thick;
-13 mm long for materials 13 to 25 mm thick;
-18 mm long for materials over 25 mm thick.
For linear indications, the indications must be separated by a distance greater than the length of an acceptable indication adjacent to it.
(b) Rounded indications:
-8 mm diameter for materials up to 13 mm thick;
-13 mm diameter for materials over 13 mm thick.
Four or more rounded indications in a line separated by no more than 1.5 mm edge to edge are unacceptable.
**Forgings**
The maximum acceptable indications are as follows:
(a) Linear indications:
-5 mm long for materials up to 13 mm thick;
-10 mm long for materials 13 to 25 mm thick;
-15 mm for materials over 25 mm thick.
For linear indications, the indication must be separated by a distance greater than the length of an acceptable indication adjacent to it.
(b) Rounded indications:
-5 mm diameter for materials up to 13 mm thick;
-8 mm diameter for materials over 13 mm thick.
Four or more rounded indications in a line separated by no more than 1.5 mm edge to edge are unacceptable.

### 9.3 ASME B31.1

(1) Mechanical discontinuities on the surface will be indicated by bleeding out of the penetrant, however, localized surface imperfections, such as those that may occur from machining marks or other surface

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conditions, may produce similar indications that are non relevant to the detection of unacceptable discontinuities.
(2) Any indication deemed irrelevant shall be considered as a defect and shall be re-examined to verify whether or not actual defects are present. Irrelevant indications and large areas of pigmentation that would mask indications and/or defects are unacceptable.
(3) Indications whose largest dimensions are greater than 1.5 mm shall be considered relevant.
The following relevant indications are unacceptable:
-any cracks or linear indications
-rounded indications with dimensions greater than 5 mm
-4 or more rounded indications in a line separated by 1.5 mm or less edge to edge
-10 or more rounded indications in 3 870 $mm^2$ of surface with the largest dimension of that area not exceeding 150 mm with the surface located in the most unfavorable location relative to the indications being evalueted.

**9.4 ASME B31.3**
All surfaces to be examined must be free of:
-Relevant linear indications;
-Relevant rounded indications greater than 5.0 mm;
-Four or more relevant rounded indications in a line separated by 1.5 mm or less edge to edge.

## 10. Cleaning after the test

After the inspection, the surface must be cleaned wiping with a cloth or using water and drying afterwards.

## 11. Defects removal

Unacceptable defects must be repaired.
If the defect is repaired by excavating or grinding and if subsequent welding is not necessary, the excavated area must be blended with the surrounding surface in order to avoid sharp notches, crevices or corners.
When welding is necessary after the removal of the defect, the surface must be cleaned and the welding must be performed with a qualified process.
All repaired areas must subsequently be re-examined by applying the same technique used for defects detection.

## 12. Test report

The following information must be indicated in the test report:
-identification of the items subjected to control;
-type of material and heat number;
-reference to this procedure and revision;
-reference to the applied standard and acceptance criteria;
-extension of the control;
-liquid penetrant type (visible or fluorescent);
-batch number of each product used: solvent, penetrant and developer;
-lighting equipment;
-registration, description, classification and mapping of the indications: number, position, orientation and size;
-result of the test;

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-date of execution of the test;
-name and qualification of the technician who carried out the test.

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# CERTIFICATO DI CONTROLLO CON LIQUIDI PENETRANTI
## LIQUID PENETRANT TEST CERTIFICATE

N.PTCV

Sheet 1 of 1

| CLIENTE customer | ORDINE order | COMM.AST ast job |
|---|---|---|
| | | |

| PROCEDURA D'ESAME examination procedure | SPECIFICA GENERALE general specification | Criteri di accettabilità acceptance criteria |
|---|---|---|
| **PT001 REV.3** | **ASME V ARTICLE 6** | **ASME VIII APPENDIX 8** |
| **FASE DI LAVORO working step** | **CONDIZIONE SUPERFICIALE surface condition** | |
| **FINISHED** | **MACHINED** | |

TECNICA (technique): **LAVABILI AD ACQUA (WATER WASHABLE)**

| IDENTIFICATIVO identification | COLATA heat | MATERIALE material | DISEGNO dwg |
|---|---|---|---|
| **SEE ATTACHED LIST** | | | |
| | | | |
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SCHIZZO sketch

***EXTENSION TO STELLITE OVERLAY+CRITICAL ZONES ASME B16.34 & ASME VIII D1.App.8***

| MATERIALI materials | VISIBILE visible | FLUORESCENTE fluorescent |
|---|---|---|
| SOLVENTE solvent | ***R 2.60 VELNET/SOLNET*** | |
| PENETRANTE penetrant | ***R 2.71 RED WW AG 1*** | |
| RIVELATORE developer | ***R 2.82 ROTRIVEL U-WHITE*** | |
| MARCA mark | ***C.G.M*** | |

| | | | |
|---|---|---|---|
| PULITURA cleaning | ***SOLVENT*** | ASCIUGATURA Drying | ***AIR / ABSORBING PAPER*** |
| APPLICAZIONE PENETRANTE penetrant application | ***SPRAY*** | TEMPO MIN. PENETRAZIONE min. penetration time | ***15 min.*** |
| RIMOZIONE PENETRANTE penetrant removal | ***WATER SPRAY MAX 30 Psi*** | MINIMO TEMPO DI SVILUPPO min. developing time | ***10 min.*** |
| APPLICAZIONE SVILUPPATORE developer application | ***SPRAY*** | TEMPERATURA Temperature | ***20 ° C*** |
| TEMPO MASSIMO DI LETTURA max. reading time | ***20 min.*** | ILLUMUNAZIONE Visible light intensity | ***≥ 1076 lux*** |

RISULTATI results: ☑ CONFORME ALLA SPECIFICA according to specification — NON CONFORME ALLA SPECIFICA not according to specification — SCARTO rejection

NOTE: notes

***SEE ATTACHED LIST***

| OPERATORE operator | LIVELLO SNT-TC-1A / ISO 9712 SNT-TC-1A/ISO 9712 level | ISPETTORI TERZE PARTI third part inspectors | A.S.T. Quality Assurance Department |
|---|---|---|---|
| DATA Date | **II LEVEL** | DATA Date | DATA Date |

Rev. 3

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# *CERTIFICATO DI LIVELLO 2*
## *LEVEL 2 CERTIFICATE*

**N° 36397/PND/C**

Si certifica la qualificazione per esami in Prove Non Distruttive al **LIVELLO 2**
*This is to certify qualification by examinations in Non-Destructive Testing at the **LEVEL 2***

***di / of***

**Ibba Alessandro**

nato a / *born in* **Rho (MI)**

il / *on* **21 gennaio 1986**

per il metodo / *for the method:*

**Liquidi Penetranti (PT)**

per i settori / *for the sectors:*

**Collaudo pre e in servizio che comprende la fabbricazione**

**(c; f; w; t; wp; p)**

Il presente certificato viene rilasciato in conformità alla Norma UNI EN ISO 9712:2012.
*This certificate is issued according to UNI EN ISO 9712:2012.*

Firma persona certificata
*Signature of certificate holder*

Direttore Generale
*General Manager*

M. Reggiani

Data Delibera: 18/07/2022
*Approval Date*

Data Scadenza: 18/07/2027 C
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Approvazione per l'esecuzione di prove non distruttive secondo l'Allegato I paragrafo 3.1.3 della **Direttiva attrezzature in pressione 2014/68/UE/PED** (CEM/TR 15589 Route A)

AIPnD

# PART 1-DESIGN DOSSIER

# Section 4.2

Hydrostatic test procedure

# Base Load Power Hub (BLPH)

## CONTROL VALVES

## HYDROSTATIC TEST PROCEDURE

Document Number: 1724000740-QC-PRO-00010

Document Class: 2

ROSETTI MARINO

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| 1 | NO COMMENTS - APPROVED - WORK MAY PROCEED |
| 2 | MINOR COMMENTS - REVISE AND RESUBMIT - WORK MAY PROCEED |
| 3 | MAJOR COMMENTS – REJECTED – DO NOT PROCEED |
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| V. Barratta | 04-09-2024 |

| Rev. | Date | Description | Prepared | Reviewed | Approved |
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| 2 | Table of Contents | X | X | X | X | | | | |
| 3 | Revision / Change Log | X | X | X | X | | | | |
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| Rev. | Description |
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| 00 | ISSUE FOR REVIEW (IFR) |
| 01 | ACCEPTED FOR CONSTRUCTION (AFC) |
| 02 | ACCEPTED FOR CONSTRUCTION (AFC) |
| 03 | ACCEPTED FOR CONSTRUCTION (AFC) |
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# PROCEDURA DI PROVA IDROSTATICA

# *HYDROSTATIC TEST PROCEDURE*

| Rev<br>*Iss* | Data<br>*Date* | Descrizione<br>*Description* | Redatto<br>*Edited* | Controllato<br>*Checked* | Approvato<br>*Approved* |
|---|---|---|---|---|---|
| 27 | 04/07/2023 | Tabella 1: Valori di prova idrostatica arrotondati per eccesso a 1 barg.<br>Capitolo 4: modificato riferimento da ASME VIII ad ASME XIII<br>Capitolo 8.1: Aggiunto requisito per pH dell'acqua di prova in conformità ad IOGP S-730<br>Capitolo 8.2.2: modificato riferimento da ASME VIII ad ASME XIII<br>Aggiunto gruppo 3.1 in tabella 1 | AC | FC | LP |
| 26 | 10/03/2022 | Aggiornati tempi prova idraulica boccagli e cappucci, aggiunti requisiti di sicurezza. Aggiornati capitoli 7.3 e 7.4 | AC | FC | AL |
| 25 | 27/07/2021 | Tab. 2 - Aggiornati valori pressioni di prova PN – Table 2 - Test pressure values updated | A.Perego | F.Chiatto | A.Lapenna |
| 24 | 08/04/2021 | Cambiati criteri per la definizione del tempo di prova dei boccagli. Eliminati i riferimenti alle normative non utilizzate | AC | FC | AL |
| 23 | 29/05/2019 | Aggiornati valori massimi classi PN in accordo a EN 12516-1 ed. 2014 Corretta tabella 6 e aggiunta nota per PSV<br>PN classes maximum pressure updated according to EN 12516-1 ed. 2014<br>Table 6 corrected and noted for PSV added | AP | FC | AL |
| 22 | 15/11/2018 | Cambiato da "idraulica" a "idrostatica"<br>Changed from "hydraulic" to "hydrostatic" | AC | FC | AL |
| 21 | 14/12/2017 | Aggiornato layout ed aggiunti tempi prova idrostatica per valvole API10000 e API15000 | AC | FC | AL |
| 20 | 26/02/2014 | Eliminata tabella del raggruppamento dei materiali, che viene gestita nell'Appendice A | AS | FF | AC |
| 19 | 08/07/2013 | Aggiunti riferimenti ASME VIII-1 | AS | FF | AC |
| 18 | 19/10/2012 | Aggiunto requisito per Cloruri e Nitronic 60 UNS S21800 | AS | ER | AC |
| 0 | 12.1990 | Emmissione / *First issue* | FC | AL | VC |

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# 1. GENERAL

This procedure contains technical specification for the hydrostatic pressure test.

# 2. APPLICABILITY

This procedure applies to the pressure containing parts of the valves produced by A.S.T. and specifically:

- For spring loaded safety valve:
  This procedure is applicable to body, bonnet, cap and nozzle.
- For pilot operated safety valve:
  This procedure is applicable to body, nozzle, pilot body and accessory.
- For changeover valve:
  This procedure is applicable to changeover body.
- For control valve:
- This procedure is applicable to body and bonnet.

# 3. SCOPE

Hydrostatic test is meant to verify tightness and stability of pressure containing components.

# 4. REFERENCE STANDARDS

Reference standards and AST procedures are the following:

- API 6A Specification for wellhead and christmas tree equipment.
- ASME XIII Rules for overpressure protection.
- ASME B16.5 Steel Pipe Flanges and Flanged Fittings
- ASME B16.34 Steel Valves
- EN ISO 4126-1 Safety devices for protection against excessive pressure- Safety valves
- EN ISO 4126-4 Safety devices for protection against excessive pressure- Pilot operated safety valves
- EN 12516-1 Industrial valves. Shell design strength. Tabulation method for steel valve shells
- AST PI0003 Procedure for the control and the calibration of the gauges

# 5. HEALTH, SAFETY AND ENVIRONMENT

This chapter must be read carefully in order to reduce the risk of possible health and safety consequences for the personnel involved and to ensure the integrity of the working environment.
All operations described in this procedure must be carried out by competent personnel who have received appropriate instructions and specific training, observing the legal provisions in force in the country in which the valves are tested and the requirements of international standards and internal procedures in the field of health, safety and the environment. When the tests are carried out at AST facilities, the legislative reference is decree 81/08 "Testo Unico sulla Salute e Sicurezza sul Lavoro".
AST is responsible only for operations carried out by its own personnel.
It is not possible to list and evaluate all the possible conditions that may endanger the health and safety of workers, in any case we recommend the following precautions:
- Know and observe all the general safety rules in force in the area to which you must access and work.
- Carefully evaluate the consequences of all the actions you intend to carry out.
- Always wear suitable safety equipment, such as at least safety shoes, gloves and sight protection.
- Check that the valve or component has been connected in accordance with the instructions of the test bench you are using. When using flanges, check that they are of the correct type, of the correct material and that all the studs and nuts are of the correct diameter and material.

- Depressurize before performing any operation on the valve or component under test.
- Before removing a valve or component from the test bench, make sure that it has been depressurized.

# 6. INSTRUMENTATIONS

All instruments used for hydrostatic test shall be identified uniquely and shall be periodically calibrated in accordance with procedures SGQ008, PI0003 and PI0013.

# 7. TEST DESCRIPTION

## 7.1 SAFETY REQUIREMENTS

The test supervisor must ensure that all the personnel participating to the test have read, are aware of and have understood the content of this document before starting the tests.

Company safety regulations shall be adhered to during the tests. Extreme caution shall be exercised during pressure testing, as well as during lifting operations.

The risks mentioned in this paragraph are not exhaustive and are given only as an example.

At the end of every test, ensure that there is no trapped pressure anywhere in the test equipment and in the test devices/tools.

## 7.2 GENERAL

Test is performed on one part at the time or on two or more parts assembled together.
This test is not meant for verify sealing of joints; it is allowed the use of temporary gaskets. Components under test must not be painted.
The components are tested using suitable equipment for feeding the test fluid, for venting the air and for closing the remaining threaded or flanged connections.
The test fluid is introduced into the part to be tested making sure that the trapped air is completely vented.
For pressure containing parts having different pressure classes (Inlet side at high pressure and outlet side at low pressure), the hydrostatic test must be performed for both sections, according to the applicable pressure class, proceeding as follows:

a) Perform the hydrostatic test of high-pressure side, after isolating it from low pressure side.
b) Perform the hydrostatic test of low-pressure side.

Temporary seals may be used for the test. Figure 1 shows a typical application case (butt-welded safety valve with semi-nozzle).
For valves with heating jacket the hydrostatic test shall be performed with the following procedure:

a) Perform the hydrostatic test of the valve part without heating jacket.
b) Weld the heating jacket on the valve part and perform non destructive examination, if any.
c) Perform the hydrostatic test of heating jacket.

## 7.3 PARTS WITH PRESSURE CLASS DIFFERENT FROM API 6A

After checking that all air has been correctly vented from the component or components under test, the pressure is slowly increased up to the specified value.
During pressurization, always check that there is no abnormal deformation or leakage between the valve component and the test equipment.
The component or components are kept under pressure for the specified time, after which the inspection is carried out.
Inspection of the pressurized parts take place after careful cleaning and drying of the same. External surfaces may be covered with chalk powder so as to put in evidence leakage and sweating.
At the end of the inspection the pressure is brought to zero and the component or components emptied completely from the test fluid.
The test completion is reported on the work order of the component.

Casted components like caps, bonnets and bodies are properly identified by the operator once test has been completed with satisfactory result; non-compliant components are instead identified with the "HOLD" tag and segregated in separate place.
At the end of the test, throughly dry all the surfaces, apply the protections where and when foreseen and check that the component is correctly identified.

## 7.4 PARTS WITH API 6A PRESSURE CLASS

After checking that all air has been correctly vented from the component or components under test, the pressure is slowly increased up to the specified value.
During pressurization, always check that there is no abnormal deformation or leakage between the valve component and the test equipment.
The component or components are kept under pressure for the specified time, after which the inspection is carried out.
The pressure is then reduced to zero and the component or components are pressurized a second time to the specified value and kept under pressure for the specified time, after which the second inspection is carried out.
Inspections of the pressurized parts take place after careful cleaning and drying of the same. External surfaces may be covered with chalk powder so as to put in evidence leakage and sweating.
At the end of the inspection the pressure is brought to zero and the component or components emptied completely from the test fluid.
The test result is reported on the working order of the component. Test report shall include the pressure chart, shall identify the recording device, shall be dated and shall be signed.
Casted components like caps, bonnets and bodies are marked with a stamp of eligibility.
Non-compliant components are identified with the "HOLD" tag.
At the end of the test, throughly dry all the surfaces, apply the protections where and when foreseen and check that the component is correctly identified.

# 8. TEST SPECIFICATION

## 8.1 GENERAL SPECIFICATION

Water with corrosion inhibitor, with a pH between 6 and 8.5 and with a chloride content not exceeding 15 parts per million shall be used and checked at least quarterly or during the replacement of the fluid in the tank. Testing fluid shall be at room temperature.

## 8.2 PARTS WITH PRESSURE CLASS DIFFERENT FROM API 6A

### *8.2.1 PRESSURE MEASURING DEVICES*

The pressure measurement must be carried out by means of pressure transducers or pressure gauges such as to guarantee an accuracy on the test pressure equal to 0 / + 5%.

### *8.2.2 TEST PRESSURE*

As specified by ASME B16.34, ASME XIII 3.6.1 and EN ISO 4126 parts 1 and 4 the hydrostatic test pressure must be 1,5 times the design pressure.
Specifically, the hydrostatic test pressure shall be in accordance with the following criteria:

1. For parts with pressure class in accordance with ASME B16.34 refer to table 1. Hydrostatic test pressure depends on pressure class and material group of the part. Refer to Appendix A for the link between the material used by AST for the pressure containing parts and the relevant material group.
2. For parts with pressure class in accordance with EN ISO 12516-1, refer to table 2. Hydrostatic test pressure depends on pressure class and material group of the part. Refer to Appendix A for the link between the material used by AST for the pressure containing parts and the relevant material group.
3. For pilot body pressure classes are indicated in table 4. For hydrostatic test pressure refer to the above point 1 and 2.

4. For valve parts not included in the above points, the hydrostatic test shall be performed at a pressure equal to 1,5 times the design pressure at room temperature.

### *8.2.3 TEST DURATION*

Minimum test duration is specified by Table 6. It is possible to proceed with the inspection only after waiting for the indicated time.

## 8.3 PARTS WITH API 6A PRESSURE CLASS

### *8.3.1 PRESSURE MEASURING DEVICES*

Pressure measurement must be carried out by means of pressure transducers or pressure gauges with an accuracy class of at least +/- 2% of the full scale. If pressure gauges are used instead of pressure transducers, the pressure reading must be made between 20% and 80% of the full scale.
If a product specification level (PSL) of 3 or 4 is specified, a pressure recording system must be used for the overall duration of the hydrostatic test.

### *8.3.2 TEST PRESSURE*

The hydrostatic test pressure is 1.5 times the maximum design pressure at room temperature, the test pressure can never be higher than the values shown in table 3, that is accordance with API 6A.
The pressure classes of the pilot bodies are shown in table 4. The hydrostatic test pressure is 1.5 times the design pressure, the test pressure can never be higher than the values shown in Table 3.

### *8.3.3 TEST DURATION*

The minimum duration of each test is specified in Table 7. It is possible to proceed with the inspections only after waiting for the indicated time.

# 9. ACCEPTANCE CRITERIA

There must not be any visible leakage or sweating through the boundary walls.

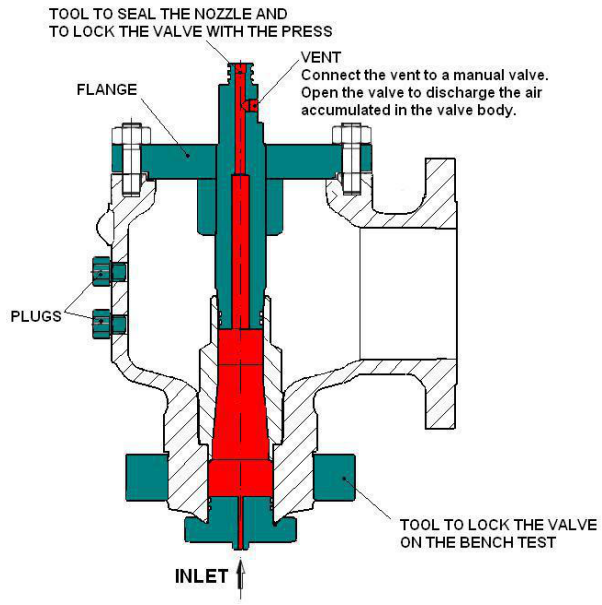
# 10. CERTIFICATION

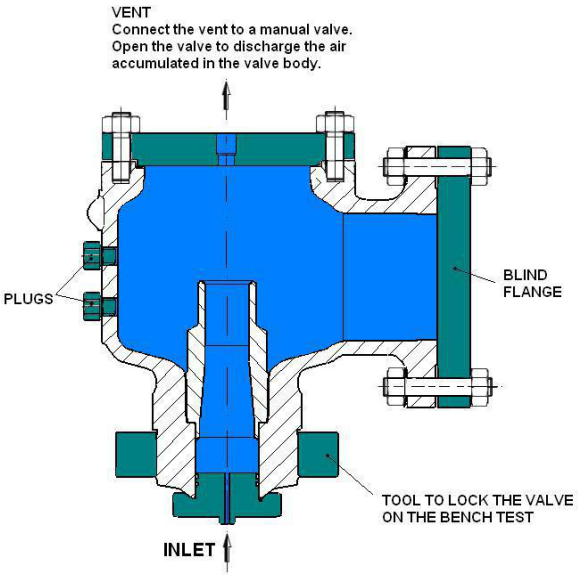
The results and the test parameters are recorded on the valve certificate, issued by the quality department (QUA). For parts with pressure class according to API 6A and PSL3 or PSL 4 requirements, the test report, which includes the pressure diagram, the recording device, the date and the signature, shall be considered part of the certificate.

**Figura1 / *Figura 1***

*Esempio di valvola con due classi di pressione*

*Typical valve with two pressure classes*




Procedere con la prova idrostatica delle parti soggette all'alta pressione (flangia di ingresso corpo e boccaglio) con l'ausilio di opportuni attrezzi (adattatore flangia, tappo idrostatico etc.)
La zona ad alta pressione deve essere isolata da quella a bassa.

*Perform hydrostatic test on pressure containing parts subject to high pressure (inlet valve flange and nozzle) with suitable tools and or equipment (flange adaptor, hydrostatic plug, etc.).*
*High pressure side shall be isolated from low pressure side.*

Procedere con la prova idrostatica delle parti soggette alla bassa pressione (flangia di uscita e corpo) con l'ausilio di opportuni attrezzi (adattatore flangia, coperchio corpo etc.)

*Perform hydrostatic test on pressure containing parts subject to low pressure (outlet valve flange and body thickness) with suitable tools or equipment (flange adaptor, body cap, etc.).*

**Tabella1 / *Table 1***

Pressioni di prova / *Test pressures*

In accordo a ASME B16.34 / *In accordance with ASME B16.34*

| Material Groups | Pressioni Pressures | | Class | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | 150 | 300 | 600 | 900 | 1500 | 2500 | 4500 |
| 1.1 | *Press di progetto Design pressure* | [bar] | 19,7 | 51,0 | 102 | 153,1 | 255,5 | 425,4 | 765,9 |
| | Press. prova idrost. Hydrost. test pressure | 0 / +1.7 | **30** | **77** | **153** | **230** | **384** | **639** | **1149** |
| 1.2 - 1.9 - 1.10 - 1.13<br>1.14 - 1.15 - 1.17 - 2.8 - 3.1 - 3.5 - 3.7 - 3.8 | *Press di progetto Design pressure* | [bar] | 20 | 51,7 | 103,4 | 155,1 | 258,6 | 430,9 | 775,7 |
| | Press. prova idrost. Hydrost. test pressure | 0 / +1.7 | **30** | **78** | **156** | **233** | **388** | **647** | **1164** |
| 1.3 - 1.5 | *Press di progetto Design pressure* | [bar] | 18,4 | 48 | 96 | 144,1 | 240,1 | 400,1 | 720,3 |
| | Press. prova idrost. Hydrost. test pressure | 0 / +1.7 | **28** | **72** | **144** | **217** | **361** | **601** | **1081** |
| 1.6 - 1.16 | *Press di progetto Design pressure* | [bar] | 15,6 | 40,6 | 81,3 | 121,9 | 203,1 | 338,6 | 609,4 |
| | Press. prova idrost. Hydrost. test pressure | +1,7/-0 | **24** | **61** | **122** | **183** | **305** | **508** | **915** |
| 2.1 - 2.2 - 2.4 - 2.5 | *Press di progetto Design pressure* | [bar] | 19,0 | 49,6 | 99,3 | 148,9 | 248,2 | 413,7 | 744,6 |
| | Press. prova idrost. Hydrost. test pressure | 0 / +1.7 | **29** | **75** | **149** | **224** | **373** | **621** | **1117** |
| 2.3 - 3.4 - 3.17 - 3.15 | *Press di progetto Design pressure* | [bar] | 15,9 | 41,4 | 82,7 | 124,1 | 206,9 | 344,8 | 620,5 |
| | Press. prova idrost. Hydrost. test pressure | 0 / +1.7 | **24** | **63** | **125** | **187** | **311** | **518** | **931** |
| 3.12 | *Press di progetto Design pressure* | [bar] | 17,8 | 46,3 | 92,7 | 139 | 231,7 | 386,1 | 695 |
| | Press. prova idrost. Hydrost. test pressure | 0 / +1.7 | **27** | **70** | **140** | **209** | **348** | **580** | **1043** |
| 1.4 | *Press di progetto Design pressure* | [bar] | 16,3 | 42,6 | 85,12 | 127,7 | 212,8 | 354,6 | 638,3 |
| | Press. prova idrost. Hydrost. test pressure | 0 / +1.7 | **25** | **64** | **128** | **192** | **320** | **532** | **958** |

**Tabella 2 / *Table 2***

Pressioni di prova / *Test pressures*

In accordo a EN ISO 12516-1 / *In accordance with EN ISO 12516-1*

| Material Groups | Pressioni Pressures | | Class | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | PN6 | PN10 | PN16 | PN25 | PN40 | PN63 | PN100 | PN160 | PN250 | PN320 | PN400 |
| 1C1 - 1C2<br>1C9 - 1C10<br>1C13 - 1C14<br>2C8<br>10E0 - 16E0<br>1C3 - 1C5<br>1C6 - 1C8<br>2C1 - 2C2<br>2C4 - 2C5<br>2C3 - 2C6 | *Press di progetto*<br>*Design pressure* | | 6 | 10 | 16 | 25 | 40 | 63 | 100 | 160 | 250 | 320 | 400 |
| | **Pressione prova idrostatica**<br><br>**Hydrostatic test pressure** | **[bar]**<br>0 / +1.7 | **9** | **15** | **24** | **38** | **60** | **95** | **150** | **240** | **375** | **480** | **600** |

**Tabella 3 / *Table 3***

Classi di pressione e pressione di prova idrostatica in accordo ad API 6A
*Pressure rating class for hydrostatic test in accordance with API 6A*

| **Classe di Pressione**<br>***Pressure Class*** | | **Pressione di prova idrostatica**<br>***Hydrostatic test pressure*** |
|---|---|---|
| **psi** | **bar** | **bar** |
| 2 000 | 138 | 207 |
| 3 000 | 207 | 311 |
| 5 000 | 345 | 518 |
| 10 000 | 690 | 1 035 |
| 15 000 | 1 035 | 1 553 |
| 20 000 | 1 380 | 2 070 |

**Tabella 4 / *Table 4***

Classi di pressione per i corpi piloti [min]
*Pressure rating class for pilot body [min]*

| **Modello pilota**<br>***Pilot type*** | **Classe di Pressione**<br>***Pressure Class*** |
|---|---|
| 7210 | ASME B16.34 Class 2500 |
| 7220 | ASME B16.34 Class 300 |
| 7230 | ASME B16.34 Class 600 |
| 7240 | ASME B16.34 Class 900 |
| 7250 | ASME B16.34 Class 2500 |
| 7250-HP | API 6A Class 15000 psi |

**Tabella 6 / *Table 6***

Durata minima della prova [min] / *Minimum test duration [min]*

| **Componente di contenimento della pressione**<br>***Pressure containing parts*** | **Dimesioni**<br>***Dimensions*** | **Minima durata prova idrostatica**<br>***Hydrostatic test minimum duration*** |
|---|---|---|
| **Corpi[2]**<br>***Bodies[2]*** | Fino a NPS 2 – DN 50<br>*Up to NPS 2 – DN 50* | 1 min |
| | *Oltre NPS 2 - DN 50 fino a NPS 8 - DN 200*<br>*From NPS 2 – DN 50 to NPS 8 – DN 200* | 2 min |
| | Da NPS 8 – DN 200 fino a NPS 12 – DN 300<br>*From NPS 8 – DN 200 to NPS 12 – DN 300* | 3 min |
| | Oltre NPS 12 - DN 300<br>*Over NPS 12 - DN 300* | 5 min |
| **Cappucci e corpi pilota**<br>***Caps and pilot bodies*** | Tutte le dimensioni<br>*All sizes* | 3 min |
| **Boccagli[3]**<br>***Nozzles[3]*** | Fino a NPS 1 – DN 25<br>*Up to NPS 1 – DN 25* | 1 min |
| | Oltre NPS 1 - DN 25 fino a NPS 2 - DN 50<br>*From NPS 1 – DN 25 to NPS 2 – DN 50* | 2 min |
| | Oltre NPS 2 - DN 50 fino a NPS 8 - DN 200<br>*From NPS 2 – DN 50 to NPS 8 – DN 200* | 5 min |
| **Cappelli[4]**<br>***Bonnets[4]*** | Fino a 80 mm, escluso<br>*Up to 80 mm, excluded* | 1 min |
| | Da 80 mm fino a 190 mm<br>*From 80 mm to 190 mm* | 2 min |
| | Oltre 190 mm<br>*Over 190 mm* | 3 min |

1) La durata della prova è sempre uguale o maggiore a quanto prescritto da ASME B16.5 e ASME B16.34.
   *Test duration is equal or longer than what is required by ASME B16.5 and ASME B16.34.*
2) Per le valvole di sicurezza riferirsi alla dimensione della flangia di uscita
   *For safety valves refer to the size of the outlet flange.*
3) Le dimensioni si riferiscono alla dimensione nominale del boccaglio.
   *Dimensions refer to the nominal pipe size of the nozzle*
4) Le dimensioni si riferiscono al diametro dell'imposta guida.
   *Dimensions refer to liner external diameter*

**Tabella 7 / *Table 7***
Durata minima della prova [min] / *Minimum test duration [min]*

| | PSL 1 & PSL 2 | PSL 3 & PSL 4 |
|---|---|---|
| Primary pressure-holding period | 3 min | 3 min |
| Secondary pressure-holding period | 3 min | 15 min |

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# ANNEX - A _add to AST "HT" Hydro-test Procedure _ CV2400221

| Item | Type | Valve Tag | Serial nr. | Valve Service | Valve Model | Body Size | leackage CLASS | SHUTOFF [Bar G] | FAIL POS | Body Material | Rating | Finish | Actuator Size | HYDROSTATIC TEST PRESSURE [Bar G] | HT MINIMUM TEST DURATION [min] | TEST HT MEDIUM | HT LEAKAGE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | Control Valve | 25-FV-031 | 2400583 | - | CV-8407 | 1" | VI | 40 | CLOSE | A351 CF3M | 300# | RF | SD09R | 75 | 1 | WATER | 0 |
| 10 | Control Valve | 25-FV-032 | 2400584 | - | CV-8407 | 1" | VI | 40 | CLOSE | A351 CF3M | 300# | RF | SD09R | 75 | 1 | WATER | 0 |
| 10 | Control Valve | 25-FV-033 | 2400585 | - | CV-8407 | 1" | VI | 40 | CLOSE | A351 CF3M | 300# | RF | SD09R | 75 | 1 | WATER | 0 |
| 10 | Control Valve | 25-FV-034 | 2400586 | - | CV-8407 | 1" | VI | 40 | CLOSE | A351 CF3M | 300# | RF | SD09R | 75 | 1 | WATER | 0 |
| 10 | Control Valve | 25-FV-036 | 2400587 | - | CV-8407 | 1" | VI | 40 | CLOSE | A351 CF3M | 300# | RF | SD09R | 75 | 1 | WATER | 0 |
| 10 | Control Valve | 25-FV-038 | 2400588 | - | CV-8407 | 1" | VI | 40 | CLOSE | A351 CF3M | 300# | RF | SD09R | 75 | 1 | WATER | 0 |
| 20 | Control Valve | 25-PV-035 | 2400589 | H2 Service | CV-8407 | 2" | VI | 40 | CLOSE | A351 CF3M | 300# | RF | SD09R | 75 | 1 | WATER | 0 |
| 20 | Control Valve | 25-PV-037 | 2400590 | H2 Service | CV-8407 | 2" | VI | 40 | CLOSE | A351 CF3M | 300# | RF | SD09R | 75 | 1 | WATER | 0 |
| 20 | Control Valve | 25-PV-040 | 2400591 | H2 Service | CV-8407 | 2" | VI | 40 | CLOSE | A351 CF3M | 300# | RF | SD09R | 75 | 1 | WATER | 0 |
| 20 | Control Valve | 25-PV-043 | 2400592 | H2 Service | CV-8407 | 2" | VI | 40 | CLOSE | A351 CF3M | 300# | RF | SD09R | 75 | 1 | WATER | 0 |
| 20 | Control Valve | 25-PV-046 | 2400593 | H2 Service | CV-8407 | 2" | VI | 40 | CLOSE | A351 CF3M | 300# | RF | SD09R | 75 | 1 | WATER | 0 |
| 20 | Control Valve | 25-PV-049 | 2400594 | H2 Service | CV-8407 | 2" | VI | 40 | CLOSE | A351 CF3M | 300# | RF | SD09R | 75 | 1 | WATER | 0 |
| 30 | Control Valve | 25-PV-055A | 2400595 | H2 Service | CV-8407 | 1 1/2" | VI | 40 | CLOSE | A351 CF3M | 300# | RF | SD11R | 75 | 1 | WATER | 0 |
| 40 | Control Valve | 64-PV-031A | 2400597 | - | CV-8407 | 1" | V | 10 | CLOSE | A350 LF2 | 150# | RF - LUG | SD09R | 30 | 1 | WATER | 0 |
| 40 | Control Valve | 64-PV-031B | 2400598 | - | CV-8407 | 1" | V | 10 | CLOSE | A350 LF2 | 150# | RF - LUG | SD09R | 30 | 1 | WATER | 0 |
| 50 | Control Valve | 25-PV-055B | 2400596 | H2 Service | CV-8407 | 1 1/2" | VI | 40 | CLOSE | A351 CF3M | 300# | RF | SD11R | 75 | 1 | WATER | 0 |

# PART 1-DESIGN DOSSIER

# Section 4.3

FAT procedure

# Base Load Power Hub (BLPH)

## CONTROL VALVES

## FAT PROCEDURE

Document Number: 1724000740-QC-PRO-00011

Document Class: 2

ROSETTI MARINO

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

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| Sign | Date |
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| V. Barratta | 24-01-2025 |

| Rev. | Date | Description | Prepared | Reviewed | Approved |
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Revision / Change Log

| Rev. | Description |
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| 00 | ISSUE FOR REVIEW (IFR) |
| 01 | ACCEPTED FOR CONSTRUCTION (AFC) |
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| 6 | 23/08/21 | Aggiunto test continuità elettrica per valvole soggette a marcatura ATEX. *Electrical continuity check added for valves subjected to ATEX.* | A.Perego | F.Chiatto | A.Lapenna |
| 5 | 28/04/20 | Correzioni varie - Mod. par. 6.4, 6.5, 7.1, 9, tab. 2, tab. 3, all. 1; agg. allegato 2. *General rev. - Clauses 6.4, 6.5, 7.1, 9, tab. 2 and 3, annex 1, mod.; annex 2 added.* | A.Perego | F.Chiatto | A.Lapenna |
| 4 | 18/09/15 | Introdotti riferimenti a PI0001, inserita verifica tempo manovra e prove per valvole ON-OFF. *PI0001 references included, insert stroking time test and on-off control valves tests.* | LV | FF | AC |
| 3 | 15/12/02 | Revisione generale *General revision* | VC | FC | VC |
| 2 | 15/12/98 | Inserita possibilità di prova con la massima pressione di esercizio e indicato diametro tubo per conteggio bolle. Aggiunta serie CV-8450. Revisione Tabella 3 e Allegato1 *Testing with maximum operating pressure and diameter of pipe for bubble measurement have been added. Addition series CV-8450. Table 3 and Attachment 1 revised.* | CS | VC | VC |
| 1 | 13/10/97 | Revisione editoriale e aggiunta Allegato1 *Editorial revision and addition of Attachment 1* | CS | VC | VC |
| 0 | 02/05/95 | Emissione - *Issue* | CS | VC | VC |



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# 1 SCOPO

La presente procedura illustra le prove di collaudo da effettuare sulle valvole di regolazione prodotte da AST e i relativi criteri di accettabilità.

# 2 NORME DI RIFERIMENTO

Le seguenti normative sono state utilizzate per la definizione delle prove richiamate nella presente procedura:

- ASME B16.34 - Valves – Flanged, threaded and welding end
- EN 1349 - Industrial process control valves
- EN 12266 - Industrial valves. Testing of valves. Pressure tests, test procedures and acceptance criteria.
- IEC 60534-2-1 - Industrial process control valves – Flow Capacity - Sizing equations for fluid flow under installed conditions
- IEC 60534-4 - Industrial process control valves – Inspection and routine testing
- AST PI0001 - Hydrostatic test procedure

# 3 APPLICABILITÀ

La presente procedura di collaudo è applicabile alle valvole di regolazione della serie CV-8000 (8100, 8200, 830C, 830D, 8400, 8450, 8600, 8700 e 8750, 870U e 870S) modulanti ed ON-OFF prodotte da AST, azionate da attuatori pneumatici.
Le valvole possono essere corredate con altri attuatori (elettrici, idraulici) ma in tal caso quanto descritto nella presente procedura, se necessario, deve essere integrato con ulteriori informazioni riportate in un documento separato.

# 4 PROVA IDRAULICA

La prova idraulica può essere eseguita sia sui componenti singoli della valvola di regolazione che sulla valvola completamente assemblata. Per la procedura di prova idraulica, le pressioni di prova ed i tempi riferirsi a PI0001. La prova idraulica in accordo a PI0001, eseguita sui singoli componenti non assemblati, ha lo scopo di verificare sia la resistenza ai fini del contenimento della pressione che la tenuta del singolo componente. Le prove descritte in seguito possono essere eseguite solo dopo l'esito positivo di questa prova.

# 5 PROVA DI TENUTA DELL'INVOLUCRO

Scopo della presente prova è la verifica della tenuta dell'involucro alla pressione interna, inclusa la baderna di tenuta stelo (pacco baderna).
Qualora la prova idraulica sia stata condotta su componenti non assemblati la tenuta dei singoli componenti non è oggetto della presente prova che si applica quindi alle sole giunzioni ed al pacco baderna.
La valvola deve essere montata su un idoneo banco prova o le sue connessioni devono essere chiuse con flange cieche, l'otturatore deve essere posizionato in modo che la valvola sia aperta. Le attrezzature di prova non devono sottoporre la valvola a carichi che potrebbero influenzare i risultati della prova.
Le apparecchiature per la misurazione della pressione devono avere un'accuratezza pari al ± 5% della pressione di prova richiesta.
Il fluido di prova deve essere aria o azoto a temperatura ambiente per le prove con gas ed acqua a temperatura ambiente, con inibitore di corrosione, per le prove con liquido. Il contenuto di cloruri dell'acqua non deve essere superiore a 15 ppm.
Il fluido utilizzato per la prova deve essere riportato sul certificato di collaudo.

## 5.1 PRESSIONE DI PROVA

Quando il fluido di prova è un liquido (acqua con inibitore di corrosione) la pressione è pari ad 1.5 volte la pressione di progetto a temperatura ambiente.
Quando il fluido di prova è un gas (aria o azoto) la pressione è pari a 1.1 volte la pressione di design a temperatura ambiente o 6 ± 1 bar.

## 5.2 DURATA DELLA PROVA

La durata della prova di tenuta è riportata nella tabella 1.


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## 5.3 CRITERI DI ACCETTABILITA'

Quando il fluido di prova è un liquido non sono ammesse perdite rilevabili visivamente sulla superficie e sulle giunzioni degli elementi costituenti la valvola. Sono escluse dalla prova le attrezzature (ad esempio flange cieche e guarnizioni temporanee) utilizzate per chiudere le connessioni della valvola. È ammessa una perdita del pacco baderna solamente se non si rilevi visivamente alcuna perdita quando la pressione viene abbassata a 1.1 volte la pressione di progetto a temperatura ambiente.
Quando il fluido di prova è un gas bisogna verificare con acqua saponata o con liquido idoneo al rilevamento delle perdite, che non ci sia una continua formazione di bolle sulla superficie e sulle giunzioni degli elementi costituenti la valvola, inclusa la baderna. Sono escluse dalla prova le attrezzature (ad esempio flange cieche e guarnizioni) utilizzate per chiudere le connessioni della valvola.

# 6 PROVE FUNZIONALI

Lo scopo di questo test, descritto in questa procedura ed eseguito in reparto, è verificare assemblaggio e il corretto funzionamento della valvola.
È molto difficile replicare le reali condizioni operative del processo, quindi questa procedura è una guida orientativa per definire l'efficienza della valvola fuori servizio.

## 6.1 CORSA NOMINALE

### 6.1.1 VALVOLE DI REGOLAZIONE SENZA POSIZIONATORE

Le valvole di regolazione e le valvole di regolazione con funzione ON-OFF, che aprono (*chiudono*) con un incremento del segnale devono raggiungere il 100% della corsa nominale quando è applicato il limite superiore (*inferiore*) di pressione, indicato nel campo molla dell'attuatore. Devono chiudere quando è applicato il limite inferiore (*superiore*) di pressione, indicato nel campo molla dell'attuatore.
Il test deve essere eseguito con la valvola non pressurizzata.

### 6.1.2 VALVOLE DI REGOLAZIONE CON POSIZIONATORE

L'azione di apertura (*chiusura*) della valvola di regolazione con posizionatore iniziano a muovere l'otturatore quando viene applicato un segnale compreso fra lo 0% e il 2% del gap.
La valvola sarà completamente aperta (*chiusa*) quando è applicato un segnale compreso fra 98% e 100% del gap.
Il test deve essere eseguito con la valvola non pressurizzata.

## 6.2 Funzionalità

Le prove descritte in questa sezione hanno lo scopo di verificare che la valvola sia in grado di compiere la funzione assegnata in caso di mancanza del fluido di potenza (fail position). Quando richiesto contrattualmente il funzionamento viene verificato al massimo differenziale di pressione previsto contrattualmente.
Le prove devono essere eseguite sulla valvola completamente assemblata, non è ammesso regolare il serraggio del pacco baderna o cambiare le regolazioni della strumentazione durante o dopo l'esecuzione di queste prove.

### 6.2.1 CASO DI EMERGENZA – VALVOLA CHIUDE

Tale prova si applica a tutte le valvole dotate di attuatore alle quali sia richiesto di chiudere in caso di mancanza del fluido di potenza o in caso di emergenza.
Pressurizzare il corpo della valvola al valore di pressione previsto, quando richiesto contrattualmente, e verificare che l'otturatore sia in grado raggiungere correttamente la posizione di apertura e di chiusura. Quando la valvola ha raggiunto la posizione di chiusura, depressurizzare l'uscita. Simulare la mancanza del fluido di potenza e verificare che la valvola sia in grado di rimanere chiusa. La tenuta non è oggetto della presente prova.
La prova può essere eseguita con gas (azoto) o liquido (acqua con inibitore di corrosione), si tenga comunque presente che quando la valvola viene provata con liquido il movimento dello stelo causa una variazione della pressione di prova che deve essere opportunamente compensato.

### 6.2.2 CASO DI EMERGENZA - VALVOLA APRE

Tale prova si applica a tutte le valvole dotate di attuatore alle quali sia richiesto di aprire in caso di mancanza del fluido di potenza o in caso di emergenza.
Pressurizzare il corpo della valvola al valore di pressione previsto, quando richiesto contrattualmente, e verificare che l'otturatore sia in grado raggiungere correttamente la posizione di apertura e di chiusura. Quando la valvola è chiusa depressurizzare l'uscita. Simulare la mancanza del fluido di potenza e verificare che la valvola sia in grado di aprire. Durante


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l'apertura della valvola con il corpo pressurizzato si ha la fuoriuscita del fluido di prova che deve essere opportunamente convogliato. La tenuta non è oggetto della presente prova.
La prova può essere eseguita con gas (azoto) o liquido (acqua con inibitore di corrosione), si tenga comunque presente che quando la valvola viene provata con liquido il movimento dello stelo causa una variazione della pressione di prova che deve essere opportunamente compensato.

### 6.2.3 CASO DI EMERGENZA - VALVOLA BLOCCATA

Tale prova si applica a tutte le valvole dotate di attuatore per le quali sia richiesto di mantenere invariata la posizione in caso di mancanza del fluido di potenza o in caso di emergenza.
Pressurizzare il corpo della valvola al valore di pressione previsto, quando richiesto contrattualmente, e verificare che l'otturatore sia in grado raggiungere correttamente la posizione di apertura e di chiusura. La prova può essere eseguita con gas o liquido, si tenga comunque presente che quando la valvola viene provata con liquido il movimento dello stelo causa una variazione della pressione di prova che deve essere opportunamente compensata.
Posizionare l'otturatore a metà corsa circa, simulare la mancanza del fluido di potenza e verificare che dopo 5 minuti non ci siano stati spostamenti superiori al 5% della corsa nominale.

## 6.3 TEMPO DI MANOVRA

Questa verifica si esegue quando sulla specifica della valvola è richiesto un tempo massimo per effettuare una corsa completa, in apertura o chiusura, sia in regolazione che mediante eccitazione / diseccitazione di apposita valvola a solenoide, oppure in assenza di fluido di potenza (aria) o alimentazione elettrica.
Il tempo della manovra mediante eccitazione / diseccitazione di valvola a solenoide (azionamento on-off) deve include il tempo morto di carico/scarico dell'aria nell'attuatore, prima che lo stelo inizi a muoversi.
Nel caso di verifica del tempo di manovra in regolazione, il tempo morto di pressurizzazione / de pressurizzazione delle camere dell'attuatore non deve essere incluso; questo può essere realizzato misurando il tempo dall'inizio del movimento dello stelo, oppure posizionando la valvola ad un valore di corsa appena superiore al cut-off impostato per la verifica del tempo di apertura o appena al di sotto del 100% di corsa per il tempo in chiusura.
Per la verifica della corsa si può utilizzare la posizione dell'indicatore rispetto alla targhetta della corsa oppure installare un comparatore (si feda fig. 1).
Il test deve essere eseguito con a valvola assemblata e pronta per la spedizione: è proibito registrare il pacco baderne o cambiare la configurazione degli strumenti durante o dopo il test.

## 6.4 PROVA DI ISTERESI E LINEARITÀ senza posizionatore

La prova di isteresi e linearità deve essere eseguita su tutte le valvole per servizio regolante quando fornite sprovviste di posizionatore, oppure quando espressamente richiesto dalle specifiche cliente oppure specificato in ordine.
La prova deve essere eseguita senza pressione all'interno del corpo e con tutta la strumentazione funzionante e regolata.
Il test deve essere eseguito con valvola assemblata, non è ammesso regolare il serraggio del pacco baderna o cambiare le regolazioni della strumentazione durante o dopo l'esecuzione di questa prova.
La prova d'isteresi e linearità consiste nel fare variare il segnale di comando dell'attuatore dal minimo al massimo, con tre punti intermedi, leggendo su un comparatore collegato allo stelo della valvola (fig.1) i cinque valori corrispondenti della corsa. Il segnale di comando viene fatto poi variare in senso inverso con gli stessi cinque valori, leggendo i corrispondenti valori di corsa.
I due valori rilevati della corsa, per lo stesso valore del segnale di comando, devono essere compresi entro:

- ±5% per valvole con packing in PTFE
- ±10% per le valvole con packing in GRAFITE

della corsa nominale massima.
Tale prova non si applica alle valvole con funzione ON-OFF.

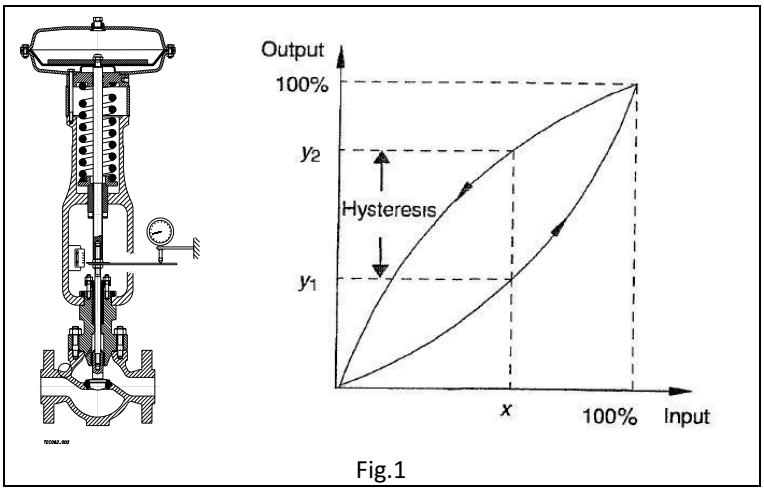


Fig.1


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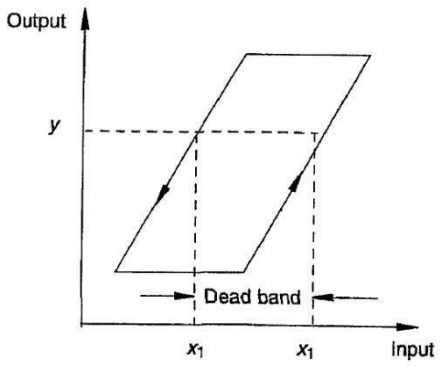
## 6.5 PROVA DI ISTERESI E LINEARITÀ con POSIZIONATORE

Tale prova viene eseguita quando espressamente richiesto dalle specifiche cliente oppure specificato in ordine, la prova deve essere eseguita senza pressione all'interno del corpo, con tutta la strumentazione funzionante e regolata e con il posizionatore attivo.
Il test deve essere eseguito con valvola assemblata, non è ammesso regolare il serraggio del pacco baderna o cambiare le regolazioni della strumentazione durante o dopo l'esecuzione di questa prova.
Il segnale inviato al posizionatore può essere pneumatico, analogico o digitale.
La prova di isteresi e linearità consiste nel fare variare il segnale di comando dell'attuatore dal minimo al massimo, con tre punti intermedi, leggendo su un comparatore collegato allo stelo della valvola (fig.1) i cinque valori corrispondenti della corsa.
Il segnale di comando viene fatto poi variare in senso inverso con gli stessi cinque valori, leggendo i corrispondenti valori di corsa.
La posizione della corsa viene rilevata per i seguenti valori % del segnale 0-25-50-75-100-75-50-25-0.
I due valori rilevati della corsa, per lo stesso valore del segnale di comando, devono essere compresi entro il

- ±1% per valvole con packing in PTFE
- ±1.5% per valvole con packing in GRAFITE.

della corsa nominale massima.
Tale prova non si applica alle valvole con funzione ON-OFF.
Se richiesto dal cliente il test può essere sostituito dalla certificazione di performance del posizionatore

## 6.6 PROVA DELLA "BANDA MORTA"




Lo scopo della presente prova è quello di rilevare la variazione di segnale necessaria a produrre l'inversione del movimento dello stelo della valvola.
Tale prova si applica a tutte le valvole di regolazione con o senza posizionatore tranne che alle valvole con funzione ON-OFF.
La prova deve essere eseguita senza pressione all'interno del corpo e con tutta la strumentazione funzionante e regolata. Il segnale inviato al posizionatore può essere pneumatico, analogico o digitale.
Non è ammesso regolare il serraggio del pacco baderna o cambiare le regolazioni della strumentazione durante o dopo l'esecuzione di questa prova.
La banda morta viene misurata al 25%, al 50% ed al 75% della corsa procedendo come di seguito descritto per ciascuna posizione.
Si aumenta il segnale di comando fino al valore di riferimento e si attende che lo stelo sia fermo e stabile. Successivamente il segnale viene diminuito lentamente. Quando l'otturatore inizia a muoversi, (è possibile verificarlo dal comparatore) è necessario segnare il valore del segnale di input. Ripetere l'operazione per tutti i punti.
Successivamente effettuare le operazioni nel verso opposto, diminuendo il valore del segnale, verificare che l'otturatore sia fermo dopodiché incrementare il segnare segnando il valore di quando l'otturatore inizia a muoversi. Ripetere queste operazioni per tutti i punti.
La differenza tra i due valori è l'errore della banda morta e non deve essere superiore ad una percentuale del valore massimo del segnale di comando come di seguito specificato:

- ± 6% per valvole senza posizionatore e con packing in teflon.
- ± 10% per valvole senza posizionatore, con classe 900 e superiore, e con packing in teflon.
- ± 15% per valvole senza posizionatore e con packing in grafite.
- ± 1% per valvole con posizionatore attivo e con packing in teflon
- ± 1.5% per valvole con posizionatore attivo e con packing in grafite.

## 6.7 TEST SU VALVOLE CON FUNZIONE ON-OFF

Per le valvole con funzione ON-OFF verificare solamente:

- Corsa nominale, vedi 6.1
- Tempo di manovra, vedi 6.3 (se richiesto dal contratto)

È importante verificare il movimento scorrevole dell'otturatore

***NOTE:*** test di isteresi e banda morta non sono richiesti.


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# 7 PROVE DI TENUTA DELLE SEDI

La valvola deve essere provata con l'attuatore montato e tarato, tutta la strumentazione deve essere funzionante e regolata.
Le prove qui di seguito descritte devono essere conformi a quanto riportato da IEC 60534-4.
Quanto di seguito descritto non può essere utilizzato per la valutazione delle perdite della valvola quando installata e soggetta alle condizioni operative.

## 7.1 CLASSE DI PERDITA

Le seguenti descrizioni riportano un'indicazione generica delle classi di perdite tipicamente applicate alle valvole di produzione AST:

- **Classe I**: è generalmente applicata a tutte le valvole per le quali non viene richiesta la funzione di chiusura o per le quali debba essere garantita una minima portata a valvola chiusa.
- **Classe II** e **Classe III**: sono generalmente applicate a valvole di regolazione a doppia sede serie CV-8200, alle farfalle senza guarnizione di tenuta o a tutte le valvole per le quali si ammette un livello di perdita elevato.
- **Classe IV**: è generalmente applicata a valvole di regolazione della serie CV-8100, CV-8300C, CV-8300D, CV-8400, CV-8700, CV-8450 e CV-8750 con tenuta metallo-metallo.
- **Classe IV-S1**: è generalmente applicata a valvole come quelle della classe V ma con otturatore con guarnizione bilanciante con grafite.
- **Classe V**: è generalmente applicata a valvole critiche dell'impianto quando è richiesta anche una funzione di intercettazione per lunghi periodi e con alti differenziali di pressione. Sono valvole a singola sede con tenuta metallo-metallo, senza bilanciatura, con bilanciamento tramite lip-seal in PTFE o C-Ring metallico, oppure bilanciate con pilota.
- **Classe VI**: si applica solo a valvole a singola sede con tenuta soffice.

## 7.2 FLUIDO DI PROVA

I fluidi utilizzati per la prova sono

- aria (o azoto) a temperatura ambiente,
- acqua alla temperatura compresa tra 5°C e 40°C, l'acqua può contenere un inibitore della corrosione.

## 7.3 CONDIZIONI DI PROVA

Il fluido di prova deve essere applicato all'entrata del corpo valvola. L'uscita del corpo valvola può essere aperta all'atmosfera o essere collegata ad un sistema di misurazione di portata (flussometri) a bassa perdita di carico e con uscita aperta all'atmosfera. Occorre fare attenzione a non provocare dannose sovrappressioni nell'apparecchio di misura a seguito dell'apertura della valvola in prova.
Quando viene utilizzata l'acqua come fluido di prova è necessario assicurarsi che il corpo valvola con l'otturatore in posizione aperta e le eventuali tubazioni, siano riempiti completamente. La valvola deve quindi essere chiusa facendo attenzione ad eliminare eventuali sacche d'aria.
Dopo che la perdita si è stabilizzata si può procedere con la misurazione, che deve essere effettuata per un tempo sufficientemente lungo a garantire l'affidabilità del rilievo.

## 7.4 PROCEDIMENTO DI PROVA

In accordo a IEC 60534-4 si definiscono due procedimenti di prova.

### 7.4.1 PROCEDIMENTO DI PROVA 1

La pressione del fluido di prova deve essere compresa tra 3 bar e 4 bar o entro il ± 5% della pressione differenziale di esercizio massima specificata dall'acquirente se minore di 3.5 bar.

### 7.4.2 PROCEDIMENTO DI PROVA 2

La pressione di prova deve essere compresa entro il ± 5% della pressione differenziale di esercizio massima della valvola, come specificato dall'acquirente.

## 7.5 MASSIME PERDITE AMMESSE

La Tabella 3 riassume le perdite ammesse da AST nel rispetto della norma IEC 60534-4


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# 8 VERIFICA DI CONTINUITÀ ELETTRICA

## 8.1 Descrizione

Questa prova deve essere eseguita per tutte le valvole soggette a marcatura ATEX 2014/34/EU.
Lo scopo è la verifica della continuità elettrica tra le parti in movimento e la struttura fissa di valvola e attuatore.
La prova si applica a valvola completa di attuatore, che sia esso pneumatico, elettrico oppure idraulico.

## 8.2 PROCEDURA DI PROVA

La prova consiste nella misura della resistenza elettrica tra il blocchetto di collegamento dello stelo valvola all'attuatore e l'assieme valvola mediante un comune multimetro.
Data la tipologia di prova non è necessario che lo strumento sia soggetto a calibrazione periodica ma è sufficiente verificare le letture a morsetti aperti e morsetti in corto circuito per la verifica della funzionalità.
La valvola dovrà essere movimentata almeno cinque volte. La misura di resistenza deve essere eseguita tra il blocchetto di collegamento e il morsetto di messa a terra presente sulla flangia del cappello con otturatore in posizione intermedia tra tutto aperto e tutto chiuso in almeno tre punti, tipicamente 25%, 50% e 75 % circa.

## 8.3 ACCETTABILITÀ

Il valore di resistenza misurato dovrà essere non superiore a 10 Ω, valore prescritto da EN 12266-2 Annex B ma con procedura di prova differente.
Qualora sia misurato un valore di resistenza superiore sarà necessario consultare l'ufficio tecnico e, se il caso, provvedere a collegare il blocchetto di giunzione valvola attuatore al giogo dell'attuatore mediante cavetto elettrico flessibile di lunghezza adeguata a consentire l'esecuzione dell'intera corsa.


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# 1 SCOPE

This procedure defines the production tests to be done on the control valves produced by AST and the acceptability criteria.

# 2 REFERENCE STANDARDS

The tests defined in this procedure refer to the following standards:

- ASME B16.34 - Valves – Flanged, threaded and welding end
- EN 1349 - Industrial process control valves
- EN 12266 - Industrial valves. Testing of valves. Pressure tests, test procedures and acceptance criteria.
- IEC 60534-2-1 - Industrial process control valves – Flow Capacity - Sizing equations for fluid flow under installed conditions
- IEC 60534-4 - Industrial process control valves – Inspection and routine testing
- PI0001 - Hydrostatic test procedure

# 3 APPLICABILITY

This procedure applies to modulating and ON-OFF control valves series CV-8000 (8100, 8200, 8300C, 8300D, 8400, 8450, 8600, 8700 and 8750, 8700U and 8700S) modulating and ON-OFF manufactured by A.S.T. and actuated by actuator.
This procedure could be also applied to control valve with electric or hydraulic actuators provided that the necessary supplemental information, if any, are provided in a separate document.

# 4 HYDRAULIC TEST

The hydraulic test can be performed on each single components of the control valve or on the control valve fully assembled. For the hydraulic test procedure, for the test pressure and the test duration refer to PI0001. The hydraulic test according to PI0001, performed on individual components not assembled, has the aim to verify the structural integrity and the shell tightness. The following tests can be performed only after the positive results of this test.

# 5 SHELL THIGHTNESS TEST

The aim is to verify the shell tightness under internal pressure, including the packing tightness.
If the hydraulic test is performed on the components not assembled, the shell tightness of the individual components is not included in this clause that applies only to the static seals, to the gasketed joints and to the packing.
The valve should be mounted on a suitable test bench or its connections must be closed with blind flanges, the plug shall be positioned so that the valve is open. Test equipment shall not subject the valve to externally applied stresses which may affect results of the tests.
The pressure measuring instrument shall have at least an accuracy of ± 5% of the test pressure required.
The test fluid shall be air or nitrogen at room temperature for testing with gas and water at room temperature, with corrosion inhibitor, for the tests with liquid. The maximum chloride content of the water is 15 ppm.
The test media shall be reported in the valve certificate.

## 5.1 TEST PRESSURE

When testing with liquid (water with corrosion inhibitor) as test media, the test pressure shall be 1.5 times the design pressure at room temperature.
When testing with gas (air or nitrogen) as test media, the test pressure shall be 1.1 times the design pressure at room temperature or 6 ± 1 bar.

## 5.2 TEST DURATION

Test duration is quoted on table 1.

## 5.3 ACCEPTANCE CRITERIA

When the test fluid is water any visually detectable weeping or leakage through the shell walls, the static seals and the gasketed joints shall be cause for rejection. Test equipment and test fixtures (e.g. blind flanges and temporary gaskets) used to close the control valve end connections are excluded from the test.


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During the test the leakage through the packing is permitted provided no leakage is visually detected when the pressure is lowered to 1.1 times the design pressure at room temperature.
When the test fluid is air or nitrogen the soapy water or other suitable means shall be used to verify that there isn't a continuous formation of bubbles on the shell walls, static seals and gasketed joints; the packing tightness shall be also included in the test.
The continuous bubbles formation shall be cause for rejection.
The equipment (eg blind flanges and gaskets) used to close the valve connections are excluded from the test.

# 6 PERFORMANCE TEST

The purpose of the tests described in this procedure and carried out in workshop, is verify the correct assembly and the correct functioning of the valve.
It is very difficult to reply the real condition of the operating process system, than this procedure is a indicative guide line for to define the efficiency of the valves out of service.

## 6.1 NOMINAL TRAVEL

### 6.1.1 CONTROL VALVES WITHOUT POSITIONER

The control valves and control valves ON-OFF function, that open (shut down) with a increasing signal shall achieve the 100% of the nominal travel when it is applied the superior limit (inferior) of pressure, indicated on the actuator spring range, and they shut down when it is applied the inferior limit (superior) of pressure, indicated on the actuator spring range.
The test is performed with the valve not pressurized.

### 6.1.2 CONTROL VALVES WITH POSITIONER

The action of opening (shutting down) of the control valves with positioners shall start when it is applied an inlet signal between 0% and 2% of the gap.
They should completely open (shut down) when it is applied a signal between 98% and 100% of the gap.
The test is performed with the valve not pressurized.

## 6.2 FUNCTIONALITY

The purpose of the tests described in this chapter, is verify the correct function without power fluid or electrical power (fail position).
When required by contract the functionality tests are verified at the maximum differential pressure.
The tests shall be performed with the valve assembly, it is forbidden: to re-set the packing, or to change the instrument configuration during or after the test.

### 6.2.1 FAIL POSITION - SHUT DOWN VALVE

This test is applied at all actuated valve assembly, where is required the function of shutting down: in case of emergency, lack fluid power or electrical power.
In order to perform this test, is necessary to pressurize the body valve at the correct value, agreed by the contract, and verify that the plug achieve the closing position and open position.
When the valve is close, depressurize the outlet side. Now it is necessary to simulate the fail position switching the power and verify the correct close position of the valve. The leak rate of the seat is not the purpose of the proof.
The test is carried out with air (nitrogen) or liquid (water with inhibitor of corrosion), if the test media is water is necessary to adjust the pressure value during the plug movement.

### 6.2.2 FAIL POSITION – VALVE OPEN

This test is applied at all actuated valve assembly, where is required the opening: in case of emergency, lack fluid power or electrical power.
In order to perform this test, is necessary to pressurize the body valve at the correct value, agreed by the contract, and verify that the plug achieve the closing position and open position.
When the valve is close, depressurize the outlet side. Now it is necessary to simulate the fail position switching the power and verify that the plug open. During the opening the valve start to leak, it is also necessary re direct the exhaust.
The leak rate of the seat is not the purpose of the proof.
The test is carried out whit air (nitrogen) or liquid (water with inhibitor of corrosion), if the test media is water is necessary to adjust the pressure value during the plug movement.


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### 6.2.3 FAIL POSITION – LOCKED VALVE

This test is applied at all actuated valve assembly, where is required the locked position: in case of emergency, lack fluid power or electrical power.
In order to perform this test, is necessary to pressurize the body valve at the correct value, agreed by the contract, and verify that the plug achieve the closing position and open position.
After the first operation, move the valve in the medium position. Now it is necessary to simulate the fail position switching the power and verify after 5 minutes that the travel position deviation is less than 5% of the nominal stroke.

## 6.3 STROKING TIME TEST

This test must be performed when a maximum stroking time for a complete stroke in opening or closing direction, both in control mode or on-off mode, by energizing / de-energizing a specific solenoid valve or in lack of instrument air or electric power supply is required by valve specification.
The stroking time by energizing / de-energizing the solenoid valve (on-off actuation) must include the dead time of pressurizing / depressurizing the actuator chamber, before the stem starts to move.
In the evaluation of stroking time in control mode, the dead time for pressurizing / depressurizing the actuator chambers must not be included; this can be achieved either by starting to measure the stroking time at the beginning of the stem movement, or by positioning the valve at a stroke position just above the cut-off, for the opening time, or just below 100% of stroke for the closing time.
To check the valve stroke, the travel indicator and stroke label can be used or a comparator can be installed (see fig. 1).
The test shall be performed with the valve assembled as ready to ship: it is forbidden: to re-set the stem packing, or to change the pneumatic accessories configuration during or after the test.

## 6.4 HYSTERESIS AND LINEARITY TEST WITHOUT POSITIONER

Hysteresis and linearity test must be performed on all valves for control service when supplied without pneumatic positioner, or when expressly required by customer specifications or specified in the order.
The valve shall be tested with instrumentation control panel functioning and opportunely calibrated.
The test shall be performed with the valve assembly, it is forbidden: to re-set the packing, or to change the instrument configuration during or after the test.
The actuator hysteresis and linearity test consist of making variations of the actuator command signal from the minimum to the maximum, with three intermediate steps, it is possible to read on the comparator gauge mounted on the valve stem (fig.1) the five corresponding values of the travel. Then the command signal shall be decrease to the minimum with the same five steps, reading the corresponding five values of the stroke.
The travel values are marked for this % of the drive signal: 0-25-50-75-100-75-50-25-0.
The two values marked of the same stroke should be between these values:

- +/- 5% for valves with packing in PTFE
- +/- 10% for valves with packing in GRAPHITE

of the nominal stroke.
This test does not apply to ON-OFF valves.

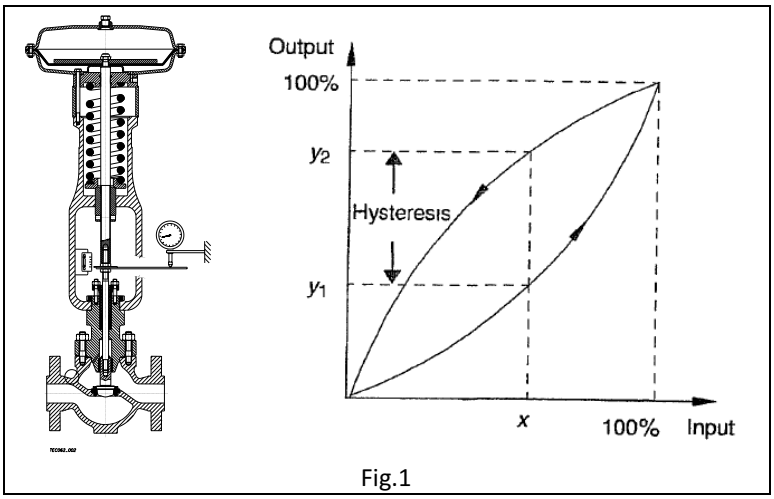


Fig.1

## 6.5 HYSTERESIS AND LINEARITY TEST WITH POSITIONER

This test must be performed when expressly required by customer specifications or specified in the order. The valve shall be tested with all instrumentation active. The control panel and positioner are functioning and opportunely calibrated. The signal drive of the positioned may be: pneumatic, analogical or digital.
The test shall be performed with the valve assembly, it is forbidden: to re-set the packing, or to change the instrument configuration during or after the test.
The actuator hysteresis and linearity test consist of making variations of the positioned drive signal from the minimum to the maximum, with three intermediate steps, it is possible to read on the comparator gauge mounted on the valve stem (fig.1) the


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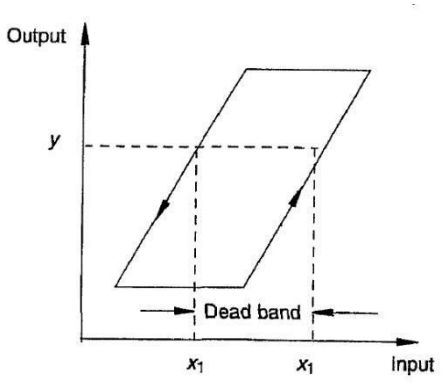
five corresponding values of the travel. Then the command signal shall be decrease to the minimum with the same five steps, reading the corresponding five values of the stroke.
The travel values are marked for this % of the drive signal: 0-25-50-75-100-75-50-25-0.
The two values marked of the same drive signal should be between these values:

- +/- 1% for valves with packing in PTFE
- +/- 1,5% for valves with packing in GRAPHITE

of the nominal travel.
This test does not apply to ON-OFF valves.
If agree with the client this test may be replaced with the certification of the positioner static performance.

## 6.6 DEAD BAND TEST

The purpose of dead band test is to measure the change in operating signal required to produce a reversal of stem movement.
This test shall be applied at control valve with or without positioned, the ON-OFF valves are excluded of this test.
The proof shall be performed with the valve assembly without pressure, it is forbidden: to re-set the packing, or to change the instrument configuration during or after the test. The signal drive of the positioned may be: pneumatic, analogical or digital.
The dead band shall be measured at 25%, 50% and 75% of the nominal stroke, according to the procedure described below.
To increase the signal drive up to value required, after a few second when the plug is stop, decrease the signal drive very slowly. When the plug starts to move (it is possible verify them by the comparator gauge fig.1) it is necessary to mark the signal drive value. Repeat this operation for all point.




Subsequently carry out the measurement in opposite way, decreasing the signal, verify that the plug is stopped and remark the signal drive value, when the plug starts to move, with signal drive are increasing. Repeat this operation for all point.
The maximum difference between the two values noted at the same stroke, it is the dead band error they shall be inferior to a percentage of full range input signal, following the list below.

- +/- 6% for valves without positioner
- +/- 10% for valves with rating Class 900 o upper with PTFE packing without positioner.
- +/- 15% for valves with GRAPHITE packing without positioner.
- +/- 1% for valves positioner and PTFE packing.
- +/- 1.5 % for valves with positioner and GRAPHITE packing.

## 6.7 ON-OFF VALVES TEST

For ON-OFF valves verify only:

- nominal travel, see 6.1
- stroke time test, see 6.3 (if is required by the contract)

It is important to check a smooth motion of plug.

**NOTE:** The hysteresis and dead band tests are not required.


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# 7 SEAT TIGHTNESS TEST

*The valve shall be tested with the actuator assembled and settled, all the instruments and accessory supplied together with the actuator shall be in service and properly calibrated.*
*The tests described below shall be in compliance with the provisions of IEC 60534-4*.
Here below quoted shall not be used as a basis for predicting leakage when the valve is installed under operating conditions.

## 7.1 LEAKAGE CLASS

The following descriptions give a generic indication about the leakage classes typically applied to the control valves produced by AST:

- **CLASS I**: is usually applied to control valve for which is not required the closing function or for which a minimum flow rate is specified when the valve is closed.
- **CLASS II** and **CLASS III**: is usually applied to the double-seated control valves type CV-8200, to butterfly valves without gasket or to the control valves where a high leakage rate is permitted.
- **CLASS IV**: is usually applied to the control valves type CV-8100, CV-8300C, CV-8300D, CV-8400, CV-8700, CV-8450 and CV-8750 with metal-to-metal seat.
- **CLASSE IV-S1**: is usually applied to control valves as class V with graphite balanced trim.
- **CLASS V**: is usually applied to control valves for critical application, when is requested a blocking service for long periods of time with high differential pressure. They are usually single seat valves with metal-to-metal seat unbalanced, PTFE lip seal or metallic C-Ring balanced, or balanced with pilot.
- **CLASS VI**: is only applied to control valves with soft seat.

## 7.2 TEST MEDIUM

The test medium may be liquid or gas as specified in each test description.

- Gas: air or nitrogen at ambient temperature is used.
- Liquid: water, with corrosion inhibitor, at a temperature between 5°C and 40 °C is used.

## 7.3 TEST CONDITIONS

The test fluid shall be applied to valve inlet. The valve outlet could be open at atmosphere or be connected to a sizing flow system (flowmeter) at a low rate with outlet opens on atmosphere. Pay attention to avoid dangerous overpressures on the measuring system due to unintentional openings of the tested valve.
If the fluid used for the test is water, you fill completely the body and also outlet pipings of the valve, by maintaining the valve opens. Then the valve should close by paying attention and in case by eliminating the possible pockets of air.
You should note the leakage of the valve for an adequate time to establish the right one till the flow of the leakage is established.

## 7.4 TEST PROCEDURE

In accordance with IEC 60534-4 the following testing procedures are defined

### 7.4.1 TEST PROCEDURE 1

The test pressure shall be between 3 bar gauge and 4 bar gauge or within ±5% of the maximum operating differential pressure specified by the purchaser if it is below 3.5 bar gauge.

### 7.4.2 TEST PROCEDURE 2

The test pressure should be within ±5% of the maximum operating differential pressure across the valve as specified by the purchaser.

## 7.5 ALLOWABLE SEAT LEAKAGES

The table 3 shows the seat leakages allowed by AST, according to IEC 60534-4.


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# 8 ELECTRICAL CONTINUITY TEST

## 8.1 DESCRIPTION

This test must be performed for all valves subject to ATEX 2014/34/EU marking.
The purpose is to check the electrical continuity between the moving parts and the fixed structure of the valve and actuator.
The test is applied to a valve complete with whichever actuator, be it pneumatic, electric or hydraulic.

## 8.2 TEST PROCEDURE

The test consists of measuring the electrical resistance between the valve stem connector and the valve assembly by using a common multimeter.
Because of the type of test, the instrument does not need to be subjected to periodic calibration but it is sufficient to check the readings with open terminals and short-circuited terminals to verify its functionality.
The valve must be opened and closed at least five times.
The measurement must be carried out, with the plug at intermediate positions between fully open and fully closed, at least three points, typically about 25%, 50% and 75%, between the stem connector and the grounding terminal present on the valve bonnet flange.

## 8.3 ACCEPTANCE CRITERIA

The measured resistance value must not exceed 10 Ω, value prescribed by EN 12266-2 Annex B but with a different test procedure.
Where a higher resistance value is measured, it will be necessary to consult the technical departement and, if the case, connect the stem connector to the actuator yoke by means of a flexible electric cable of adequate length to allow the valve full stroke.


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## TABELLE – TABLES

**Tabella 1 / *Table 1* -** Durata minima della prova [min] / *Minimum test duration [min]*

| **Dimensioni Nominali**<br>***Nominal dimensions*** | **Durata minima della prova**<br>***minimum test duration*** |
|---|---|
| Fino a NPS 2 – DN 50<br>*Up to NPS 2 – DN 50* | 1 min |
| Oltre NPS 2 - DN 50 fino a NPS 8 - DN 200<br>*From NPS 2 – DN 50 to NPS 8 – DN 200* | 2 min |
| Da NPS 8 – DN 200 fino a NPS 12 – DN 300<br>*From NPS 8 – DN 200 to NPS 12 – DN 300* | 3 min |
| Oltre NPS 12 - DN 300<br>*Over NPS 12 - DN 300* | 5 min |

**Tabella 2 / *Table 2* -** Pressioni di prova in funzione del campo molla / *Test pressures versus spring range*

| **Campo molla**<br>***Spring range*** | **bar**<br>***psi*** | **0.21 ÷ 0.62**<br>***3 ÷ 9*** | **0.21 ÷ 1.03**<br>***3 ÷ 15*** | **0.41 ÷ 2.07**<br>***6 ÷ 30*** | **0.83 ÷ 2.07**<br>***12 ÷ 30*** | **1.03 ÷ 2.07**<br>***15 ÷ 30*** | **1.24 ÷ 2.07**<br>***18 ÷ 30*** | **1.38 ÷ 3.03**<br>**20 ÷ 44** | **Step** |
|---|---|---|---|---|---|---|---|---|---|
| Pressioni di prova<br>*Test pressure* | bar<br>*psi* | 0.21<br>*3* | 0.21<br>*3* | 0.41<br>*6* | 0.83<br>*12* | 1.03<br>*15* | 1.24<br>*18* | 1.38<br>*20* | 0 |
| | bar<br>*psi* | 0.31<br>*4.5* | 0.41<br>*6* | 0.83<br>*12* | 1.14<br>*16.5* | 1.29<br>*18.75* | 1.45<br>*21* | 1.79<br>*26* | 1 |
| | bar<br>*psi* | 0.41<br>*6* | 0.62<br>*9* | 1.24<br>*18* | 1.45<br>*21* | 1.55<br>*22.5* | 1.65<br>*24* | 2.21<br>*32* | 2 |
| | bar<br>*psi* | 0.52<br>*7.5* | 0.83<br>*12* | 1.66<br>*24* | 1.76<br>*25.5* | 1.81<br>*26.25* | 1.86<br>*27* | 2.62<br>*38* | 3 |
| | bar<br>*psi* | 0.62<br>*9* | 1.03<br>*15* | 2.07<br>*30* | 2.07<br>*30* | 2.07<br>*30* | 2.07<br>*30* | 3.03<br>*44* | 4 |


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**Tabella 3 / *Table 3* -** Massime perdite sede ammesse / *Maximum allowable seat leakage*

| Classe di tenuta<br>*Leakage Class* | Fluido di prova<br>*Test medium* | Procedura standard<br>*Standard procedure* | Massima perdita ammessa<br>*Maximum seat leakage*<br>**Procedura di prova 1 / *Test procedure* 1**<br>Pressione di prova / *Test pressure* = 3.5 - *bar g* | | **Procedura di prova 2 / *Test procedure* 2**<br>Pressione di prova / *Test pressure* = max Δp - *bar g* | |
|---|---|---|---|---|---|---|
| II | Liquid - *l/min* | - | $0.135 \cdot Cv$ | $\mathbf{5 \cdot 10^{-3} \cdot Q_1}$ | $0.072 \cdot Cv \cdot \sqrt{\Delta p}$ | $\mathbf{5 \cdot 10^{-3} \cdot Q_2}$ |
| | Gas - *Nl/h* | **1** | $\mathbf{305 \cdot Cv}$ | | $76.7 \cdot Cv \cdot \sqrt{(\Delta p + 1.013) \cdot \Delta p}$ | |
| III | Liquid - *l/min* | - | $2.7 \cdot 10^{-2} \cdot Cv$ | $\mathbf{10^{-3} \cdot Q_1}$ | $1.44 \cdot 10^{-2} \cdot Cv \cdot \sqrt{\Delta p}$ | $\mathbf{10^{-3} \cdot Q_2}$ |
| | Gas - *Nl/h* | **1** | $\mathbf{61 \cdot Cv}$ | | $15.3 \cdot Cv \cdot \sqrt{(\Delta p + 1.013) \cdot \Delta p}$ | |
| IV | Liquid - *l/min* | **2** [(1)] | $2.7 \cdot 10^{-3} \cdot Cv$ | $\mathbf{10^{-4} \cdot Q_1}$ | $\mathbf{1.44 \cdot 10^{-3} \cdot Cv \cdot \sqrt{\Delta p}}$ | $\mathbf{10^{-4} \cdot Q_2}$ |
| | Gas - *Nl/h* | - | $6.1 \cdot Cv$ | | $1.53 \cdot Cv \cdot \sqrt{(\Delta p + 1.013) \cdot \Delta p}$ | |
| IV-S1 | Liquid - *l/min* | **2** | $1.35 \cdot 10^{-4} \cdot Cv$ | $\mathbf{5 \cdot 10^{-6} \cdot Q_1}$ | $\mathbf{7.2 \cdot 10^{-5} \cdot Cv \cdot \sqrt{\Delta p}}$ | $\mathbf{5 \cdot 10^{-6} \cdot Q_2}$ |
| | Gas - *Nl/h* | - | $0.3 \cdot Cv$ | | $0.077 \cdot Cv \cdot \sqrt{(\Delta p + 1.013) \cdot \Delta p}$ | |
| V | Liquid - *ml/min* | **2** | $1.05 \cdot 10^{-3} \cdot D$ | | $\mathbf{3 \cdot 10^{-4} \cdot \Delta p \cdot D}$ | |
| | Gas - *Nl/h* | - | $10.8 \cdot 10^{-3} \cdot D$ | | $10.8 \cdot 10^{-3} (\Delta p/3.5) \cdot [(\Delta p+1.01) / 5.52 + 0.182] \cdot D$ | |
| VI | Gas | **1** | $\mathbf{1.05 \cdot LF}$ [(2)] | | $0.3 \cdot \Delta p \cdot LF$ [(2)] | |

[(1)] Procedura di prova 1 ammessa quando portata attrezzatura di prova non sufficiente / *Test procedure 1 allowed when test facility flow rate is not enough.*
[(2)] Per i valori del fattore di perdita L.F., si veda Tabella 4 / *For leakage rate factor L.F. values, see Table 4.*

Dove / *Where:*

| | | |
|---|---|---|
| **D** | Diametro della sede - mm. | *Seat diameter - mm.* |
| **Δp** | Massima pressione differenziale a valvola chiusa - bar. | *Maximum shutoff pressure - bar.* |

**Tabella 4 / *Table 4* – Fattore di Perdita LF per Classe VI / *Leakage rate factor LF for Class VI***

| Diametro nominale seggio<br>***Seat nominal diameter*** | Diametro effettivodel seggio<br>***Actual seat diameter***<br>*mm* | LF | |
|---|---|---|---|
| | | *ml/min* | bolle/minuto<br>*bubbles/minute* |
| DN 20 - NPS 3/4 | 25 | 0.15 | 1 |
| DN 25 - NPS 1 | 25 | 0.15 | 1 |
| DN 40 - NPS 1 ½ | 40 | 0.30 | 2 |
| DN 50 - NPS 2 | 50 | 0.45 | 3 |
| DN 65 – NPS 2 ½ | 65 | 0.60 | 4 |
| DN 80 - NPS 3 | 80 | 0.90 | 6 |
| DN 100 - NPS 4 | 100 | 1.70 | 11 |
| DN 150 - NPS 6 | 150 | 4.00 | 27 |
| DN 200 - NPS 8 | 200 | 6.75 | 45 |
| DN 250 - NPS 10 | 250 | 11.1 | - |
| DN 300 - NPS 12 | 300 | 16.0 | - |
| DN 350 - NPS 14 | 350 | 21.6 | - |
| DN 400 - NPS 16 | 400 | 28.4 | - |

**Note / *Notes***

Se il diametro del seggio differisce di più di 2 mm dai valori tabulati si può trovare il fattore di perdita per interpolazione assumendo il fattore di perdita proporzionale al quadrato del diametro seggio (per esempio al diametro 125 mm corrisponde un fattore di perdita di 2.74).
*If the valve seat diameter differs by more than 2 mm from one of the values listed, the leakage factor may be obtained by interpolation assuming that the leakage rate varies as the square of the seat diameter (for example to diameter 125mm a leakage factor of 2.74 applies).*

Il tubo utilizzato per il conteggio delle bolle al minuto deve avere diametro interno = 6 mm, spessore di parete = 1 mm e deve essere immerso in acqua per 5÷10 mm.
*The pipe used for the bubble per minute measurement must have an inside diameter = 6 mm, a wall thickness = 1 mm and must be submerged in the water by 5÷10 mm.*


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# ALLEGATO 1– CALCOLO PORTATE NOMINALI - ANNEX 1 – RATED CAPACITY CALCULATION

Le formule usate per il calcolo della portata nominale della valvola ed il conseguente calcolo delle portate ammesse per le classi di perdita II÷IV-S1, sono ricavate da IEC 60534.

*The formulas used to calculate the valve rated capacity and then for the calculation of allowed flows for leakage classes II to IV-S1, are derived from the standard IEC 60534.*

## A1 – PORTATA NOMINALE CON ARIA - *RATED CAPACITY WITH AIR*

$$Q = N_9 \cdot F_p \cdot Cv \cdot P_1 \cdot Y \cdot \sqrt{\frac{x}{M \cdot T_1 \cdot z}}$$

Dove - *Where:*

| | | | |
|---|---|---|---|
| **Q** | *Nm³/h* | Portata nominale con valvola completamente aperta e pressione differenziale uguale a quella di prova | *Rated capacity with valve fully open and differential pressure equal to the test one* |
| **$N_9$ = 2 120** | -- | Coefficiente $N_9$ di IEC 60534 per la temperatura di riferimento di 0°C a pressione atmosferica = 1.013 bar (Nm³/h) | *Coefficient $N_9$ from IEC 60534 for reference temperature 0°C, at atmospheric pressure = 1.013 bar (Nm³/h)* |
| **Y = 0.667** | -- | Coefficiente di espansione assunto pari a 0.667 (flusso limite). | *Expansion factor, assumed = 0.667 (limit flow).* |
| **$\Delta p$** | *bar* | Pressione differenziale attraverso la valvola | *Differential pressure across the valve* |
| **$P_1 = \Delta p + 1.013$** | *bara* | Pressione assoluta a monte della valvola. In questo caso la pressione all'uscita della valvola è quella atmosferica | *Absolute pressure upstream the control valve. In this case the downstream pressure is atmospheric* |
| **$x = \Delta p / P_1$** | -- | Rapporto tra la pressione differenziale e la pressione assoluta in ingresso | *Ratio of actual pressure differential to inlet absolute pressure* |
| **M = 28.97** | *g/mol* | Peso molecolare del fluido usato. Per l'aria M=28.97 | *Molecular weight of the test media. For air M=28.97* |
| **$T_1$ = 293.15** | *K* | Temperatura assoluta di ingresso alle condizioni di prova assunta = 20 °C | *Inlet absolute temperature at test conditions, assumed equal 20 °C* |
| **z = 1** | -- | Fattore di comprimibilità = 1 | *Gas compressibility factor = 1* |
| **$F_p$ = 1** | -- | Fattore di piping = 1 | *Piping geometry factor = 1* |

Risulta allora - *Therefore it is*:

$$\mathbf{Q = 15\,336 \cdot Cv \cdot \sqrt{(\Delta p + 1.013) \cdot \Delta p}} \quad \textbf{- } Nl/h$$

## A2 – PORTATA NOMINALE CON ACQUA - *RATED CAPACITY WITH WATER*

$$Q = N_1 \cdot F_p \cdot Cv \cdot \sqrt{\Delta p / \rho_r}$$

Dove - *Where:*

| | | | |
|---|---|---|---|
| **Q** | *[m³/h]* | Portata nominale con valvola completamente aperta e pressione differenziale uguale a quella di prova | *Rated capacity with valve fully open and differential pressure equal to the test one* |
| **$N_1$ = 0.865** | -- | Coefficiente $N_1$ di IEC 60534 per portata in m³/h e Δp in bar | *Coefficient $N_1$ from IEC 60534 for flow in m³/h and Δp bar* |
| **$\rho_r$ = 1** | -- | Densità relativa fluido | *Fluid relative density* |
| **$\Delta p$** | *[bar]* | Pressione differenziale attraverso la valvola | *Differential pressure across the valve* |

$$\mathbf{Q = 14.42 \cdot Cv \cdot \sqrt{\Delta p}} \quad \textbf{[l/min]}$$

## A3 – TABELLA PORTATE NOMINALI - *RATED CAPACITIES TABLE*

| **Fluido di prova** *Test medium* | **Unità** *Units* | **Procedura di prova / *Test procedure* 1 (Δp = 3.5 barg ± 0.5)** | **Procedura di prova / *Test procedure* 2** |
|---|---|---|---|
| **Liquido - *Liquid*** | *[l/min]* | $Q_1 = 27 \cdot Cv$ | $Q_2 = 14.42 \cdot Cv \cdot \sqrt{\Delta p}$ |
| **Aria - *Air*** | *[Nl/h]* | $Q_1 = 60\,953 \cdot Cv$ | $Q_2 = 15\,336 \cdot Cv \cdot \sqrt{(\Delta p + 1.013) \cdot \Delta p}$ |


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## ALLEGATO 2 – TABELLA RIASSUNTIVA TEST - ANNEX 2 – TESTS SUMMARY TABLE

La tabella seguente riporta l'elenco dei test standard eseguiti sulle valvole di produzione AST, per servizio di regolazione e per servizio on-off, e dei test eseguibili a richiesta.

*The following table lists the standard tests performed on the AST valves, both for control service and for on-off service, and the tests that can be performed on request.*

| TEST | PARAGRAFO *CLAUSE* | MANUAL OPERATED | ON-OFF SERVICE | CONTROL SERVICE | |
|---|---|---|---|---|---|
| | | | | Without POSITIONER | With POSITIONER |
| **PROVA PRESSATURA IDRAULICA**<br>*HYDRAULIC PRESSURE TEST* | ***4*** | **S** | **S** | **S** | **S** |
| **PROVA DI TENUTA DELL'INVOLUCRO**<br>*SHELL THIGHTNESS TEST* | ***5*** | **S** | **S** | **S** | **S** |
| **CORSA NOMINALE**<br>*NOMINAL TRAVEL* | ***6.1*** | **S** | **S** | **S** | **S** |
| **POSIZIONE DI EMERGENZA**<br>*FAIL POSITION* | ***6.2*** | -- | **S** | **S** | **S** |
| **TEMPO DI MANOVRA**<br>*STROKE TIME* | ***6.3*** | -- | **S** | **S** | **S** |
| **PROVA DI ISTERESI E LINEARITÀ SENZA POSIZIONATORE**<br>*HYSTERESIS AND LINEARITY TEST WITHOUT POSITIONER* | ***6.4*** | -- | -- | **O** | **O** |
| **PROVA DI ISTERESI E LINEARITÀ CON POSIZIONATORE**<br>*HYSTERESIS AND LINEARITY TEST WITH POSITIONER* | ***6.5*** | -- | -- | **O** | **O** |
| **PROVA DELLA "BANDA MORTA" SENZA POSIZIONATORE**<br>*DEAD BAND TEST WITHOUT POSITIONER* | ***6.6*** | -- | -- | **S** | **O** |
| **PROVA DELLA "BANDA MORTA" CON POSIZIONATORE**<br>*DEAD BAND TEST WITH POSITIONER* | ***6.6*** | -- | -- | -- | **S** |
| **PROVE DI TENUTA DELLE SEDI**<br>*SEAT TIGHTNESS TEST* | ***7*** | **S** | **S** | **S** | **S** |
| **VERIFICA DI CONTINUITÀ ELETTRICA** [(1)]<br>*ELECTRICAL CONTINUITY TEST* [(1)] | ***8*** | **S** | **S** | **S** | **S** |

[(1)] Il test di Continuità Elettrica deve essere eseguito solo per le valvole soggette alla Direttiva ATEX 2014/34/EU o equivalente.
*The Electrical Continuity check is only required for valves subject to ATEX 2014/34/EU Directive or equivalent.*

**S** - Standard

**O** - Optional

-- - Not applicable


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| Item | Type | Valve Tag | Serial nr. | Valve Service | Valve Model | Body Size | leackage CLASS | SHUTOFF [Bar G] | FAIL POS | Body Material | Rating | Finish | Actuator Size | PACKING TIGHNESS TEST PRESSURE [Bar G] | PACKING TIGHNESS TEST MINIMUM TEST DURATION [min] | TEST PACKING TIGHNESS TEST MEDIUM | PACKING TIGHNESS LEAKAGE | SEAT TEST PRESSURE [Bar G] | SEAT TEST MINIMUM TEST DURATION [min] | SEAT TEST MEDIUM | SEAT LEAKAGE [bubble/min] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | Control Valve | 25-FV-031 | 2400583 | - | CV-8407 | 1" | VI | 40 | CLOSE | A351 CF3M | 300# | RF | SD09R | 6 | 1 | AIR | 0 | 3,5 | 1 | AIR | 1 |
| 10 | Control Valve | 25-FV-032 | 2400584 | - | CV-8407 | 1" | VI | 40 | CLOSE | A351 CF3M | 300# | RF | SD09R | 6 | 1 | AIR | 0 | 3,5 | 1 | AIR | 1 |
| 10 | Control Valve | 25-FV-033 | 2400585 | - | CV-8407 | 1" | VI | 40 | CLOSE | A351 CF3M | 300# | RF | SD09R | 6 | 1 | AIR | 0 | 3,5 | 1 | AIR | 1 |
| 10 | Control Valve | 25-FV-034 | 2400586 | - | CV-8407 | 1" | VI | 40 | CLOSE | A351 CF3M | 300# | RF | SD09R | 6 | 1 | AIR | 0 | 3,5 | 1 | AIR | 1 |
| 10 | Control Valve | 25-FV-036 | 2400587 | - | CV-8407 | 1" | VI | 40 | CLOSE | A351 CF3M | 300# | RF | SD09R | 6 | 1 | AIR | 0 | 3,5 | 1 | AIR | 1 |
| 10 | Control Valve | 25-FV-038 | 2400588 | - | CV-8407 | 1" | VI | 40 | CLOSE | A351 CF3M | 300# | RF | SD09R | 6 | 1 | AIR | 0 | 3,5 | 1 | AIR | 1 |
| 20 | Control Valve | 25-PV-035 | 2400589 | H2 Service | CV-8407 | 2" | VI | 40 | CLOSE | A351 CF3M | 300# | RF | SD09R | 6 | 1 | AIR | 0 | 3,5 | 1 | AIR | 1 |
| 20 | Control Valve | 25-PV-037 | 2400590 | H2 Service | CV-8407 | 2" | VI | 40 | CLOSE | A351 CF3M | 300# | RF | SD09R | 6 | 1 | AIR | 0 | 3,5 | 1 | AIR | 1 |
| 20 | Control Valve | 25-PV-040 | 2400591 | H2 Service | CV-8407 | 2" | VI | 40 | CLOSE | A351 CF3M | 300# | RF | SD09R | 6 | 1 | AIR | 0 | 3,5 | 1 | AIR | 1 |
| 20 | Control Valve | 25-PV-043 | 2400592 | H2 Service | CV-8407 | 2" | VI | 40 | CLOSE | A351 CF3M | 300# | RF | SD09R | 6 | 1 | AIR | 0 | 3,5 | 1 | AIR | 1 |
| 20 | Control Valve | 25-PV-046 | 2400593 | H2 Service | CV-8407 | 2" | VI | 40 | CLOSE | A351 CF3M | 300# | RF | SD09R | 6 | 1 | AIR | 0 | 3,5 | 1 | AIR | 1 |
| 20 | Control Valve | 25-PV-049 | 2400594 | H2 Service | CV-8407 | 2" | VI | 40 | CLOSE | A351 CF3M | 300# | RF | SD09R | 6 | 1 | AIR | 0 | 3,5 | 1 | AIR | 1 |
| 30 | Control Valve | 25-PV-055A | 2400595 | H2 Service | CV-8407 | 1 1/2" | VI | 40 | CLOSE | A351 CF3M | 300# | RF | SD11R | 6 | 1 | AIR | 0 | 3,5 | 1 | AIR | 1 |
| 40 | Control Valve | 64-PV-031A | 2400597 | - | CV-8407 | 1" | V | 10 | CLOSE | A350 LF2 | 150# | RF - LUG | SD09R | 6 | 1 | AIR | 0 | 10 | 1 | WATER | 0,036 [ml/min] |
| 40 | Control Valve | 64-PV-031B | 2400598 | - | CV-8407 | 1" | V | 10 | CLOSE | A350 LF2 | 150# | RF - LUG | SD09R | 6 | 1 | AIR | 0 | 10 | 1 | WATER | 0,036 [ml/min] |
| 50 | Control Valve | 25-PV-055B | 2400596 | H2 Service | CV-8407 | 1 1/2" | VI | 40 | CLOSE | A351 CF3M | 300# | RF | SD11R | 6 | 1 | AIR | 0 | 3,5 | 1 | AIR | 1 |

# PART 1-DESIGN DOSSIER

# Section 4.4

Preparation for packing, shipping including handling and storage procedures

# Base Load Power Hub (BLPH)

## PREPARATION FOR PACKING, SHIPPING INCLUDING HANDLING AND STORAGE PROCEDURES

Document Number: 1724000740-QC-PRO-00019

Document Class: 3

ROSETTI MARINO

| | |
|---|---|
| 1 | APPROVED - WORK MAY PROCEED |
| 2N | REVISE AND RE-SUBMIT - DO NOT PROCEED |
| 2Y | REVISE AND RE-SUBMIT - WORK MAY PROCEED |
| 3 | REJECTED |
| 4 | APPROVAL NOT REQUIRED |

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

| Sign | Date |
|---|---|
| Rosetti Leonardo | 10/05/2024 |

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| 6 | 10/05/2018 | Added HSE requirements and preservation | Lapenna | Minelli | Chiatto |
| 5 | 23/01/13 | Rev. Para. 5, 6 e 7.3. Elimin. Para. 9 | Radice | Minelli | Chiatto |
| 4 | 12/12/09 | Revisione generale/General revised | Albani | Fornaro | Chiatto |
| 3 | 10/12/08 | Revisione generale/General revised | Albani | Fornaro | Chiatto |
| 2 | 15/07/08 | Added AST DOCUMENT STATUS | Albani | Curioni | Chiatto |
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| 0 | 30/08/94 | Emissione / *Emission* | Chiatto | Curioni | Chiatto |


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# 1 SCOPO

La presente procedura operativa definisce le modalità ed i criteri con i quali AST prepara alla spedizione e costruisce gli imballi per le apparecchiature di propria produzione.

# 2 DOCUMENTI E NORMATIVE APPLICABILI

- Requisiti contrattuali
- ISPM N°15
- Dlgs 81 – Legge per la prevenzione degli infortuni

# 3 APPLICABILITA'

Se non diversamente prescritto dalla documentazione contrattuale, la presente procedura operativa si applica a tutte le apparecchiature prodotte da AST.

# 4 SALUTE, SICUREZZA ED AMBIENTE

Il presente capitolo deve essere letto attentamente al fine di ridurre il rischio di possibili conseguenze alla salute del personale coinvolto ed assicurare l'integrità dell'ambiente di lavoro.
Tutte le operazioni descritte nella presente procedura devono essere eseguite da personale competente che ha ricevuto adeguate istruzioni e specifico addestramento, osservando le disposizioni legislative in vigore nel paese in cui le valvole vengono provate e quanto prescritto dalle norme internazionali e procedure interne in ambito di salute, sicurezza e ambiente. AST è responsabile per le sole operazioni effettuate dal proprio personale.
Non è possibile elencare tutte le possibili condizioni che possono mettere in pericolo la salute e la sicurezza dei lavoratori, in ogni caso raccomandiamo le seguenti precauzioni:
- Conoscere ed osservare tutte le regole generali sulla sicurezza vigenti nell'area alla quale si deve accedere ed operare.
- Valutare attentamente le conseguenze di tutte le azioni che si intendono effettuare.
- Indossare sempre idonei dispositivi di sicurezza, come minimo scarpe antinfortunistiche, guanti, occhiali di protezione e otoprotettori.
- Maneggiare i macchinari con attenzione e mai in condizioni di alterazione fisica e mentale.

# 5 RESPONSABILITA' E COMPITI

Il Project Manager (PM) ha la responsabilità ed il compito di definire la tipologia di imballo previsto in commessa (se diverso da quello standard AST).

L'ufficio produzione (PRO) ha la responsabilità ed il compito di verificare la corretta applicazione della presente procedura operativa e/o delle specifiche contrattuali.

# 6 MODALITA' OPERATIVA

**Prima di stivare le apparecchiature** negli imballi occorre prendere tutte le precauzioni necessarie per prevenire il danneggiamento delle parti delicate; in particolare:

a) Dopo la prova idrostatica (condotta utilizzando fluido contenente inibitore di corrosione) tutte le superfici interne verranno liberate dall'eccesso di fluido ed asciugate.
b) Dopo il test funzionale, le superfici esterne lavorate e non verniciate di valvole in acciaio al carbonio vengono protette dall'ossidazione con protettivo pelabile o equivalente.
c) Le superfici di tenuta delle flange delle valvole in acciaio al carbonio devono essere protette con una pellicola di grasso (ove consentito) o materiale idoneo alla prevenzione della ruggine.

d) Le flange e le connessioni filettate devono essere chiuse per impedire l'accidentale introduzione di corpi estranei o fluidi e devono essere protette contro gli urti.
e) Gli eventuali fori presenti sulle valvole (sfiato soffietto, areazione cappello ecc.) devono essere chiusi.
f) Gli apparecchi di controllo montati sulle valvole (posizionatori, regolatori ecc.) devono essere protetti.
g) Le filettature dei punti di sollevamento devono essere ingrassate e protette contro gli urti.
h) Le leve di sollevamento, quando necessario, devono essere fissate alla apparecchiatura.
i) Le viti di blocco a corredo dell'apparecchiatura devono essere fissate.

**Durante le operazioni di stivaggio** le apparecchiature devono essere movimentate utilizzando gli appositi punti di sollevamento (ad es. golfare), avendo cura di evitare urti, sfregamenti e tutto ciò che potrebbe danneggiare l'apparecchiatura stessa e la verniciatura.

**Se lo stivaggio viene effettuato in casse di legno** le apparecchiature devono essere fissate con travetti, cunei ecc. inchiodati al fondo o alle pareti delle casse. Nel caso di imballi di tipo "oceanico" si deve prestare attenzione a non danneggiare il rivestimento interno delle casse. Se non diversamente specificato, le apparecchiature possono essere stivate indifferentemente in posizione verticale od orizzontale.

**Se lo stivaggio viene effettuato in scatole di cartone** le apparecchiature devono essere disposte preferibilmente in posizione orizzontale.

**Durante le operazioni di movimentazione delle apparecchiature, si deve fare uso delle apposite attrezzature in dotazione, funi, ganci, catene, ecc. utilizzando i punti di sollevamento.**

# 7 SPECIFICHE DI IMBALLO

## 7.1 CASSE DI LEGNO

### 7.1.1 LIMITAZIONI

Le casse di legno sono limitate a contenere apparecchiature del peso complessivo non superiore a 1500 kg.

### 7.1.2 PRESCRIZIONI GENERALI

**Le casse di legno** devono essere costruite con assi **accostate** in accordo alla fig. 1; le dimensioni massime accettabili sono:

- larghezza 200 cm
- lunghezza 200 cm
- altezza 200 cm

**Le assi di legno** devono avere uno spessore minimo di 15 mm per casse destinate a contenere fino a 500 kg mentre per portate superiori lo spessore minimo deve essere 20 mm, non devono presentare nodi passanti di diametro superiore ai 40 mm e devono avere larghezza minima di 10 cm.
Le assi che costituiscono le pareti delle casse possono essere disposte sia in orizzontale che in verticale, in quest'ultimo caso è necessario prevedere un telaio di supporto. **Non sono ammesse assi rotte.**

**Il fondo** delle casse deve essere costruito con le assi disposte nella direzione della dimensione maggiore.

**L'ingresso delle forche** deve essere sul lato più lungo.

**I chiodi** utilizzati per la costruzione delle casse non devono sporgere né all'interno né all'esterno delle casse, ma devono essere ripiegati e ribattuti.

**La dimensione** minima dei travetti di fondo deve essere 6 x 8 cm disposti con la dimensione maggiore in verticale.

Se contrattualmente richiesto il legno per le casse può essere fumigato e certificato.

### 7.1.3 CASSE DI LEGNO STANDARD

Vale quanto descritto in 7.1.1 e 7.1.2

### 7.1.4 CASSE DI LEGNO DI TIPO "OCEANICO"

In aggiunta a quanto prescritto ai punti 7.1.1 e 7.1.2 le casse devono essere rivestite internamente, ad eccezione del fondo, con un foglio di polietilene o carta catramata rinforzata da trama di nylon.
La carta catramata o il polietilene che riveste il coperchio devono eccedere sui quattro lati di circa 4-5 cm.

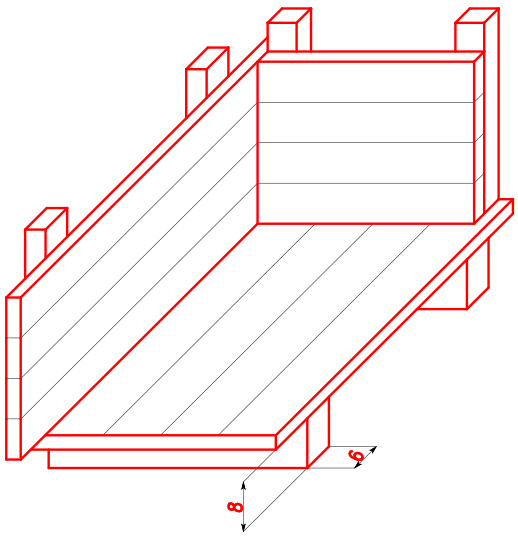
**Se contrattualmente richiesto** le valvole verranno chiuse ermeticamente utilizzando sacchi barriera contenenti sali disidratanti al fine di garantire maggiore protezione dalla salsedine e dall'umidità. Tale imballo garantisce la protezione della merce anche dopo un periodo di sei mesi, se stoccata correttamente.

## 7.2 IMBALLI DI CARTONE

### 7.2.1 LIMITAZIONI

Gli imballi in cartone (dimensioni standard da commercio), sono limitati a contenere apparecchiature del peso complessivo non superiore a 50 kg e non devono mai essere utilizzati come imballo di tipo "oceanico".

Figura 1 - cassa standard



# 8 PRESERVAZIONE

AST si assume la piena responsabilità per la corretta preservazione delle valvole fino alla loro spedizione. Le attività da condurre sono le seguenti:

- Le flange di ingress e uscita e le superfici lavorate devono essere trattate con protettivo pelabile o equivalente antiruggine.
- Le connessioni filettate dei dispositivi di sollevamento devono essere ingrassate e protette da possibili urti.
- I golfari, se presenti, devono essere fissati alla valvola.
- La vite di blocco, se presente, deve essere fissata alla valvola.
- Le valvole devono essere stoccate in un luogo con controllata percentuale di umidità e in posizione verticale (es. magazzino).

IN CASO DI IMBALLO OCEANICO:

- Fino alla loro installazione, le valvole devono rimanere nel loro imballo originale, chiuse ermeticamente nei sacchi barriera.
- Ciascuna valvola deve essere chiusa nel sacco barriera con sali essiccanti per poter garantire una maggior protezione da sale e umidità per circa 2 anni.
- Se le valvole vengono stoccate esternamente, e non in un magazzino riparato, i sali contenuti nel sacco barriera devono essere sostituiti ogni circa 12 mesi per poter garantire una maggior protezione contro sale e umidità.

# 9 MARCATURA DELLE CASSE

La marcatura, oltre quanto prescritto dalla documentazione contrattuale, deve riportare:

a) Il numero d'ordine d'acquisto del cliente
b) La ragiona sociale del destinatario o del cliente
c) Deve essere indicato su tutti i lati dell'imballo il lato superiore e, se necessario, i punti di sollevamento, utilizzando la simbologia internazionale.

# 10 DOCUMENTAZIONE

La documentazione da fornire, se necessario, insieme alla merce deve essere contrattualmente concordata. La documentazione di spedizione dovrà accompagnare ogni lotto, o parte di lotto, verso la località di destinazione. Ogni cassa conterrà una copia del Packing List, chiuso in busta impermeabile.

# 1 SCOPE

This procedure describes the activities for a proper and correct packing of AST valves before delivery.

# 2 APPLICABLE DOCUMENTS & STANDARDS

- PO / Customer requirements
- ISPM N°15
- Dlgs 81 – Italian Legislative Decree against injurious incidents.

# 3 APPLICABILITY

Unless different Customer prescriptions or instructions this procedure shall be applied on all AST valves / products.

# 4 HEALTH, SAFETY AND ENVIRONMENT

This chapter must be read carefully in order to reduce the risk of possible health and safety consequences for the personnel involved and to ensure the integrity of the working environment.
All operations described in this procedure must be carried out by competent personnel who have received appropriate instructions and specific training, observing the legal provisions in force in the country in which the valves are tested and the requirements of international standards and internal procedures in the field of health, safety and the environment. AST is responsible only for operations carried out by its own personnel.
It is not possible to list and evaluate all the possible conditions that may endanger the health and safety of workers, in any case we recommend the following precautions:
- Know and observe all the general safety rules in force in the area to which you must access and work.
- Carefully evaluate the consequences of all the actions you intend to carry out.
- Always wear suitable safety equipment, such as at least safety shoes, gloves, sight and hearing protection.
- Handle all machinery with care and never in conditions of psycho-physics alteration.

# 5 COMPETENCES AND RESPONSIBILITIES

The Project manager (PM) is responsible and has the duty to define which type of packaging is required by customer, if different from standard.

Production department (PRO) is responsible and has the duty to verify that the instruction procedure and/or different agreements with Customers are correctly applied.

# 6 OPERATIVE PROCEDURE

Before storing the equipment in the packaging, AST operator shall take all necessary precautions to prevent damaging of delicate valve parts, in particular:

a) After Hydrostatic Test (performed using a fluid containing corrosion inhibitor) all internal surfaces shall be free from excessive fluid and shall be dried carefully.
b) After Functional Test, external unpainted machined surfaces of carbon steel valves will be protected against rusting by using a strippable protective or equivalent.
c) Flange facings of valves manufactured in carbon steel must be protected with grease (where allowed) or other suitable material in order to prevent rusting.
d) Flanges and threaded connections must be plugged in order to avoid introduction of dirty particles, foreign materials and fluids. They must also be protected against impacts.
e) Holes on the valves (i.e. bellow vent, cap vent, etc.) must be closed.
f) Control instrumentation (i.e. positioners, regulators, etc.) must be covered with paper board.

g) Threads of lifting devices must be greased and protected against impacts.
h) Lifting levers, if mounted, must be fixed with strings to the instrumentation.
i) Test gags must be fixed with strings to the instrumentation.

During handling and storage operations the equipment must be moved using suitable lifting devices (i.e. eyebolt), taking care to avoid impacts, scratches and anything that might damage the valve itself and/or the painting.

If stored in wooden boxes the equipment must be fixed using beams or wedges nailed to the bottom or to the walls of the boxes. In case of sea-worth packing, special care must be taken not to damage the interior casing of the boxes. If not differently required, instrumentation may be stored both in vertical or horizontal position.

If stored in paper board boxes equipment shall be placed in horizontal position.

**During equipment handling operations, the appropriate devices: ropes, hooks, chains, etc. must be used. Lifting points shall be used.**

# 7 PACKING SPECIFICATIONS

## 7.1 WOODEN BOXES

### 7.1.1 LIMITATIONS

Wooden crates are limited to containing equipment of a total weight not exceeding 1500 kg (3300 lb).

### 7.1.2 GENERAL PRESCRIPTIONS

Wooden boxes must be built with boards nailed close one to each other according to Picture 1; dimensions as follows:

- width 200 cm 6.56 feet
- length 200 cm 6.56 feet
- height 200 cm 6.56 feet

Wooden boards must have a minimum thickness of 15 mm (0.591 inch) for boxes with max. weight up to 500 kg (1100 lb), and a thickness of 20 mm (0.788 inch) for greater loads, must not have knots from side to side bigger than 40 mm (1.576 inch) and must have a min. width of 10 cm (3.937 inch).
Boards making up the walls of the boxes can be arranged both horizontally and vertically, in the latter case it is necessary to provide a support frame. Broken boards are not permitted.

The bottom of the boxes must be constructed with boards placed along the bigger dimension.

Entrance of fork lift must be foreseen on the longer side.

Nails used for construction must not protrude from the boards and must be bent.

Minimum dimension of beams used in the bottom is 6 x 8 cm (2.362 x 3.15 inch) and must be placed with wider side in vertical position.

If contractually required wood will be fumigated and certified.

### 7.1.3 STANDARD WOODEN BOXES

See what prescribed in 7.1.1 and 7.1.2

### 7.1.4 SEAWORTH WOODEN BOXES

In addition to what prescribed at 6.1.1 and 6.1.2, boxes must have an inside covering (excluding the bottom) of polyethylene sheets or tarred paper reinforced with nylon net.

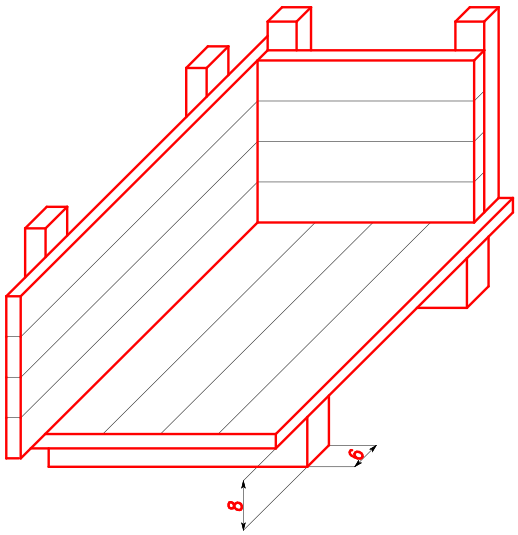
Polyethylene sheets or tarred paper that cover the top must overcome the four walls of at least 4-5 cm (1.575 - 1.968 inch).
**If contractually required** valves will be hermetically closed in vacuum bags containing dehydrating salts in order to grant a higher protection against saltiness and humidity.
This packaging grants the protection of the goods even after a period of six months, if properly stored.

## 7.2 PAPER BOARD PACKAGING

### 7.2.1 LIMITATIONS

Paper board packaging (of commercial dimensions) are limited to a maximum weight of 50 kg (110 lb) and must not be used as sea-worth packaging.

*Picture 1 – Standard Box*




# 8 PRESERVATION

AST have the full responsibility for preservation of the valves until delivery. Preservation activities are below listed:

- The inlet flanges, the outlet flanges and the machined surfaces, of the valves, will be protected against rusting by means of strippable protective.
- Threads of lifting devices must be greased and protected from impacts.
- Lifting levers, if assembled, must be fixed with strings to the valves.
- Test gags, if any, must be fixed with strings to the valves.
- Valves shall be stored indoor, in vertical position, in heated and humidity-controlled storage areas (example warehouse).

IN CASE OF SEAWORTH PACKING:

- Valves shall remain in their original packing, hermetically closed in vacuum bag, until installation.
- Each valve will be put in vacuum bag with Dehydrating salts in order to grant a higher protection against saltiness and humidity for a period of 2 years.
- If valves will be stored outdoor, and not in a heated warehouse, the dehydrating salts contained in each vacuum bag shall to be replaced each 12 months in order to grant a higher protection against saltiness and humidity.

# 9 MARKING

Besides what contractually required, marking shall include:

a) Customer PO number
b) Customer or destination address
c) Box upper side and, if necessary, lifting points shall be indicated on each side by means of International code.

# 10 DOCUMENTATION

Documentation to be provided along with the goods, if needed, must be contractually agreed.
Shipping documentation must accompany each batch, or part of a batch, to the destination location. Each box shall contain a copy of Packing List in a waterproof envelope.

# PART 1-DESIGN DOSSIER

# Section 5.1

Sizing calculation sheet (including noise level data sheets, control valve curves)

# Base Load Power Hub (BLPH)

## SIZING CALCULATION SHEET (INCLUDING NOISE LEVEL DATA SHEETS, CONTROL VALVE CURVES)

Document Number: 1724000740-IN-DS-00003

Document Class: 2

ROSETTI MARINO

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

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| Sign | Date |
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| V. Barratta | 12-09-2024 |

| Rev. | Date | Description | Prepared | Reviewed | Approved |
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| 03 | 03/09/2024 | Accepted for Construction (AFC) | AT | AP | AP |
| 02 | 30/07/2024 | Accepted for Construction (AFC) | AT | AP | AP |
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| 00 | 27/05/2024 | Issue for Review (IFR) | AT | AP | AP |




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| 4 | References | X | X | X | X | | | | |
| 5 | Sizing Calculation Sheet (including Noise Level Data Sheets, Control Valve Curves) | X | X | X | X | | | | |





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Revision / Change Log

| Rev. | Description |
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| 00 | ISSUE FOR REVIEW (IFR) |
| 01 | ISSUE FOR REVIEW (IFR) |
| 02 | ACCEPTED FOR CONSTRUCTION (AFC) |
| 03 | ACCEPTED FOR CONSTRUCTION (AFC) |
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| Item | Tag | Serial Number | P&ID Number | Sheet Number for Calculations | Sheet Number for Curves |
|---|---|---|---|---|---|
| 1 | 25-FV-031 | 2400583 | 123A90-DDL-PR-PID-80015 | 10 | 26 |
| 2 | 25-FV-032 | 2400584 | 123A90-DDL-PR-PID-80016 | 11 | 27 |
| 3 | 25-FV-033 | 2400585 | 123A90-DDL-PR-PID-80017 | 12 | 28 |
| 4 | 25-FV-034 | 2400586 | 123A90-DDL-PR-PID-80018 | 13 | 29 |
| 5 | 25-FV-036 | 2400587 | 123A90-DDL-PR-PID-80020 | 14 | 30 |
| 6 | 25-FV-038 | 2400588 | 123A90-DDL-PR-PID-80019 | 15 | 31 |
| 7 | 25-PV-035 | 2400589 | 123A90-DDL-PR-PID-80015 | 16 | 32 |
| 8 | 25-PV-037 | 2400590 | 123A90-DDL-PR-PID-80016 | 17 | 33 |
| 9 | 25-PV-040 | 2400591 | 123A90-DDL-PR-PID-80017 | 18 | 34 |
| 10 | 25-PV-043 | 2400592 | 123A90-DDL-PR-PID-80018 | 19 | 35 |
| 11 | 25-PV-046 | 2400593 | 123A90-DDL-PR-PID-80019 | 20 | 36 |
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| 13 | 25-PV-055A | 2400595 | 123A90-DDL-PR-PID-80014 | 22 | 38 |
| 14 | 25-PV-055B | 2400596 | 123A90-DDL-PR-PID-80014 | 23 | 39 |
| 15 | 64-PV-031A | 2400597 | 123A90-DDL-PR-PID-80027 | 24 | 40 |
| 16 | 64-PV-031B | 2400598 | 123A90-DDL-PR-PID-80027 | 25 | 41 |




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*Customer: ROSETTI MARINO*

*Plant / Site: HOLLANDSE KUST NOORD WIND PARK Prj.*

*Quotation Ref./Job Ref.: OV2301646/CV2400221*

*DSH REV. 2 - 04/06/2024 - 0*

*Final Installation: NL*

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|---|---|---|---|---|---|
| 1 | Item | 10 | 49 | Q.ty | 6 |
| 2 | Valve tag / S.No | 25-FV-031÷034/036/038 / 2400583 ÷ 2400588 | 50 | Valve Service | NITROGEN FROM NITROGEN SYSTEM (A-64000) TO HYDROGEN STORAGE VESSEL (V-25001A÷F) |

## PIPING AND DESIGN CONDITIONS

| | PIPING | | | AMBIENCE AND DESIGN CONDITIONS | | |
|---|---|---|---|---|---|---|
| 3 | Piping Size / Ext.Diam | 1" | 51 | Inlet / Outlet Design Pressure | 40 | bar g |
| 4 | Schedule / Thickness | 40 | 52 | Inlet / Outlet Design Temperature | 100 | °C |
| 5 | Pipe Insulation | No | 53 | Tmin / Tmax | -8.4 / +25 | °C |
| 6 | Installation Location | Outdoor | 54 | Certification / Classific.Area | PED+ATEX / Zone 2 | |

## VALVE CONSTRUCTION

| | VALVE CHARACTERISTICS | | | MATERIALS | |
|---|---|---|---|---|---|
| 7 | Valve Model | CV-8407 | 55 | Body Material | A351 CF3M |
| 8 | Valve Type | Globe | 56 | Bonnet Material | A479 316L |
| 9 | Valve Layout | Straight | 57 | Boltings | A193 B8M Cl. 2 / A194 8M |
| 10 | Bonnet type | Bolted | 58 | Bellows Material | - |
| 11 | Guiding Type | Top Guided | 59 | Plug / Vane Material | A479 316L+PTFE |
| 12 | No.Ports | 1 | 60 | Seat Material | A479 316L |
| 13 | Flow direction | to Open | 61 | Cage Material | - |
| 14 | Trim Type | Contoured Plug | 62 | Guide Material | - |
| 15 | Port Size | 1/4" Inch | 63 | Stem Material | A 479 316L |
| 16 | CV / Characteristics | 0.85 / Equal% | 64 | VE-CO LT Material | - |
| | | | 65 | Seating Type | Metallic |
| 17 | Body Size | 1" | 66 | Balancing Material | - |
| 18 | Rating Standard | ASME B16.34 | | PACKING | |
| 19 | Pressure Class | 300# | 67 | Packing Material | PTFE |
| 20 | End Connection Standard | ASME B16.5 | 68 | Live Loading | - |
| 21 | End Connection Type | RF | 69 | Stem Flushing | - |
| 22 | End Connection Finishing | - | | DEVICES | |
| | | | 70 | Inlet Device | - |
| 23 | Stroke | 13 mm | 71 | Inlet Device Size | - |
| 24 | Shut-off Direction | Direct | 72 | Outlet Device | - |
| 25 | Leakage Class | VI - IEC 60534-4 | 73 | Outlet Device Size | - |
| 26 | Shut-off pressure | 40 bar g | 74 | Body Heating | - |

## ACTUATOR AND ACCESSORIES

| | ACTUATOR | |
|---|---|---|
| 27 | Fail Position | Closed |
| 28 | Actuation Type / Model | Pneumatic Diaphragm |
| 29 | Actuator Action | Reverse |
| 30 | Actuator Size | SD11R |
| 31 | Spring Range | 15-30 psi |
| 32 | Supply | 50- psi |
| 33 | Design Supply | 11 barg |
| 34 | Handwheel | - |
| 35 | Mechanical Stop | - |
| 36 | Throttling Time | <10 s |
| 37 | Quick Stroking Time | - s |
| 38 | Yoke Material | CS |
| 39 | Pneumatic Tubing Material | AISI 316 |
| 40 | Pneumatic Fittings | AISI 316 Double Ferrule |
| 41 | Pneumatic Connection Size | 1/4" NPT-F |

| | POSITIONER | |
|---|---|---|
| 42 | Positioner Model | TISSIN TS900 |
| 43 | Type | Smart Digital |
| 44 | Input Signal / Protocol | 4-20 mA HART |
| 45 | Fail Safety | Fail safe |
| 46 | Output Signal | 4-20 mA |
| 47 | Prot. Class / Encl. Material / El. Classif. | IP66 / AISI 316 / Eexd \ C T4-T6 |
| 48 | El.Conn. / Pn.Conn. | M20x1.5 \ 1/4" NPT-F |

| | FILTER REGULATOR | |
|---|---|---|
| 75 | Fr. Model | FR04411S00SSNB2 |
| 76 | Pn.Conn. / Body Material | 1/4" NPT-F / S.Steel |
| | BOOSTER | |
| 77 | Booster Model | - |
| 78 | Pn.Conn. / Body Material | - |
| | SOLENOID VALVE | |
| 79 | SOV Model | - |
| 80 | Body Material | - |
| 81 | Prot. Class / El. Classif. | - |
| 82 | El.Conn. / Pn.Conn. | - |
| 83 | Supply | - |
| 84 | Power Consumption | - |
| | PNEUMATIC VALVE | |
| 85 | Pneumatic Discharge Model | - |
| 86 | Pn.Conn. / Body Material | - |
| | LOCK UP VALVE | |
| 87 | Lock Up Model | - |
| 88 | Pn.Conn. / Body Material | - |
| | LIMIT SWITCH | |
| 89 | Limit Switch Model | 1 x GDSN0LIS2MS290 EISENBAU |
| 90 | Type | SPDT |
| 91 | Contact Type | - |
| 92 | Encl.Material | 316SS |
| 93 | El.Connection | M20x1,5 |
| 94 | Prot. Class / El. Classif. | IP66 / MIN. Ex-d IIC (or IIB+H2) T1 |

## NOTES

| | | | |
|---|---|---|---|
| N.1 | n°1 PSV installed downstream the air filter regulator, size 1/4", st.ast., set 6 barg (CE) | N.4 | |
| N.2 | | N.5 | |
| N.3 | | N.6 | |
| | | N.7 | |

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*Customer: ROSETTI MARINO*

*Plant / Site: HOLLANDSE KUST NOORD WIND PARK Prj.*

*Quotation Ref./Job Ref.: OV2301646/CV2400221*

*DSH REV. 2 - 04/06/2024 - 0*

*Final Installation: NL*

| | | | | | |
|---|---|---|---|---|---|
| 1 | Item | 20 | 49 | Q.ty | 6 |
| 2 | Valve tag / S.No | 25-PV-035/037/040/043/046/049 / 2400589 ÷ 2400594 | 50 | Valve Service | HYDROGEN FROM STORAGE VESSEL (V-25001A+F) TO HYDROGEN VENT HEADER |

## PIPING AND DESIGN CONDITIONS

| | PIPING | | | AMBIENCE AND DESIGN CONDITIONS | | |
|---|---|---|---|---|---|---|
| 3 | Piping Size / Ext.Diam | 3" | 51 | Inlet / Outlet Design Pressure | 40 | bar g |
| 4 | Schedule / Thickness | 10S | 52 | Inlet / Outlet Design Temperature | 80 | °C |
| 5 | Pipe Insulation | No | 53 | Tmin / Tmax | -8.4 / +25 | °C |
| 6 | Installation Location | Outdoor | 54 | Certification / Classific.Area | PED+ATEX / Zone 2 | |

## VALVE CONSTRUCTION

| | VALVE CHARACTERISTICS | | | MATERIALS | |
|---|---|---|---|---|---|
| 7 | Valve Model | CV-8407 | 55 | Body Material | A351 CF3M |
| 8 | Valve Type | Globe | 56 | Bonnet Material | A479 316L |
| 9 | Valve Layout | Straight | 57 | Boltings | A193 B8M Cl. 2 / A194 8M |
| 10 | Bonnet type | Bolted | 58 | Bellows Material | - |
| 11 | Guiding Type | Top Guided | 59 | Plug / Vane Material | A479 316L+PTFE |
| 12 | No.Ports | 1 | 60 | Seat Material | A479 316L |
| 13 | Flow direction | to Open | 61 | Cage Material | - |
| 14 | Trim Type | Contoured Plug | 62 | Guide Material | - |
| 15 | Port Size | 1" Inch | 63 | Stem Material | A 479 316L |
| 16 | CV / Characteristics | 13 / Equal% | 64 | VE-CO LT Material | - |
| | | | 65 | Seating Type | Metallic |
| 17 | Body Size | 2" | 66 | Balancing Material | - |
| 18 | Rating Standard | ASME B16.34 | | **PACKING** | |
| 19 | Pressure Class | 300# | 67 | Packing Material | GRAPHITE - VF1 |
| 20 | End Connection Standard | ASME B16.5 | 68 | Live Loading | - |
| 21 | End Connection Type | RF | 69 | Stem Flushing | - |
| 22 | End Connection Finishing | - | | **DEVICES** | |
| | | | 70 | Inlet Device | - |
| 23 | Stroke | 25 mm | 71 | Inlet Device Size | - |
| 24 | Shut-off Direction | Direct | 72 | Outlet Device | - |
| 25 | Leakage Class | VI - IEC 60534-4 | 73 | Outlet Device Size | - |
| 26 | Shut-off pressure | 40 bar g | 74 | Body Heating | - |

## ACTUATOR AND ACCESSORIES

| | ACTUATOR | |
|---|---|---|
| 27 | Fail Position | Closed |
| 28 | Actuation Type / Model | Pneumatic Diaphragm |
| 29 | Actuator Action | Reverse |
| 30 | Actuator Size | SD13R |
| 31 | Spring Range | 20-44 psi |
| 32 | Supply | 50- psi |
| 33 | Design Supply | 11 barg |
| 34 | Handwheel | - |
| 35 | Mechanical Stop | - |
| 36 | Throttling Time | <15 s |
| 37 | Quick Stroking Time | - s |
| 38 | Yoke Material | CS |
| 39 | Pneumatic Tubing Material | AISI 316 |
| 40 | Pneumatic Fittings | AISI 316 Double Ferrule |
| 41 | Pneumatic Connection Size | 1/4" NPT-F |

| | POSITIONER | |
|---|---|---|
| 42 | Positioner Model | TISSIN TS900 |
| 43 | Type | Smart Digital |
| 44 | Input Signal / Protocol | 4-20 mA HART |
| 45 | Fail Safety | Fail safe |
| 46 | Output Signal | 4-20 mA |
| 47 | Prot. Class / Encl. Material / El. Classif. | IP66 / AISI 316 / Eexd \ C T4-T6 |
| 48 | El.Conn. / Pn.Conn. | M20x1.5 \ 1/4" NPT-F |

| | FILTER REGULATOR | |
|---|---|---|
| 75 | Fr. Model | FR04411S00SSNB2 |
| 76 | Pn.Conn. / Body Material | 1/4" NPT-F / S.Steel |
| | **BOOSTER** | |
| 77 | Booster Model | - |
| 78 | Pn.Conn. / Body Material | - |
| | **SOLENOID VALVE** | |
| 79 | SOV Model | - |
| 80 | Body Material | - |
| 81 | Prot. Class / El. Classif. | - |
| 82 | El.Conn. / Pn.Conn. | - |
| 83 | Supply | - |
| 84 | Power Consumption | - |
| | **PNEUMATIC VALVE** | |
| 85 | Pneumatic Discharge Model | - |
| 86 | Pn.Conn. / Body Material | - |
| | **LOCK UP VALVE** | |
| 87 | Lock Up Model | - |
| 88 | Pn.Conn. / Body Material | - |
| | **LIMIT SWITCH** | |
| 89 | Limit Switch Model | 1 x GDSN0LIS2MS290 EISENBAU |
| 90 | Type | SPDT |
| 91 | Contact Type | - |
| 92 | Encl.Material | 316SS |
| 93 | El.Connection | M20x1,5 |
| 94 | Prot. Class / El. Classif. | IP66 / MIN. Ex-d IIC (or IIB+H2) T1 |

## NOTES

| | | | |
|---|---|---|---|
| N.1 | n°1 PSV installed downstream the air filter regulator, size 1/4", st.ast., set 6 barg (CE) | N.4 | |
| N.2 | HYDROGEN SERVICE - PACKING ISO 15848-1 | N.5 | |
| N.3 | | N.6 | |
| | | N.7 | |

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*Customer: ROSETTI MARINO*

*Plant / Site: HOLLANDSE KUST NOORD WIND PARK Prj.*

*Quotation Ref./Job Ref.: OV2301646/CV2400221*

*DSH REV. 2 - 04/06/2024 - 0*

*Final Installation: NL*

| | | | | | |
|---|---|---|---|---|---|
| 1 | Item | 30 | 49 | Q.ty | 1 |
| 2 | Valve tag / S.No | 25-PV-055A / 2400595 | 50 | Valve Service | HYDROGEN FROM STORAGE VESSEL TO FUEL CELL PACKAGE |

## PIPING AND DESIGN CONDITIONS

### PIPING

| | | | |
|---|---|---|---|
| 3 | Piping Size / Ext.Diam | 1 1/2" | |
| 4 | Schedule / Thickness | 40 | |
| 5 | Pipe Insulation | No | |
| 6 | Installation Location | Outdoor | |

### AMBIENCE AND DESIGN CONDITIONS

| | | | |
|---|---|---|---|
| 51 | Inlet / Outlet Design Pressure | 40 | bar g |
| 52 | Inlet / Outlet Design Temperature | 100 | °C |
| 53 | Tmin / Tmax | -8.4 / +25 | °C |
| 54 | Certification / Classific.Area | PED+ATEX / Zone 2 | |

## VALVE CONSTRUCTION

### VALVE CHARACTERISTICS

| | | | |
|---|---|---|---|
| 7 | Valve Model | CV-8407 | |
| 8 | Valve Type | Globe | |
| 9 | Valve Layout | Straight | |
| 10 | Bonnet type | Bolted | |
| 11 | Guiding Type | Top Guided | |
| 12 | No.Ports | 1 | |
| 13 | Flow direction | to Open | |
| 14 | Trim Type | Contoured Plug | |
| 15 | Port Size | 1" | Inch |
| 16 | CV / Characteristics | 13 / Equal% | |
| 17 | Body Size | 1 1/2" | |
| 18 | Rating Standard | ASME B16.34 | |
| 19 | Pressure Class | 300# | |
| 20 | End Connection Standard | ASME B16.5 | |
| 21 | End Connection Type | RF | |
| 22 | End Connection Finishing | - | |
| 23 | Stroke | 20 | mm |
| 24 | Shut-off Direction | Direct | |
| 25 | Leakage Class | VI - IEC 60534-4 | |
| 26 | Shut-off pressure | 40 | bar g |

### MATERIALS

| | | |
|---|---|---|
| 55 | Body Material | A351 CF3M |
| 56 | Bonnet Material | A479 316L |
| 57 | Boltings | A193 B8M Cl. 2 / A194 8M |
| 58 | Bellows Material | - |
| 59 | Plug / Vane Material | A479 316L+PTFE |
| 60 | Seat Material | A479 316L |
| 61 | Cage Material | - |
| 62 | Guide Material | - |
| 63 | Stem Material | A 479 316L |
| 64 | VE-CO LT Material | - |
| 65 | Seating Type | Metallic |
| 66 | Balancing Material | - |

### PACKING

| | | |
|---|---|---|
| 67 | Packing Material | GRAPHITE - VF1 |
| 68 | Live Loading | - |
| 69 | Stem Flushing | - |

### DEVICES

| | | |
|---|---|---|
| 70 | Inlet Device | - |
| 71 | Inlet Device Size | - |
| 72 | Outlet Device | - |
| 73 | Outlet Device Size | - |
| 74 | Body Heating | - |

## ACTUATOR AND ACCESSORIES

### ACTUATOR

| | | | |
|---|---|---|---|
| 27 | Fail Position | Closed | |
| 28 | Actuation Type / Model | Pneumatic Diaphragm | |
| 29 | Actuator Action | Reverse | |
| 30 | Actuator Size | SD11R | |
| 31 | Spring Range | 20-44 psi | |
| 32 | Supply | 50- psi | |
| 33 | Design Supply | 11 barg | |
| 34 | Handwheel | - | |
| 35 | Mechanical Stop | - | |
| 36 | Throttling Time | <10 | s |
| 37 | Quick Stroking Time | - | s |
| 38 | Yoke Material | CS | |
| 39 | Pneumatic Tubing Material | AISI 316 | |
| 40 | Pneumatic Fittings | AISI 316 Double Ferrule | |
| 41 | Pneumatic Connection Size | 1/4" NPT-F | |

### POSITIONER

| | | |
|---|---|---|
| 42 | Positioner Model | TISSIN TS900 |
| 43 | Type | Smart Digital |
| 44 | Input Signal / Protocol | 4-20 mA HART |
| 45 | Fail Safety | Fail safe |
| 46 | Output Signal | 4-20 mA |
| 47 | Prot. Class / Encl. Material / El. Classif. | IP66 / AISI 316 / Eexd \ C T4-T6 |
| 48 | El.Conn. / Pn.Conn. | M20x1.5 \ 1/4" NPT-F |

### FILTER REGULATOR

| | | |
|---|---|---|
| 75 | Fr. Model | FR04411S00SSNB2 |
| 76 | Pn.Conn. / Body Material | 1/4" NPT-F / S.Steel |

### BOOSTER

| | | |
|---|---|---|
| 77 | Booster Model | - |
| 78 | Pn.Conn. / Body Material | - |

### SOLENOID VALVE

| | | |
|---|---|---|
| 79 | SOV Model | - |
| 80 | Body Material | - |
| 81 | Prot. Class / El. Classif. | - |
| 82 | El.Conn. / Pn.Conn. | - |
| 83 | Supply | - |
| 84 | Power Consumption | - |

### PNEUMATIC VALVE

| | | |
|---|---|---|
| 85 | Pneumatic Discharge Model | - |
| 86 | Pn.Conn. / Body Material | - |

### LOCK UP VALVE

| | | |
|---|---|---|
| 87 | Lock Up Model | - |
| 88 | Pn.Conn. / Body Material | - |

### LIMIT SWITCH

| | | |
|---|---|---|
| 89 | Limit Switch Model | 1 x GDSN0LIS2MS290 EISENBAU |
| 90 | Type | SPDT |
| 91 | Contact Type | - |
| 92 | Encl.Material | 316SS |
| 93 | El.Connection | M20x1,5 |
| 94 | Prot. Class / El. Classif. | IP66 / MIN. Ex-d IIC (or IIB+H2) T1 |

## NOTES

| | | | |
|---|---|---|---|
| N.1 | n°1 PSV installed downstream the air filter regulator, size 1/4", st.ast., set 6 barg (CE) | N.4 | |
| N.2 | HYDROGEN SERVICE - PACKING ISO 15848-1 | N.5 | |
| N.3 | | N.6 | |
| | | N.7 | |

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*Customer: ROSETTI MARINO*

*Plant / Site: HOLLANDSE KUST NOORD WIND PARK Prj.*

*Quotation Ref./Job Ref.: OV2301646/CV2400221*

*DSH REV. 2 - 04/06/2024 - 0*

*Final Installation: NL*

| | | | | | |
|---|---|---|---|---|---|
| 1 | Item | **40** | 49 | Q.ty | 2 |
| 2 | Valve tag / S.No | **64-PV-031A/B / 2400597 ÷ 2400598** | 50 | Valve Service | NITROGEN FROM NITROGEN SYSTEM (A-64000) TO HEADER |

## PIPING AND DESIGN CONDITIONS

| | PIPING | | | AMBIENCE AND DESIGN CONDITIONS | | |
|---|---|---|---|---|---|---|
| 3 | Piping Size / Ext.Diam | 1" | 51 | Inlet / Outlet Design Pressure | 10 | bar g |
| 4 | Schedule / Thickness | 80 | 52 | Inlet / Outlet Design Temperature | 100 | °C |
| 5 | Pipe Insulation | No | 53 | Tmin / Tmax | -8.4 / +25 | °C |
| 6 | Installation Location | Outdoor | 54 | Certification / Classific.Area | PED+ATEX / Zone 2 | |

## VALVE CONSTRUCTION

| | VALVE CHARACTERISTICS | | | MATERIALS | |
|---|---|---|---|---|---|
| 7 | Valve Model | CV-8407 | 55 | Body Material | A350 LF2 |
| 8 | Valve Type | Globe | 56 | Bonnet Material | A350 LF2 |
| 9 | Valve Layout | Straight | 57 | Boltings | A193 B8M Cl. 2 / A194 8M |
| 10 | Bonnet type | Bolted | 58 | Bellows Material | - |
| 11 | Guiding Type | Top Guided | 59 | Plug / Vane Material | A479 316L + CoCr-A |
| 12 | No.Ports | 1 | 60 | Seat Material | A479 316L + CoCr-A |
| 13 | Flow direction | to Open | 61 | Cage Material | - |
| 14 | Trim Type | Contoured Plug | 62 | Guide Material | - |
| 15 | Port Size | 3/8" Inch | 63 | Stem Material | A 479 316L |
| 16 | CV / Characteristics | 1.9 / Equal% | 64 | VE-CO LT Material | - |
| | | | 65 | Seating Type | Metallic |
| 17 | Body Size | 1" | 66 | Balancing Material | - |
| 18 | Rating Standard | ASME B16.34 | | **PACKING** | |
| 19 | Pressure Class | 150# | 67 | Packing Material | PTFE |
| 20 | End Connection Standard | ASME B16.5 | 68 | Live Loading | - |
| 21 | End Connection Type | RF | 69 | Stem Flushing | - |
| 22 | End Connection Finishing | - | | **DEVICES** | |
| | | | 70 | Inlet Device | - |
| 23 | Stroke | 13 mm | 71 | Inlet Device Size | - |
| 24 | Shut-off Direction | Direct | 72 | Outlet Device | - |
| 25 | Leakage Class | V - IEC 60534-4 | 73 | Outlet Device Size | - |
| 26 | Shut-off pressure | 10 bar g | 74 | Body Heating | - |

## ACTUATOR AND ACCESSORIES

| | ACTUATOR | | | FILTER REGULATOR | |
|---|---|---|---|---|---|
| 27 | Fail Position | Closed | 75 | Fr. Model | FR04411S00SSNB2 |
| 28 | Actuation Type / Model | Pneumatic Diaphragm | 76 | Pn.Conn. / Body Material | 1/4" NPT-F / S.Steel |
| 29 | Actuator Action | Reverse | | **BOOSTER** | |
| 30 | Actuator Size | SD11R | 77 | Booster Model | - |
| 31 | Spring Range | 15-30 psi | 78 | Pn.Conn. / Body Material | - |
| 32 | Supply | 50- psi | | **SOLENOID VALVE** | |
| 33 | Design Supply | 11 barg | 79 | SOV Model | - |
| 34 | Handwheel | - | 80 | Body Material | - |
| 35 | Mechanical Stop | - | 81 | Prot. Class / El. Classif. | - |
| 36 | Throttling Time | <10 s | 82 | El.Conn. / Pn.Conn. | - |
| 37 | Quick Stroking Time | - s | 83 | Supply | - |
| 38 | Yoke Material | CS | 84 | Power Consumption | - |
| 39 | Pneumatic Tubing Material | AISI 316 | | **PNEUMATIC VALVE** | |
| 40 | Pneumatic Fittings | AISI 316 Double Ferrule | 85 | Pneumatic Discharge Model | - |
| 41 | Pneumatic Connection Size | 1/4" NPT-F | 86 | Pn.Conn. / Body Material | - |
| | | | | **LOCK UP VALVE** | |
| | **POSITIONER** | | 87 | Lock Up Model | - |
| 42 | Positioner Model | TISSIN TS900 | 88 | Pn.Conn. / Body Material | - |
| 43 | Type | Smart Digital | | **LIMIT SWITCH** | |
| 44 | Input Signal / Protocol | 4-20 mA HART | 89 | Limit Switch Model | 1 x GDSN0LIS2MS290 EISENBAU |
| 45 | Fail Safety | Fail safe | 90 | Type | SPDT |
| 46 | Output Signal | 4-20 mA | 91 | Contact Type | - |
| 47 | Prot. Class / Encl. Material / El. Classif. | IP66 / AISI 316 / Eexd \ C T4-T6 | 92 | Encl.Material | 316SS |
| 48 | El.Conn. / Pn.Conn. | M20x1.5 \ 1/4" NPT-F | 93 | El.Connection | M20x1,5 |
| | | | 94 | Prot. Class / El. Classif. | IP66 / MIN. Ex-d IIC (or IIB+H2) T1 |

## NOTES

| | | | |
|---|---|---|---|
| N.1 | n°1 PSV installed downstream the air filter regulator, size 1/4", st.ast., set 6 barg (CE) | N.4 | |
| N.2 | | N.5 | |
| N.3 | | N.6 | |
| | | N.7 | |

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*Customer: ROSETTI MARINO*

*Plant / Site: HOLLANDSE KUST NOORD WIND PARK Prj.*

*Quotation Ref./Job Ref.: OV2301646/CV2400221*

*DSH REV. 3 - 04/06/2024 - 0*

*Final Installation: NL*

| | | | | | |
|---|---|---|---|---|---|
| 1 | Item | 50 | 49 | Q.ty | 1 |
| 2 | Valve tag / S.No | 25-PV-055B / 2400596 | 50 | Valve Service | HYDROGEN FROM STORAGE VESSEL TO FUEL CELL PACKAGE |

## PIPING AND DESIGN CONDITIONS

### PIPING

| | | | |
|---|---|---|---|
| 3 | Piping Size / Ext.Diam | 1 1/2" | |
| 4 | Schedule / Thickness | 40 | |
| 5 | Pipe Insulation | No | |
| 6 | Installation Location | Outdoor | |

### AMBIENCE AND DESIGN CONDITIONS

| | | | |
|---|---|---|---|
| 51 | Inlet / Outlet Design Pressure | 40 | bar g |
| 52 | Inlet / Outlet Design Temperature | 100 | °C |
| 53 | Tmin / Tmax | -8.4 / +25 | °C |
| 54 | Certification / Classific.Area | PED+ATEX / Zone 2 | |

## VALVE CONSTRUCTION

### VALVE CHARACTERISTICS

| | | | |
|---|---|---|---|
| 7 | Valve Model | CV-8407 | |
| 8 | Valve Type | Globe | |
| 9 | Valve Layout | Straight | |
| 10 | Bonnet type | Bolted | |
| 11 | Guiding Type | Top Guided | |
| 12 | No.Ports | 1 | |
| 13 | Flow direction | to Open | |
| 14 | Trim Type | Contoured Plug | |
| 15 | Port Size | 5/32" | Inch |
| 16 | CV / Characteristics | 0.45 / Equal% | |
| 17 | Body Size | 1 1/2" | |
| 18 | Rating Standard | ASME B16.34 | |
| 19 | Pressure Class | 300# | |
| 20 | End Connection Standard | ASME B16.5 | |
| 21 | End Connection Type | RF | |
| 22 | End Connection Finishing | - | |
| 23 | Stroke | 13 | mm |
| 24 | Shut-off Direction | Direct | |
| 25 | Leakage Class | VI - IEC 60534-4 | |
| 26 | Shut-off pressure | 40 | bar g |

### MATERIALS

| | | |
|---|---|---|
| 55 | Body Material | A351 CF3M |
| 56 | Bonnet Material | A479 316L |
| 57 | Boltings | A193 B8M Cl. 2 / A194 8M |
| 58 | Bellows Material | - |
| 59 | Plug / Vane Material | A479 316L+PTFE |
| 60 | Seat Material | A479 316L |
| 61 | Cage Material | - |
| 62 | Guide Material | - |
| 63 | Stem Material | A 479 316L |
| 64 | VE-CO LT Material | - |
| 65 | Seating Type | Metallic |
| 66 | Balancing Material | - |

### PACKING

| | | |
|---|---|---|
| 67 | Packing Material | GRAPHITE - VF1 |
| 68 | Live Loading | - |
| 69 | Stem Flushing | - |

### DEVICES

| | | |
|---|---|---|
| 70 | Inlet Device | - |
| 71 | Inlet Device Size | - |
| 72 | Outlet Device | - |
| 73 | Outlet Device Size | - |
| 74 | Body Heating | - |

## ACTUATOR AND ACCESSORIES

### ACTUATOR

| | | |
|---|---|---|
| 27 | Fail Position | Closed |
| 28 | Actuation Type / Model | Pneumatic Diaphragm |
| 29 | Actuator Action | Reverse |
| 30 | Actuator Size | SD11R |
| 31 | Spring Range | 20-44 psi |
| 32 | Supply | 50- psi |
| 33 | Design Supply | 11 barg |
| 34 | Handwheel | - |
| 35 | Mechanical Stop | - |
| 36 | Throttling Time | <10 s |
| 37 | Quick Stroking Time | - s |
| 38 | Yoke Material | CS |
| 39 | Pneumatic Tubing Material | AISI 316 |
| 40 | Pneumatic Fittings | AISI 316 Double Ferrule |
| 41 | Pneumatic Connection Size | 1/4" NPT-F |

### POSITIONER

| | | |
|---|---|---|
| 42 | Positioner Model | TISSIN TS900 |
| 43 | Type | Smart Digital |
| 44 | Input Signal / Protocol | 4-20 mA HART |
| 45 | Fail Safety | Fail safe |
| 46 | Output Signal | 4-20 mA |
| 47 | Prot. Class / Encl. Material / El. Classif. | IP66 / AISI 316 / Eexd \ C T4-T6 |
| 48 | El.Conn. / Pn.Conn. | M20x1.5 \ 1/4" NPT-F |

### FILTER REGULATOR

| | | |
|---|---|---|
| 75 | Fr. Model | FR04411S00SSNB2 |
| 76 | Pn.Conn. / Body Material | 1/4" NPT-F / S.Steel |

### BOOSTER

| | | |
|---|---|---|
| 77 | Booster Model | - |
| 78 | Pn.Conn. / Body Material | - |

### SOLENOID VALVE

| | | |
|---|---|---|
| 79 | SOV Model | - |
| 80 | Body Material | - |
| 81 | Prot. Class / El. Classif. | - |
| 82 | El.Conn. / Pn.Conn. | - |
| 83 | Supply | - |
| 84 | Power Consumption | - |

### PNEUMATIC VALVE

| | | |
|---|---|---|
| 85 | Pneumatic Discharge Model | - |
| 86 | Pn.Conn. / Body Material | - |

### LOCK UP VALVE

| | | |
|---|---|---|
| 87 | Lock Up Model | - |
| 88 | Pn.Conn. / Body Material | - |

### LIMIT SWITCH

| | | |
|---|---|---|
| 89 | Limit Switch Model | 1 x GDSN0LIS2MS290 EISENBAU |
| 90 | Type | SPDT |
| 91 | Contact Type | - |
| 92 | Encl.Material | 316SS |
| 93 | El.Connection | M20x1,5 |
| 94 | Prot. Class / El. Classif. | IP66 / MIN. Ex-d IIC (or IIB+H2) T1 |

## NOTES

| | | | |
|---|---|---|---|
| N.1 | n°1 PSV installed downstream the air filter regulator, size 1/4", st.ast., set 6 barg (CE) | N.4 | |
| N.2 | HYDROGEN SERVICE - PACKING ISO 15848-1 | N.5 | |
| N.3 | | N.6 | |
| | | N.7 | |

v.03.00

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# CALCULATION FORM FOR CONTROL VALVES

| | | | |
|---|---|---|---|
| Customer | ROSETTI MARINO SPA | QUOTE | CV2400221 |
| Order | 1724000740 123A90A | Sheet | 1 |
| Plant | Hollandse Kust Noord Wind Park Pr. | Created By | RC |

## PIPELINE DATA

| | INLET | OUTLET |
|---|---|---|
| Nominal diameter | 1" | 1" |
| Schedule | 40 | 40 |
| External Diameter, mm | 33.40 | 33.40 |
| Internal Diameter, mm | 26.6 | 26.6 |
| Thickness, mm | 3.4 | 3.4 |

## VALVE DATA

| | |
|---|---|
| **Valve TAG** | **25-FV-031** |
| Serial AST | **2400583** |
| AST Ref. | 10 |
| Upstream Fluid State | GAS |

## VALVE DATA: BODY

| | |
|---|---|
| Valve Family | CV-8400 |
| Valve Model | CV-8407 |
| Valve Description | Globe - Straigth way - Contoured Plug |
| Unit | NPS |
| Body Size | 1" |
| Fluid | NITROGEN |

## VALVE DATA: TRIM

| | |
|---|---|
| Trim Configuration | CP-E |
| Stroke, mm | 13 |
| Port Size, Inch | 1/4" |
| Flow Characteristic | Equal% |
| Flow Action | FTO |
| Selected Flow Coefficient | 0.85 |

## PROCESS DATA

| | | Units | #1 | #2 | #3 | #4 | NOTES |
|---|---|---|---|---|---|---|---|
| Fluid | - | - | GAS | GAS | | | |
| Flow Rate | Q/W | Nm³/h | 40.00 | 40.00 | | | |
| Inlet Temperature | T1 | °C | 15.00 | 15.00 | | | |
| Inlet Pressure | P1 | bar (g) | 7.000 | 7.000 | | | |
| Outlet Pressure | P2 | | 0.000 | 3.000 | | | |
| Differential Pressure | ΔP | - | 7.000 | 4.000 | | | |
| Fluid density at P1 and T1 | ρ1 | kg/m³ | 9.460 | 9.460 | | | |
| Dynamic Viscosity | μ | cP | | | | | |
| Molecular Weight | MW | kg/kmol | 28.000 | 28.000 | | | |
| Specific Heat Ratio (cp/cv) | γ | - | 1.400 | 1.400 | | | |
| Compressibility Factor | Z | - | 0.990 | 0.990 | | | |
| Critical Pressure | Pcrit | bar (A) | | | | | |
| Vapor pressure | Pvap | bar (A) | | | | | |
| **Calculated Flow Coefficient** | **C** | **-** | **0.3678** | **0.3846** | | | |
| **Selected Flow Coefficient** | **Cv** | - | 0.85 | 0.85 | | | |
| Calculated / Selected | C/Cv | % | 43.27 | 45.25 | | | |
| Pressure Recovery Factor | $F_L$ | - | 0.9357 | 0.9353 | | | |
| Valve Style Modifier | $F_d$ | - | 0.2143 | 0.2211 | | | |
| Pressure Differential Ratio Factor | $X_T$ | - | 0.7355 | 0.7349 | | | |
| **Stroke %** | | **%** | **74.2** | **75.6** | | | |
| Predicted Noise SPL | - | dB | 77.27 | <75 | | | |
| Valve Outlet Velocity | v2 | m/s | 20.82 | 5.256 | | | |
| Valve Outlet Mach Number | M2 | - | 0.06015 | 0.01519 | | | |
| Downstream Pipe Fluid Velocity | vP2 | m/s | 20.82 | 5.256 | | | |
| Flow Regime | - | - | Choked | Normal | | | |
| Upstream Fluid State | - | - | Gaseous | Gaseous | | | |
| Downstream Fluid State | - | - | Gaseous | Gaseous | | | |

## NOTES

| | Rev. | Date | Reason For Issue | EM / CK / APP |
|---|---|---|---|---|
| Rev Index. | 0 | | | RC / RC / RC |

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# CALCULATION FORM FOR CONTROL VALVES

| | | | |
|---|---|---|---|
| Customer | ROSETTI MARINO SPA | QUOTE | CV2400221 |
| Order | 1724000740 123A90A | Sheet | 2 |
| Plant | Hollandse Kust Noord Wind Park Pr. | Created By | RC |

## PIPELINE DATA

| | INLET | OUTLET |
|---|---|---|
| Nominal diameter | 1" | 1" |
| Schedule | 40 | 40 |
| External Diameter, mm | 33.40 | 33.40 |
| Internal Diameter, mm | 26.6 | 26.6 |
| Thickness, mm | 3.4 | 3.4 |

## VALVE DATA

| Valve TAG | 25-FV-032 |
|---|---|
| Serial AST | **2400584** |
| AST Ref. | 20 |
| Upstream Fluid State | GAS |

## VALVE DATA: BODY

| | |
|---|---|
| Valve Family | CV-8400 |
| Valve Model | CV-8407 |
| Valve Description | Globe - Straigth way - Contoured Plug |
| Unit | NPS |
| Body Size | 1" |
| Fluid | NITROGEN |

## VALVE DATA: TRIM

| | |
|---|---|
| Trim Configuration | CP-E |
| Stroke, mm | 13 |
| Port Size, Inch | 1/4" |
| Flow Characteristic | Equal% |
| Flow Action | FTO |
| Selected Flow Coefficient | 0.85 |

## PROCESS DATA

| | | Units | #1 | #2 | #3 | #4 | NOTES |
|---|---|---|---|---|---|---|---|
| Fluid | - | - | GAS | GAS | | | |
| Flow Rate | Q/W | Nm³/h | 40.00 | 40.00 | | | |
| Inlet Temperature | T1 | °C | 15.00 | 15.00 | | | |
| Inlet Pressure | P1 | bar (g) | 7.000 | 7.000 | | | |
| Outlet Pressure | P2 | | 0.000 | 3.000 | | | |
| Differential Pressure | ΔP | - | 7.000 | 4.000 | | | |
| Fluid density at P1 and T1 | ρ1 | kg/m³ | 9.460 | 9.460 | | | |
| Dynamic Viscosity | μ | cP | | | | | |
| Molecular Weight | MW | kg/kmol | 28.000 | 28.000 | | | |
| Specific Heat Ratio (cp/cv) | γ | - | 1.400 | 1.400 | | | |
| Compressibility Factor | Z | - | 0.990 | 0.990 | | | |
| Critical Pressure | Pcrit | bar (A) | | | | | |
| Vapor pressure | Pvap | bar (A) | | | | | |
| **Calculated Flow Coefficient** | **C** | **-** | **0.3678** | **0.3846** | | | |
| **Selected Flow Coefficient** | **Cv** | - | 0.85 | 0.85 | | | |
| Calculated / Selected | C/Cv | % | 43.27 | 45.25 | | | |
| Pressure Recovery Factor | $F_L$ | - | 0.9357 | 0.9353 | | | |
| Valve Style Modifier | $F_d$ | - | 0.2143 | 0.2211 | | | |
| Pressure Differential Ratio Factor | $X_T$ | - | 0.7355 | 0.7349 | | | |
| **Stroke %** | | **%** | **74.2** | **75.6** | | | |
| Predicted Noise SPL | - | dB | 77.27 | <75 | | | |
| Valve Outlet Velocity | v2 | m/s | 20.82 | 5.256 | | | |
| Valve Outlet Mach Number | M2 | - | 0.06015 | 0.01519 | | | |
| Downstream Pipe Fluid Velocity | vP2 | m/s | 20.82 | 5.256 | | | |
| Flow Regime | - | - | Choked | Normal | | | |
| Upstream Fluid State | - | - | Gaseous | Gaseous | | | |
| Downstream Fluid State | - | - | Gaseous | Gaseous | | | |

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# CALCULATION FORM FOR CONTROL VALVES

| | | | |
|---|---|---|---|
| Customer | ROSETTI MARINO SPA | QUOTE | CV2400221 |
| Order | 1724000740 123A90A | Sheet | 3 |
| Plant | Hollandse Kust Noord Wind Park Pr. | Created By | RC |

## PIPELINE DATA

| | INLET | OUTLET |
|---|---|---|
| Nominal diameter | 1" | 1" |
| Schedule | 40 | 40 |
| External Diameter, mm | 33.40 | 33.40 |
| Internal Diameter, mm | 26.6 | 26.6 |
| Thickness, mm | 3.4 | 3.4 |

## VALVE DATA

| Valve TAG | 25-FV-033 |
|---|---|
| Serial AST | **2400585** |
| AST Ref. | 30 |
| Upstream Fluid State | GAS |

## VALVE DATA: BODY

| | |
|---|---|
| Valve Family | CV-8400 |
| Valve Model | CV-8407 |
| Valve Description | Globe - Straigth way - Contoured Plug |
| Unit | NPS |
| Body Size | 1" |
| Fluid | NITROGEN |

## VALVE DATA: TRIM

| | |
|---|---|
| Trim Configuration | CP-E |
| Stroke, mm | 13 |
| Port Size, Inch | 1/4" |
| Flow Characteristic | Equal% |
| Flow Action | FTO |
| Selected Flow Coefficient | 0.85 |

## PROCESS DATA

| | | Units | #1 | #2 | #3 | #4 | NOTES |
|---|---|---|---|---|---|---|---|
| Fluid | - | - | GAS | GAS | | | |
| Flow Rate | Q/W | Nm³/h | 40.00 | 40.00 | | | |
| Inlet Temperature | T1 | °C | 15.00 | 15.00 | | | |
| Inlet Pressure | P1 | bar (g) | 7.000 | 7.000 | | | |
| Outlet Pressure | P2 | | 0.000 | 3.000 | | | |
| Differential Pressure | ΔP | - | 7.000 | 4.000 | | | |
| Fluid density at P1 and T1 | ρ1 | kg/m³ | 9.460 | 9.460 | | | |
| Dynamic Viscosity | μ | cP | | | | | |
| Molecular Weight | MW | kg/kmol | 28.000 | 28.000 | | | |
| Specific Heat Ratio (cp/cv) | γ | - | 1.400 | 1.400 | | | |
| Compressibility Factor | Z | - | 0.990 | 0.990 | | | |
| Critical Pressure | Pcrit | bar (A) | | | | | |
| Vapor pressure | Pvap | bar (A) | | | | | |
| **Calculated Flow Coefficient** | **C** | **-** | **0.3678** | **0.3846** | | | |
| **Selected Flow Coefficient** | **Cv** | - | 0.85 | 0.85 | | | |
| Calculated / Selected | C/Cv | % | 43.27 | 45.25 | | | |
| Pressure Recovery Factor | $F_L$ | - | 0.9357 | 0.9353 | | | |
| Valve Style Modifier | $F_d$ | - | 0.2143 | 0.2211 | | | |
| Pressure Differential Ratio Factor | $X_T$ | - | 0.7355 | 0.7349 | | | |
| **Stroke %** | | **%** | **74.2** | **75.6** | | | |
| Predicted Noise SPL | - | dB | 77.27 | <75 | | | |
| Valve Outlet Velocity | v2 | m/s | 20.82 | 5.256 | | | |
| Valve Outlet Mach Number | M2 | - | 0.06015 | 0.01519 | | | |
| Downstream Pipe Fluid Velocity | vP2 | m/s | 20.82 | 5.256 | | | |
| Flow Regime | - | - | Choked | Normal | | | |
| Upstream Fluid State | - | - | Gaseous | Gaseous | | | |
| Downstream Fluid State | - | - | Gaseous | Gaseous | | | |

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# CALCULATION FORM FOR CONTROL VALVES

| | | | |
|---|---|---|---|
| Customer | ROSETTI MARINO SPA | QUOTE | CV2400221 |
| Order | 1724000740 123A90A | Sheet | 4 |
| Plant | Hollandse Kust Noord Wind Park Pr. | Created By | RC |

## PIPELINE DATA

| | INLET | OUTLET |
|---|---|---|
| Nominal diameter | 1" | 1" |
| Schedule | 40 | 40 |
| External Diameter, mm | 33.40 | 33.40 |
| Internal Diameter, mm | 26.6 | 26.6 |
| Thickness, mm | 3.4 | 3.4 |

## VALVE DATA

| Valve TAG | 25-FV-034 |
|---|---|
| Serial AST | **2400586** |
| AST Ref. | 40 |
| Upstream Fluid State | GAS |

## VALVE DATA: BODY

| | |
|---|---|
| Valve Family | CV-8400 |
| Valve Model | CV-8407 |
| Valve Description | Globe - Straigth way - Contoured Plug |
| Unit | NPS |
| Body Size | 1" |
| Fluid | NITROGEN |

## VALVE DATA: TRIM

| | |
|---|---|
| Trim Configuration | CP-E |
| Stroke, mm | 13 |
| Port Size, Inch | 1/4" |
| Flow Characteristic | Equal% |
| Flow Action | FTO |
| Selected Flow Coefficient | 0.85 |

## PROCESS DATA

| | | Units | #1 | #2 | #3 | #4 | NOTES |
|---|---|---|---|---|---|---|---|
| Fluid | - | - | GAS | GAS | | | |
| Flow Rate | Q/W | Nm³/h | 40.00 | 40.00 | | | |
| Inlet Temperature | T1 | °C | 15.00 | 15.00 | | | |
| Inlet Pressure | P1 | bar (g) | 7.000 | 7.000 | | | |
| Outlet Pressure | P2 | | 0.000 | 3.000 | | | |
| Differential Pressure | ΔP | - | 7.000 | 4.000 | | | |
| Fluid density at P1 and T1 | ρ1 | kg/m³ | 9.460 | 9.460 | | | |
| Dynamic Viscosity | μ | cP | | | | | |
| Molecular Weight | MW | kg/kmol | 28.000 | 28.000 | | | |
| Specific Heat Ratio (cp/cv) | γ | - | 1.400 | 1.400 | | | |
| Compressibility Factor | Z | - | 0.990 | 0.990 | | | |
| Critical Pressure | Pcrit | bar (A) | | | | | |
| Vapor pressure | Pvap | bar (A) | | | | | |
| **Calculated Flow Coefficient** | **C** | **-** | **0.3678** | **0.3846** | | | |
| **Selected Flow Coefficient** | **Cv** | - | 0.85 | 0.85 | | | |
| Calculated / Selected | C/Cv | % | 43.27 | 45.25 | | | |
| Pressure Recovery Factor | $F_L$ | - | 0.9357 | 0.9353 | | | |
| Valve Style Modifier | $F_d$ | - | 0.2143 | 0.2211 | | | |
| Pressure Differential Ratio Factor | $X_T$ | - | 0.7355 | 0.7349 | | | |
| **Stroke %** | | **%** | **74.2** | **75.6** | | | |
| Predicted Noise SPL | - | dB | 77.27 | <75 | | | |
| Valve Outlet Velocity | v2 | m/s | 20.82 | 5.256 | | | |
| Valve Outlet Mach Number | M2 | - | 0.06015 | 0.01519 | | | |
| Downstream Pipe Fluid Velocity | vP2 | m/s | 20.82 | 5.256 | | | |
| Flow Regime | - | - | Choked | Normal | | | |
| Upstream Fluid State | - | - | Gaseous | Gaseous | | | |
| Downstream Fluid State | - | - | Gaseous | Gaseous | | | |

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# CALCULATION FORM FOR CONTROL VALVES

| | | | |
|---|---|---|---|
| Customer | ROSETTI MARINO SPA | QUOTE | CV2400221 |
| Order | 1724000740 123A90A | Sheet | 5 |
| Plant | Hollandse Kust Noord Wind Park Pr. | Created By | RC |

## PIPELINE DATA

| | INLET | OUTLET |
|---|---|---|
| Nominal diameter | 1" | 1" |
| Schedule | 40 | 40 |
| External Diameter, mm | 33.40 | 33.40 |
| Internal Diameter, mm | 26.6 | 26.6 |
| Thickness, mm | 3.4 | 3.4 |

## VALVE DATA

| | |
|---|---|
| **Valve TAG** | **25-FV-036** |
| Serial AST | **2400587** |
| AST Ref. | 50 |
| Upstream Fluid State | GAS |

## VALVE DATA: BODY

| | |
|---|---|
| Valve Family | CV-8400 |
| Valve Model | CV-8407 |
| Valve Description | Globe - Straigth way - Contoured Plug |
| Unit | NPS |
| Body Size | 1" |
| Fluid | NITROGEN |

## VALVE DATA: TRIM

| | |
|---|---|
| Trim Configuration | CP-E |
| Stroke, mm | 13 |
| Port Size, Inch | 1/4" |
| Flow Characteristic | Equal% |
| Flow Action | FTO |
| Selected Flow Coefficient | 0.85 |

## PROCESS DATA

| | | Units | #1 | #2 | #3 | #4 | NOTES |
|---|---|---|---|---|---|---|---|
| Fluid | - | - | GAS | GAS | | | |
| Flow Rate | Q/W | Nm³/h | 40.00 | 40.00 | | | |
| Inlet Temperature | T1 | °C | 15.00 | 15.00 | | | |
| Inlet Pressure | P1 | bar (g) | 7.000 | 7.000 | | | |
| Outlet Pressure | P2 | | 0.000 | 3.000 | | | |
| Differential Pressure | ΔP | - | 7.000 | 4.000 | | | |
| Fluid density at P1 and T1 | ρ1 | kg/m³ | 9.460 | 9.460 | | | |
| Dynamic Viscosity | μ | cP | | | | | |
| Molecular Weight | MW | kg/kmol | 28.000 | 28.000 | | | |
| Specific Heat Ratio (cp/cv) | γ | - | 1.400 | 1.400 | | | |
| Compressibility Factor | Z | - | 0.990 | 0.990 | | | |
| Critical Pressure | Pcrit | bar (A) | | | | | |
| Vapor pressure | Pvap | bar (A) | | | | | |
| **Calculated Flow Coefficient** | **C** | **-** | **0.3678** | **0.3846** | | | |
| **Selected Flow Coefficient** | **Cv** | - | 0.85 | 0.85 | | | |
| Calculated / Selected | C/Cv | % | 43.27 | 45.25 | | | |
| Pressure Recovery Factor | $F_L$ | - | 0.9357 | 0.9353 | | | |
| Valve Style Modifier | $F_d$ | - | 0.2143 | 0.2211 | | | |
| Pressure Differential Ratio Factor | $X_T$ | - | 0.7355 | 0.7349 | | | |
| **Stroke %** | | **%** | **74.2** | **75.6** | | | |
| Predicted Noise SPL | - | dB | 77.27 | <75 | | | |
| Valve Outlet Velocity | v2 | m/s | 20.82 | 5.256 | | | |
| Valve Outlet Mach Number | M2 | - | 0.06015 | 0.01519 | | | |
| Downstream Pipe Fluid Velocity | vP2 | m/s | 20.82 | 5.256 | | | |
| Flow Regime | - | - | Choked | Normal | | | |
| Upstream Fluid State | - | - | Gaseous | Gaseous | | | |
| Downstream Fluid State | - | - | Gaseous | Gaseous | | | |

## NOTES

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# CALCULATION FORM FOR CONTROL VALVES

| | | | |
|---|---|---|---|
| Customer | ROSETTI MARINO SPA | QUOTE | CV2400221 |
| Order | 1724000740 123A90A | Sheet | 6 |
| Plant | Hollandse Kust Noord Wind Park Pr. | Created By | RC |

## PIPELINE DATA

| | INLET | OUTLET |
|---|---|---|
| Nominal diameter | 1" | 1" |
| Schedule | 40 | 40 |
| External Diameter, mm | 33.40 | 33.40 |
| Internal Diameter, mm | 26.6 | 26.6 |
| Thickness, mm | 3.4 | 3.4 |

## VALVE DATA

| Valve TAG | 25-FV-038 |
|---|---|
| Serial AST | **2400588** |
| AST Ref. | 60 |
| Upstream Fluid State | GAS |

## VALVE DATA: BODY

| | |
|---|---|
| Valve Family | CV-8400 |
| Valve Model | CV-8407 |
| Valve Description | Globe - Straigth way - Contoured Plug |
| Unit | NPS |
| Body Size | 1" |
| Fluid | NITROGEN |

## VALVE DATA: TRIM

| | |
|---|---|
| Trim Configuration | CP-E |
| Stroke, mm | 13 |
| Port Size, Inch | 1/4" |
| Flow Characteristic | Equal% |
| Flow Action | FTO |
| Selected Flow Coefficient | 0.85 |

## PROCESS DATA

| | | Units | #1 | #2 | #3 | #4 | NOTES |
|---|---|---|---|---|---|---|---|
| Fluid | - | - | GAS | GAS | | | |
| Flow Rate | Q/W | Nm³/h | 40.00 | 40.00 | | | |
| Inlet Temperature | T1 | °C | 15.00 | 15.00 | | | |
| Inlet Pressure | P1 | bar (g) | 7.000 | 7.000 | | | |
| Outlet Pressure | P2 | | 0.000 | 3.000 | | | |
| Differential Pressure | ΔP | - | 7.000 | 4.000 | | | |
| Fluid density at P1 and T1 | ρ1 | kg/m³ | 9.460 | 9.460 | | | |
| Dynamic Viscosity | μ | cP | | | | | |
| Molecular Weight | MW | kg/kmol | 28.000 | 28.000 | | | |
| Specific Heat Ratio (cp/cv) | γ | - | 1.400 | 1.400 | | | |
| Compressibility Factor | Z | - | 0.990 | 0.990 | | | |
| Critical Pressure | Pcrit | bar (A) | | | | | |
| Vapor pressure | Pvap | bar (A) | | | | | |
| **Calculated Flow Coefficient** | **C** | **-** | **0.3678** | **0.3846** | | | |
| **Selected Flow Coefficient** | **Cv** | - | 0.85 | 0.85 | | | |
| Calculated / Selected | C/Cv | % | 43.27 | 45.25 | | | |
| Pressure Recovery Factor | $F_L$ | - | 0.9357 | 0.9353 | | | |
| Valve Style Modifier | $F_d$ | - | 0.2143 | 0.2211 | | | |
| Pressure Differential Ratio Factor | $X_T$ | - | 0.7355 | 0.7349 | | | |
| **Stroke %** | | **%** | **74.2** | **75.6** | | | |
| Predicted Noise SPL | - | dB | 77.27 | <75 | | | |
| Valve Outlet Velocity | v2 | m/s | 20.82 | 5.256 | | | |
| Valve Outlet Mach Number | M2 | - | 0.06015 | 0.01519 | | | |
| Downstream Pipe Fluid Velocity | vP2 | m/s | 20.82 | 5.256 | | | |
| Flow Regime | - | - | Choked | Normal | | | |
| Upstream Fluid State | - | - | Gaseous | Gaseous | | | |
| Downstream Fluid State | - | - | Gaseous | Gaseous | | | |

## NOTES

| | Rev. | Date | Reason For Issue | EM / CK / APP |
|---|---|---|---|---|
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# CALCULATION FORM FOR CONTROL VALVES

| | | | |
|---|---|---|---|
| Customer | ROSETTI MARINO SPA | QUOTE | CV2400221 |
| Order | 1724000740 123A90A | Sheet | 7 |
| Plant | Hollandse Kust Noord Wind Park Pr. | Created By | RC |

## PIPELINE DATA

| | INLET | OUTLET |
|---|---|---|
| Nominal diameter | 3" | 3" |
| Schedule | 10S | 10S |
| External Diameter, mm | 88.90 | 88.90 |
| Internal Diameter, mm | 82.8 | 82.8 |
| Thickness, mm | 3.1 | 3.1 |

## VALVE DATA

| Valve TAG | 25-PV-035 |
|---|---|
| Serial AST | **2400589** |
| AST Ref. | 70 |
| Upstream Fluid State | GAS |

## VALVE DATA: BODY

| | |
|---|---|
| Valve Family | CV-8400 |
| Valve Model | CV-8407 |
| Valve Description | Globe - Straigth way - Contoured Plug |
| Unit | NPS |
| Body Size | 2" |
| Fluid | NITROGEN/HYDROGEN |

## VALVE DATA: TRIM

| | |
|---|---|
| Trim Configuration | CP-E |
| Stroke, mm | 25 |
| Port Size, Inch | 1" |
| Flow Characteristic | Equal% |
| Flow Action | FTO |
| Selected Flow Coefficient | 13 |

## PROCESS DATA

| | | Units | #1 | #2 | #3 | #4 | NOTES |
|---|---|---|---|---|---|---|---|
| Fluid | - | - | GAS | GAS | GAS | GAS | |
| Flow Rate | Q/W | Nm³/h | 40.00 | 40.00 | 500.00 | 500.00 | |
| Inlet Temperature | T1 | °C | 15.00 | 15.00 | 15.00 | 15.00 | |
| Inlet Pressure | P1 | bar (g) | 4.000 | 1.000 | 4.000 | 1.000 | |
| Outlet Pressure | P2 | | 3.300 | 0.300 | 3.300 | 0.300 | |
| Differential Pressure | ΔP | - | 0.700 | 0.700 | 0.700 | 0.700 | |
| Fluid density at P1 and T1 | ρ1 | kg/m³ | 5.859 | 2.353 | 0.418 | 0.168 | |
| Dynamic Viscosity | μ | cP | | | | | |
| Molecular Weight | MW | kg/kmol | 28.000 | 28.000 | 2.000 | 2.000 | |
| Specific Heat Ratio (cp/cv) | γ | - | 1.300 | 1.300 | 1.300 | 1.300 | |
| Compressibility Factor | Z | - | 1.000 | 1.000 | 1.000 | 1.000 | |
| Critical Pressure | Pcrit | bar (A) | | | | | |
| Vapor pressure | Pvap | bar (A) | | | | | |
| **Calculated Flow Coefficient** | **C** | **-** | **0.9689** | **1.719** | **3.241** | **5.772** | |
| **Selected Flow Coefficient** | **Cv** | - | 13 | 13 | 13 | 13 | |
| Calculated / Selected | C/Cv | % | 7.453 | 13.22 | 24.93 | 44.4 | |
| Pressure Recovery Factor | $F_L$ | - | 0.9339 | 0.9318 | 0.9275 | 0.9204 | |
| Valve Style Modifier | $F_d$ | - | 0.08551 | 0.1113 | 0.1638 | 0.251 | |
| Pressure Differential Ratio Factor | $X_T$ | - | 0.7327 | 0.7294 | 0.7228 | 0.7118 | |
| **Stroke %** | | **%** | **38.8** | **52.1** | **66.9** | **80.8** | |
| Predicted Noise SPL | - | dB | <75 | <75 | <75 | 83.01 | |
| Valve Outlet Velocity | v2 | m/s | 1.169 | 3.84 | 14.61 | 48 | |
| Valve Outlet Mach Number | M2 | - | 0.003506 | 0.01151 | 0.01171 | 0.03846 | |
| Downstream Pipe Fluid Velocity | vP2 | m/s | 0.5114 | 1.68 | 6.392 | 20.99 | |
| Flow Regime | - | - | Normal | Normal | Normal | Normal | |
| Upstream Fluid State | - | - | Gaseous | Gaseous | Gaseous | Gaseous | |
| Downstream Fluid State | - | - | Gaseous | Gaseous | Gaseous | Gaseous | |

## NOTES

| | | | | |
|---|---|---|---|---|
| Rev Index. | 0 | | | RC / RC / RC |
| | **Rev.** | **Date** | **Reason For Issue** | **EM / CK / APP** |

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# CALCULATION FORM FOR CONTROL VALVES

| | | | |
|---|---|---|---|
| Customer | ROSETTI MARINO SPA | QUOTE | CV2400221 |
| Order | 1724000740 123A90A | Sheet | 8 |
| Plant | Hollandse Kust Noord Wind Park Pr. | Created By | RC |

## PIPELINE DATA

| | INLET | OUTLET |
|---|---|---|
| Nominal diameter | 3" | 3" |
| Schedule | 10S | 10S |
| External Diameter, mm | 88.90 | 88.90 |
| Internal Diameter, mm | 82.8 | 82.8 |
| Thickness, mm | 3.1 | 3.1 |

## VALVE DATA

| Valve TAG | 25-PV-037 |
|---|---|
| Serial AST | **2400590** |
| AST Ref. | 80 |
| Upstream Fluid State | GAS |

## VALVE DATA: BODY

| | |
|---|---|
| Valve Family | CV-8400 |
| Valve Model | CV-8407 |
| Valve Description | Globe - Straigth way - Contoured Plug |
| Unit | NPS |
| Body Size | 2" |
| Fluid | NITROGEN/HYDROGEN |

## VALVE DATA: TRIM

| | |
|---|---|
| Trim Configuration | CP-E |
| Stroke, mm | 25 |
| Port Size, Inch | 1" |
| Flow Characteristic | Equal% |
| Flow Action | FTO |
| Selected Flow Coefficient | 13 |

## PROCESS DATA

| | | Units | #1 | #2 | #3 | #4 | NOTES |
|---|---|---|---|---|---|---|---|
| Fluid | - | - | GAS | GAS | GAS | GAS | |
| Flow Rate | Q/W | Nm³/h | 40.00 | 40.00 | 500.00 | 500.00 | |
| Inlet Temperature | T1 | °C | 15.00 | 15.00 | 15.00 | 15.00 | |
| Inlet Pressure | P1 | bar (g) | 4.000 | 1.000 | 4.000 | 1.000 | |
| Outlet Pressure | P2 | | 3.300 | 0.300 | 3.300 | 0.300 | |
| Differential Pressure | ΔP | - | 0.700 | 0.700 | 0.700 | 0.700 | |
| Fluid density at P1 and T1 | ρ1 | kg/m³ | 5.859 | 2.353 | 0.418 | 0.168 | |
| Dynamic Viscosity | μ | cP | | | | | |
| Molecular Weight | MW | kg/kmol | 28.000 | 28.000 | 2.000 | 2.000 | |
| Specific Heat Ratio (cp/cv) | γ | - | 1.300 | 1.300 | 1.300 | 1.300 | |
| Compressibility Factor | Z | - | 1.000 | 1.000 | 1.000 | 1.000 | |
| Critical Pressure | Pcrit | bar (A) | | | | | |
| Vapor pressure | Pvap | bar (A) | | | | | |
| **Calculated Flow Coefficient** | **C** | **-** | **0.9689** | **1.719** | **3.241** | **5.772** | |
| **Selected Flow Coefficient** | **Cv** | - | 13 | 13 | 13 | 13 | |
| Calculated / Selected | C/Cv | % | 7.453 | 13.22 | 24.93 | 44.4 | |
| Pressure Recovery Factor | $F_L$ | - | 0.9339 | 0.9318 | 0.9275 | 0.9204 | |
| Valve Style Modifier | $F_d$ | - | 0.08551 | 0.1113 | 0.1638 | 0.251 | |
| Pressure Differential Ratio Factor | $X_T$ | - | 0.7327 | 0.7294 | 0.7228 | 0.7118 | |
| **Stroke %** | | **%** | **38.8** | **52.1** | **66.9** | **80.8** | |
| Predicted Noise SPL | - | dB | <75 | <75 | <75 | 83.01 | |
| Valve Outlet Velocity | v2 | m/s | 1.169 | 3.84 | 14.61 | 48 | |
| Valve Outlet Mach Number | M2 | - | 0.003506 | 0.01151 | 0.01171 | 0.03846 | |
| Downstream Pipe Fluid Velocity | vP2 | m/s | 0.5114 | 1.68 | 6.392 | 20.99 | |
| Flow Regime | - | - | Normal | Normal | Normal | Normal | |
| Upstream Fluid State | - | - | Gaseous | Gaseous | Gaseous | Gaseous | |
| Downstream Fluid State | - | - | Gaseous | Gaseous | Gaseous | Gaseous | |

## NOTES

| | | | | |
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# CALCULATION FORM FOR CONTROL VALVES

| | | | |
|---|---|---|---|
| Customer | ROSETTI MARINO SPA | QUOTE | CV2400221 |
| Order | 1724000740 123A90A | Sheet | 9 |
| Plant | Hollandse Kust Noord Wind Park Pr. | Created By | RC |

## PIPELINE DATA

| | INLET | OUTLET |
|---|---|---|
| Nominal diameter | 3" | 3" |
| Schedule | 10S | 10S |
| External Diameter, mm | 88.90 | 88.90 |
| Internal Diameter, mm | 82.8 | 82.8 |
| Thickness, mm | 3.1 | 3.1 |

## VALVE DATA

| Valve TAG | 25-PV-040 |
|---|---|
| Serial AST | **2400591** |
| AST Ref. | 90 |
| Upstream Fluid State | GAS |

## VALVE DATA: BODY

| | |
|---|---|
| Valve Family | CV-8400 |
| Valve Model | CV-8407 |
| Valve Description | Globe - Straigth way - Contoured Plug |
| Unit | NPS |
| Body Size | 2" |
| Fluid | NITROGEN/HYDROGEN |

## VALVE DATA: TRIM

| | |
|---|---|
| Trim Configuration | CP-E |
| Stroke, mm | 25 |
| Port Size, Inch | 1" |
| Flow Characteristic | Equal% |
| Flow Action | FTO |
| Selected Flow Coefficient | 13 |

## PROCESS DATA

| | | Units | #1 | #2 | #3 | #4 | NOTES |
|---|---|---|---|---|---|---|---|
| Fluid | - | - | GAS | GAS | GAS | GAS | |
| Flow Rate | Q/W | Nm³/h | 40.00 | 40.00 | 500.00 | 500.00 | |
| Inlet Temperature | T1 | °C | 15.00 | 15.00 | 15.00 | 15.00 | |
| Inlet Pressure | P1 | bar (g) | 4.000 | 1.000 | 4.000 | 1.000 | |
| Outlet Pressure | P2 | | 3.300 | 0.300 | 3.300 | 0.300 | |
| Differential Pressure | ΔP | - | 0.700 | 0.700 | 0.700 | 0.700 | |
| Fluid density at P1 and T1 | ρ1 | kg/m³ | 5.859 | 2.353 | 0.418 | 0.168 | |
| Dynamic Viscosity | μ | cP | | | | | |
| Molecular Weight | MW | kg/kmol | 28.000 | 28.000 | 2.000 | 2.000 | |
| Specific Heat Ratio (cp/cv) | γ | - | 1.300 | 1.300 | 1.300 | 1.300 | |
| Compressibility Factor | Z | - | 1.000 | 1.000 | 1.000 | 1.000 | |
| Critical Pressure | Pcrit | bar (A) | | | | | |
| Vapor pressure | Pvap | bar (A) | | | | | |
| **Calculated Flow Coefficient** | **C** | **-** | **0.9689** | **1.719** | **3.241** | **5.772** | |
| **Selected Flow Coefficient** | **Cv** | - | 13 | 13 | 13 | 13 | |
| Calculated / Selected | C/Cv | % | 7.453 | 13.22 | 24.93 | 44.4 | |
| Pressure Recovery Factor | $F_L$ | - | 0.9339 | 0.9318 | 0.9275 | 0.9204 | |
| Valve Style Modifier | $F_d$ | - | 0.08551 | 0.1113 | 0.1638 | 0.251 | |
| Pressure Differential Ratio Factor | $X_T$ | - | 0.7327 | 0.7294 | 0.7228 | 0.7118 | |
| **Stroke %** | | **%** | **38.8** | **52.1** | **66.9** | **80.8** | |
| Predicted Noise SPL | - | dB | <75 | <75 | <75 | 83.01 | |
| Valve Outlet Velocity | v2 | m/s | 1.169 | 3.84 | 14.61 | 48 | |
| Valve Outlet Mach Number | M2 | - | 0.003506 | 0.01151 | 0.01171 | 0.03846 | |
| Downstream Pipe Fluid Velocity | vP2 | m/s | 0.5114 | 1.68 | 6.392 | 20.99 | |
| Flow Regime | - | - | Normal | Normal | Normal | Normal | |
| Upstream Fluid State | - | - | Gaseous | Gaseous | Gaseous | Gaseous | |
| Downstream Fluid State | - | - | Gaseous | Gaseous | Gaseous | Gaseous | |

## NOTES

| | | | | |
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# CALCULATION FORM FOR CONTROL VALVES

| | | | |
|---|---|---|---|
| Customer | ROSETTI MARINO SPA | QUOTE | CV2400221 |
| Order | 1724000740 123A90A | Sheet | 10 |
| Plant | Hollandse Kust Noord Wind Park Pr. | Created By | RC |

## PIPELINE DATA

| | INLET | OUTLET |
|---|---|---|
| Nominal diameter | 3" | 3" |
| Schedule | 10S | 10S |
| External Diameter, mm | 88.90 | 88.90 |
| Internal Diameter, mm | 82.8 | 82.8 |
| Thickness, mm | 3.1 | 3.1 |

## VALVE DATA

| Valve TAG | 25-PV-043 |
|---|---|
| Serial AST | **2400592** |
| AST Ref. | 100 |
| Upstream Fluid State | GAS |

## VALVE DATA: BODY

| | |
|---|---|
| Valve Family | CV-8400 |
| Valve Model | CV-8407 |
| Valve Description | Globe - Straigth way - Contoured Plug |
| Unit | NPS |
| Body Size | 2" |
| Fluid | NITROGEN/HYDROGEN |

## VALVE DATA: TRIM

| | |
|---|---|
| Trim Configuration | CP-E |
| Stroke, mm | 25 |
| Port Size, Inch | 1" |
| Flow Characteristic | Equal% |
| Flow Action | FTO |
| Selected Flow Coefficient | 13 |

## PROCESS DATA

| | | Units | #1 | #2 | #3 | #4 | NOTES |
|---|---|---|---|---|---|---|---|
| Fluid | - | - | GAS | GAS | GAS | GAS | |
| Flow Rate | Q/W | Nm³/h | 40.00 | 40.00 | 500.00 | 500.00 | |
| Inlet Temperature | T1 | °C | 15.00 | 15.00 | 15.00 | 15.00 | |
| Inlet Pressure | P1 | bar (g) | 4.000 | 1.000 | 4.000 | 1.000 | |
| Outlet Pressure | P2 | | 3.300 | 0.300 | 3.300 | 0.300 | |
| Differential Pressure | ΔP | - | 0.700 | 0.700 | 0.700 | 0.700 | |
| Fluid density at P1 and T1 | ρ1 | kg/m³ | 5.859 | 2.353 | 0.418 | 0.168 | |
| Dynamic Viscosity | μ | cP | | | | | |
| Molecular Weight | MW | kg/kmol | 28.000 | 28.000 | 2.000 | 2.000 | |
| Specific Heat Ratio (cp/cv) | γ | - | 1.300 | 1.300 | 1.300 | 1.300 | |
| Compressibility Factor | Z | - | 1.000 | 1.000 | 1.000 | 1.000 | |
| Critical Pressure | Pcrit | bar (A) | | | | | |
| Vapor pressure | Pvap | bar (A) | | | | | |
| **Calculated Flow Coefficient** | **C** | **-** | **0.9689** | **1.719** | **3.241** | **5.772** | |
| **Selected Flow Coefficient** | **Cv** | - | 13 | 13 | 13 | 13 | |
| Calculated / Selected | C/Cv | % | 7.453 | 13.22 | 24.93 | 44.4 | |
| Pressure Recovery Factor | $F_L$ | - | 0.9339 | 0.9318 | 0.9275 | 0.9204 | |
| Valve Style Modifier | $F_d$ | - | 0.08551 | 0.1113 | 0.1638 | 0.251 | |
| Pressure Differential Ratio Factor | $X_T$ | - | 0.7327 | 0.7294 | 0.7228 | 0.7118 | |
| **Stroke %** | | **%** | **38.8** | **52.1** | **66.9** | **80.8** | |
| Predicted Noise SPL | - | dB | <75 | <75 | <75 | 83.01 | |
| Valve Outlet Velocity | v2 | m/s | 1.169 | 3.84 | 14.61 | 48 | |
| Valve Outlet Mach Number | M2 | - | 0.003506 | 0.01151 | 0.01171 | 0.03846 | |
| Downstream Pipe Fluid Velocity | vP2 | m/s | 0.5114 | 1.68 | 6.392 | 20.99 | |
| Flow Regime | - | - | Normal | Normal | Normal | Normal | |
| Upstream Fluid State | - | - | Gaseous | Gaseous | Gaseous | Gaseous | |
| Downstream Fluid State | - | - | Gaseous | Gaseous | Gaseous | Gaseous | |

## NOTES

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# CALCULATION FORM FOR CONTROL VALVES

| | | | |
|---|---|---|---|
| Customer | ROSETTI MARINO SPA | QUOTE | CV2400221 |
| Order | 1724000740 123A90A | Sheet | 11 |
| Plant | Hollandse Kust Noord Wind Park Pr. | Created By | RC |

## PIPELINE DATA

| | INLET | OUTLET |
|---|---|---|
| Nominal diameter | 3" | 3" |
| Schedule | 10S | 10S |
| External Diameter, mm | 88.90 | 88.90 |
| Internal Diameter, mm | 82.8 | 82.8 |
| Thickness, mm | 3.1 | 3.1 |

## VALVE DATA

| Valve TAG | 25-PV-046 |
|---|---|
| Serial AST | **2400593** |
| AST Ref. | 110 |
| Upstream Fluid State | GAS |

## VALVE DATA: BODY

| | |
|---|---|
| Valve Family | CV-8400 |
| Valve Model | CV-8407 |
| Valve Description | Globe - Straigth way - Contoured Plug |
| Unit | NPS |
| Body Size | 2" |
| Fluid | NITROGEN/HYDROGEN |

## VALVE DATA: TRIM

| | |
|---|---|
| Trim Configuration | CP-E |
| Stroke, mm | 25 |
| Port Size, Inch | 1" |
| Flow Characteristic | Equal% |
| Flow Action | FTO |
| Selected Flow Coefficient | 13 |

## PROCESS DATA

| | | Units | #1 | #2 | #3 | #4 | NOTES |
|---|---|---|---|---|---|---|---|
| Fluid | - | - | GAS | GAS | GAS | GAS | |
| Flow Rate | Q/W | Nm³/h | 40.00 | 40.00 | 500.00 | 500.00 | |
| Inlet Temperature | T1 | °C | 15.00 | 15.00 | 15.00 | 15.00 | |
| Inlet Pressure | P1 | bar (g) | 4.000 | 1.000 | 4.000 | 1.000 | |
| Outlet Pressure | P2 | | 3.300 | 0.300 | 3.300 | 0.300 | |
| Differential Pressure | ΔP | - | 0.700 | 0.700 | 0.700 | 0.700 | |
| Fluid density at P1 and T1 | ρ1 | kg/m³ | 5.859 | 2.353 | 0.418 | 0.168 | |
| Dynamic Viscosity | μ | cP | | | | | |
| Molecular Weight | MW | kg/kmol | 28.000 | 28.000 | 2.000 | 2.000 | |
| Specific Heat Ratio (cp/cv) | γ | - | 1.300 | 1.300 | 1.300 | 1.300 | |
| Compressibility Factor | Z | - | 1.000 | 1.000 | 1.000 | 1.000 | |
| Critical Pressure | Pcrit | bar (A) | | | | | |
| Vapor pressure | Pvap | bar (A) | | | | | |
| **Calculated Flow Coefficient** | **C** | **-** | **0.9689** | **1.719** | **3.241** | **5.772** | |
| **Selected Flow Coefficient** | **Cv** | - | 13 | 13 | 13 | 13 | |
| Calculated / Selected | C/Cv | % | 7.453 | 13.22 | 24.93 | 44.4 | |
| Pressure Recovery Factor | $F_L$ | - | 0.9339 | 0.9318 | 0.9275 | 0.9204 | |
| Valve Style Modifier | $F_d$ | - | 0.08551 | 0.1113 | 0.1638 | 0.251 | |
| Pressure Differential Ratio Factor | $X_T$ | - | 0.7327 | 0.7294 | 0.7228 | 0.7118 | |
| **Stroke %** | | **%** | **38.8** | **52.1** | **66.9** | **80.8** | |
| Predicted Noise SPL | - | dB | <75 | <75 | <75 | 83.01 | |
| Valve Outlet Velocity | v2 | m/s | 1.169 | 3.84 | 14.61 | 48 | |
| Valve Outlet Mach Number | M2 | - | 0.003506 | 0.01151 | 0.01171 | 0.03846 | |
| Downstream Pipe Fluid Velocity | vP2 | m/s | 0.5114 | 1.68 | 6.392 | 20.99 | |
| Flow Regime | - | - | Normal | Normal | Normal | Normal | |
| Upstream Fluid State | - | - | Gaseous | Gaseous | Gaseous | Gaseous | |
| Downstream Fluid State | - | - | Gaseous | Gaseous | Gaseous | Gaseous | |

## NOTES

| | | | | |
|---|---|---|---|---|
| Rev Index. | 0 | | | RC / RC / RC |
| | **Rev.** | **Date** | **Reason For Issue** | **EM / CK / APP** |

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# CALCULATION FORM FOR CONTROL VALVES

| | | | |
|---|---|---|---|
| Customer | ROSETTI MARINO SPA | QUOTE | CV2400221 |
| Order | 1724000740 123A90A | Sheet | 12 |
| Plant | Hollandse Kust Noord Wind Park Pr. | Created By | RC |

## PIPELINE DATA

| | INLET | OUTLET |
|---|---|---|
| Nominal diameter | 3" | 3" |
| Schedule | 10S | 10S |
| External Diameter, mm | 88.90 | 88.90 |
| Internal Diameter, mm | 82.8 | 82.8 |
| Thickness, mm | 3.1 | 3.1 |

## VALVE DATA

| Valve TAG | 25-PV-049 |
|---|---|
| Serial AST | **2400594** |
| AST Ref. | 120 |
| Upstream Fluid State | GAS |

## VALVE DATA: BODY

| | |
|---|---|
| Valve Family | CV-8400 |
| Valve Model | CV-8407 |
| Valve Description | Globe - Straigth way - Contoured Plug |
| Unit | NPS |
| Body Size | 2" |
| Fluid | NITROGEN/HYDROGEN |

## VALVE DATA: TRIM

| | |
|---|---|
| Trim Configuration | CP-E |
| Stroke, mm | 25 |
| Port Size, Inch | 1" |
| Flow Characteristic | Equal% |
| Flow Action | FTO |
| Selected Flow Coefficient | 13 |

## PROCESS DATA

| | | Units | #1 | #2 | #3 | #4 | NOTES |
|---|---|---|---|---|---|---|---|
| Fluid | - | - | GAS | GAS | GAS | GAS | |
| Flow Rate | Q/W | Nm³/h | 40.00 | 40.00 | 500.00 | 500.00 | |
| Inlet Temperature | T1 | °C | 15.00 | 15.00 | 15.00 | 15.00 | |
| Inlet Pressure | P1 | bar (g) | 4.000 | 1.000 | 4.000 | 1.000 | |
| Outlet Pressure | P2 | | 3.300 | 0.300 | 3.300 | 0.300 | |
| Differential Pressure | ΔP | - | 0.700 | 0.700 | 0.700 | 0.700 | |
| Fluid density at P1 and T1 | ρ1 | kg/m³ | 5.859 | 2.353 | 0.418 | 0.168 | |
| Dynamic Viscosity | μ | cP | | | | | |
| Molecular Weight | MW | kg/kmol | 28.000 | 28.000 | 2.000 | 2.000 | |
| Specific Heat Ratio (cp/cv) | γ | - | 1.300 | 1.300 | 1.300 | 1.300 | |
| Compressibility Factor | Z | - | 1.000 | 1.000 | 1.000 | 1.000 | |
| Critical Pressure | Pcrit | bar (A) | | | | | |
| Vapor pressure | Pvap | bar (A) | | | | | |
| **Calculated Flow Coefficient** | **C** | **-** | **0.9689** | **1.719** | **3.241** | **5.772** | |
| **Selected Flow Coefficient** | **Cv** | - | 13 | 13 | 13 | 13 | |
| Calculated / Selected | C/Cv | % | 7.453 | 13.22 | 24.93 | 44.4 | |
| Pressure Recovery Factor | $F_L$ | - | 0.9339 | 0.9318 | 0.9275 | 0.9204 | |
| Valve Style Modifier | $F_d$ | - | 0.08551 | 0.1113 | 0.1638 | 0.251 | |
| Pressure Differential Ratio Factor | $X_T$ | - | 0.7327 | 0.7294 | 0.7228 | 0.7118 | |
| **Stroke %** | | **%** | **38.8** | **52.1** | **66.9** | **80.8** | |
| Predicted Noise SPL | - | dB | <75 | <75 | <75 | 83.01 | |
| Valve Outlet Velocity | v2 | m/s | 1.169 | 3.84 | 14.61 | 48 | |
| Valve Outlet Mach Number | M2 | - | 0.003506 | 0.01151 | 0.01171 | 0.03846 | |
| Downstream Pipe Fluid Velocity | vP2 | m/s | 0.5114 | 1.68 | 6.392 | 20.99 | |
| Flow Regime | - | - | Normal | Normal | Normal | Normal | |
| Upstream Fluid State | - | - | Gaseous | Gaseous | Gaseous | Gaseous | |
| Downstream Fluid State | - | - | Gaseous | Gaseous | Gaseous | Gaseous | |

## NOTES

| | Rev. | Date | Reason For Issue | EM / CK / APP |
|---|---|---|---|---|
| Rev Index. | 0 | | | RC / RC / RC |

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# CALCULATION FORM FOR CONTROL VALVES

| | | | |
|---|---|---|---|
| *Customer* | ROSETTI MARINO SPA | *QUOTE* | CV2400221 |
| *Order* | 1724000740 123A90A | *Sheet* | 13 |
| *Plant* | Hollandse Kust Noord Wind Park Pr. | *Created By* | RC |

## PIPELINE DATA

| | *INLET* | *OUTLET* |
|---|---|---|
| *Nominal diameter* | 1 1/2" | 1 1/2" |
| *Schedule* | 40 | 40 |
| *External Diameter, mm* | 48.30 | 48.30 |
| *Internal Diameter, mm* | 40.9 | 40.9 |
| *Thickness, mm* | 3.7 | 3.7 |

## VALVE DATA

| | |
|---|---|
| ***Valve TAG*** | ***25-PV-055A*** |
| *Serial AST* | **2400595** |
| *AST Ref.* | 130 |
| *Upstream Fluid State* | GAS |

## VALVE DATA: BODY

| | |
|---|---|
| *Valve Family* | CV-8400 |
| *Valve Model* | CV-8407 |
| *Valve Description* | Globe - Straigth way - Contoured Plug |
| *Unit* | NPS |
| *Body Size* | 1 1/2" |
| *Fluid* | HYDROGEN |

## VALVE DATA: TRIM

| | |
|---|---|
| *Trim Configuration* | CP-E |
| *Stroke, mm* | 20 |
| *Port Size, Inch* | 1" |
| *Flow Characteristic* | Equal% |
| *Flow Action* | FTO |
| *Selected Flow Coefficient* | 13 |

## PROCESS DATA

| | | *Units* | *#1* | *#2* | *#3* | *#4* | *NOTES* |
|---|---|---|---|---|---|---|---|
| *Fluid* | - | - | GAS | GAS | | | |
| *Flow Rate* | Q/W | kg/h | 106.00 | 106.00 | | | |
| *Inlet Temperature* | T1 | °C | 15.00 | 15.00 | | | |
| *Inlet Pressure* | P1 | bar (g) | 30.000 | 4.500 | | | |
| *Outlet Pressure* | P2 | | 3.500 | 3.500 | | | |
| *Differential Pressure* | ΔP | - | 26.500 | 1.000 | | | |
| *Fluid density at P1 and T1* | ρ1 | kg/m³ | 2.563 | 0.456 | | | |
| *Dynamic Viscosity* | μ | cP | | | | | |
| *Molecular Weight* | MW | kg/kmol | 2.000 | 2.000 | | | |
| *Specific Heat Ratio (cp/cv)* | γ | - | 1.420 | 1.420 | | | |
| *Compressibility Factor* | Z | - | 1.010 | 1.010 | | | |
| *Critical Pressure* | Pcrit | bar (A) | | | | | |
| *Vapor pressure* | Pvap | bar (A) | | | | | |
| ***Calculated Flow Coefficient*** | **C** | **-** | **0.7563** | **6.271** | | | |
| ***Selected Flow Coefficient*** | **Cv** | - | 13 | 13 | | | |
| *Calculated / Selected* | C/Cv | % | 5.817 | 48.24 | | | |
| *Pressure Recovery Factor* | $F_L$ | - | 0.9345 | 0.919 | | | |
| *Valve Style Modifier* | $F_d$ | - | 0.07612 | 0.2445 | | | |
| *Pressure Differential Ratio Factor* | $X_T$ | - | 0.7336 | 0.7097 | | | |
| ***Stroke %*** | | **%** | **32.7** | **82.4** | | | |
| *Predicted Noise SPL* | - | dB | 84.95 | 76.25 | | | |
| *Valve Outlet Velocity* | v2 | m/s | 59.96 | 59.96 | | | |
| *Valve Outlet Mach Number* | M2 | - | 0.04597 | 0.04597 | | | |
| *Downstream Pipe Fluid Velocity* | vP2 | m/s | 59.96 | 59.96 | | | |
| *Flow Regime* | - | - | Choked | Normal | | | |
| *Upstream Fluid State* | - | - | Gaseous | Gaseous | | | |
| *Downstream Fluid State* | - | - | Gaseous | Gaseous | | | |

## NOTES

| | | | | |
|---|---|---|---|---|
| Rev Index. | 0 | | | RC / RC / RC |
| | **Rev.** | **Date** | **Reason For Issue** | **EM / CK / APP** |

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# CALCULATION FORM FOR CONTROL VALVES

| | | | |
|---|---|---|---|
| *Customer* | ROSETTI MARINO SPA | *QUOTE* | CV2400221 |
| *Order* | 1724000740 123A90A | *Sheet* | 14 |
| *Plant* | Hollandse Kust Noord Wind Park Pr. | *Created By* | RC |

## PIPELINE DATA

| | *INLET* | *OUTLET* |
|---|---|---|
| *Nominal diameter* | 1 1/2" | 1 1/2" |
| *Schedule* | 40 | 40 |
| *External Diameter, mm* | 48.30 | 48.30 |
| *Internal Diameter, mm* | 40.9 | 40.9 |
| *Thickness, mm* | 3.7 | 3.7 |

## VALVE DATA

| *Valve TAG* | *25-PV-055B* |
|---|---|
| *Serial AST* | **2400596** |
| *AST Ref.* | 140 |
| *Upstream Fluid State* | GAS |

## VALVE DATA: BODY

| | |
|---|---|
| *Valve Family* | CV-8400 |
| *Valve Model* | CV-8407 |
| *Valve Description* | Globe - Straigth way - Contoured Plug |
| *Unit* | NPS |
| *Body Size* | 1 1/2" |
| *Fluid* | HYDROGEN |

## VALVE DATA: TRIM

| | |
|---|---|
| *Trim Configuration* | CP-E |
| *Stroke, mm* | 13 |
| *Port Size, Inch* | 5/32" |
| *Flow Characteristic* | Equal% |
| *Flow Action* | FTO |
| *Selected Flow Coefficient* | 0.45 |

## PROCESS DATA

| | | *Units* | *#1* | *#2* | *#3* | *#4* | *NOTES* |
|---|---|---|---|---|---|---|---|
| *Fluid* | - | - | GAS | GAS | | | |
| *Flow Rate* | Q/W | kg/h | 3.24 | 3.24 | | | |
| *Inlet Temperature* | T1 | °C | -8.40 | 25.00 | | | |
| *Inlet Pressure* | P1 | bar (g) | 30.000 | 5.000 | | | |
| *Outlet Pressure* | P2 | | 4.000 | 4.000 | | | |
| *Differential Pressure* | ΔP | - | 26.000 | 1.000 | | | |
| *Fluid density at P1 and T1* | ρ1 | kg/m³ | 2.790 | 0.480 | | | |
| *Dynamic Viscosity* | μ | cP | | | | | |
| *Molecular Weight* | MW | kg/kmol | 2.000 | 2.000 | | | |
| *Specific Heat Ratio (cp/cv)* | γ | - | 1.420 | 1.420 | | | |
| *Compressibility Factor* | Z | - | 1.010 | 1.010 | | | |
| *Critical Pressure* | Pcrit | bar (A) | | | | | |
| *Vapor pressure* | Pvap | bar (A) | | | | | |
| ***Calculated Flow Coefficient*** | **C** | **-** | **0.02151** | **0.1841** | | | |
| ***Selected Flow Coefficient*** | **Cv** | - | 0.45 | 0.45 | | | |
| *Calculated / Selected* | C/Cv | % | 4.781 | 40.92 | | | |
| *Pressure Recovery Factor* | $F_L$ | - | 0.9626 | 0.956 | | | |
| *Valve Style Modifier* | $F_d$ | - | 0.08647 | 0.2092 | | | |
| *Pressure Differential Ratio Factor* | $X_T$ | - | 0.7784 | 0.7677 | | | |
| ***Stroke %*** | | **%** | **18.4** | **75.6** | | | |
| *Predicted Noise SPL* | - | dB | <75 | <75 | | | |
| *Valve Outlet Velocity* | v2 | m/s | 1.516 | 1.707 | | | |
| *Valve Outlet Mach Number* | M2 | - | 0.001213 | 0.001287 | | | |
| *Downstream Pipe Fluid Velocity* | vP2 | m/s | 1.516 | 1.707 | | | |
| *Flow Regime* | - | - | Choked | Normal | | | |
| *Upstream Fluid State* | - | - | Gaseous | Gaseous | | | |
| *Downstream Fluid State* | - | - | Gaseous | Gaseous | | | |

## NOTES

| | | | | |
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| | **Rev.** | **Date** | **Reason For Issue** | **EM / CK / APP** |

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# CALCULATION FORM FOR CONTROL VALVES

| | | | |
|---|---|---|---|
| Customer | ROSETTI MARINO SPA | QUOTE | CV2400221 |
| Order | 1724000740 123A90A | Sheet | 15 |
| Plant | Hollandse Kust Noord Wind Park Pr. | Created By | RC |

## PIPELINE DATA

| | INLET | OUTLET |
|---|---|---|
| Nominal diameter | 1" | 1" |
| Schedule | 80 | 80 |
| External Diameter, mm | 33.40 | 33.40 |
| Internal Diameter, mm | 24.3 | 24.3 |
| Thickness, mm | 4.6 | 4.6 |

## VALVE DATA

| Valve TAG | 64-PV-031A |
|---|---|
| Serial AST | **2400597** |
| AST Ref. | 150 |
| Upstream Fluid State | GAS |

## VALVE DATA: BODY

| | |
|---|---|
| Valve Family | CV-8400 |
| Valve Model | CV-8407 |
| Valve Description | Globe - Straigth way - Contoured Plug |
| Unit | NPS |
| Body Size | 1" |
| Fluid | NITROGEN |

## VALVE DATA: TRIM

| | |
|---|---|
| Trim Configuration | CP-E |
| Stroke, mm | 13 |
| Port Size, Inch | 3/8" |
| Flow Characteristic | Equal% |
| Flow Action | FTO |
| Selected Flow Coefficient | 1.9 |

## PROCESS DATA

| | | Units | #1 | #2 | #3 | #4 | NOTES |
|---|---|---|---|---|---|---|---|
| Fluid | - | - | GAS | GAS | GAS | | |
| Flow Rate | Q/W | Nm³/h | 60.00 | 10.00 | 7.00 | | |
| Inlet Temperature | T1 | °C | 15.00 | 15.00 | 15.00 | | |
| Inlet Pressure | P1 | bar (g) | 8.000 | 8.000 | 8.000 | | |
| Outlet Pressure | P2 | | 7.500 | 7.000 | 7.000 | | |
| Differential Pressure | ΔP | - | 0.500 | 1.000 | 1.000 | | |
| Fluid density at P1 and T1 | ρ1 | kg/m³ | 10.640 | 10.640 | 10.640 | | |
| Dynamic Viscosity | μ | cP | | | | | |
| Molecular Weight | MW | kg/kmol | 28.000 | 28.000 | 28.000 | | |
| Specific Heat Ratio (cp/cv) | γ | - | 1.400 | 1.400 | 1.400 | | |
| Compressibility Factor | Z | - | 0.990 | 0.990 | 0.990 | | |
| Critical Pressure | Pcrit | bar (A) | | | | | |
| Vapor pressure | Pvap | bar (A) | | | | | |
| **Calculated Flow Coefficient** | **C** | **-** | **1.22** | **0.1474** | **0.1032** | | |
| **Selected Flow Coefficient** | **Cv** | - | 1.9 | 1.9 | 1.9 | | |
| Calculated / Selected | C/Cv | % | 64.23 | 7.757 | 5.429 | | |
| Pressure Recovery Factor | $F_L$ | - | 0.9232 | 0.944 | 0.9449 | | |
| Valve Style Modifier | $F_d$ | - | 0.289 | 0.09789 | 0.09001 | | |
| Pressure Differential Ratio Factor | $X_T$ | - | 0.7162 | 0.7487 | 0.75 | | |
| **Stroke %** | | **%** | **88.4** | **33.9** | **24.7** | | |
| Predicted Noise SPL | - | dB | <75 | <75 | <75 | | |
| Valve Outlet Velocity | v2 | m/s | 4.467 | 0.791 | 0.5537 | | |
| Valve Outlet Mach Number | M2 | - | 0.01291 | 0.002285 | 0.0016 | | |
| Downstream Pipe Fluid Velocity | vP2 | m/s | 4.467 | 0.791 | 0.5537 | | |
| Flow Regime | - | - | Normal | Normal | Normal | | |
| Upstream Fluid State | - | - | Gaseous | Gaseous | Gaseous | | |
| Downstream Fluid State | - | - | Gaseous | Gaseous | Gaseous | | |

## NOTES

| Rev Index. | 0 | | | RC / RC / RC |
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| | **Rev.** | **Date** | **Reason For Issue** | **EM / CK / APP** |

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# CALCULATION FORM FOR CONTROL VALVES

| | | | |
|---|---|---|---|
| Customer | ROSETTI MARINO SPA | QUOTE | CV2400221 |
| Order | 1724000740 123A90A | Sheet | 16 |
| Plant | Hollandse Kust Noord Wind Park Pr. | Created By | RC |

## PIPELINE DATA

| | INLET | OUTLET |
|---|---|---|
| Nominal diameter | 1" | 1" |
| Schedule | 80 | 80 |
| External Diameter, mm | 33.40 | 33.40 |
| Internal Diameter, mm | 24.3 | 24.3 |
| Thickness, mm | 4.6 | 4.6 |

## VALVE DATA

| Valve TAG | 64-PV-031B |
|---|---|
| Serial AST | **2400598** |
| AST Ref. | 160 |
| Upstream Fluid State | GAS |

## VALVE DATA: BODY

| | |
|---|---|
| Valve Family | CV-8400 |
| Valve Model | CV-8407 |
| Valve Description | Globe - Straigth way - Contoured Plug |
| Unit | NPS |
| Body Size | 1" |
| Fluid | NITROGEN |

## VALVE DATA: TRIM

| | |
|---|---|
| Trim Configuration | CP-E |
| Stroke, mm | 13 |
| Port Size, Inch | 3/8" |
| Flow Characteristic | Equal% |
| Flow Action | FTO |
| Selected Flow Coefficient | 1.9 |

## PROCESS DATA

| | | Units | #1 | #2 | #3 | #4 | NOTES |
|---|---|---|---|---|---|---|---|
| Fluid | - | - | GAS | GAS | GAS | | |
| Flow Rate | Q/W | Nm³/h | 60.00 | 10.00 | 7.00 | | |
| Inlet Temperature | T1 | °C | 15.00 | 15.00 | 15.00 | | |
| Inlet Pressure | P1 | bar (g) | 8.000 | 8.000 | 8.000 | | |
| Outlet Pressure | P2 | | 7.500 | 7.000 | 7.000 | | |
| Differential Pressure | ΔP | - | 0.500 | 1.000 | 1.000 | | |
| Fluid density at P1 and T1 | ρ1 | kg/m³ | 10.640 | 10.640 | 10.640 | | |
| Dynamic Viscosity | μ | cP | | | | | |
| Molecular Weight | MW | kg/kmol | 28.000 | 28.000 | 28.000 | | |
| Specific Heat Ratio (cp/cv) | γ | - | 1.400 | 1.400 | 1.400 | | |
| Compressibility Factor | Z | - | 0.990 | 0.990 | 0.990 | | |
| Critical Pressure | Pcrit | bar (A) | | | | | |
| Vapor pressure | Pvap | bar (A) | | | | | |
| **Calculated Flow Coefficient** | **C** | **-** | **1.22** | **0.1474** | **0.1032** | | |
| **Selected Flow Coefficient** | **Cv** | - | 1.9 | 1.9 | 1.9 | | |
| Calculated / Selected | C/Cv | % | 64.23 | 7.757 | 5.429 | | |
| Pressure Recovery Factor | $F_L$ | - | 0.9232 | 0.944 | 0.9449 | | |
| Valve Style Modifier | $F_d$ | - | 0.289 | 0.09789 | 0.09001 | | |
| Pressure Differential Ratio Factor | $X_T$ | - | 0.7162 | 0.7487 | 0.75 | | |
| **Stroke %** | | **%** | **88.4** | **33.9** | **24.7** | | |
| Predicted Noise SPL | - | dB | <75 | <75 | <75 | | |
| Valve Outlet Velocity | v2 | m/s | 4.467 | 0.791 | 0.5537 | | |
| Valve Outlet Mach Number | M2 | - | 0.01291 | 0.002285 | 0.0016 | | |
| Downstream Pipe Fluid Velocity | vP2 | m/s | 4.467 | 0.791 | 0.5537 | | |
| Flow Regime | - | - | Normal | Normal | Normal | | |
| Upstream Fluid State | - | - | Gaseous | Gaseous | Gaseous | | |
| Downstream Fluid State | - | - | Gaseous | Gaseous | Gaseous | | |

## NOTES

| Rev Index. | 0 | | | RC / RC / RC |
|---|---|---|---|---|
| | **Rev.** | **Date** | **Reason For Issue** | **EM / CK / APP** |

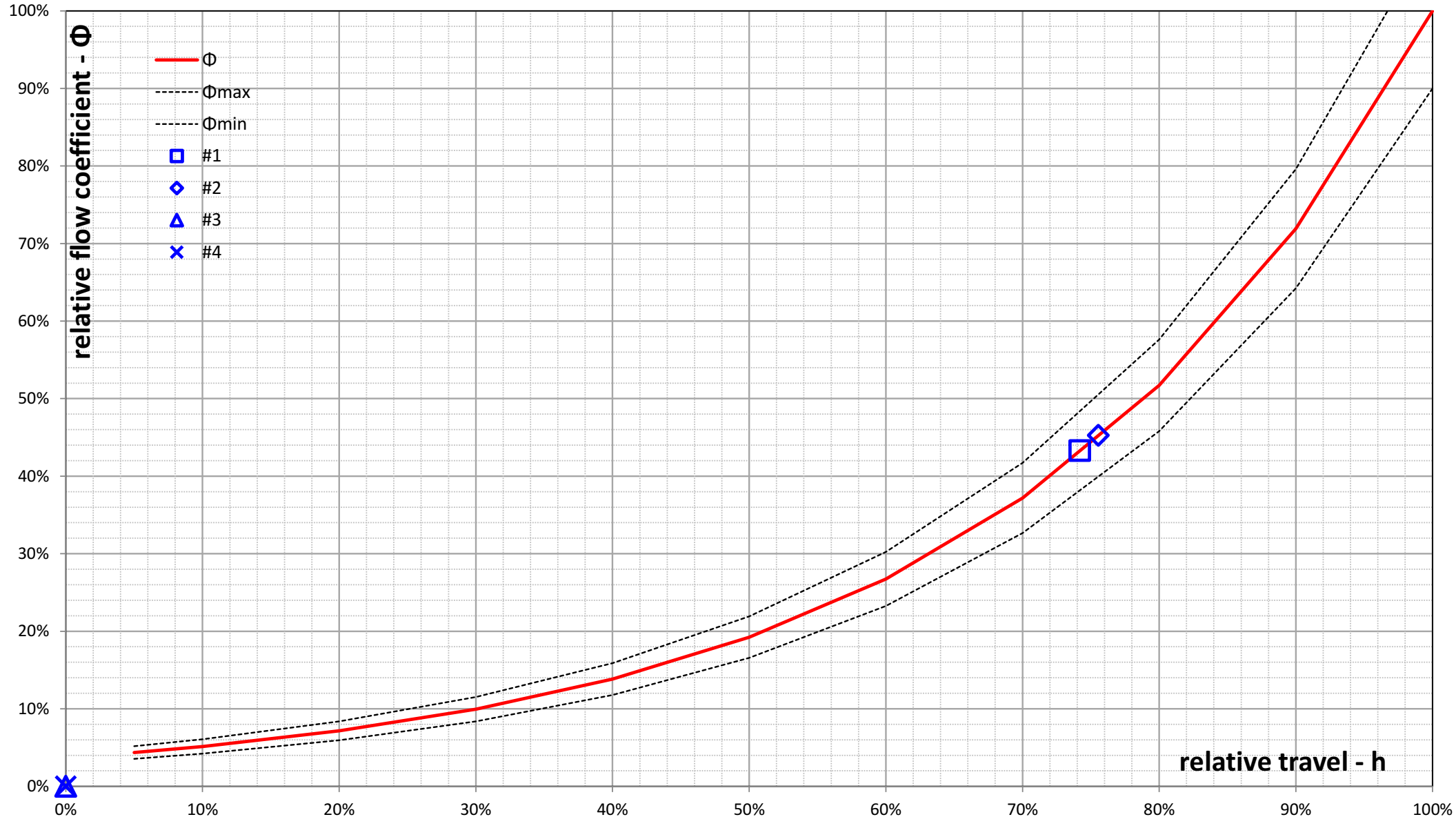
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Control Valve Division

# CONTROL VALVE FLOW CHARACTERISTIC

**Valve Model:** CV-8407

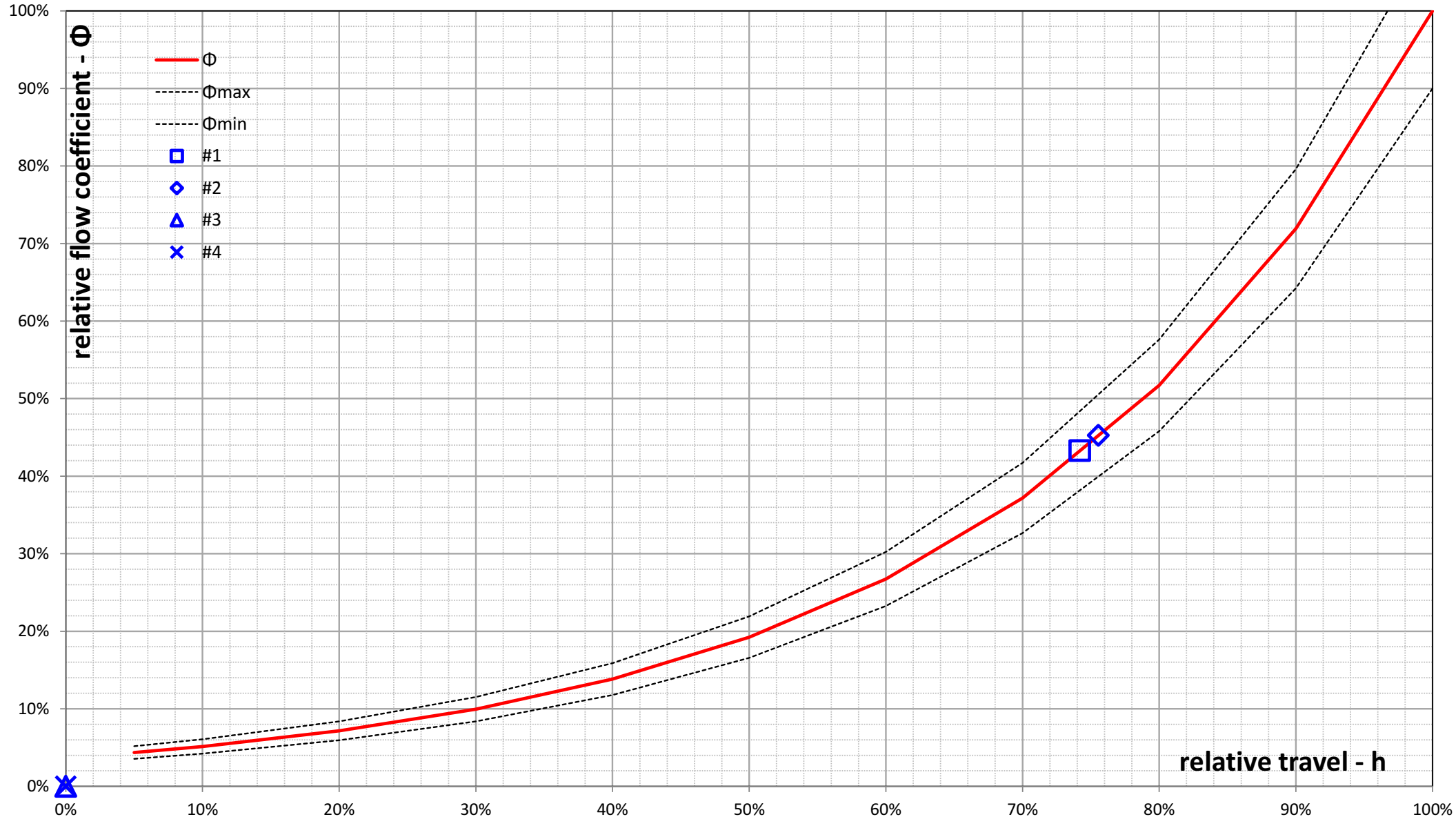
| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Customer :** | ROSETTI MARINO SPA | **Offer :** | CV2400221 | **Tag :** | 25-FV-031 | **DWG :** | | | | **Rev. 1** |
| **Plant :** | Hollandse Kust Noord Wind Park Pr. | **S/N :** | 2400583 | **DN :** | 1" | **Port:** | 1/4" | Prep. | Check. | Appr. |
| **Date :** | | **Service :** | | **Nominal Travel :** | 13 mm | **Rated Cv :** | 0.8500 | **Cv min :** | 0.0371 | |



Control Valve Division

# CONTROL VALVE FLOW CHARACTERISTIC

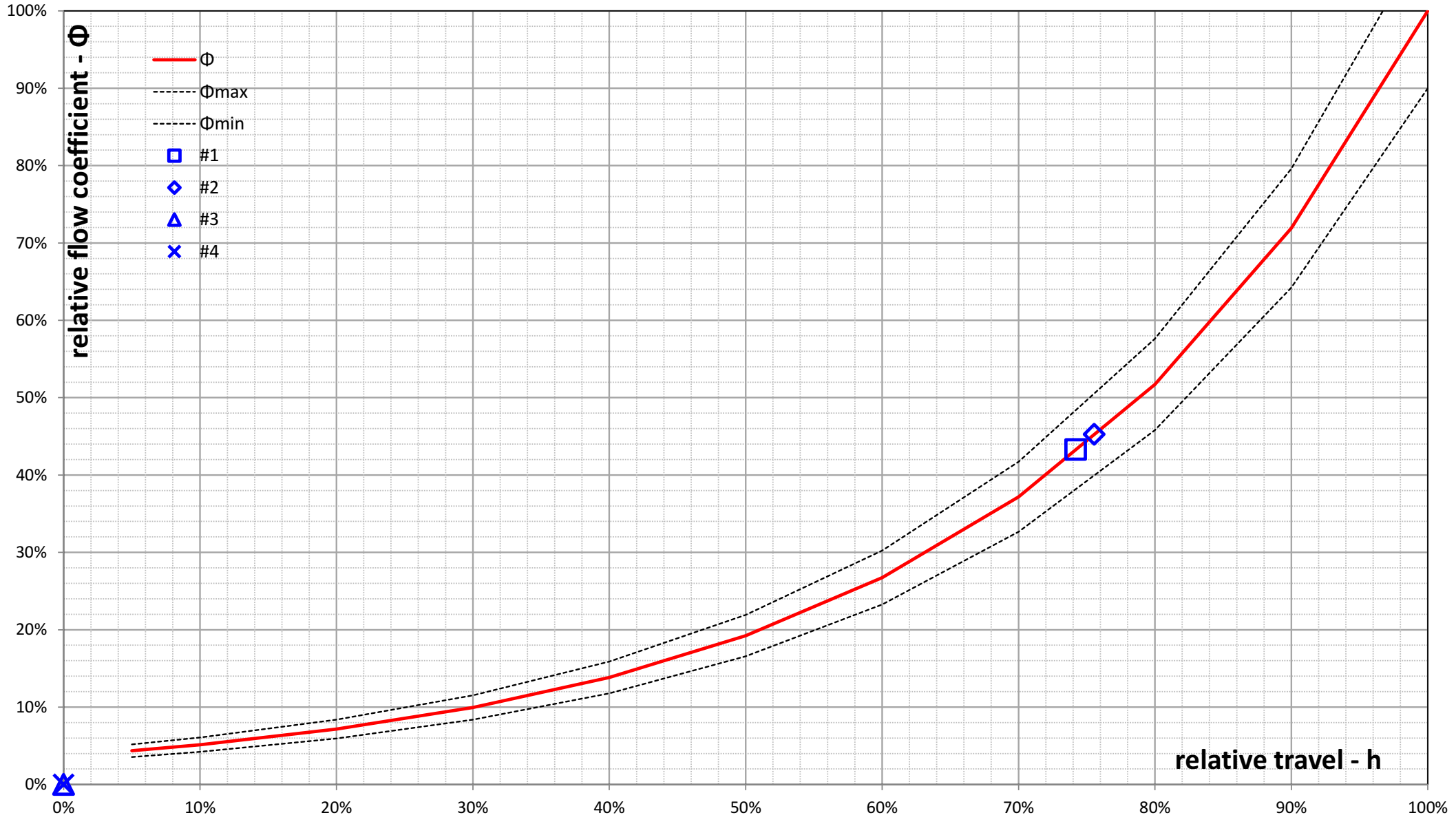
| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Valve Model:** | **CV-8407** | | | | | | | | | |
| **Customer :** | ROSETTI MARINO SPA | **Offer :** | CV2400221 | **Tag :** | 25-FV-032 | **DWG :** | | | **Rev. 1** | |
| **Plant :** | Hollandse Kust Noord Wind Park Pr. | **S/N :** | 2400584 | **DN :** | 1" | **Port:** | 1/4" | Prep. | Check. | Appr. |
| **Date :** | | **Service :** | | **Nominal Travel :** | 13 mm | **Rated Cv :** | 0.8500 | **Cv min :** | 0.0371 | |



Control Valve Division

# CONTROL VALVE FLOW CHARACTERISTIC

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Valve Model:** | **CV-8407** | | | | | | | | | |
| **Customer :** | ROSETTI MARINO SPA | **Offer :** | CV2400221 | **Tag :** | 25-FV-033 | **DWG :** | | | **Rev. 1** | |
| **Plant :** | Hollandse Kust Noord Wind Park Pr. | **S/N :** | 2400585 | **DN :** | 1" | **Port:** | 1/4" | Prep. | Check. | Appr. |
| **Service :** | | **Nominal Travel :** | 13 mm | **Rated Cv :** | 0.8500 | **Cv min :** | 0.0371 | | | |
| **Date :** | | | | | | | | | | |

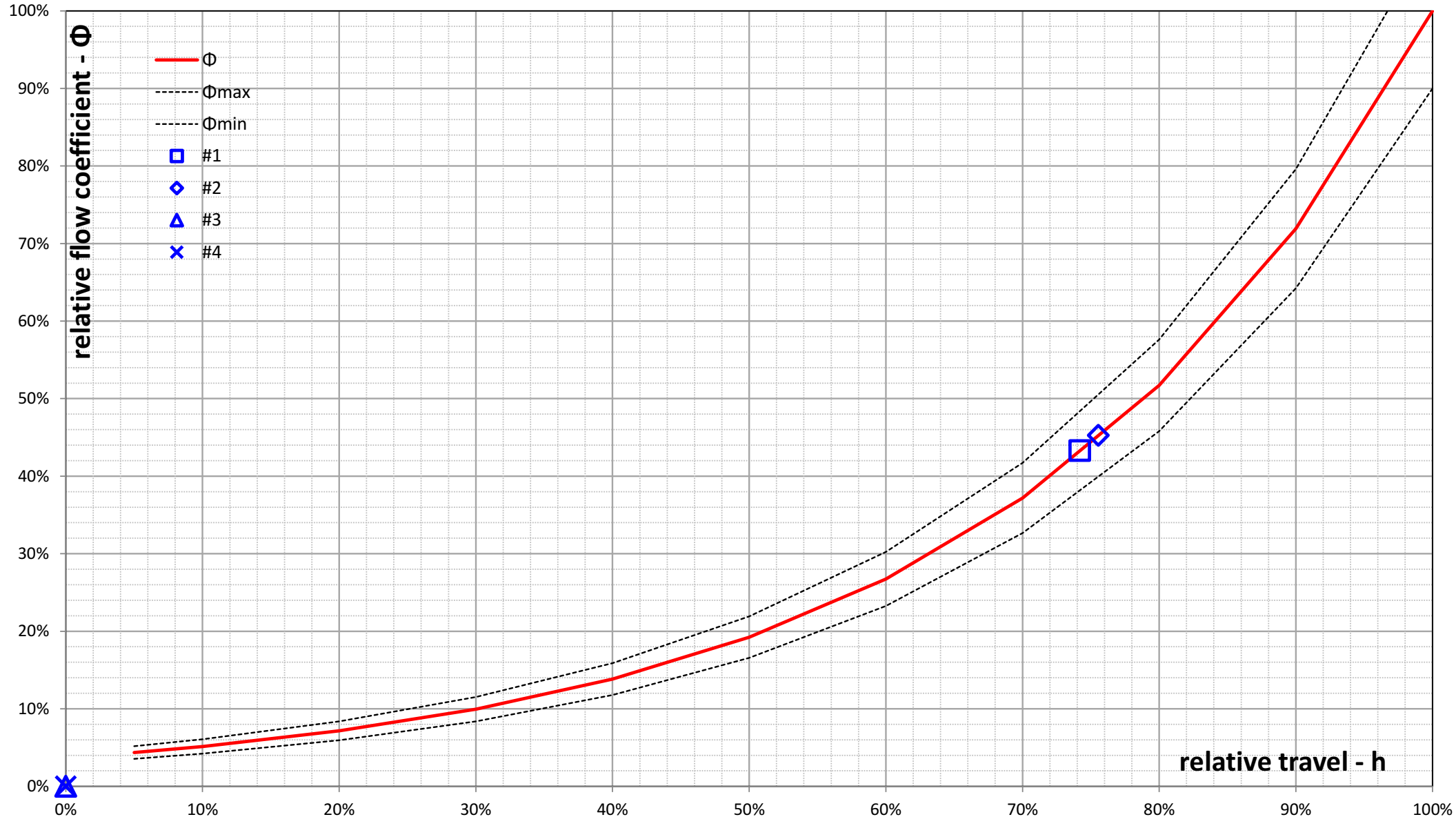


Control Valve Division

# CONTROL VALVE FLOW CHARACTERISTIC

**Valve Model:** CV-8407

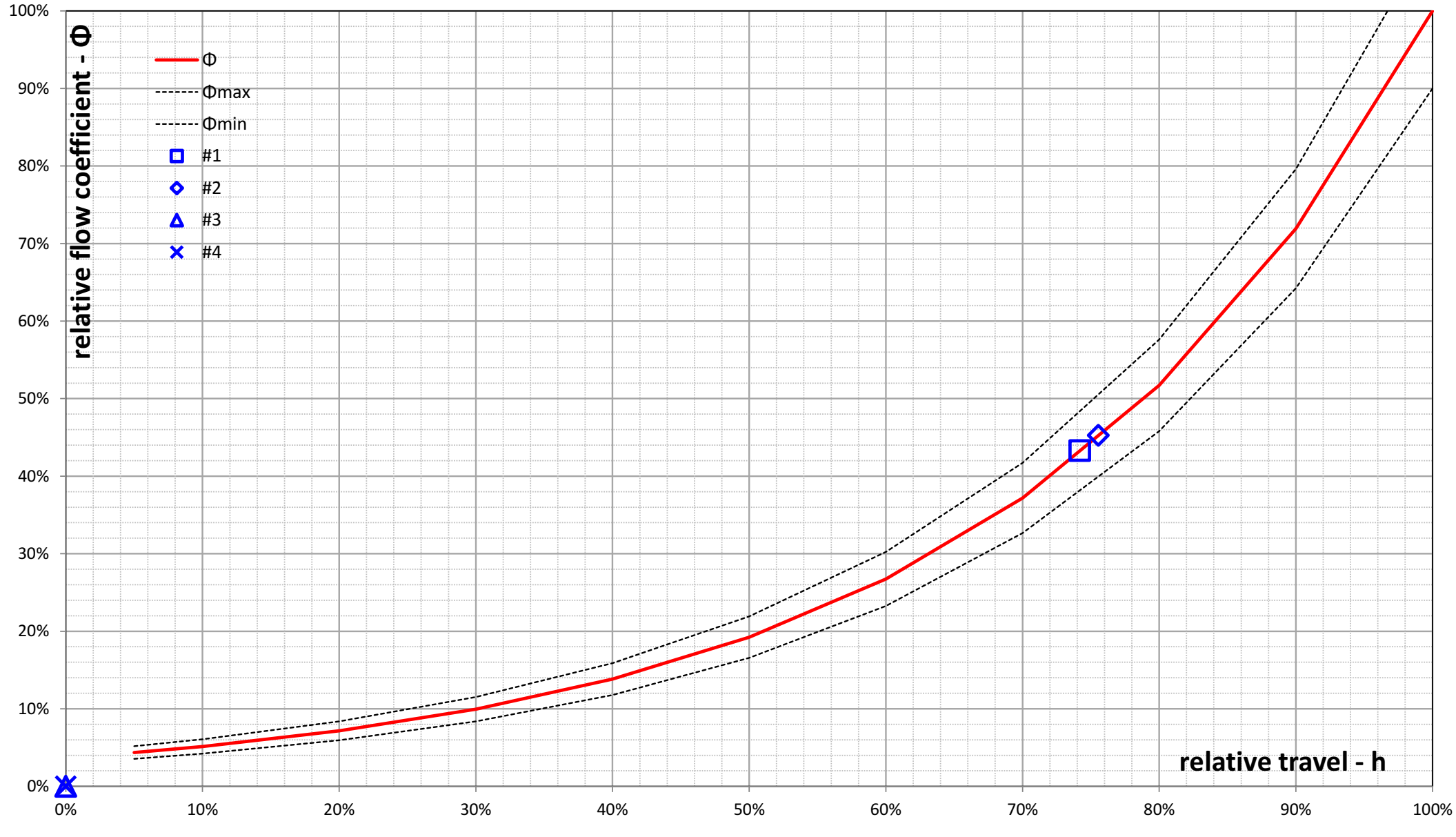
| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Customer :** | ROSETTI MARINO SPA | **Offer :** | CV2400221 | **Tag :** | 25-FV-034 | **DWG :** | | | | **Rev. 1** |
| **Plant :** | Hollandse Kust Noord Wind Park Pr. | **S/N :** | 2400586 | **DN :** | 1" | **Port:** | 1/4" | Prep. | Check. | Appr. |
| **Date :** | | **Service :** | | **Nominal Travel :** | 13 mm | **Rated Cv :** | 0.8500 | **Cv min :** | 0.0371 | |



Control Valve Division

# CONTROL VALVE FLOW CHARACTERISTIC

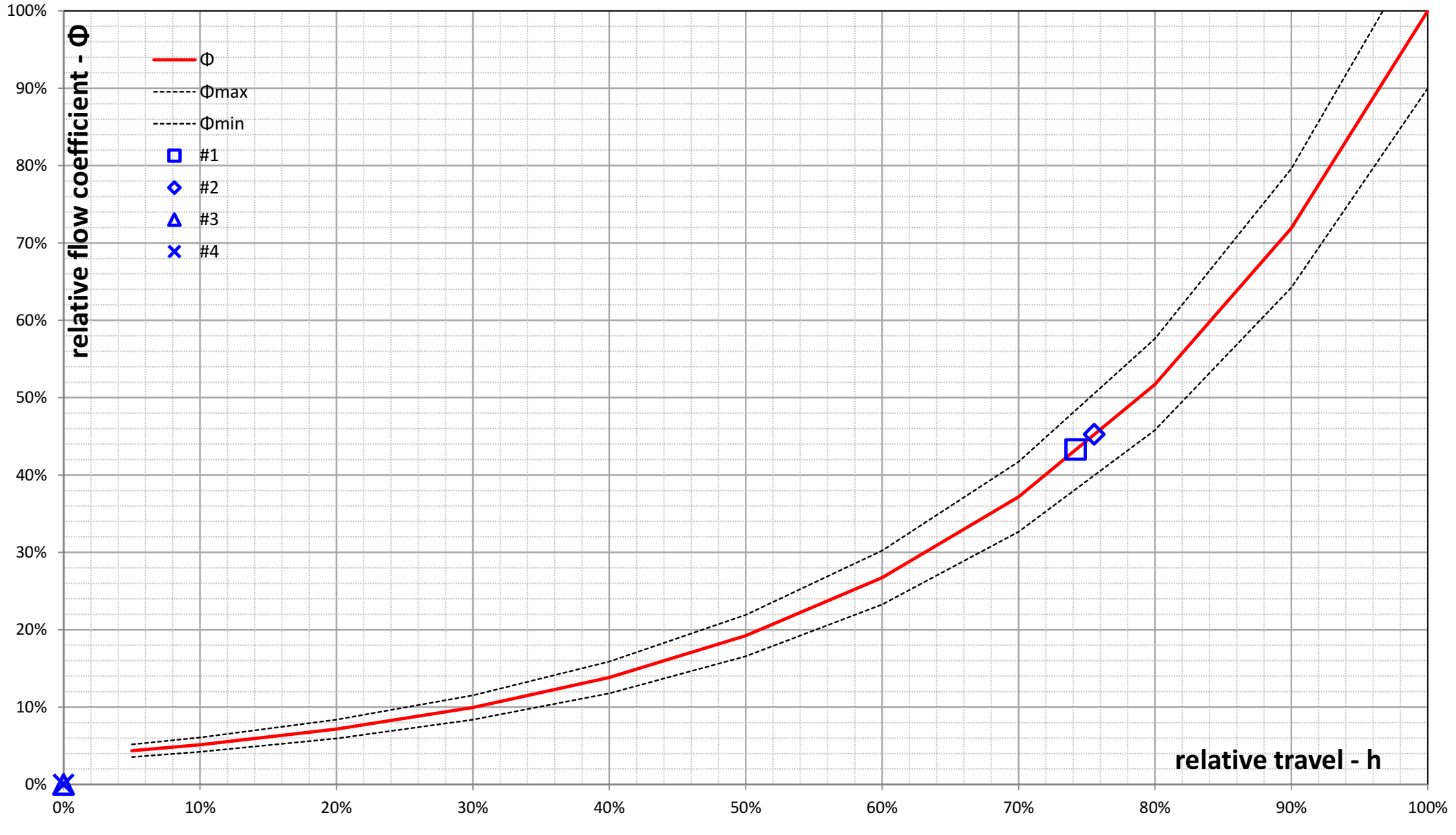
| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Valve Model:** | **CV-8407** | | | | | | | | | |
| **Customer :** | ROSETTI MARINO SPA | **Offer :** | CV2400221 | **Tag :** | 25-FV-036 | **DWG :** | | | **Rev. 1** | |
| **Plant :** | Hollandse Kust Noord Wind Park Pr. | **S/N :** | 2400587 | **DN :** | 1" | **Port:** | 1/4" | Prep. | Check. | Appr. |
| **Service :** | | **Nominal Travel :** | 13 mm | **Rated Cv :** | 0.8500 | **Cv min :** | 0.0371 | | | |
| **Date :** | | | | | | | | | | |



Control Valve Division

# CONTROL VALVE FLOW CHARACTERISTIC

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Valve Model:** | **CV-8407** | | | | | | | | | |
| **Customer :** | ROSETTI MARINO SPA | **Offer :** | CV2400221 | **Tag :** | 25-FV-038 | **DWG :** | | | **Rev. 1** | |
| **Plant :** | Hollandse Kust Noord Wind Park Pr. | **S/N :** | 2400588 | **DN :** | 1" | **Port:** | 1/4" | Prep. | Check. | Appr. |
| **Service :** | | **Nominal Travel :** | 13 mm | **Rated Cv :** | 0.8500 | **Cv min :** | 0.0371 | | | |
| **Date :** | | | | | | | | | | |

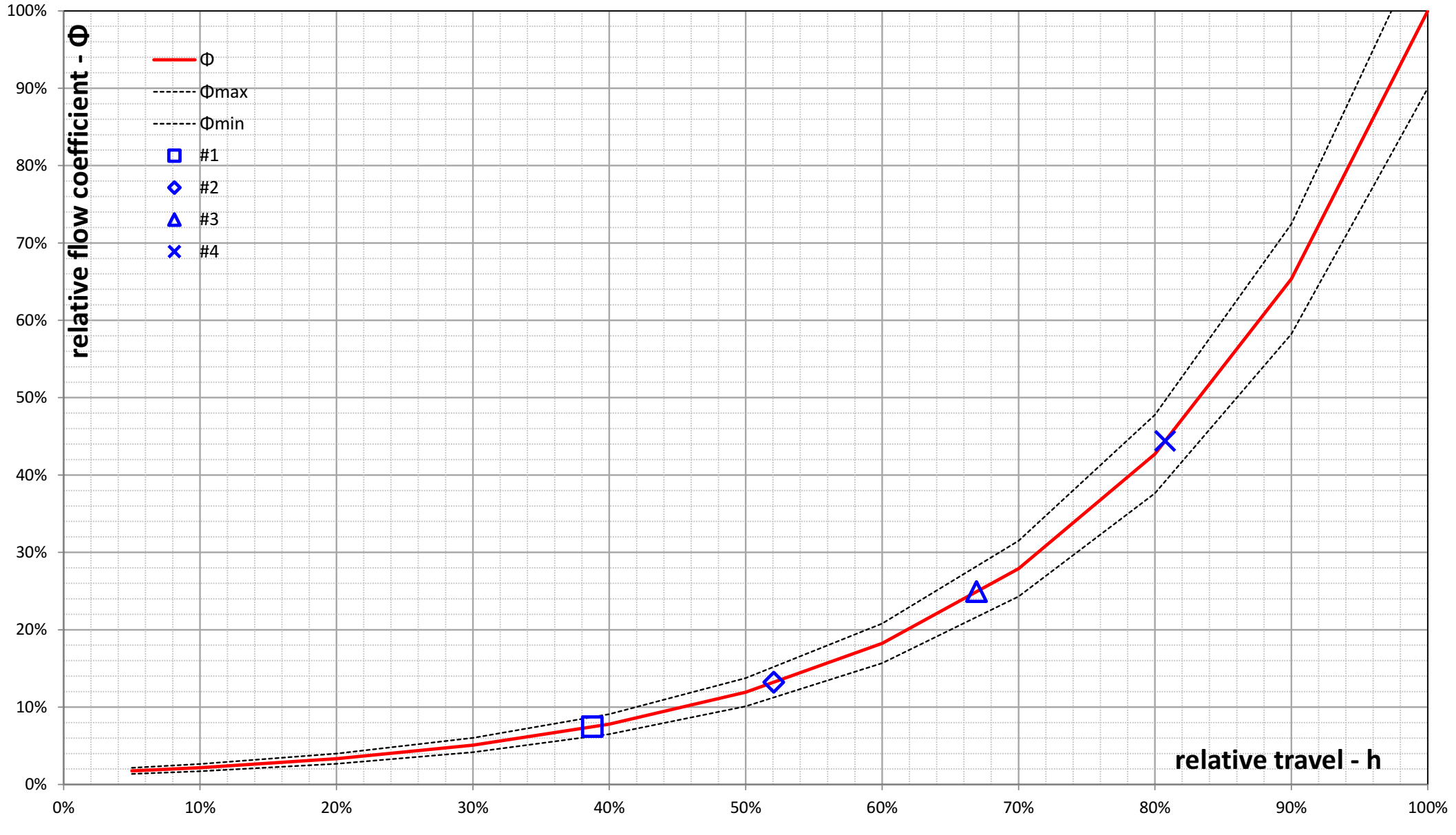


Control Valve Division

# CONTROL VALVE FLOW CHARACTERISTIC

**Valve Model:** CV-8407

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Customer :** | ROSETTI MARINO SPA | **Offer :** | CV2400221 | **Tag :** | 25-PV-035 | **DWG :** | | | **Rev. 1** | |
| **Plant :** | Hollandse Kust Noord Wind Park Pr. | **S/N :** | 2400589 | **DN :** | 2" | **Port:** | 1" | Prep. | Check. | Appr. |
| **Service :** | | **Nominal Travel :** | 25 mm | **Rated Cv :** | 13.0000 | **Cv min :** | 0.2284 | | | |
| **Date :** | | | | | | | | | | |

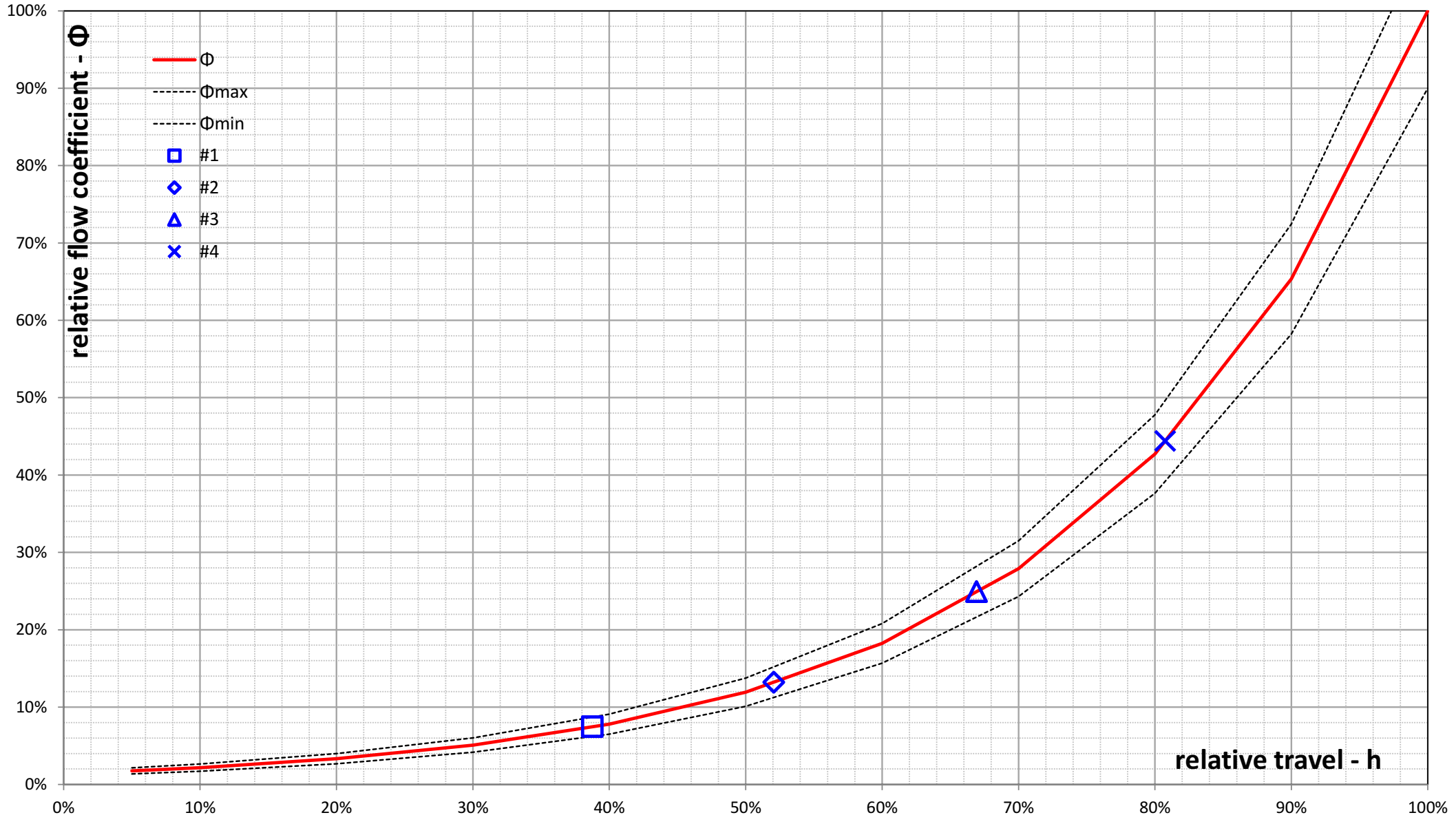


Control Valve Division

# CONTROL VALVE FLOW CHARACTERISTIC

**Valve Model:** CV-8407

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Customer :** | ROSETTI MARINO SPA | **Offer :** | CV2400221 | **Tag :** | 25-PV-037 | **DWG :** | | | **Rev. 1** | |
| **Plant :** | Hollandse Kust Noord Wind Park Pr. | **S/N :** | 2400590 | **DN :** | 2" | **Port:** | 1" | Prep. | Check. | Appr. |
| **Service :** | | **Nominal Travel :** | 25 mm | **Rated Cv :** | 13.0000 | **Cv min :** | 0.2284 | | | |
| **Date :** | | | | | | | | | | |

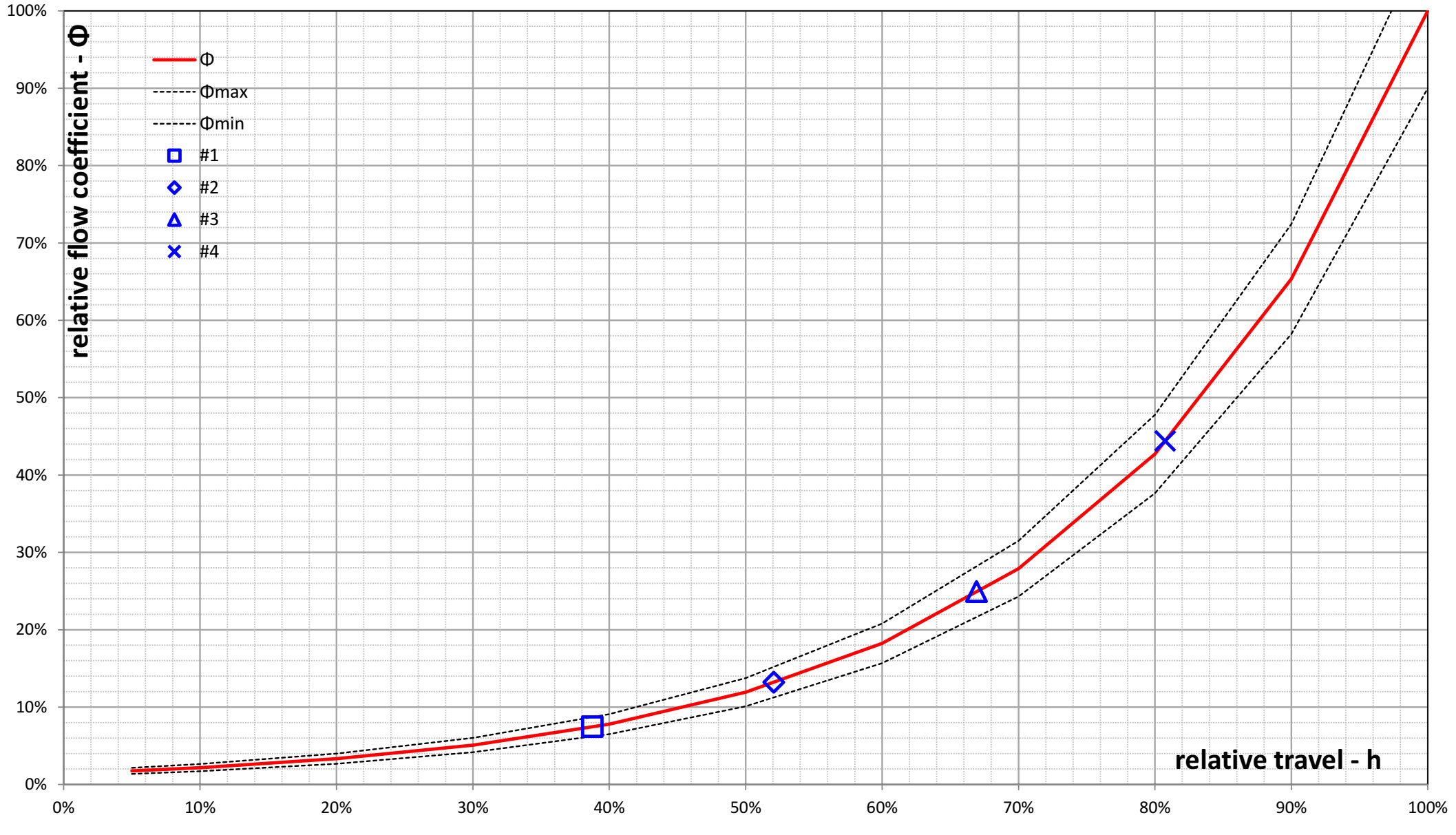


Control Valve Division

# CONTROL VALVE FLOW CHARACTERISTIC

**Valve Model:** CV-8407

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Customer :** | ROSETTI MARINO SPA | **Offer :** | CV2400221 | **Tag :** | 25-PV-040 | **DWG :** | | | **Rev. 1** | |
| **Plant :** | Hollandse Kust Noord Wind Park Pr. | **S/N :** | 2400591 | **DN :** | 2" | **Port:** | 1" | Prep. | Check. | Appr. |
| **Service :** | | **Nominal Travel :** | 25 mm | **Rated Cv :** | 13.0000 | **Cv min :** | 0.2284 | | | |
| **Date :** | | | | | | | | | | |

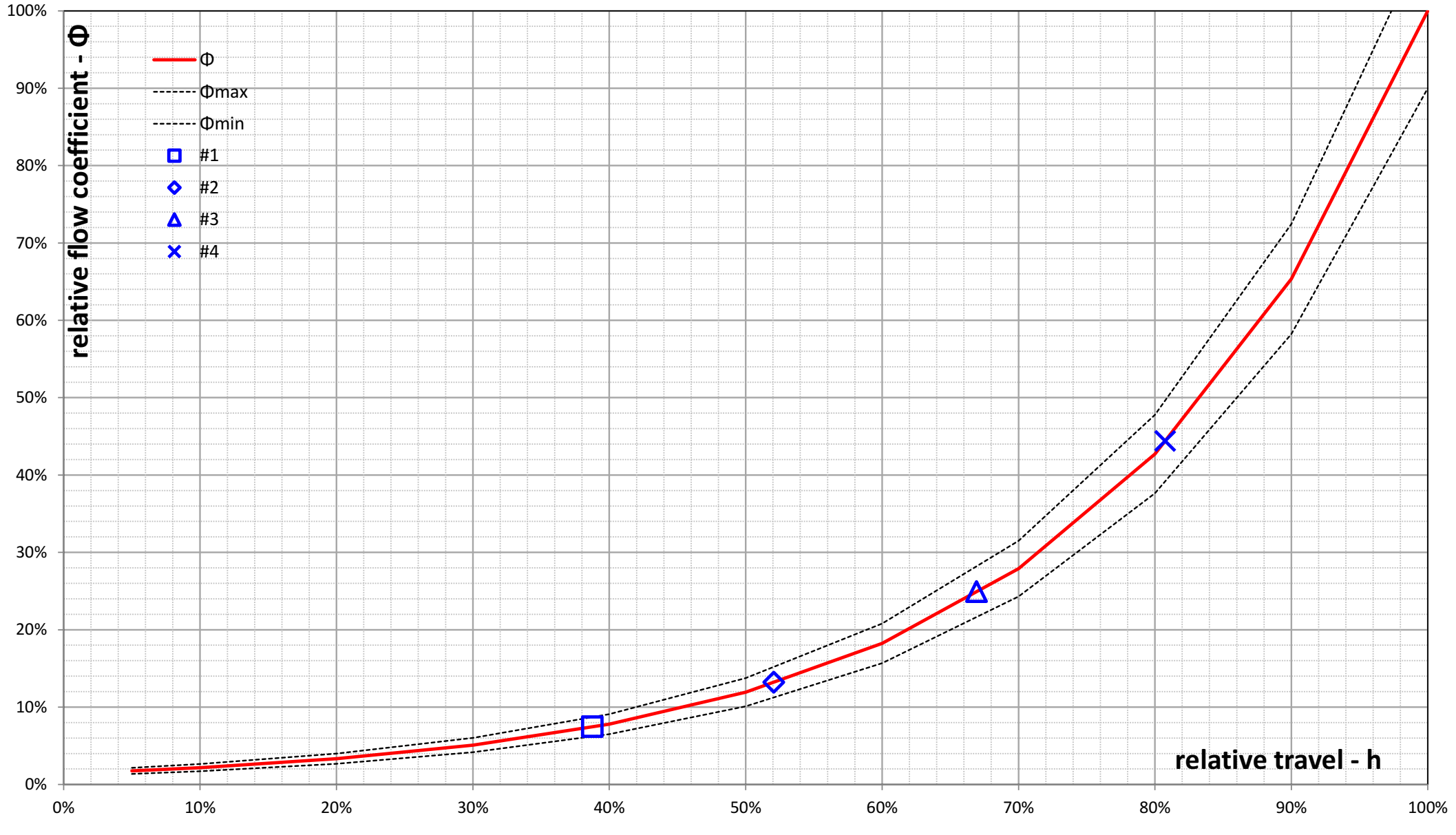


Control Valve Division

# CONTROL VALVE FLOW CHARACTERISTIC

**Valve Model:** CV-8407

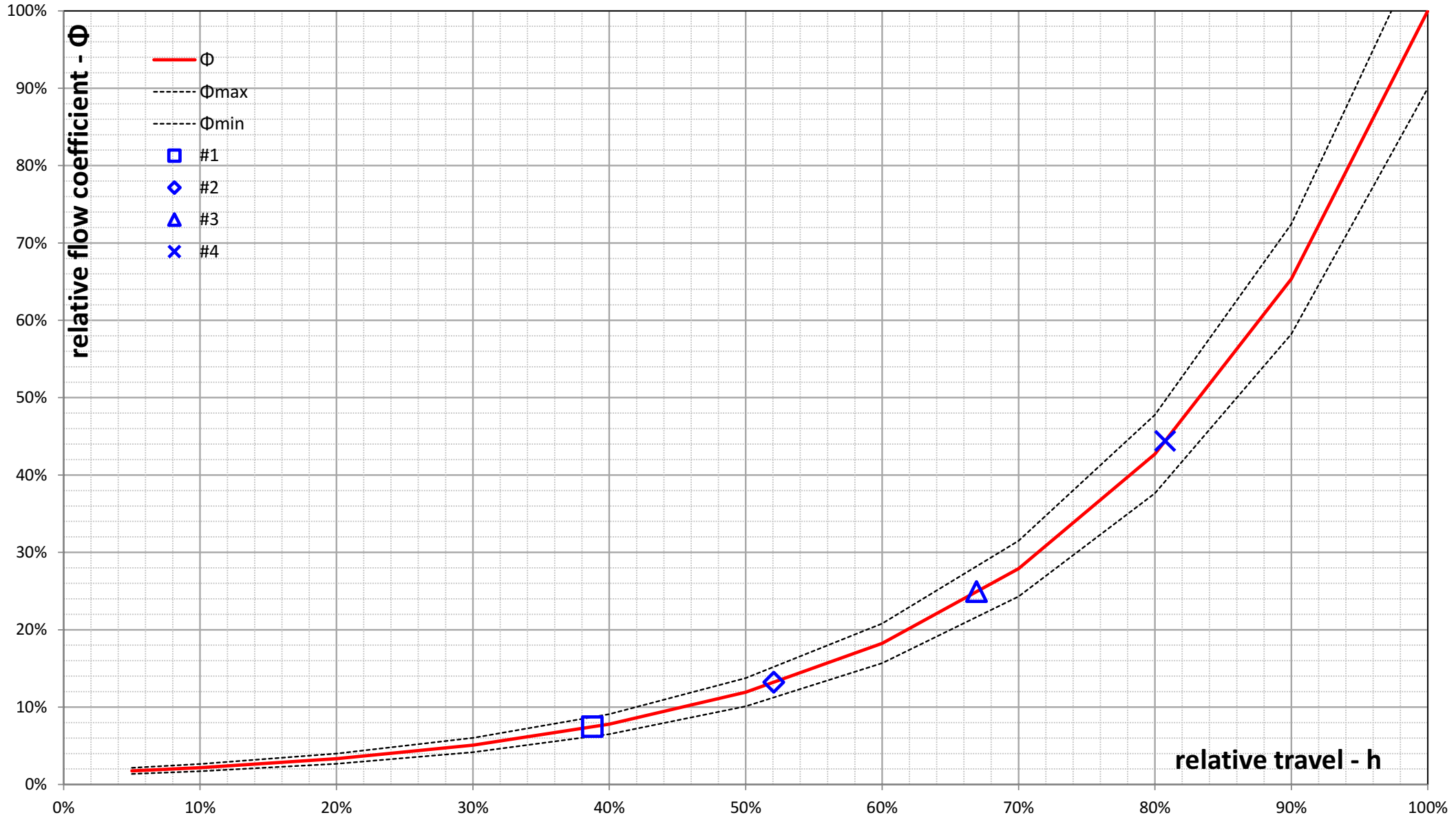
| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Customer :** | ROSETTI MARINO SPA | **Offer :** | CV2400221 | **Tag :** | 25-PV-043 | **DWG :** | | | **Rev. 1** | |
| **Plant :** | Hollandse Kust Noord Wind Park Pr. | **S/N :** | 2400592 | **DN :** | 2" | **Port:** | 1" | Prep. | Check. | Appr. |
| **Service :** | | **Nominal Travel :** | 25 mm | **Rated Cv :** | 13.0000 | **Cv min :** | 0.2284 | | | |
| **Date :** | | | | | | | | | | |



Control Valve Division

# CONTROL VALVE FLOW CHARACTERISTIC

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Valve Model:** | **CV-8407** | | | | | | | | |
| **Customer :** | ROSETTI MARINO SPA | **Offer :** | CV2400221 | **Tag :** | 25-PV-046 | **DWG :** | | **Rev. 1** | |
| **Plant :** | Hollandse Kust Noord Wind Park Pr. | **S/N :** | 2400593 | **DN :** | 2" | **Port:** | 1" | Prep. | Check. | Appr. |
| **Date :** | | **Service :** | | **Nominal Travel :** | 25 mm | **Rated Cv :** | 13.0000 | **Cv min :** | 0.2284 | | | |

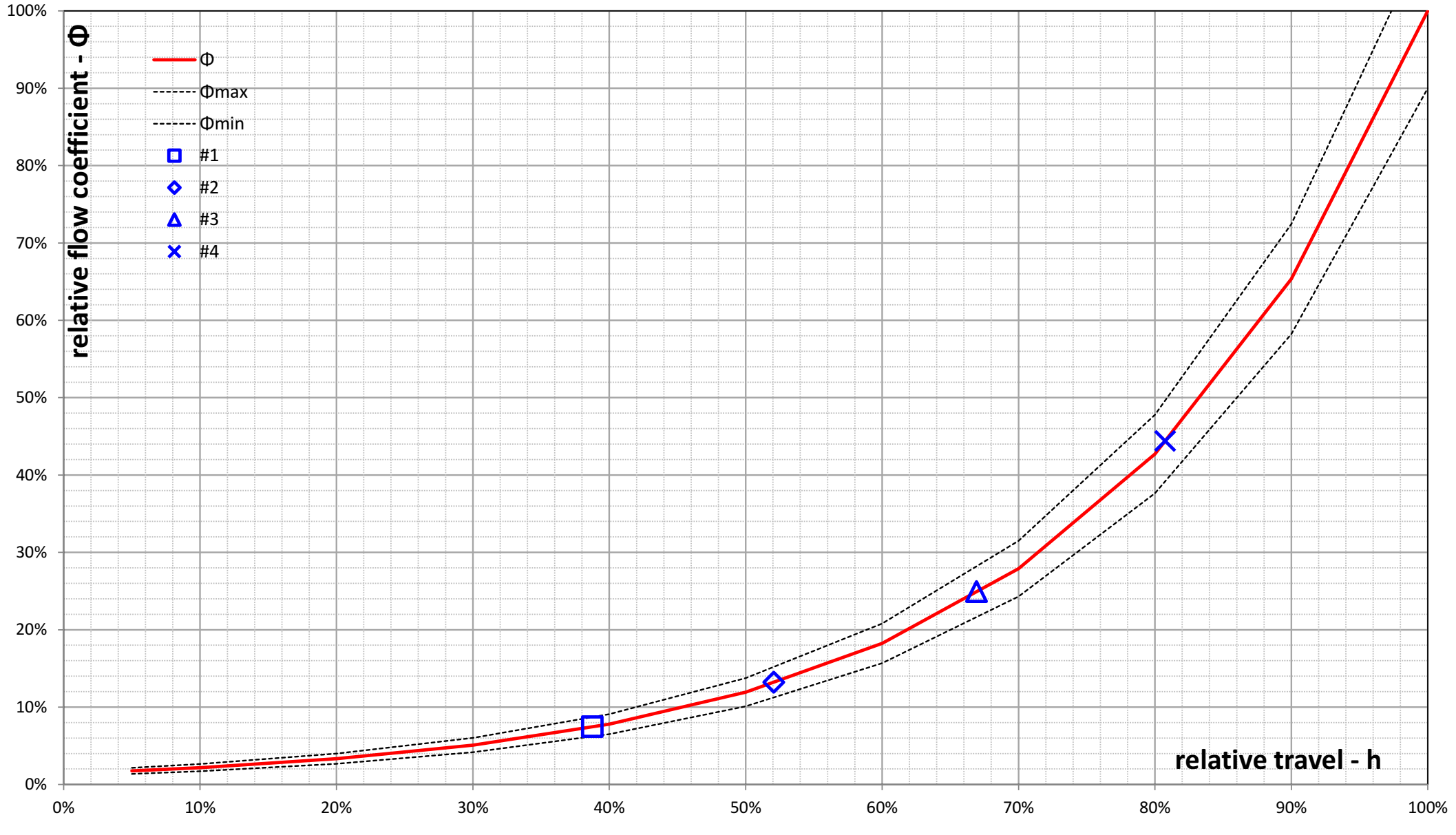


Control Valve Division

# CONTROL VALVE FLOW CHARACTERISTIC

**Valve Model:** CV-8407

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Customer :** | ROSETTI MARINO SPA | **Offer :** | CV2400221 | **Tag :** | 25-PV-049 | **DWG :** | | | **Rev. 1** | |
| **Plant :** | Hollandse Kust Noord Wind Park Pr. | **S/N :** | 2400594 | **DN :** | 2" | **Port:** | 1" | Prep. | Check. | Appr. |
| **Service :** | | **Nominal Travel :** | 25 mm | **Rated Cv :** | 13.0000 | **Cv min :** | 0.2284 | | | |
| **Date :** | | | | | | | | | | |

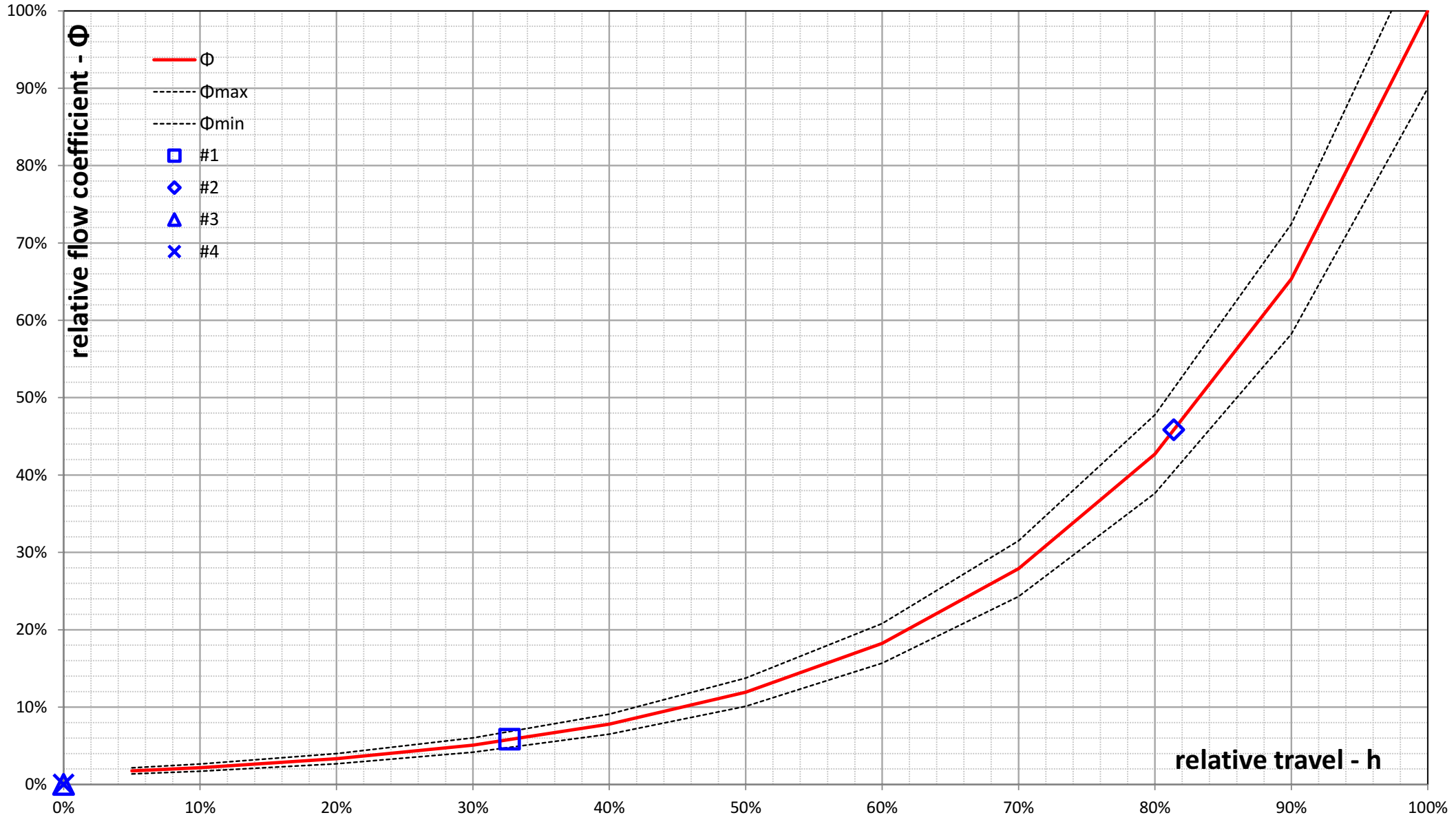


Control Valve Division

# CONTROL VALVE FLOW CHARACTERISTIC

**Valve Model:** CV-8407

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Customer :** | ROSETTI MARINO SPA | **Offer :** | CV2400221 | **Tag :** | 25-PV-055A | **DWG :** | | | **Rev. 1** | |
| **Plant :** | Hollandse Kust Noord Wind Park Pr. | **S/N :** | 2400595 | **DN :** | 1 1/2" | **Port:** | 1" | Prep. | Check. | Appr. |
| **Service :** | | **Nominal Travel :** | 20 mm | **Rated Cv :** | 13.0000 | **Cv min :** | 0.2284 | | | |
| **Date :** | | | | | | | | | | |

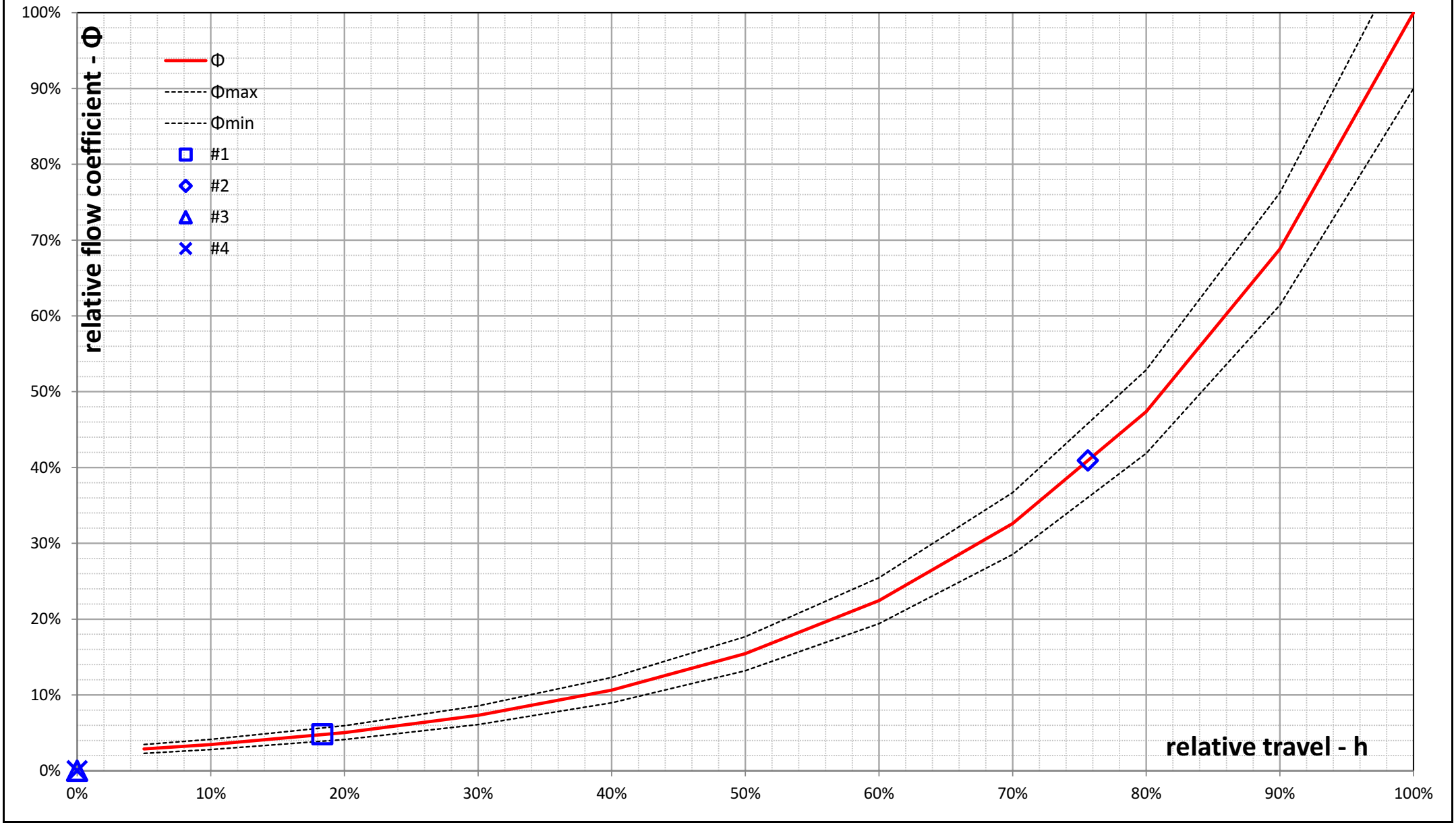


Control Valve Division

# CONTROL VALVE FLOW CHARACTERISTIC

**Valve Model:** CV-8407

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Customer :** | ROSETTI MARINO SPA | **Offer :** | CV2400221 | **Tag :** | 25-PV-055B | **DWG :** | | | **Rev. 1** | |
| **Plant :** | Hollandse Kust Noord Wind Park Pr. | **S/N :** | 2400596 | **DN :** | 1 1/2" | **Port:** | 5/32" | Prep. | Check. | Appr. |
| **Service :** | | **Nominal Travel :** | 13 mm | **Rated Cv :** | 0.4500 | **Cv min :** | 0.0129 | | | |
| **Date :** | | | | | | | | | | |

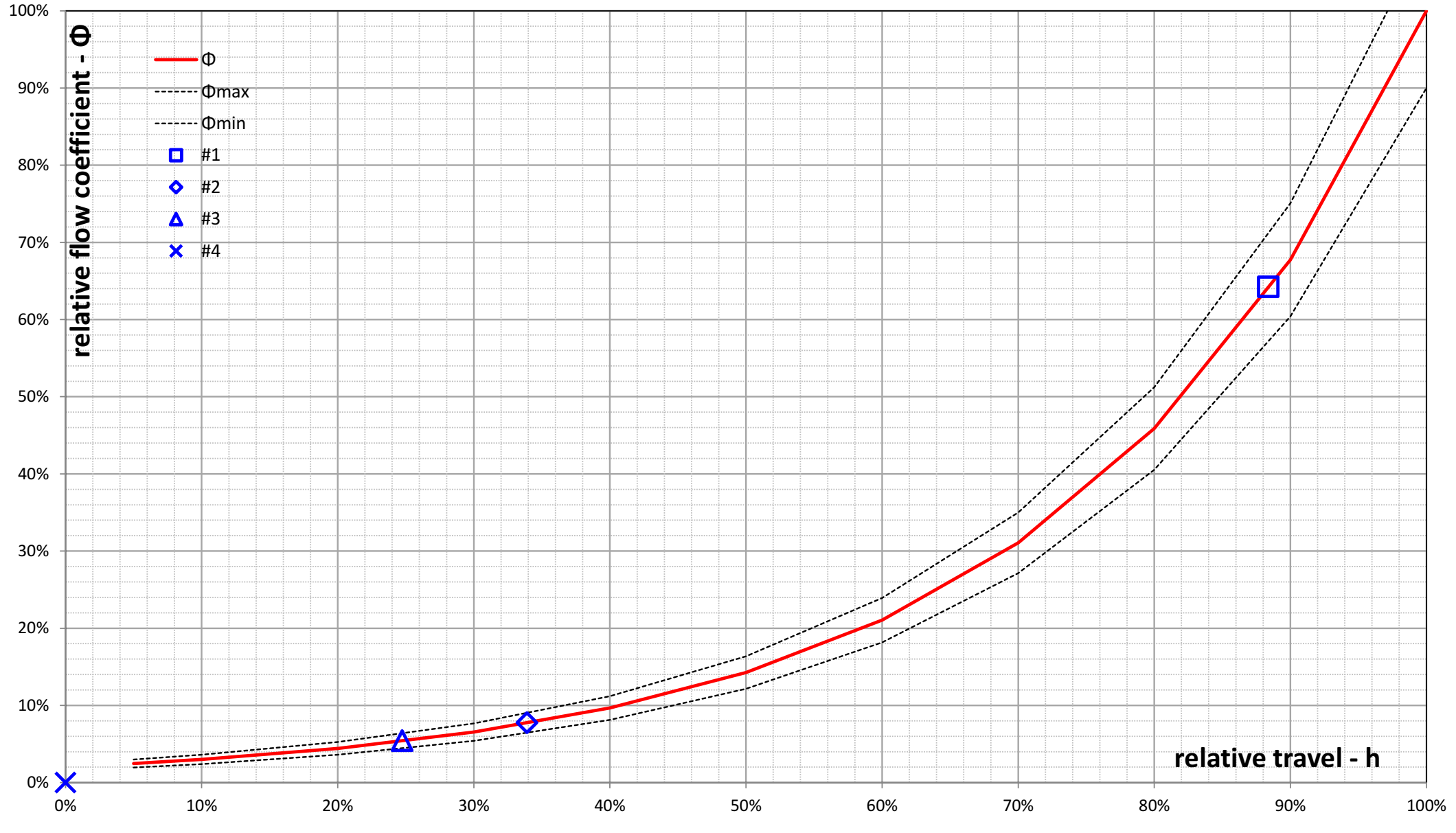


Control Valve Division

# CONTROL VALVE FLOW CHARACTERISTIC

**Valve Model:** CV-8407

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Customer :** | ROSETTI MARINO SPA | **Offer :** | CV2400221 | **Tag :** | 64-PV-031A | **DWG :** | | | **Rev. 1** | |
| **Plant :** | Hollandse Kust Noord Wind Park Pr. | **S/N :** | 2400597 | **DN :** | 1" | **Port:** | 3/8" | Prep. | Check. | Appr. |
| **Service :** | | **Nominal Travel :** | 13 mm | **Rated Cv :** | 1.9000 | **Cv min :** | 0.0469 | | | |
| **Date :** | | | | | | | | | | |

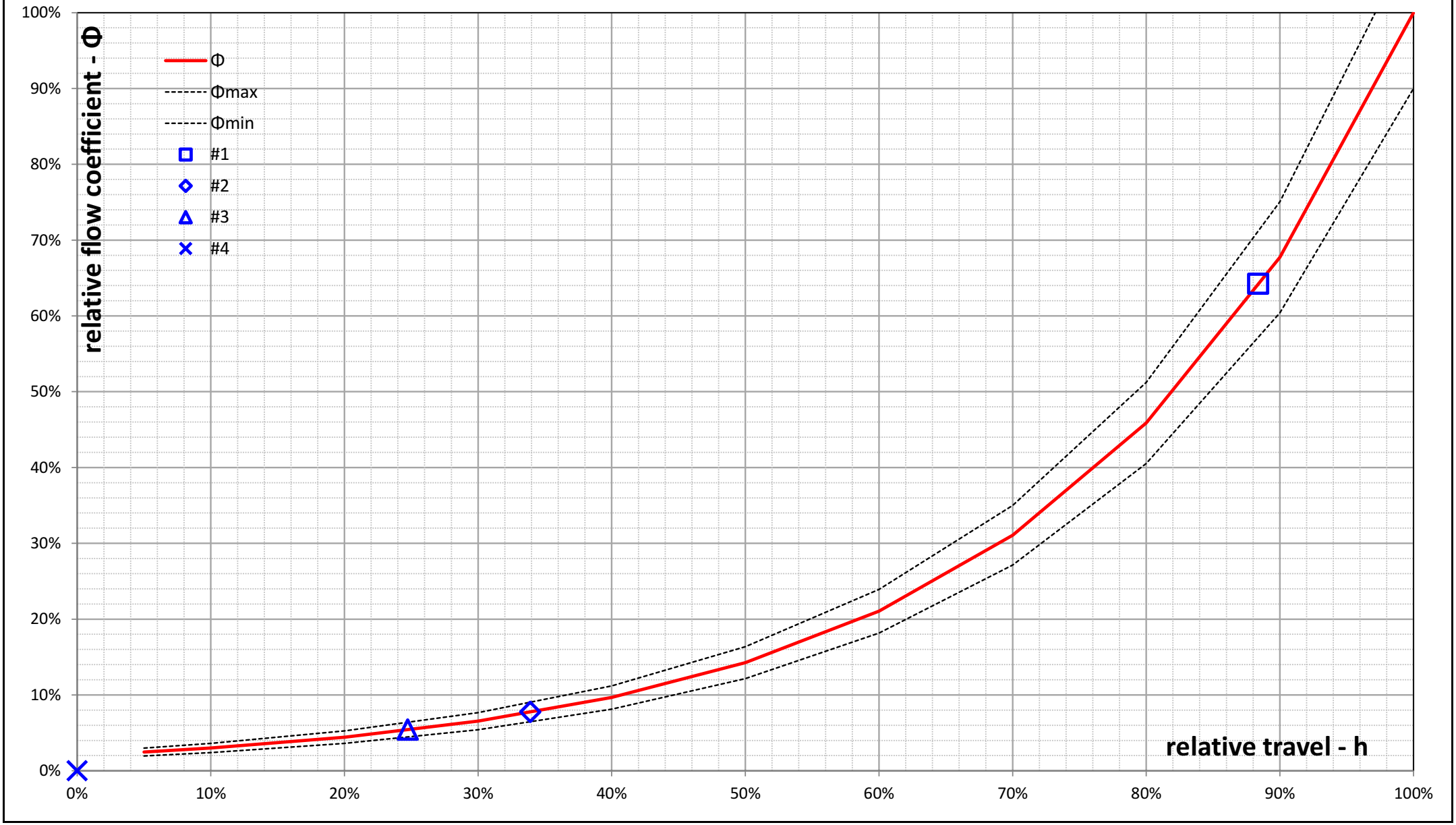


Control Valve Division

# CONTROL VALVE FLOW CHARACTERISTIC

**Valve Model:** CV-8407

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Customer :** | ROSETTI MARINO SPA | **Offer :** | CV2400221 | **Tag :** | 64-PV-031B | **DWG :** | | | **Rev. 1** | |
| **Plant :** | Hollandse Kust Noord Wind Park Pr. | **S/N :** | 2400598 | **DN :** | 1" | **Port:** | 3/8" | Prep. | Check. | Appr. |
| **Service :** | | **Nominal Travel :** | 13 mm | **Rated Cv :** | 1.9000 | **Cv min :** | 0.0469 | | | |
| **Date :** | | | | | | | | | | |



# PART 2-CERTIFICATION DOSSIER

# Section 1.1

Vendor asset and tag register

# Base Load Power Hub (BLPH)

## CONTROL VALVES

## VENDOR ASSET AND TAG REGISTER

Document Number: 1724000740-IN-LIS-00012

Document Class: 2

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

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

| Sign | Date |
|---|---|
| V. Barratta | 04-12-2024 |

| Rev. | Date | Description | Prepared | Reviewed | Approved |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| 02 | 07/11/2024 | Accepted for Construction (AFC) | BL | AC | AC |
| 01 | 06/08/2024 | Accepted for Construction (AFC) | BL | AC | AC |
| 00 | 17/07/2024 | Issue for Review (IFR) | BL | AC | AC |




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|---|---|---|---|---|---|---|---|---|---|
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| 2 | Table of Contents | X | X | X | | | | | |
| 3 | Revision / Change Log | X | X | X | | | | | |
| 4 | References | X | X | X | | | | | |
| 5 | Vendor Asset and Tag Register | X | X | X | | | | | |





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## Revision / Change Log

| Rev. | Description |
|---|---|
| 00 | ISSUE FOR REVIEW (IFR) |
| 01 | ACCEPTED FOR CONSTRUCTION (AFC) |
| 02 | ACCEPTED FOR CONSTRUCTION (AFC) |
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## HOLDS LIST

| No. | Description |
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| 1. | |
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| Tag Number | Tag Description | Physical Class Name | Location | System/SubSystem Code | Purchase Order Number | Vendor Company Name | Manufacturer Company Name | Model Number | Equipment Manufacturer Serial Number | Model Part No | Hazardous Area Equip Relevant | Hazardous Area Certificate Standard | Hazardous Area Certifying Authority | Hazardous Area Certificate Number | Atex Classification | Explosion Protection Examination Certificate Document Number | Layout Drawing | Datasheet | Assembly/Dimensional Drawing | General Arrangement | Operating & Maintenance Manual | Wiring Diagram | Spare Parts List | Lubricant Document Reference | Criticality | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 25-PV-031 | CONTROL VALVE + Pneumatic Diaphragm | N/A | HOLLANDSE KUST NOORD WIND PARK | N/A | 1724000740 | AST SpA | AST SpA | CV-8407 | 2400583 | N/A | II 2G | Atex Declaration acc to 2014/34/EU | 1370_Bureau Veritas ITA | ATEX - SN 2400583 | ATEX ZONE II | N/A | 240221-0100AA | 1724000740-IN-DS-00007 | 1724000740-IN-DD-00005 | 1724000740-IN-DA-00004 | 1724000740-IN-MAN-00017 | 1724000740-IN-DG-00006 | 1724000740-COM-LIS-00018 | N/A | N/A | |
| 25-PV-032 | CONTROL VALVE + Pneumatic Diaphragm | N/A | HOLLANDSE KUST NOORD WIND PARK | N/A | 1724000740 | AST SpA | AST SpA | CV-8407 | 2400584 | N/A | II 2G | Atex Declaration acc to 2014/34/EU | 1370_Bureau Veritas ITA | ATEX - SN 2400584 | ATEX ZONE II | N/A | 240221-0100AA | 1724000740-IN-DS-00007 | 1724000740-IN-DD-00005 | 1724000740-IN-DA-00004 | 1724000740-IN-MAN-00017 | 1724000740-IN-DG-00006 | 1724000740-COM-LIS-00018 | N/A | N/A | |
| 25-PV-033 | CONTROL VALVE + Pneumatic Diaphragm | N/A | HOLLANDSE KUST NOORD WIND PARK | N/A | 1724000740 | AST SpA | AST SpA | CV-8407 | 2400585 | N/A | II 2G | Atex Declaration acc to 2014/34/EU | 1370_Bureau Veritas ITA | ATEX - SN 2400585 | ATEX ZONE II | N/A | 240221-0100AA | 1724000740-IN-DS-00007 | 1724000740-IN-DD-00005 | 1724000740-IN-DA-00004 | 1724000740-IN-MAN-00017 | 1724000740-IN-DG-00006 | 1724000740-COM-LIS-00018 | N/A | N/A | |
| 25-PV-034 | CONTROL VALVE + Pneumatic Diaphragm | N/A | HOLLANDSE KUST NOORD WIND PARK | N/A | 1724000740 | AST SpA | AST SpA | CV-8407 | 2400586 | N/A | II 2G | Atex Declaration acc to 2014/34/EU | 1370_Bureau Veritas ITA | ATEX - SN 2400586 | ATEX ZONE II | N/A | 240221-0100AA | 1724000740-IN-DS-00007 | 1724000740-IN-DD-00005 | 1724000740-IN-DA-00004 | 1724000740-IN-MAN-00017 | 1724000740-IN-DG-00006 | 1724000740-COM-LIS-00018 | N/A | N/A | |
| 25-PV-036 | CONTROL VALVE + Pneumatic Diaphragm | N/A | HOLLANDSE KUST NOORD WIND PARK | N/A | 1724000740 | AST SpA | AST SpA | CV-8407 | 2400587 | N/A | II 2G | Atex Declaration acc to 2014/34/EU | 1370_Bureau Veritas ITA | ATEX - SN 2400587 | ATEX ZONE II | N/A | 240221-0100AA | 1724000740-IN-DS-00007 | 1724000740-IN-DD-00005 | 1724000740-IN-DA-00004 | 1724000740-IN-MAN-00017 | 1724000740-IN-DG-00006 | 1724000740-COM-LIS-00018 | N/A | N/A | |
| 25-PV-038 | CONTROL VALVE + Pneumatic Diaphragm | N/A | HOLLANDSE KUST NOORD WIND PARK | N/A | 1724000740 | AST SpA | AST SpA | CV-8407 | 2400588 | N/A | II 2G | Atex Declaration acc to 2014/34/EU | 1370_Bureau Veritas ITA | ATEX - SN 2400588 | ATEX ZONE II | N/A | 240221-0100AA | 1724000740-IN-DS-00007 | 1724000740-IN-DD-00005 | 1724000740-IN-DA-00004 | 1724000740-IN-MAN-00017 | 1724000740-IN-DG-00006 | 1724000740-COM-LIS-00018 | N/A | N/A | |
| 25-PV-035 | CONTROL VALVE + Pneumatic Diaphragm | N/A | HOLLANDSE KUST NOORD WIND PARK | N/A | 1724000740 | AST SpA | AST SpA | CV-8407 | 2400589 | N/A | II 2G | Atex Declaration acc to 2014/34/EU | 1370_Bureau Veritas ITA | ATEX - SN 2400589 | ATEX ZONE II | N/A | 240221-0200AA | 1724000740-IN-DS-00007 | 1724000740-IN-DD-00005 | 1724000740-IN-DA-00004 | 1724000740-IN-MAN-00017 | 1724000740-IN-DG-00006 | 1724000740-COM-LIS-00018 | N/A | N/A | |
| 25-PV-037 | CONTROL VALVE + Pneumatic Diaphragm | N/A | HOLLANDSE KUST NOORD WIND PARK | N/A | 1724000740 | AST SpA | AST SpA | CV-8407 | 2400590 | N/A | II 2G | Atex Declaration acc to 2014/34/EU | 1370_Bureau Veritas ITA | ATEX - SN 2400590 | ATEX ZONE II | N/A | 240221-0200AA | 1724000740-IN-DS-00007 | 1724000740-IN-DD-00005 | 1724000740-IN-DA-00004 | 1724000740-IN-MAN-00017 | 1724000740-IN-DG-00006 | 1724000740-COM-LIS-00018 | N/A | N/A | |
| 25-PV-040 | CONTROL VALVE + Pneumatic Diaphragm | N/A | HOLLANDSE KUST NOORD WIND PARK | N/A | 1724000740 | AST SpA | AST SpA | CV-8407 | 2400591 | N/A | II 2G | Atex Declaration acc to 2014/34/EU | 1370_Bureau Veritas ITA | ATEX - SN 2400591 | ATEX ZONE II | N/A | 240221-0200AA | 1724000740-IN-DS-00007 | 1724000740-IN-DD-00005 | 1724000740-IN-DA-00004 | 1724000740-IN-MAN-00017 | 1724000740-IN-DG-00006 | 1724000740-COM-LIS-00018 | N/A | N/A | |
| 25-PV-043 | CONTROL VALVE + Pneumatic Diaphragm | N/A | HOLLANDSE KUST NOORD WIND PARK | N/A | 1724000740 | AST SpA | AST SpA | CV-8407 | 2400592 | N/A | II 2G | Atex Declaration acc to 2014/34/EU | 1370_Bureau Veritas ITA | ATEX - SN 2400592 | ATEX ZONE II | N/A | 240221-0200AA | 1724000740-IN-DS-00007 | 1724000740-IN-DD-00005 | 1724000740-IN-DA-00004 | 1724000740-IN-MAN-00017 | 1724000740-IN-DG-00006 | 1724000740-COM-LIS-00018 | N/A | N/A | |
| 25-PV-046 | CONTROL VALVE + Pneumatic Diaphragm | N/A | HOLLANDSE KUST NOORD WIND PARK | N/A | 1724000740 | AST SpA | AST SpA | CV-8407 | 2400593 | N/A | II 2G | Atex Declaration acc to 2014/34/EU | 1370_Bureau Veritas ITA | ATEX - SN 2400593 | ATEX ZONE II | N/A | 240221-0200AA | 1724000740-IN-DS-00007 | 1724000740-IN-DD-00005 | 1724000740-IN-DA-00004 | 1724000740-IN-MAN-00017 | 1724000740-IN-DG-00006 | 1724000740-COM-LIS-00018 | N/A | N/A | |
| 25-PV-049 | CONTROL VALVE + Pneumatic Diaphragm | N/A | HOLLANDSE KUST NOORD WIND PARK | N/A | 1724000740 | AST SpA | AST SpA | CV-8407 | 2400594 | N/A | II 2G | Atex Declaration acc to 2014/34/EU | 1370_Bureau Veritas ITA | ATEX - SN 2400594 | ATEX ZONE II | N/A | 240221-0200AA | 1724000740-IN-DS-00007 | 1724000740-IN-DD-00005 | 1724000740-IN-DA-00004 | 1724000740-IN-MAN-00017 | 1724000740-IN-DG-00006 | 1724000740-COM-LIS-00018 | N/A | N/A | |
| 64-PV-031A | CONTROL VALVE + Pneumatic Diaphragm | N/A | HOLLANDSE KUST NOORD WIND PARK | N/A | 1724000740 | AST SpA | AST SpA | CV-8407 | 2400597 | N/A | II 2G | Atex Declaration acc to 2014/34/EU | 1370_Bureau Veritas ITA | ATEX - SN 2400597 | ATEX ZONE II | N/A | 240221-0400AA | 1724000740-IN-DS-00007 | 1724000740-IN-DD-00005 | 1724000740-IN-DA-00004 | 1724000740-IN-MAN-00017 | 1724000740-IN-DG-00006 | 1724000740-COM-LIS-00018 | N/A | N/A | |
| 64-PV-031B | CONTROL VALVE + Pneumatic Diaphragm | N/A | HOLLANDSE KUST NOORD WIND PARK | N/A | 1724000740 | AST SpA | AST SpA | CV-8407 | 2400598 | N/A | II 2G | Atex Declaration acc to 2014/34/EU | 1370_Bureau Veritas ITA | ATEX - SN 2400598 | ATEX ZONE II | N/A | 240221-0400AA | 1724000740-IN-DS-00007 | 1724000740-IN-DD-00005 | 1724000740-IN-DA-00004 | 1724000740-IN-MAN-00017 | 1724000740-IN-DG-00006 | 1724000740-COM-LIS-00018 | N/A | N/A | |
| 25-PV-055A | CONTROL VALVE + Pneumatic Diaphragm | N/A | HOLLANDSE KUST NOORD WIND PARK | N/A | 1724000740 | AST SpA | AST SpA | CV-8407 | 2400595 | N/A | II 2G | Atex Declaration acc to 2014/34/EU | 1370_Bureau Veritas ITA | ATEX - SN 2400595 | ATEX ZONE II | N/A | 240221-0300AA | 1724000740-IN-DS-00007 | 1724000740-IN-DD-00005 | 1724000740-IN-DA-00004 | 1724000740-IN-MAN-00017 | 1724000740-IN-DG-00006 | 1724000740-COM-LIS-00018 | N/A | N/A | |
| 25-PV-055B | CONTROL VALVE + Pneumatic Diaphragm | N/A | HOLLANDSE KUST NOORD WIND PARK | N/A | 1724000740 | AST SpA | AST SpA | CV-8407 | 2400596 | N/A | II 2G | Atex Declaration acc to 2014/34/EU | 1370_Bureau Veritas ITA | ATEX - SN 2400596 | ATEX ZONE II | N/A | 240221-0500AA | 1724000740-IN-DS-00007 | 1724000740-IN-DD-00005 | 1724000740-IN-DA-00004 | 1724000740-IN-MAN-00017 | 1724000740-IN-DG-00006 | 1724000740-COM-LIS-00018 | N/A | N/A | |

# PART 2-CERTIFICATION DOSSIER

# Section 1.2

Ex certification list

# Base Load Power Hub (BLPH)

CONTROL VALVES

Ex CERTIFICATION LIST

Document Number: 1724000740-QC-LIS-00014

Document Class: 2

ROSETTI MARINO

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

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

| Sign | Date |
|---|---|
| V. Barratta | 08-01-2025 |

| Rev. | Date | Description | Prepared | Reviewed | Approved |
|---|---|---|---|---|---|
| 05 | 19/12/2024 | Accepted for Construction (AFC) | EM | LP | LP |
| 04 | 02/12/2024 | Accepted for Construction (AFC) | EM | LP | LP |
| 03 | 13/11/2024 | Accepted for Construction (AFC) | EM | LP | LP |
| 02 | 25/10/2024 | Accepted for Construction (AFC) | EM | LP | LP |
| 01 | 11/09/2024 | Issue for Review (IFR) | EM | LP | LP |
| 00 | 19/07/2024 | Issue for Review (IFR) | EM | LP | LP |




File: 1724000740-QC-LIS-00014 Rev.05.xlsx

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| CROSSWIND | HOLLANDSE KUST NOORD WIND PARK Project<br>Contract No. CW-I-WP4-2023-05 | ROSETTI MARINO |
|---|---|---|
| Document Title: | Ex CERTIFICATION LIST | Sh. 2 of 5<br>Date: 19/12/2024<br>Rev. 05 |

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| 3 | Revision / Change Log | X | X | X | X | X | X | | |
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Revision / Change Log

| Rev. | Description |
|---|---|
| 00 | ISSUE FOR REVIEW (IFR) |
| 01 | ISSUE FOR REVIEW (IFR) |
| 02 | ACCEPTED FOR CONSTRUCTION (AFC) |
| 03 | ACCEPTED FOR CONSTRUCTION (AFC) |
| 04 | ACCEPTED FOR CONSTRUCTION (AFC) |
| 05 | ACCEPTED FOR CONSTRUCTION (AFC) |
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HOLDS LIST

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| 1. | |
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| 4. | |




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| Tag Number | Description | Location | Manufacturer | Model Type Catalogue Number | Serial Number | ATEX Certification Marking | Reference Document | ATEX Certificate Number | Installation Zone | Notes / Comments | P.O. | Vendor | Skid / Package | Barrier Calculation Ref. | Non-Electrical Equipment | Special Conditions of safe use Applicable |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **25-FV-031** | Control Valve+Pneumatic Actuator | 1"-HY-153-03HSS-N | AST SpA | CV-8407 + Pneumatic Diaphragm SD11R | 2400583 | CE Ex - II 2 G Ex h IIC T6..T1 Gb X | AST Decl.Atex SN:2400583 - 1724000740-IN-DS-00007 | Declaration of Conformity By AST_ATEX- SN °2400583 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-FV-032** | Control Valve+Pneumatic Actuator | 1"-HY-186-03HSS-N | AST SpA | CV-8407 + Pneumatic Diaphragm SD11R | 2400584 | CE Ex - II 2 G Ex h IIC T6..T1 Gb X | AST Decl.Atex SN:2400584 - 1724000740-IN-DS-00007 | Declaration of Conformity By AST_ATEX- SN °2400584 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-FV-033** | Control Valve+Pneumatic Actuator | 1"-HY-187-03HSS-N | AST SpA | CV-8407 + Pneumatic Diaphragm SD11R | 2400585 | CE Ex - II 2 G Ex h IIC T6..T1 Gb X | AST Decl.Atex SN:2400585 - 1724000740-IN-DS-00007 | Declaration of Conformity By AST_ATEX- SN °2400585 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-FV-034** | Control Valve+Pneumatic Actuator | 1"-HY-188-03HSS-N | AST SpA | CV-8407 + Pneumatic Diaphragm SD11R | 2400586 | CE Ex - II 2 G Ex h IIC T6..T1 Gb X | AST Decl.Atex SN:2400586 - 1724000740-IN-DS-00007 | Declaration of Conformity By AST_ATEX- SN °2400586 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-FV-036** | Control Valve+Pneumatic Actuator | 1"-HY-190-03HSS-N | AST SpA | CV-8407 + Pneumatic Diaphragm SD11R | 2400587 | CE Ex - II 2 G Ex h IIC T6..T1 Gb X | AST Decl.Atex SN:2400587 - 1724000740-IN-DS-00007 | Declaration of Conformity By AST_ATEX- SN °2400587 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-FV-038** | Control Valve+Pneumatic Actuator | 1"-HY-190-03HSS-N | AST SpA | CV-8407 + Pneumatic Diaphragm SD11R | 2400588 | CE Ex - II 2 G Ex h IIC T6..T1 Gb X | AST Decl.Atex SN:2400588 - 1724000740-IN-DS-00007 | Declaration of Conformity By AST_ATEX- SN °2400588 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-PV-035** | Control Valve+Pneumatic Actuator | 3"-HY-142-03HSS-N | AST SpA | CV-8407 + Pneumatic Diaphragm SD11R | 2400589 | CE Ex - II 2 G Ex h IIC T6..T1 Gb X | AST Decl.Atex SN:2400589 - 1724000740-IN-DS-00007 | Declaration of Conformity By AST_ATEX- SN °2400589 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-PV-037** | Control Valve+Pneumatic Actuator | 3"-HY-167-03HSS-N | AST SpA | CV-8407 + Pneumatic Diaphragm SD11R | 2400590 | CE Ex - II 2 G Ex h IIC T6..T1 Gb X | AST Decl.Atex SN:2400590 - 1724000740-IN-DS-00007 | Declaration of Conformity By AST_ATEX- SN °2400590 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-PV-040** | Control Valve+Pneumatic Actuator | 3"-HY-171-03HSS-N | AST SpA | CV-8407 + Pneumatic Diaphragm SD11R | 2400591 | CE Ex - II 2 G Ex h IIC T6..T1 Gb X | AST Decl.Atex SN:2400591 - 1724000740-IN-DS-00007 | Declaration of Conformity By AST_ATEX- SN °2400591 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-PV-043** | Control Valve+Pneumatic Actuator | 3"-HY-175-03HSS-N | AST SpA | CV-8407 + Pneumatic Diaphragm SD11R | 2400592 | CE Ex - II 2 G Ex h IIC T6..T1 Gb X | AST Decl.Atex SN:2400592 - 1724000740-IN-DS-00007 | Declaration of Conformity By AST_ATEX- SN °2400592 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-PV-046** | Control Valve+Pneumatic Actuator | 3"-HY-180-03HSS-N | AST SpA | CV-8407 + Pneumatic Diaphragm SD11R | 2400593 | CE Ex - II 2 G Ex h IIC T6..T1 Gb X | AST Decl.Atex SN:2400593 - 1724000740-IN-DS-00007 | Declaration of Conformity By AST_ATEX- SN °2400593 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-PV-049** | Control Valve+Pneumatic Actuator | 3"-HY-184-03HSS-N | AST SpA | CV-8407 + Pneumatic Diaphragm SD11R | 2400594 | CE Ex - II 2 G Ex h IIC T6..T1 Gb X | AST Decl.Atex SN:2400594 - 1724000740-IN-DS-00007 | Declaration of Conformity By AST_ATEX- SN °2400594 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-PV-055A** | Control Valve+Pneumatic Actuator | 1-1/2"-HY-148-03HSS-N | AST SpA | CV-8407 + Pneumatic Diaphragm SD11R | 2400595 | CE Ex - II 2 G Ex h IIC T6..T1 Gb X | AST Decl.Atex SN:2400595 - 1724000740-IN-DS-00007 | Declaration of Conformity By AST_ATEX- SN °2400595 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-PV-055B** | Control Valve+Pneumatic Actuator | 1-1/2"-HY-148-03HSS-N | AST SpA | CV-8407 + Pneumatic Diaphragm SD11R | 2400596 | CE Ex - II 2 G Ex h IIC T6..T1 Gb X | AST Decl.Atex SN:2400596 - 1724000740-IN-DS-00007 | Declaration of Conformity By AST_ATEX- SN °2400596 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **64-PV-031A** | Control Valve+Pneumatic Actuator | 1"-N-158-01CS-N | AST SpA | CV-8407 + Pneumatic Diaphragm SD11R | 2400597 | CE Ex - II 2 G Ex h IIC T6..T1 Gb X | AST Decl.Atex SN:2400597 - 1724000740-IN-DS-00007 | Declaration of Conformity By AST_ATEX- SN °2400597 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **64-PV-031B** | Control Valve+Pneumatic Actuator | 1"-N-158-01CS-N | AST SpA | CV-8407 + Pneumatic Diaphragm SD11R | 2400598 | CE Ex - II 2 G Ex h IIC T6..T1 Gb X | AST Decl.Atex SN:2400598 - 1724000740-IN-DS-00007 | Declaration of Conformity By AST_ATEX- SN °2400598 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-ZSHL-031** | Open/Close Limit Switches | 1"-HY-153-03HSS-N | EISENBAU | GUARDABOX - GD SERIES GDSN0LIS2MS290 | Batch:44219 | CE Ex - II 2G Ex db IIC T6..T4 | Fiditas EU - Type Examination Certificate - 1724000740-IN-DS-00007 | FIDI 20 ATEX 0039X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-ZSHL-032** | Open/Close Limit Switches | 1"-HY-186-03HSS-N | EISENBAU | GUARDABOX - GD SERIES GDSN0LIS2MS290 | Batch:44219 | CE Ex - II 2G Ex db IIC T6..T4 | Fiditas EU - Type Examination Certificate - 1724000740-IN-DS-00007 | FIDI 20 ATEX 0039X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-ZSHL-033** | Open/Close Limit Switches | 1"-HY-187-03HSS-N | EISENBAU | GUARDABOX - GD SERIES GDSN0LIS2MS290 | Batch:44219 | CE Ex - II 2G Ex db IIC T6..T4 | Fiditas EU - Type Examination Certificate - 1724000740-IN-DS-00007 | FIDI 20 ATEX 0039X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-ZSHL-034** | Open/Close Limit Switches | 1"-HY-188-03HSS-N | EISENBAU | GUARDABOX - GD SERIES GDSN0LIS2MS290 | Batch:44219 | CE Ex - II 2G Ex db IIC T6..T4 | Fiditas EU - Type Examination Certificate - 1724000740-IN-DS-00007 | FIDI 20 ATEX 0039X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-ZSHL-036** | Open/Close Limit Switches | 1"-HY-190-03HSS-N | EISENBAU | GUARDABOX - GD SERIES GDSN0LIS2MS290 | Batch:44219 | CE Ex - II 2G Ex db IIC T6..T4 | Fiditas EU - Type Examination Certificate - 1724000740-IN-DS-00007 | FIDI 20 ATEX 0039X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-ZSHL-038** | Open/Close Limit Switches | 1"-HY-190-03HSS-N | EISENBAU | GUARDABOX - GD SERIES GDSN0LIS2MS290 | Batch:44219 | CE Ex - II 2G Ex db IIC T6..T4 | Fiditas EU - Type Examination Certificate - 1724000740-IN-DS-00007 | FIDI 20 ATEX 0039X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-ZSHL-035** | Open/Close Limit Switches | 3"-HY-142-03HSS-N | EISENBAU | GUARDABOX - GD SERIES GDSN0LIS2MS290 | Batch:44219 | CE Ex - II 2G Ex db IIC T6..T4 | Fiditas EU - Type Examination Certificate - 1724000740-IN-DS-00007 | FIDI 20 ATEX 0039X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-ZSHL-037** | Open/Close Limit Switches | 3"-HY-167-03HSS-N | EISENBAU | GUARDABOX - GD SERIES GDSN0LIS2MS290 | Batch:44219 | CE Ex - II 2G Ex db IIC T6..T4 | Fiditas EU - Type Examination Certificate - 1724000740-IN-DS-00007 | FIDI 20 ATEX 0039X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-ZSHL-040** | Open/Close Limit Switches | 3"-HY-171-03HSS-N | EISENBAU | GUARDABOX - GD SERIES GDSN0LIS2MS290 | Batch:44219 | CE Ex - II 2G Ex db IIC T6..T4 | Fiditas EU - Type Examination Certificate - 1724000740-IN-DS-00007 | FIDI 20 ATEX 0039X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-ZSHL-043** | Open/Close Limit Switches | 3"-HY-175-03HSS-N | EISENBAU | GUARDABOX - GD SERIES GDSN0LIS2MS290 | Batch:44219 | CE Ex - II 2G Ex db IIC T6..T4 | Fiditas EU - Type Examination Certificate - 1724000740-IN-DS-00007 | FIDI 20 ATEX 0039X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-ZSHL-046** | Open/Close Limit Switches | 3"-HY-180-03HSS-N | EISENBAU | GUARDABOX - GD SERIES GDSN0LIS2MS290 | Batch:44219 | CE Ex - II 2G Ex db IIC T6..T4 | Fiditas EU - Type Examination Certificate - 1724000740-IN-DS-00007 | FIDI 20 ATEX 0039X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-ZSHL-049** | Open/Close Limit Switches | 3"-HY-184-03HSS-N | EISENBAU | GUARDABOX - GD SERIES GDSN0LIS2MS290 | Batch:44219 | CE Ex - II 2G Ex db IIC T6..T4 | Fiditas EU - Type Examination Certificate - 1724000740-IN-DS-00007 | FIDI 20 ATEX 0039X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-ZSHL-055A** | Open/Close Limit Switches | 1-1/2"-HY-148-03HSS-N | EISENBAU | GUARDABOX - GD SERIES GDSN0LIS2MS290 | Batch:44219 | CE Ex - II 2G Ex db IIC T6..T4 | Fiditas EU - Type Examination Certificate - 1724000740-IN-DS-00007 | FIDI 20 ATEX 0039X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-ZSHL-055B** | Open/Close Limit Switches | 1-1/2"-HY-148-03HSS-N | EISENBAU | GUARDABOX - GD SERIES GDSN0LIS2MS290 | Batch:44219 | CE Ex - II 2G Ex db IIC T6..T4 | Fiditas EU - Type Examination Certificate - 1724000740-IN-DS-00007 | FIDI 20 ATEX 0039X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **64-ZSHL-031A** | Open/Close Limit Switches | 1"-N-158-01CS-N | EISENBAU | GUARDABOX - GD SERIES GDSN0LIS2MS290 | Batch:44219 | CE Ex - II 2G Ex db IIC T6..T4 | Fiditas EU - Type Examination Certificate - 1724000740-IN-DS-00007 | FIDI 20 ATEX 0039X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **64-ZSHL-031B** | Open/Close Limit Switches | 1"-N-158-01CS-N | EISENBAU | GUARDABOX - GD SERIES GDSN0LIS2MS290 | Batch:44219 | CE Ex - II 2G Ex db IIC T6..T4 | Fiditas EU - Type Examination Certificate - 1724000740-IN-DS-00007 | FIDI 20 ATEX 0039X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-FY-031** | Positioner | 1"-HY-153-03HSS-N | TISSIN | TS 900 Series | TI-TS905LC41S30 - 24050879 | CE Ex - II 2G Ex db IIC T5 / T6 | Tiissin EU - Type Examination Certificate - 1724000740-IN-DS-00007 | EPS 19 ATEX 1 112 X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-FY-032** | Positioner | 1"-HY-186-03HSS-N | TISSIN | TS 900 Series | TI-TS905LC41S30 - 24050880 | CE Ex - II 2G Ex db IIC T5 / T6 | Tiissin EU - Type Examination Certificate - 1724000740-IN-DS-00007 | EPS 19 ATEX 1 112 X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-FY-033** | Positioner | 1"-HY-187-03HSS-N | TISSIN | TS 900 Series | TI-TS905LC41S30 - 24050881 | CE Ex - II 2G Ex db IIC T5 / T6 | Tiissin EU - Type Examination Certificate - 1724000740-IN-DS-00007 | EPS 19 ATEX 1 112 X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-FY-034** | Positioner | 1"-HY-188-03HSS-N | TISSIN | TS 900 Series | TI-TS905LC41S30 - 24050882 | CE Ex - II 2G Ex db IIC T5 / T6 | Tiissin EU - Type Examination Certificate - 1724000740-IN-DS-00007 | EPS 19 ATEX 1 112 X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-FY-036** | Positioner | 1"-HY-190-03HSS-N | TISSIN | TS 900 Series | TI-TS905LC41S30 - 24050883 | CE Ex - II 2G Ex db IIC T5 / T6 | Tiissin EU - Type Examination Certificate - 1724000740-IN-DS-00007 | EPS 19 ATEX 1 112 X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-FY-038** | Positioner | 1"-HY-190-03HSS-N | TISSIN | TS 900 Series | TI-TS905LC41S30 - 24050884 | CE Ex - II 2G Ex db IIC T5 / T6 | Tiissin EU - Type Examination Certificate - 1724000740-IN-DS-00007 | EPS 19 ATEX 1 112 X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-PY-035** | Positioner | 3"-HY-142-03HSS-N | TISSIN | TS 900 Series | TI-TS905LC41S30 - 24050885 | CE Ex - II 2G Ex db IIC T5 / T6 | Tiissin EU - Type Examination Certificate - 1724000740-IN-DS-00007 | EPS 19 ATEX 1 112 X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-PY-037** | Positioner | 3"-HY-167-03HSS-N | TISSIN | TS 900 Series | TI-TS905LC41S30 - 24050886 | CE Ex - II 2G Ex db IIC T5 / T6 | Tiissin EU - Type Examination Certificate - 1724000740-IN-DS-00007 | EPS 19 ATEX 1 112 X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-PY-040** | Positioner | 3"-HY-171-03HSS-N | TISSIN | TS 900 Series | TI-TS905LC41S30 - 24050887 | CE Ex - II 2G Ex db IIC T5 / T6 | Tiissin EU - Type Examination Certificate - 1724000740-IN-DS-00007 | EPS 19 ATEX 1 112 X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-PY-043** | Positioner | 3"-HY-175-03HSS-N | TISSIN | TS 900 Series | TI-TS905LC41S30 - 24050888 | CE Ex - II 2G Ex db IIC T5 / T6 | Tiissin EU - Type Examination Certificate - 1724000740-IN-DS-00007 | EPS 19 ATEX 1 112 X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-PY-046** | Positioner | 3"-HY-180-03HSS-N | TISSIN | TS 900 Series | TI-TS905LC41S30 - 24050889 | CE Ex - II 2G Ex db IIC T5 / T6 | Tiissin EU - Type Examination Certificate - 1724000740-IN-DS-00007 | EPS 19 ATEX 1 112 X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-PY-049** | Positioner | 3"-HY-184-03HSS-N | TISSIN | TS 900 Series | TI-TS905LC41S30 - 24050890 | CE Ex - II 2G Ex db IIC T5 / T6 | Tiissin EU - Type Examination Certificate - 1724000740-IN-DS-00007 | EPS 19 ATEX 1 112 X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-PY-055A** | Positioner | 1-1/2"-HY-148-03HSS-N | TISSIN | TS 900 Series | TI-TS905LC41S30 - 24050891 | CE Ex - II 2G Ex db IIC T5 / T6 | Tiissin EU - Type Examination Certificate - 1724000740-IN-DS-00007 | EPS 19 ATEX 1 112 X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-PY-055B** | Positioner | 1-1/2"-HY-148-03HSS-N | TISSIN | TS 900 Series | TI-TS905LC41S30 - 24050892 | CE Ex - II 2G Ex db IIC T5 / T6 | Tiissin EU - Type Examination Certificate - 1724000740-IN-DS-00007 | EPS 19 ATEX 1 112 X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **64-PY-031A** | Positioner | 1"-N-158-01CS-N | TISSIN | TS 900 Series | TI-TS905LC41S30 - 24050893 | CE Ex - II 2G Ex db IIC T5 / T6 | Tiissin EU - Type Examination Certificate - 1724000740-IN-DS-00007 | EPS 19 ATEX 1 112 X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **64-PY-031B** | Positioner | 1"-N-158-01CS-N | TISSIN | TS 900 Series | TI-TS905LC41S30 - 24050894 | CE Ex - II 2G Ex db IIC T5 / T6 | Tiissin EU - Type Examination Certificate - 1724000740-IN-DS-00007 | EPS 19 ATEX 1 112 X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-SV-031** | Air set Filter | 1"-HY-153-03HSS-N | SITECNA | FR04 | FR08411S00SSNB2 TRACE 24/1638 | CE Ex - 2G Ex h IIC T6/T5 Gb X | Sitecna EU - Type Examination Certificate - 1724000740-IN-DS-00007 | Declaration of Conformity By Sitecna_FR08411S00SSNB2 TRACE 24/1638 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-SV-032** | Air set Filter | 1"-HY-186-03HSS-N | SITECNA | FR04 | FR08411S00SSNB2 TRACE 24/1638 | CE Ex - 2G Ex h IIC T6/T5 Gb X | Sitecna EU - Type Examination Certificate - 1724000740-IN-DS-00007 | Declaration of Conformity By Sitecna_FR08411S00SSNB2 TRACE 24/1638 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-SV-033** | Air set Filter | 1"-HY-187-03HSS-N | SITECNA | FR04 | FR08411S00SSNB2 TRACE 24/1638 | CE Ex - 2G Ex h IIC T6/T5 Gb X | Sitecna EU - Type Examination Certificate - 1724000740-IN-DS-00007 | Declaration of Conformity By Sitecna_FR08411S00SSNB2 TRACE 24/1638 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-SV-034** | Air set Filter | 1"-HY-188-03HSS-N | SITECNA | FR04 | FR08411S00SSNB2 TRACE 24/1638 | CE Ex - 2G Ex h IIC T6/T5 Gb X | Sitecna EU - Type Examination Certificate - 1724000740-IN-DS-00007 | Declaration of Conformity By Sitecna_FR08411S00SSNB2 TRACE 24/1638 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-SV-036** | Air set Filter | 1"-HY-190-03HSS-N | SITECNA | FR04 | FR08411S00SSNB2 TRACE 24/1638 | CE Ex - 2G Ex h IIC T6/T5 Gb X | Sitecna EU - Type Examination Certificate - 1724000740-IN-DS-00007 | Declaration of Conformity By Sitecna_FR08411S00SSNB2 TRACE 24/1638 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-SV-038** | Air set Filter | 1"-HY-190-03HSS-N | SITECNA | FR04 | FR08411S00SSNB2 TRACE 24/1638 | CE Ex - 2G Ex h IIC T6/T5 Gb X | Sitecna EU - Type Examination Certificate - 1724000740-IN-DS-00007 | Declaration of Conformity By Sitecna_FR08411S00SSNB2 TRACE 24/1638 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-SV-035** | Air set Filter | 3"-HY-142-03HSS-N | SITECNA | FR04 | FR08411S00SSNB2 TRACE 24/1638 | CE Ex - 2G Ex h IIC T6/T5 Gb X | Sitecna EU - Type Examination Certificate - 1724000740-IN-DS-00007 | Declaration of Conformity By Sitecna_FR08411S00SSNB2 TRACE 24/1638 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-SV-037** | Air set Filter | 3"-HY-167-03HSS-N | SITECNA | FR04 | FR08411S00SSNB2 TRACE 24/1638 | CE Ex - 2G Ex h IIC T6/T5 Gb X | Sitecna EU - Type Examination Certificate - 1724000740-IN-DS-00007 | Declaration of Conformity By Sitecna_FR08411S00SSNB2 TRACE 24/1638 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-SV-040** | Air set Filter | 3"-HY-171-03HSS-N | SITECNA | FR04 | FR08411S00SSNB2 TRACE 24/1638 | CE Ex - 2G Ex h IIC T6/T5 Gb X | Sitecna EU - Type Examination Certificate - 1724000740-IN-DS-00007 | Declaration of Conformity By Sitecna_FR08411S00SSNB2 TRACE 24/1638 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-SV-043** | Air set Filter | 3"-HY-175-03HSS-N | SITECNA | FR04 | FR08411S00SSNB2 TRACE 24/1638 | CE Ex - 2G Ex h IIC T6/T5 Gb X | Sitecna EU - Type Examination Certificate - 1724000740-IN-DS-00007 | Declaration of Conformity By Sitecna_FR08411S00SSNB2 TRACE 24/1638 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-SV-046** | Air set Filter | 3"-HY-180-03HSS-N | SITECNA | FR04 | FR08411S00SSNB2 TRACE 24/1638 | CE Ex - 2G Ex h IIC T6/T5 Gb X | Sitecna EU - Type Examination Certificate - 1724000740-IN-DS-00007 | Declaration of Conformity By Sitecna_FR08411S00SSNB2 TRACE 24/1638 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-SV-049** | Air set Filter | 3"-HY-184-03HSS-N | SITECNA | FR04 | FR08411S00SSNB2 TRACE 24/1638 | CE Ex - 2G Ex h IIC T6/T5 Gb X | Sitecna EU - Type Examination Certificate - 1724000740-IN-DS-00007 | Declaration of Conformity By Sitecna_FR08411S00SSNB2 TRACE 24/1638 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-SV-055A** | Air set Filter | 1-1/2"-HY-148-03HSS-N | SITECNA | FR04 | FR08411S00SSNB2 TRACE 24/1638 | CE Ex - 2G Ex h IIC T6/T5 Gb X | Sitecna EU - Type Examination Certificate - 1724000740-IN-DS-00007 | Declaration of Conformity By Sitecna_FR08411S00SSNB2 TRACE 24/1638 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-SV-055B** | Air set Filter | 1-1/2"-HY-148-03HSS-N | SITECNA | FR04 | FR08411S00SSNB2 TRACE 24/1638 | CE Ex - 2G Ex h IIC T6/T5 Gb X | Sitecna EU - Type Examination Certificate - 1724000740-IN-DS-00007 | Declaration of Conformity By Sitecna_FR08411S00SSNB2 TRACE 24/1638 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **64-SV-031A** | Air set Filter | 1"-N-158-01CS-N | SITECNA | FR04 | FR08411S00SSNB2 TRACE 24/1638 | CE Ex - 2G Ex h IIC T6/T5 Gb X | Sitecna EU - Type Examination Certificate - 1724000740-IN-DS-00007 | Declaration of Conformity By Sitecna_FR08411S00SSNB2 TRACE 24/1638 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **64-SV-031B** | Air set Filter | 1"-N-158-01CS-N | SITECNA | FR04 | FR08411S00SSNB2 TRACE 24/1638 | CE Ex - 2G Ex h IIC T6/T5 Gb X | Sitecna EU - Type Examination Certificate - 1724000740-IN-DS-00007 | Declaration of Conformity By Sitecna_FR08411S00SSNB2 TRACE 24/1638 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-PG-031** | Air set Pressure Gauge Filter | 1"-HY-153-03HSS-N | SITECNA | FR04 Pressure Gauge_MBS6P4S2PN07-ATEX | FR08411S00SSNB2 TRACE 24/1638 - PRESSURE GAUGE MBS6P4S2PN07-ATEX | CE Ex - 2G Ex h IIC T6/T5 Gb X | Sitecna EU - Type Examination Certificate - 1724000740-IN-DS-00007 | Declaration of Conformity By Sitecna_FR08411S00SSNB2 TRACE 24/1638 - PRESSURE GAUGE MBS6P4S2PN07-ATEX | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-PG-032** | Air set Pressure Gauge Filter | 1"-HY-186-03HSS-N | SITECNA | FR04 Pressure Gauge_MBS6P4S2PN07-ATEX | FR08411S00SSNB2 TRACE 24/1638 - PRESSURE GAUGE MBS6P4S2PN07-ATEX | CE Ex - 2G Ex h IIC T6/T5 Gb X | Sitecna EU - Type Examination Certificate - 1724000740-IN-DS-00007 | Declaration of Conformity By Sitecna_FR08411S00SSNB2 TRACE 24/1638 - PRESSURE GAUGE MBS6P4S2PN07-ATEX | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-PG-033** | Air set Pressure Gauge Filter | 1"-HY-187-03HSS-N | SITECNA | FR04 Pressure Gauge_MBS6P4S2PN07-ATEX | FR08411S00SSNB2 TRACE 24/1638 - PRESSURE GAUGE MBS6P4S2PN07-ATEX | CE Ex - 2G Ex h IIC T6/T5 Gb X | Sitecna EU - Type Examination Certificate - 1724000740-IN-DS-00007 | Declaration of Conformity By Sitecna_FR08411S00SSNB2 TRACE 24/1638 - PRESSURE GAUGE MBS6P4S2PN07-ATEX | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-PG-034** | Air set Pressure Gauge Filter | 1"-HY-188-03HSS-N | SITECNA | FR04 Pressure Gauge_MBS6P4S2PN07-ATEX | FR08411S00SSNB2 TRACE 24/1638 - PRESSURE GAUGE MBS6P4S2PN07-ATEX | CE Ex - 2G Ex h IIC T6/T5 Gb X | Sitecna EU - Type Examination Certificate - 1724000740-IN-DS-00007 | Declaration of Conformity By Sitecna_FR08411S00SSNB2 TRACE 24/1638 - PRESSURE GAUGE MBS6P4S2PN07-ATEX | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-PG-036** | Air set Pressure Gauge Filter | 1"-HY-190-03HSS-N | SITECNA | FR04 Pressure Gauge_MBS6P4S2PN07-ATEX | FR08411S00SSNB2 TRACE 24/1638 - PRESSURE GAUGE MBS6P4S2PN07-ATEX | CE Ex - 2G Ex h IIC T6/T5 Gb X | Sitecna EU - Type Examination Certificate - 1724000740-IN-DS-00007 | Declaration of Conformity By Sitecna_FR08411S00SSNB2 TRACE 24/1638 - PRESSURE GAUGE MBS6P4S2PN07-ATEX | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-PG-038** | Air set Pressure Gauge Filter | 1"-HY-190-03HSS-N | SITECNA | FR04 Pressure Gauge_MBS6P4S2PN07-ATEX | FR08411S00SSNB2 TRACE 24/1638 - PRESSURE GAUGE MBS6P4S2PN07-ATEX | CE Ex - 2G Ex h IIC T6/T5 Gb X | Sitecna EU - Type Examination Certificate - 1724000740-IN-DS-00007 | Declaration of Conformity By Sitecna_FR08411S00SSNB2 TRACE 24/1638 - PRESSURE GAUGE MBS6P4S2PN07-ATEX | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-PG-035** | Air set Pressure Gauge Filter | 3"-HY-142-03HSS-N | SITECNA | FR04 Pressure Gauge_MBS6P4S2PN07-ATEX | FR08411S00SSNB2 TRACE 24/1638 - PRESSURE GAUGE MBS6P4S2PN07-ATEX | CE Ex - 2G Ex h IIC T6/T5 Gb X | Sitecna EU - Type Examination Certificate - 1724000740-IN-DS-00007 | Declaration of Conformity By Sitecna_FR08411S00SSNB2 TRACE 24/1638 - PRESSURE GAUGE MBS6P4S2PN07-ATEX | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-PG-037** | Air set Pressure Gauge Filter | 3"-HY-167-03HSS-N | SITECNA | FR04 Pressure Gauge_MBS6P4S2PN07-ATEX | FR08411S00SSNB2 TRACE 24/1638 - PRESSURE GAUGE MBS6P4S2PN07-ATEX | CE Ex - 2G Ex h IIC T6/T5 Gb X | Sitecna EU - Type Examination Certificate - 1724000740-IN-DS-00007 | Declaration of Conformity By Sitecna_FR08411S00SSNB2 TRACE 24/1638 - PRESSURE GAUGE MBS6P4S2PN07-ATEX | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-PG-040** | Air set Pressure Gauge Filter | 3"-HY-171-03HSS-N | SITECNA | FR04 Pressure Gauge_MBS6P4S2PN07-ATEX | FR08411S00SSNB2 TRACE 24/1638 - PRESSURE GAUGE MBS6P4S2PN07-ATEX | CE Ex - 2G Ex h IIC T6/T5 Gb X | Sitecna EU - Type Examination Certificate - 1724000740-IN-DS-00007 | Declaration of Conformity By Sitecna_FR08411S00SSNB2 TRACE 24/1638 - PRESSURE GAUGE MBS6P4S2PN07-ATEX | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-PG-043** | Air set Pressure G

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **25-PSV-049** | Safety Valve | 3"-HY-184-03HSS-N | COITECH | SLK | 24-03801 | CE Ex - II 2 GD Ex h X | Coitech EU - Type Examination Certificate - 1724000740-IN-DS-00007 | Declaration of Conformity By COITECH SLKL-08HA74-015 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-PSV-055A** | Safety Valve | 1-1/2"-HY-148-03HSS-N | COITECH | SLK | 24-03802 | CE Ex - II 2 GD Ex h X | Coitech EU - Type Examination Certificate - 1724000740-IN-DS-00007 | Declaration of Conformity By COITECH SLKL-08HA74-015 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-PSV-055B** | Safety Valve | 1-1/2"-HY-148-03HSS-N | COITECH | SLK | 24-03803 | CE Ex - II 2 GD Ex h X | Coitech EU - Type Examination Certificate - 1724000740-IN-DS-00007 | Declaration of Conformity By COITECH SLKL-08HA74-015 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **64-PSV-031A** | Safety Valve | 1"-N-158-01CS-N | COITECH | SLK | 24-03804 | CE Ex - II 2 GD Ex h X | Coitech EU - Type Examination Certificate - 1724000740-IN-DS-00007 | Declaration of Conformity By COITECH SLKL-08HA74-015 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **64-PSV-031B** | Safety Valve | 1"-N-158-01CS-N | COITECH | SLK | 24-03805 | CE Ex - II 2 GD Ex h X | Coitech EU - Type Examination Certificate - 1724000740-IN-DS-00007 | Declaration of Conformity By COITECH SLKL-08HA74-015 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| | | | | | | | | | | | | | | | | |

# PART 2-CERTIFICATION DOSSIER

# Section 1.3

Atex documentation

# Base Load Power Hub (BLPH)

## CONTROL VALVES

## ATEX DOCUMENTATION

Document Number: 1724000740-IN-LIS-00015

Document Class: 2

| ROSETTI MARINO | |
|---|---|
| 1 | NO COMMENTS - APPROVED - WORK MAY PROCEED |
| 2 | MINOR COMMENTS - REVISE AND RESUBMIT - WORK MAY PROCEED |
| 3 | MAJOR COMMENTS – REJECTED – DO NOT PROCEED |
| 4 | APPROVAL NOT REQUIRED |
| *NOTE: Approval doesn't relieve the supplier from mandatory compliance with contractual documents and specifications. Comments made do not imply acceptance of any cost or delivery impact.* | |
| Sign | Date |
| Filippo Zanellati | 17/02/2025 |

| Rev. | Date | Description | Prepared | Reviewed | Approved |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| 03 | 06/02/2025 | Accepted for Construction (AFC) | EM | LP | LP |
| 02 | 19/12/2024 | Accepted for Construction (AFC) | EM | LP | LP |
| 01 | 25/11/2024 | Issue for Review (IFR) | EM | LP | LP |
| 00 | 19/07/2024 | Issue for Review (IFR) | EM | LP | LP |




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| 2 | Table of Contents | X | X | X | X | | | | |
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Revision / Change Log

| Rev. | Description |
|---|---|
| 00 | ISSUE FOR REVIEW (IFR) |
| 01 | ISSUE FOR REVIEW (IFR) |
| 02 | ACCEPTED FOR CONSTRUCTION (AFC) |
| 03 | ACCEPTED FOR CONSTRUCTION (AFC) |
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| Tag Number | Description | Location | Manufacturer | Model Type Catalogue Number | Serial Number | ATEX Certification Marking | Reference Document | ATEX Certificate Number | Installation Zone | Notes / Comments | P.O. | Vendor | Skid / Package | Barrier Calculation Ref. | Non-Electrical Equipment | Special Conditions of safe use Applicable |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **25-FV-031** | Control Valve+Pneumatic Actuator | 1"-HY-153-03HSS-N | AST SpA | CV-8407 + Pneumatic Diaphragm SD11R | 2400583 | CE Ex - II 2 G Ex h IIC T6..T1 Gb X | AST Decl.Atex SN:2400583 - 1724000740-IN-DS-00007 | Declaration of Conformity By AST_ATEX- SN °2400583 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-FV-032** | Control Valve+Pneumatic Actuator | 1"-HY-186-03HSS-N | AST SpA | CV-8407 + Pneumatic Diaphragm SD11R | 2400584 | CE Ex - II 2 G Ex h IIC T6..T1 Gb X | AST Decl.Atex SN:2400584 - 1724000740-IN-DS-00007 | Declaration of Conformity By AST_ATEX- SN °2400584 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-FV-033** | Control Valve+Pneumatic Actuator | 1"-HY-187-03HSS-N | AST SpA | CV-8407 + Pneumatic Diaphragm SD11R | 2400585 | CE Ex - II 2 G Ex h IIC T6..T1 Gb X | AST Decl.Atex SN:2400585 - 1724000740-IN-DS-00007 | Declaration of Conformity By AST_ATEX- SN °2400585 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-FV-034** | Control Valve+Pneumatic Actuator | 1"-HY-188-03HSS-N | AST SpA | CV-8407 + Pneumatic Diaphragm SD11R | 2400586 | CE Ex - II 2 G Ex h IIC T6..T1 Gb X | AST Decl.Atex SN:2400586 - 1724000740-IN-DS-00007 | Declaration of Conformity By AST_ATEX- SN °2400586 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-FV-036** | Control Valve+Pneumatic Actuator | 1"-HY-190-03HSS-N | AST SpA | CV-8407 + Pneumatic Diaphragm SD11R | 2400587 | CE Ex - II 2 G Ex h IIC T6..T1 Gb X | AST Decl.Atex SN:2400587 - 1724000740-IN-DS-00007 | Declaration of Conformity By AST_ATEX- SN °2400587 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-FV-038** | Control Valve+Pneumatic Actuator | 1"-HY-190-03HSS-N | AST SpA | CV-8407 + Pneumatic Diaphragm SD11R | 2400588 | CE Ex - II 2 G Ex h IIC T6..T1 Gb X | AST Decl.Atex SN:2400588 - 1724000740-IN-DS-00007 | Declaration of Conformity By AST_ATEX- SN °2400588 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-PV-035** | Control Valve+Pneumatic Actuator | 3"-HY-142-03HSS-N | AST SpA | CV-8407 + Pneumatic Diaphragm SD11R | 2400589 | CE Ex - II 2 G Ex h IIC T6..T1 Gb X | AST Decl.Atex SN:2400589 - 1724000740-IN-DS-00007 | Declaration of Conformity By AST_ATEX- SN °2400589 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-PV-037** | Control Valve+Pneumatic Actuator | 3"-HY-167-03HSS-N | AST SpA | CV-8407 + Pneumatic Diaphragm SD11R | 2400590 | CE Ex - II 2 G Ex h IIC T6..T1 Gb X | AST Decl.Atex SN:2400590 - 1724000740-IN-DS-00007 | Declaration of Conformity By AST_ATEX- SN °2400590 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-PV-040** | Control Valve+Pneumatic Actuator | 3"-HY-171-03HSS-N | AST SpA | CV-8407 + Pneumatic Diaphragm SD11R | 2400591 | CE Ex - II 2 G Ex h IIC T6..T1 Gb X | AST Decl.Atex SN:2400591 - 1724000740-IN-DS-00007 | Declaration of Conformity By AST_ATEX- SN °2400591 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-PV-043** | Control Valve+Pneumatic Actuator | 3"-HY-175-03HSS-N | AST SpA | CV-8407 + Pneumatic Diaphragm SD11R | 2400592 | CE Ex - II 2 G Ex h IIC T6..T1 Gb X | AST Decl.Atex SN:2400592 - 1724000740-IN-DS-00007 | Declaration of Conformity By AST_ATEX- SN °2400592 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-PV-046** | Control Valve+Pneumatic Actuator | 3"-HY-180-03HSS-N | AST SpA | CV-8407 + Pneumatic Diaphragm SD11R | 2400593 | CE Ex - II 2 G Ex h IIC T6..T1 Gb X | AST Decl.Atex SN:2400593 - 1724000740-IN-DS-00007 | Declaration of Conformity By AST_ATEX- SN °2400593 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-PV-049** | Control Valve+Pneumatic Actuator | 3"-HY-184-03HSS-N | AST SpA | CV-8407 + Pneumatic Diaphragm SD11R | 2400594 | CE Ex - II 2 G Ex h IIC T6..T1 Gb X | AST Decl.Atex SN:2400594 - 1724000740-IN-DS-00007 | Declaration of Conformity By AST_ATEX- SN °2400594 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-PV-055A** | Control Valve+Pneumatic Actuator | 1-1/2"-HY-148-03HSS-N | AST SpA | CV-8407 + Pneumatic Diaphragm SD11R | 2400595 | CE Ex - II 2 G Ex h IIC T6..T1 Gb X | AST Decl.Atex SN:2400595 - 1724000740-IN-DS-00007 | Declaration of Conformity By AST_ATEX- SN °2400595 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-PV-055B** | Control Valve+Pneumatic Actuator | 1-1/2"-HY-148-03HSS-N | AST SpA | CV-8407 + Pneumatic Diaphragm SD11R | 2400596 | CE Ex - II 2 G Ex h IIC T6..T1 Gb X | AST Decl.Atex SN:2400596 - 1724000740-IN-DS-00007 | Declaration of Conformity By AST_ATEX- SN °2400596 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **64-PV-031A** | Control Valve+Pneumatic Actuator | 1"-N-158-01CS-N | AST SpA | CV-8407 + Pneumatic Diaphragm SD11R | 2400597 | CE Ex - II 2 G Ex h IIC T6..T1 Gb X | AST Decl.Atex SN:2400597 - 1724000740-IN-DS-00007 | Declaration of Conformity By AST_ATEX- SN °2400597 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **64-PV-031B** | Control Valve+Pneumatic Actuator | 1"-N-158-01CS-N | AST SpA | CV-8407 + Pneumatic Diaphragm SD11R | 2400598 | CE Ex - II 2 G Ex h IIC T6..T1 Gb X | AST Decl.Atex SN:2400598 - 1724000740-IN-DS-00007 | Declaration of Conformity By AST_ATEX- SN °2400598 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-ZSHL-031** | Open/Close Limit Switches | 1"-HY-153-03HSS-N | EISENBAU | GUARDABOX - GD SERIES GDSN0LIS2MS290 | Batch:44219 | CE Ex - II 2G Ex db IIC T6..T4 | Fiditas EU - Type Examination Certificate - 1724000740-IN-DS-00007 | FIDI 20 ATEX 0039X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-ZSHL-032** | Open/Close Limit Switches | 1"-HY-186-03HSS-N | EISENBAU | GUARDABOX - GD SERIES GDSN0LIS2MS290 | Batch:44219 | CE Ex - II 2G Ex db IIC T6..T4 | Fiditas EU - Type Examination Certificate - 1724000740-IN-DS-00007 | FIDI 20 ATEX 0039X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-ZSHL-033** | Open/Close Limit Switches | 1"-HY-187-03HSS-N | EISENBAU | GUARDABOX - GD SERIES GDSN0LIS2MS290 | Batch:44219 | CE Ex - II 2G Ex db IIC T6..T4 | Fiditas EU - Type Examination Certificate - 1724000740-IN-DS-00007 | FIDI 20 ATEX 0039X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-ZSHL-034** | Open/Close Limit Switches | 1"-HY-188-03HSS-N | EISENBAU | GUARDABOX - GD SERIES GDSN0LIS2MS290 | Batch:44219 | CE Ex - II 2G Ex db IIC T6..T4 | Fiditas EU - Type Examination Certificate - 1724000740-IN-DS-00007 | FIDI 20 ATEX 0039X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-ZSHL-036** | Open/Close Limit Switches | 1"-HY-190-03HSS-N | EISENBAU | GUARDABOX - GD SERIES GDSN0LIS2MS290 | Batch:44219 | CE Ex - II 2G Ex db IIC T6..T4 | Fiditas EU - Type Examination Certificate - 1724000740-IN-DS-00007 | FIDI 20 ATEX 0039X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-ZSHL-038** | Open/Close Limit Switches | 1"-HY-190-03HSS-N | EISENBAU | GUARDABOX - GD SERIES GDSN0LIS2MS290 | Batch:44219 | CE Ex - II 2G Ex db IIC T6..T4 | Fiditas EU - Type Examination Certificate - 1724000740-IN-DS-00007 | FIDI 20 ATEX 0039X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-ZSHL-035** | Open/Close Limit Switches | 3"-HY-142-03HSS-N | EISENBAU | GUARDABOX - GD SERIES GDSN0LIS2MS290 | Batch:44219 | CE Ex - II 2G Ex db IIC T6..T4 | Fiditas EU - Type Examination Certificate - 1724000740-IN-DS-00007 | FIDI 20 ATEX 0039X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-ZSHL-037** | Open/Close Limit Switches | 3"-HY-167-03HSS-N | EISENBAU | GUARDABOX - GD SERIES GDSN0LIS2MS290 | Batch:44219 | CE Ex - II 2G Ex db IIC T6..T4 | Fiditas EU - Type Examination Certificate - 1724000740-IN-DS-00007 | FIDI 20 ATEX 0039X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-ZSHL-040** | Open/Close Limit Switches | 3"-HY-171-03HSS-N | EISENBAU | GUARDABOX - GD SERIES GDSN0LIS2MS290 | Batch:44219 | CE Ex - II 2G Ex db IIC T6..T4 | Fiditas EU - Type Examination Certificate - 1724000740-IN-DS-00007 | FIDI 20 ATEX 0039X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-ZSHL-043** | Open/Close Limit Switches | 3"-HY-175-03HSS-N | EISENBAU | GUARDABOX - GD SERIES GDSN0LIS2MS290 | Batch:44219 | CE Ex - II 2G Ex db IIC T6..T4 | Fiditas EU - Type Examination Certificate - 1724000740-IN-DS-00007 | FIDI 20 ATEX 0039X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-ZSHL-046** | Open/Close Limit Switches | 3"-HY-180-03HSS-N | EISENBAU | GUARDABOX - GD SERIES GDSN0LIS2MS290 | Batch:44219 | CE Ex - II 2G Ex db IIC T6..T4 | Fiditas EU - Type Examination Certificate - 1724000740-IN-DS-00007 | FIDI 20 ATEX 0039X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-ZSHL-049** | Open/Close Limit Switches | 3"-HY-184-03HSS-N | EISENBAU | GUARDABOX - GD SERIES GDSN0LIS2MS290 | Batch:44219 | CE Ex - II 2G Ex db IIC T6..T4 | Fiditas EU - Type Examination Certificate - 1724000740-IN-DS-00007 | FIDI 20 ATEX 0039X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-ZSHL-055A** | Open/Close Limit Switches | 1-1/2"-HY-148-03HSS-N | EISENBAU | GUARDABOX - GD SERIES GDSN0LIS2MS290 | Batch:44219 | CE Ex - II 2G Ex db IIC T6..T4 | Fiditas EU - Type Examination Certificate - 1724000740-IN-DS-00007 | FIDI 20 ATEX 0039X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-ZSHL-055B** | Open/Close Limit Switches | 1-1/2"-HY-148-03HSS-N | EISENBAU | GUARDABOX - GD SERIES GDSN0LIS2MS290 | Batch:44219 | CE Ex - II 2G Ex db IIC T6..T4 | Fiditas EU - Type Examination Certificate - 1724000740-IN-DS-00007 | FIDI 20 ATEX 0039X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **64-ZSHL-031A** | Open/Close Limit Switches | 1"-N-158-01CS-N | EISENBAU | GUARDABOX - GD SERIES GDSN0LIS2MS290 | Batch:44219 | CE Ex - II 2G Ex db IIC T6..T4 | Fiditas EU - Type Examination Certificate - 1724000740-IN-DS-00007 | FIDI 20 ATEX 0039X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **64-ZSHL-031B** | Open/Close Limit Switches | 1"-N-158-01CS-N | EISENBAU | GUARDABOX - GD SERIES GDSN0LIS2MS290 | Batch:44219 | CE Ex - II 2G Ex db IIC T6..T4 | Fiditas EU - Type Examination Certificate - 1724000740-IN-DS-00007 | FIDI 20 ATEX 0039X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-FY-031** | Positioner | 1"-HY-153-03HSS-N | TISSIN | TS 900 Series | TI-TS905LC41S30 - 24050879 | CE Ex - II 2G Ex db IIC T5 / T6 | Tissin EU - Type Examination Certificate - 1724000740-IN-DS-00007 | EPS 19 ATEX 1 112 X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-FY-032** | Positioner | 1"-HY-186-03HSS-N | TISSIN | TS 900 Series | TI-TS905LC41S30 - 24050880 | CE Ex - II 2G Ex db IIC T5 / T6 | Tissin EU - Type Examination Certificate - 1724000740-IN-DS-00007 | EPS 19 ATEX 1 112 X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-FY-033** | Positioner | 1"-HY-187-03HSS-N | TISSIN | TS 900 Series | TI-TS905LC41S30 - 24050881 | CE Ex - II 2G Ex db IIC T5 / T6 | Tissin EU - Type Examination Certificate - 1724000740-IN-DS-00007 | EPS 19 ATEX 1 112 X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-FY-034** | Positioner | 1"-HY-188-03HSS-N | TISSIN | TS 900 Series | TI-TS905LC41S30 - 24050882 | CE Ex - II 2G Ex db IIC T5 / T6 | Tissin EU - Type Examination Certificate - 1724000740-IN-DS-00007 | EPS 19 ATEX 1 112 X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-FY-036** | Positioner | 1"-HY-190-03HSS-N | TISSIN | TS 900 Series | TI-TS905LC41S30 - 24050883 | CE Ex - II 2G Ex db IIC T5 / T6 | Tissin EU - Type Examination Certificate - 1724000740-IN-DS-00007 | EPS 19 ATEX 1 112 X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-FY-038** | Positioner | 1"-HY-190-03HSS-N | TISSIN | TS 900 Series | TI-TS905LC41S30 - 24050884 | CE Ex - II 2G Ex db IIC T5 / T6 | Tissin EU - Type Examination Certificate - 1724000740-IN-DS-00007 | EPS 19 ATEX 1 112 X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-PY-035** | Positioner | 3"-HY-142-03HSS-N | TISSIN | TS 900 Series | TI-TS905LC41S30 - 24050885 | CE Ex - II 2G Ex db IIC T5 / T6 | Tissin EU - Type Examination Certificate - 1724000740-IN-DS-00007 | EPS 19 ATEX 1 112 X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-PY-037** | Positioner | 3"-HY-167-03HSS-N | TISSIN | TS 900 Series | TI-TS905LC41S30 - 24050886 | CE Ex - II 2G Ex db IIC T5 / T6 | Tissin EU - Type Examination Certificate - 1724000740-IN-DS-00007 | EPS 19 ATEX 1 112 X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-PY-040** | Positioner | 3"-HY-171-03HSS-N | TISSIN | TS 900 Series | TI-TS905LC41S30 - 24050887 | CE Ex - II 2G Ex db IIC T5 / T6 | Tissin EU - Type Examination Certificate - 1724000740-IN-DS-00007 | EPS 19 ATEX 1 112 X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-PY-043** | Positioner | 3"-HY-175-03HSS-N | TISSIN | TS 900 Series | TI-TS905LC41S30 - 24050888 | CE Ex - II 2G Ex db IIC T5 / T6 | Tissin EU - Type Examination Certificate - 1724000740-IN-DS-00007 | EPS 19 ATEX 1 112 X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-PY-046** | Positioner | 3"-HY-180-03HSS-N | TISSIN | TS 900 Series | TI-TS905LC41S30 - 24050889 | CE Ex - II 2G Ex db IIC T5 / T6 | Tissin EU - Type Examination Certificate - 1724000740-IN-DS-00007 | EPS 19 ATEX 1 112 X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-PY-049** | Positioner | 3"-HY-184-03HSS-N | TISSIN | TS 900 Series | TI-TS905LC41S30 - 24050890 | CE Ex - II 2G Ex db IIC T5 / T6 | Tissin EU - Type Examination Certificate - 1724000740-IN-DS-00007 | EPS 19 ATEX 1 112 X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-PY-055A** | Positioner | 1-1/2"-HY-148-03HSS-N | TISSIN | TS 900 Series | TI-TS905LC41S30 - 24050891 | CE Ex - II 2G Ex db IIC T5 / T6 | Tissin EU - Type Examination Certificate - 1724000740-IN-DS-00007 | EPS 19 ATEX 1 112 X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-PY-055B** | Positioner | 1-1/2"-HY-148-03HSS-N | TISSIN | TS 900 Series | TI-TS905LC41S30 - 24050892 | CE Ex - II 2G Ex db IIC T5 / T6 | Tissin EU - Type Examination Certificate - 1724000740-IN-DS-00007 | EPS 19 ATEX 1 112 X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **64-PY-031A** | Positioner | 1"-N-158-01CS-N | TISSIN | TS 900 Series | TI-TS905LC41S30 - 24050893 | CE Ex - II 2G Ex db IIC T5 / T6 | Tissin EU - Type Examination Certificate - 1724000740-IN-DS-00007 | EPS 19 ATEX 1 112 X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **64-PY-031B** | Positioner | 1"-N-158-01CS-N | TISSIN | TS 900 Series | TI-TS905LC41S30 - 24050894 | CE Ex - II 2G Ex db IIC T5 / T6 | Tissin EU - Type Examination Certificate - 1724000740-IN-DS-00007 | EPS 19 ATEX 1 112 X | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | NO | YES |
| **25-SV-031** | Air set Filter | 1"-HY-153-03HSS-N | SITECNA | FR04 | FR08411S00SSNB2 TRACE 24/1638 | CE Ex - 2G Ex h IIC T6/T5 Gb X | Sitecna EU - Type Examination Certificate - 1724000740-IN-DS-00007 | Declaration of Conformity By Sitecna_FR08411S00SSNB2 TRACE 24/1638 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-SV-032** | Air set Filter | 1"-HY-186-03HSS-N | SITECNA | FR04 | FR08411S00SSNB2 TRACE 24/1638 | CE Ex - 2G Ex h IIC T6/T5 Gb X | Sitecna EU - Type Examination Certificate - 1724000740-IN-DS-00007 | Declaration of Conformity By Sitecna_FR08411S00SSNB2 TRACE 24/1638 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-SV-033** | Air set Filter | 1"-HY-187-03HSS-N | SITECNA | FR04 | FR08411S00SSNB2 TRACE 24/1638 | CE Ex - 2G Ex h IIC T6/T5 Gb X | Sitecna EU - Type Examination Certificate - 1724000740-IN-DS-00007 | Declaration of Conformity By Sitecna_FR08411S00SSNB2 TRACE 24/1638 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-SV-034** | Air set Filter | 1"-HY-188-03HSS-N | SITECNA | FR04 | FR08411S00SSNB2 TRACE 24/1638 | CE Ex - 2G Ex h IIC T6/T5 Gb X | Sitecna EU - Type Examination Certificate - 1724000740-IN-DS-00007 | Declaration of Conformity By Sitecna_FR08411S00SSNB2 TRACE 24/1638 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-SV-036** | Air set Filter | 1"-HY-190-03HSS-N | SITECNA | FR04 | FR08411S00SSNB2 TRACE 24/1638 | CE Ex - 2G Ex h IIC T6/T5 Gb X | Sitecna EU - Type Examination Certificate - 1724000740-IN-DS-00007 | Declaration of Conformity By Sitecna_FR08411S00SSNB2 TRACE 24/1638 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-SV-038** | Air set Filter | 1"-HY-190-03HSS-N | SITECNA | FR04 | FR08411S00SSNB2 TRACE 24/1638 | CE Ex - 2G Ex h IIC T6/T5 Gb X | Sitecna EU - Type Examination Certificate - 1724000740-IN-DS-00007 | Declaration of Conformity By Sitecna_FR08411S00SSNB2 TRACE 24/1638 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-SV-035** | Air set Filter | 3"-HY-142-03HSS-N | SITECNA | FR04 | FR08411S00SSNB2 TRACE 24/1638 | CE Ex - 2G Ex h IIC T6/T5 Gb X | Sitecna EU - Type Examination Certificate - 1724000740-IN-DS-00007 | Declaration of Conformity By Sitecna_FR08411S00SSNB2 TRACE 24/1638 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-SV-037** | Air set Filter | 3"-HY-167-03HSS-N | SITECNA | FR04 | FR08411S00SSNB2 TRACE 24/1638 | CE Ex - 2G Ex h IIC T6/T5 Gb X | Sitecna EU - Type Examination Certificate - 1724000740-IN-DS-00007 | Declaration of Conformity By Sitecna_FR08411S00SSNB2 TRACE 24/1638 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-SV-040** | Air set Filter | 3"-HY-171-03HSS-N | SITECNA | FR04 | FR08411S00SSNB2 TRACE 24/1638 | CE Ex - 2G Ex h IIC T6/T5 Gb X | Sitecna EU - Type Examination Certificate - 1724000740-IN-DS-00007 | Declaration of Conformity By Sitecna_FR08411S00SSNB2 TRACE 24/1638 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-SV-043** | Air set Filter | 3"-HY-175-03HSS-N | SITECNA | FR04 | FR08411S00SSNB2 TRACE 24/1638 | CE Ex - 2G Ex h IIC T6/T5 Gb X | Sitecna EU - Type Examination Certificate - 1724000740-IN-DS-00007 | Declaration of Conformity By Sitecna_FR08411S00SSNB2 TRACE 24/1638 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-SV-046** | Air set Filter | 3"-HY-180-03HSS-N | SITECNA | FR04 | FR08411S00SSNB2 TRACE 24/1638 | CE Ex - 2G Ex h IIC T6/T5 Gb X | Sitecna EU - Type Examination Certificate - 1724000740-IN-DS-00007 | Declaration of Conformity By Sitecna_FR08411S00SSNB2 TRACE 24/1638 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-SV-049** | Air set Filter | 3"-HY-184-03HSS-N | SITECNA | FR04 | FR08411S00SSNB2 TRACE 24/1638 | CE Ex - 2G Ex h IIC T6/T5 Gb X | Sitecna EU - Type Examination Certificate - 1724000740-IN-DS-00007 | Declaration of Conformity By Sitecna_FR08411S00SSNB2 TRACE 24/1638 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-SV-055A** | Air set Filter | 1-1/2"-HY-148-03HSS-N | SITECNA | FR04 | FR08411S00SSNB2 TRACE 24/1638 | CE Ex - 2G Ex h IIC T6/T5 Gb X | Sitecna EU - Type Examination Certificate - 1724000740-IN-DS-00007 | Declaration of Conformity By Sitecna_FR08411S00SSNB2 TRACE 24/1638 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-SV-055B** | Air set Filter | 1-1/2"-HY-148-03HSS-N | SITECNA | FR04 | FR08411S00SSNB2 TRACE 24/1638 | CE Ex - 2G Ex h IIC T6/T5 Gb X | Sitecna EU - Type Examination Certificate - 1724000740-IN-DS-00007 | Declaration of Conformity By Sitecna_FR08411S00SSNB2 TRACE 24/1638 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **64-SV-031A** | Air set Filter | 1"-N-158-01CS-N | SITECNA | FR04 | FR08411S00SSNB2 TRACE 24/1638 | CE Ex - 2G Ex h IIC T6/T5 Gb X | Sitecna EU - Type Examination Certificate - 1724000740-IN-DS-00007 | Declaration of Conformity By Sitecna_FR08411S00SSNB2 TRACE 24/1638 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **64-SV-031B** | Air set Filter | 1"-N-158-01CS-N | SITECNA | FR04 | FR08411S00SSNB2 TRACE 24/1638 | CE Ex - 2G Ex h IIC T6/T5 Gb X | Sitecna EU - Type Examination Certificate - 1724000740-IN-DS-00007 | Declaration of Conformity By Sitecna_FR08411S00SSNB2 TRACE 24/1638 | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-PG-031** | Air set Pressure Gauge Filter | 1"-HY-153-03HSS-N | SITECNA | FR04 Pressure Gauge_MBS6P4S2PN07-ATEX | FR08411S00SSNB2 TRACE 24/1638 - PRESSURE GAUGE MBS6P4S2PN07-ATEX | CE Ex - 2G Ex h IIC T6/T5 Gb X | Sitecna EU - Type Examination Certificate - 1724000740-IN-DS-00007 | Declaration of Conformity By Sitecna_FR08411S00SSNB2 TRACE 24/1638 - PRESSURE GAUGE MBS6P4S2PN07-ATEX | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-PG-032** | Air set Pressure Gauge Filter | 1"-HY-186-03HSS-N | SITECNA | FR04 Pressure Gauge_MBS6P4S2PN07-ATEX | FR08411S00SSNB2 TRACE 24/1638 - PRESSURE GAUGE MBS6P4S2PN07-ATEX | CE Ex - 2G Ex h IIC T6/T5 Gb X | Sitecna EU - Type Examination Certificate - 1724000740-IN-DS-00007 | Declaration of Conformity By Sitecna_FR08411S00SSNB2 TRACE 24/1638 - PRESSURE GAUGE MBS6P4S2PN07-ATEX | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-PG-033** | Air set Pressure Gauge Filter | 1"-HY-187-03HSS-N | SITECNA | FR04 Pressure Gauge_MBS6P4S2PN07-ATEX | FR08411S00SSNB2 TRACE 24/1638 - PRESSURE GAUGE MBS6P4S2PN07-ATEX | CE Ex - 2G Ex h IIC T6/T5 Gb X | Sitecna EU - Type Examination Certificate - 1724000740-IN-DS-00007 | Declaration of Conformity By Sitecna_FR08411S00SSNB2 TRACE 24/1638 - PRESSURE GAUGE MBS6P4S2PN07-ATEX | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-PG-034** | Air set Pressure Gauge Filter | 1"-HY-188-03HSS-N | SITECNA | FR04 Pressure Gauge_MBS6P4S2PN07-ATEX | FR08411S00SSNB2 TRACE 24/1638 - PRESSURE GAUGE MBS6P4S2PN07-ATEX | CE Ex - 2G Ex h IIC T6/T5 Gb X | Sitecna EU - Type Examination Certificate - 1724000740-IN-DS-00007 | Declaration of Conformity By Sitecna_FR08411S00SSNB2 TRACE 24/1638 - PRESSURE GAUGE MBS6P4S2PN07-ATEX | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-PG-036** | Air set Pressure Gauge Filter | 1"-HY-190-03HSS-N | SITECNA | FR04 Pressure Gauge_MBS6P4S2PN07-ATEX | FR08411S00SSNB2 TRACE 24/1638 - PRESSURE GAUGE MBS6P4S2PN07-ATEX | CE Ex - 2G Ex h IIC T6/T5 Gb X | Sitecna EU - Type Examination Certificate - 1724000740-IN-DS-00007 | Declaration of Conformity By Sitecna_FR08411S00SSNB2 TRACE 24/1638 - PRESSURE GAUGE MBS6P4S2PN07-ATEX | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-PG-038** | Air set Pressure Gauge Filter | 1"-HY-190-03HSS-N | SITECNA | FR04 Pressure Gauge_MBS6P4S2PN07-ATEX | FR08411S00SSNB2 TRACE 24/1638 - PRESSURE GAUGE MBS6P4S2PN07-ATEX | CE Ex - 2G Ex h IIC T6/T5 Gb X | Sitecna EU - Type Examination Certificate - 1724000740-IN-DS-00007 | Declaration of Conformity By Sitecna_FR08411S00SSNB2 TRACE 24/1638 - PRESSURE GAUGE MBS6P4S2PN07-ATEX | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-PG-035** | Air set Pressure Gauge Filter | 3"-HY-142-03HSS-N | SITECNA | FR04 Pressure Gauge_MBS6P4S2PN07-ATEX | FR08411S00SSNB2 TRACE 24/1638 - PRESSURE GAUGE MBS6P4S2PN07-ATEX | CE Ex - 2G Ex h IIC T6/T5 Gb X | Sitecna EU - Type Examination Certificate - 1724000740-IN-DS-00007 | Declaration of Conformity By Sitecna_FR08411S00SSNB2 TRACE 24/1638 - PRESSURE GAUGE MBS6P4S2PN07-ATEX | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-PG-037** | Air set Pressure Gauge Filter | 3"-HY-167-03HSS-N | SITECNA | FR04 Pressure Gauge_MBS6P4S2PN07-ATEX | FR08411S00SSNB2 TRACE 24/1638 - PRESSURE GAUGE MBS6P4S2PN07-ATEX | CE Ex - 2G Ex h IIC T6/T5 Gb X | Sitecna EU - Type Examination Certificate - 1724000740-IN-DS-00007 | Declaration of Conformity By Sitecna_FR08411S00SSNB2 TRACE 24/1638 - PRESSURE GAUGE MBS6P4S2PN07-ATEX | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-PG-040** | Air set Pressure Gauge Filter | 3"-HY-171-03HSS-N | SITECNA | FR04 Pressure Gauge_MBS6P4S2PN07-ATEX | FR08411S00SSNB2 TRACE 24/1638 - PRESSURE GAUGE MBS6P4S2PN07-ATEX | CE Ex - 2G Ex h IIC T6/T5 Gb X | Sitecna EU - Type Examination Certificate - 1724000740-IN-DS-00007 | Declaration of Conformity By Sitecna_FR08411S00SSNB2 TRACE 24/1638 - PRESSURE GAUGE MBS6P4S2PN07-ATEX | ATEX ZONE 2 | N/A | 1724000740 | AST SpA | N.A. | N.A. | YES | YES |
| **25-PG-043** | Air set Pressure Gauge Filter | 3"-HY-175-03

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# Declaration of Conformity

| | |
|---|---|
| **Manufacturer:** | **A.S.T. S.p.A.** |
| **Pressure Equipment:** | **CONTROL VALVE** |
| **Job:** | **CV2400221** |
| **Type and Size:** | **CV-8407 NPS 1" CLASS 300 RF Port ¼"** |
| **Fluid:** | **Group 1 – Group 2** |
| **Temperature and Pressure:** | **100°C - 40 Bar g** |
| **Qty:** | **1** |
| **Serial Number:** | **2400583** |

**A.S.T. S.p.A. declare that the above-mentioned product has been designed and manufactured according to Customer's specifications, European Pressure Equipment Directive as follows:**

| **PED 2014/68/UE** | | | |
|---|---|---|---|
| **FLUID** | **Group no.** | **1** | **Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |
| ☒ | **Cat. I, II, III** | **Module H** | |
| ☐ | **Cat. IV** | **Module B+D** | |
| ☐ | **Art. 4.3** | | |

**and to ATEX Directive as follows:**

| **ATEX 2014/34/EU** | |
|---|---|
| ☒ CE Ex **II 2 G Ex h IIC T6…T1 Gb X** | **Technical file # TEC079 filed at Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |

The following Codes and Standards are applied, when needed
ASME B1.1, ASME B1.20.1, ASME PTC-25, ASME CA-1, ASME B16.34, ASME B16.5, ASME B16.10, ASME B16.20, ASME B16.21, ASME B16.25, ASME B16.11, ASME Sect. I, ASME Sect. II parts A-B-D, ASME Sect. V, ASME Sect. VIII, ASME BPV code cases, ASME Sect. IX, NB-23, API 6A, API 520, API 521, API 527, API 576, API 598, EN 19, EN 764-7, EN ISO 4126 parts 1-4-7-9-10, EN 1092, EN 1759, EN 12516 part 1 e 2, EN 12627, EN 12760, EN 12952-10, EN 12953-8, EN 13648-1, EN 10204, EN 12266-1, ISO 5208, ISO 15156 parts 1-2-3, ISO 9001, ISO 80079-36, ISO 80079-37, IEC 60079-0 MSS SP-55.

Construction materials used according to ASTM standard and subjected to Particular Material Appraisal. Alternatively, materials according to European harmonized standards are used.

***Delegate for signature***

Name: Luca Pressato
Title: Quality Assurance Manager
Date: 06/11/2024

*Signature:*

A.S.T. S.p.A.
Quality Assurance

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W www.astspa.it

# Declaration of Conformity

| | |
|---|---|
| **Manufacturer:** | **A.S.T. S.p.A.** |
| **Pressure Equipment:** | **CONTROL VALVE** |
| **Job:** | **CV2400221** |
| **Type and Size:** | **CV-8407 NPS 1" CLASS 300 RF Port ¼"** |
| **Fluid:** | **Group 1 – Group 2** |
| **Temperature and Pressure:** | **100°C - 40 Bar g** |
| **Qty:** | **1** |
| **Serial Number:** | **2400584** |

**A.S.T. S.p.A. declare that the above-mentioned product has been designed and manufactured according to Customer's specifications, European Pressure Equipment Directive as follows:**

| **PED 2014/68/UE** | | | |
|---|---|---|---|
| **FLUID** | **Group no.** | **1** | **Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |
| ☒ | **Cat. I, II, III** | **Module H** | |
| ☐ | **Cat. IV** | **Module B+D** | |
| ☐ | **Art. 4.3** | | |

**and to ATEX Directive as follows:**

| **ATEX 2014/34/EU** | |
|---|---|
| ☒ CE Ex **II 2 G Ex h IIC T6…T1 Gb X** | **Technical file # TEC079 filed at Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |

The following Codes and Standards are applied, when needed
ASME B1.1, ASME B1.20.1, ASME PTC-25, ASME CA-1, ASME B16.34, ASME B16.5, ASME B16.10, ASME B16.20, ASME B16.21, ASME B16.25, ASME B16.11, ASME Sect. I, ASME Sect. II parts A-B-D, ASME Sect. V, ASME Sect. VIII, ASME BPV code cases, ASME Sect. IX, NB-23, API 6A, API 520, API 521, API 527, API 576, API 598, EN 19, EN 764-7, EN ISO 4126 parts 1-4-7-9-10, EN 1092, EN 1759, EN 12516 part 1 e 2, EN 12627, EN 12760, EN 12952-10, EN 12953-8, EN 13648-1, EN 10204, EN 12266-1, ISO 5208, ISO 15156 parts 1-2-3, ISO 9001, ISO 80079-36, ISO 80079-37, IEC 60079-0 MSS SP-55.

Construction materials used according to ASTM standard and subjected to Particular Material Appraisal. Alternatively, materials according to European harmonized standards are used.

***Delegate for signature***

Name: Luca Pressato
Title: Quality Assurance Manager
Date: 06/11/2024

*Signature*:

A.S.T. S.p.A.
Quality Assurance

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# Declaration of Conformity

| | |
|---|---|
| **Manufacturer:** | **A.S.T. S.p.A.** |
| **Pressure Equipment:** | **CONTROL VALVE** |
| **Job:** | **CV2400221** |
| **Type and Size:** | **CV-8407 NPS 1" CLASS 300 RF Port ¼"** |
| **Fluid:** | **Group 1 – Group 2** |
| **Temperature and Pressure:** | **100°C - 40 Bar g** |
| **Qty:** | **1** |
| **Serial Number:** | **2400585** |

**A.S.T. S.p.A. declare that the above-mentioned product has been designed and manufactured according to Customer's specifications, European Pressure Equipment Directive as follows:**

| **PED 2014/68/UE** | | | |
|---|---|---|---|
| **FLUID** | **Group no.** | **1** | **Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |
| ☒ | **Cat. I, II, III** | **Module H** | |
| ☐ | **Cat. IV** | **Module B+D** | |
| ☐ | **Art. 4.3** | | |

**and to ATEX Directive as follows:**

| **ATEX 2014/34/EU** | |
|---|---|
| ☒ CE Ex **II 2 G Ex h IIC T6…T1 Gb X** | **Technical file # TEC079 filed at Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |

The following Codes and Standards are applied, when needed
ASME B1.1, ASME B1.20.1, ASME PTC-25, ASME CA-1, ASME B16.34, ASME B16.5, ASME B16.10, ASME B16.20, ASME B16.21, ASME B16.25, ASME B16.11, ASME Sect. I, ASME Sect. II parts A-B-D, ASME Sect. V, ASME Sect. VIII, ASME BPV code cases, ASME Sect. IX, NB-23, API 6A, API 520, API 521, API 527, API 576, API 598, EN 19, EN 764-7, EN ISO 4126 parts 1-4-7-9-10, EN 1092, EN 1759, EN 12516 part 1 e 2, EN 12627, EN 12760, EN 12952-10, EN 12953-8, EN 13648-1, EN 10204, EN 12266-1, ISO 5208, ISO 15156 parts 1-2-3, ISO 9001, ISO 80079-36, ISO 80079-37, IEC 60079-0 MSS SP-55.

Construction materials used according to ASTM standard and subjected to Particular Material Appraisal. Alternatively, materials according to European harmonized standards are used.

***Delegate for signature***

Name: Luca Pressato
Title: Quality Assurance Manager
Date: 06/11/2024

*Signature:*

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Quality Assurance

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# Declaration of Conformity

| | |
|---|---|
| **Manufacturer:** | **A.S.T. S.p.A.** |
| **Pressure Equipment:** | **CONTROL VALVE** |
| **Job:** | **CV2400221** |
| **Type and Size:** | **CV-8407 NPS 1" CLASS 300 RF Port ¼"** |
| **Fluid:** | **Group 1 – Group 2** |
| **Temperature and Pressure:** | **100°C - 40 Bar g** |
| **Qty:** | **1** |
| **Serial Number:** | **2400586** |

**A.S.T. S.p.A. declare that the above-mentioned product has been designed and manufactured according to Customer's specifications, European Pressure Equipment Directive as follows:**

| **PED 2014/68/UE** | | | |
|---|---|---|---|
| **FLUID** | **Group no.** | **1** | **Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |
| ☒ | **Cat. I, II, III** | **Module H** | |
| ☐ | **Cat. IV** | **Module B+D** | |
| ☐ | **Art. 4.3** | | |

**and to ATEX Directive as follows:**

| **ATEX 2014/34/EU** | |
|---|---|
| ☒ CE Ex **II 2 G Ex h IIC T6…T1 Gb X** | **Technical file # TEC079 filed at Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |

The following Codes and Standards are applied, when needed
ASME B1.1, ASME B1.20.1, ASME PTC-25, ASME CA-1, ASME B16.34, ASME B16.5, ASME B16.10, ASME B16.20, ASME B16.21, ASME B16.25, ASME B16.11, ASME Sect. I, ASME Sect. II parts A-B-D, ASME Sect. V, ASME Sect. VIII, ASME BPV code cases, ASME Sect. IX, NB-23, API 6A, API 520, API 521, API 527, API 576, API 598, EN 19, EN 764-7, EN ISO 4126 parts 1-4-7-9-10, EN 1092, EN 1759, EN 12516 part 1 e 2, EN 12627, EN 12760, EN 12952-10, EN 12953-8, EN 13648-1, EN 10204, EN 12266-1, ISO 5208, ISO 15156 parts 1-2-3, ISO 9001, ISO 80079-36, ISO 80079-37, IEC 60079-0 MSS SP-55.

Construction materials used according to ASTM standard and subjected to Particular Material Appraisal. Alternatively, materials according to European harmonized standards are used.

***Delegate for signature***

Name: Luca Pressato
Title: Quality Assurance Manager
Date: 06/11/2024

*Signature:*

A.S.T. S.p.A.
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# Declaration of Conformity

| | |
|---|---|
| **Manufacturer:** | **A.S.T. S.p.A.** |
| **Pressure Equipment:** | **CONTROL VALVE** |
| **Job:** | **CV2400221** |
| **Type and Size:** | **CV-8407 NPS 1" CLASS 300 RF Port ¼"** |
| **Fluid:** | **Group 1 – Group 2** |
| **Temperature and Pressure:** | **100°C - 40 Bar g** |
| **Qty:** | **1** |
| **Serial Number:** | **2400587** |

**A.S.T. S.p.A. declare that the above-mentioned product has been designed and manufactured according to Customer's specifications, European Pressure Equipment Directive as follows:**

| **PED 2014/68/UE** | | | |
|---|---|---|---|
| **FLUID** | **Group no.** | **1** | **Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |
| ☒ | **Cat. I, II, III** | **Module H** | |
| ☐ | **Cat. IV** | **Module B+D** | |
| ☐ | **Art. 4.3** | | |

**and to ATEX Directive as follows:**

| **ATEX 2014/34/EU** | |
|---|---|
| ☒ CE Ex **II 2 G Ex h IIC T6…T1 Gb X** | **Technical file # TEC079 filed at Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |

The following Codes and Standards are applied, when needed
ASME B1.1, ASME B1.20.1, ASME PTC-25, ASME CA-1, ASME B16.34, ASME B16.5, ASME B16.10, ASME B16.20, ASME B16.21, ASME B16.25, ASME B16.11, ASME Sect. I, ASME Sect. II parts A-B-D, ASME Sect. V, ASME Sect. VIII, ASME BPV code cases, ASME Sect. IX, NB-23, API 6A, API 520, API 521, API 527, API 576, API 598, EN 19, EN 764-7, EN ISO 4126 parts 1-4-7-9-10, EN 1092, EN 1759, EN 12516 part 1 e 2, EN 12627, EN 12760, EN 12952-10, EN 12953-8, EN 13648-1, EN 10204, EN 12266-1, ISO 5208, ISO 15156 parts 1-2-3, ISO 9001, ISO 80079-36, ISO 80079-37, IEC 60079-0 MSS SP-55.

Construction materials used according to ASTM standard and subjected to Particular Material Appraisal. Alternatively, materials according to European harmonized standards are used.

***Delegate for signature***

Name: Luca Pressato
Title: Quality Assurance Manager
Date: 06/11/2024

*Signature*:

A.S.T. S.p.A.
Quality Assurance

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# Declaration of Conformity

| | |
|---|---|
| **Manufacturer:** | **A.S.T. S.p.A.** |
| **Pressure Equipment:** | **CONTROL VALVE** |
| **Job:** | **CV2400221** |
| **Type and Size:** | **CV-8407 NPS 1" CLASS 300 RF Port ¼"** |
| **Fluid:** | **Group 1 – Group 2** |
| **Temperature and Pressure:** | **100°C - 40 Bar g** |
| **Qty:** | **1** |
| **Serial Number:** | **2400588** |

**A.S.T. S.p.A. declare that the above-mentioned product has been designed and manufactured according to Customer's specifications, European Pressure Equipment Directive as follows:**

| **PED 2014/68/UE** | | | |
|---|---|---|---|
| **FLUID** | **Group no.** | **1** | **Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |
| ☒ | **Cat. I, II, III** | **Module H** | |
| ☐ | **Cat. IV** | **Module B+D** | |
| ☐ | **Art. 4.3** | | |

**and to ATEX Directive as follows:**

| **ATEX 2014/34/EU** | |
|---|---|
| ☒ CE Ex **II 2 G Ex h IIC T6…T1 Gb X** | **Technical file # TEC079 filed at Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |

The following Codes and Standards are applied, when needed
ASME B1.1, ASME B1.20.1, ASME PTC-25, ASME CA-1, ASME B16.34, ASME B16.5, ASME B16.10, ASME B16.20, ASME B16.21, ASME B16.25, ASME B16.11, ASME Sect. I, ASME Sect. II parts A-B-D, ASME Sect. V, ASME Sect. VIII, ASME BPV code cases, ASME Sect. IX, NB-23, API 6A, API 520, API 521, API 527, API 576, API 598, EN 19, EN 764-7, EN ISO 4126 parts 1-4-7-9-10, EN 1092, EN 1759, EN 12516 part 1 e 2, EN 12627, EN 12760, EN 12952-10, EN 12953-8, EN 13648-1, EN 10204, EN 12266-1, ISO 5208, ISO 15156 parts 1-2-3, ISO 9001, ISO 80079-36, ISO 80079-37, IEC 60079-0 MSS SP-55.

Construction materials used according to ASTM standard and subjected to Particular Material Appraisal. Alternatively, materials according to European harmonized standards are used.

***Delegate for signature***

Name: Luca Pressato
Title: Quality Assurance Manager
Date: 06/11/2024

*Signature*

A.S.T. S.p.A.
Quality Assurance

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W www.astspa.it

# Declaration of Conformity

| | |
|---|---|
| **Manufacturer:** | **A.S.T. S.p.A.** |
| **Pressure Equipment:** | **CONTROL VALVE** |
| **Job:** | **CV2400221** |
| **Type and Size:** | **CV-8407 NPS 2" CLASS 300 RF Port 1"** |
| **Fluid:** | **Group 1 – Group 2** |
| **Temperature and Pressure:** | **80°C - 40 Bar g** |
| **Qty:** | **1** |
| **Serial Number:** | **2400589** |

**A.S.T. S.p.A. declare that the above-mentioned product has been designed and manufactured according to Customer's specifications, European Pressure Equipment Directive as follows:**

| **PED 2014/68/UE** | | | |
|---|---|---|---|
| **FLUID** | **Group no.** | **1** | **Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |
| ☒ | **Cat. I, II, III** | **Module H** | |
| ☐ | **Cat. IV** | **Module B+D** | |
| ☐ | **Art. 4.3** | | |

**and to ATEX Directive as follows:**

| **ATEX 2014/34/EU** | |
|---|---|
| ☒ CE Ex **II 2 G Ex h IIC T6…T1 Gb X** | **Technical file # TEC079 filed at Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |

The following Codes and Standards are applied, when needed
ASME B1.1, ASME B1.20.1, ASME PTC-25, ASME CA-1, ASME B16.34, ASME B16.5, ASME B16.10, ASME B16.20, ASME B16.21, ASME B16.25, ASME B16.11, ASME Sect. I, ASME Sect. II parts A-B-D, ASME Sect. V, ASME Sect. VIII, ASME BPV code cases, ASME Sect. IX, NB-23, API 6A, API 520, API 521, API 527, API 576, API 598, EN 19, EN 764-7, EN ISO 4126 parts 1-4-7-9-10, EN 1092, EN 1759, EN 12516 part 1 e 2, EN 12627, EN 12760, EN 12952-10, EN 12953-8, EN 13648-1, EN 10204, EN 12266-1, ISO 5208, ISO 15156 parts 1-2-3, ISO 9001, ISO 80079-36, ISO 80079-37, IEC 60079-0 MSS SP-55.

Construction materials used according to ASTM standard and subjected to Particular Material Appraisal. Alternatively, materials according to European harmonized standards are used.

***Delegate for signature***

Name: Luca Pressato
Title: Quality Assurance Manager
Date: 06/11/2024

*Signature*:

A.S.T. S.p.A.
Quality Assurance

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F +39 02 9362248
W www.astspa.it

# Declaration of Conformity

| | |
|---|---|
| **Manufacturer:** | **A.S.T. S.p.A.** |
| **Pressure Equipment:** | **CONTROL VALVE** |
| **Job:** | **CV2400221** |
| **Type and Size:** | **CV-8407 NPS 2" CLASS 300 RF Port 1"** |
| **Fluid:** | **Group 1 – Group 2** |
| **Temperature and Pressure:** | **80°C - 40 Bar g** |
| **Qty:** | **1** |
| **Serial Number:** | **2400590** |

**A.S.T. S.p.A. declare that the above-mentioned product has been designed and manufactured according to Customer's specifications, European Pressure Equipment Directive as follows:**

| **PED 2014/68/UE** | | | |
|---|---|---|---|
| **FLUID** | **Group no.** | **1** | **Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |
| ☒ | **Cat. I, II, III** | **Module H** | |
| ☐ | **Cat. IV** | **Module B+D** | |
| ☐ | **Art. 4.3** | | |

**and to ATEX Directive as follows:**

| **ATEX 2014/34/EU** | |
|---|---|
| ☒ CE Ex **II 2 G Ex h IIC T6…T1 Gb X** | **Technical file # TEC079 filed at Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |

The following Codes and Standards are applied, when needed
ASME B1.1, ASME B1.20.1, ASME PTC-25, ASME CA-1, ASME B16.34, ASME B16.5, ASME B16.10, ASME B16.20, ASME B16.21, ASME B16.25, ASME B16.11, ASME Sect. I, ASME Sect. II parts A-B-D, ASME Sect. V, ASME Sect. VIII, ASME BPV code cases, ASME Sect. IX, NB-23, API 6A, API 520, API 521, API 527, API 576, API 598, EN 19, EN 764-7, EN ISO 4126 parts 1-4-7-9-10, EN 1092, EN 1759, EN 12516 part 1 e 2, EN 12627, EN 12760, EN 12952-10, EN 12953-8, EN 13648-1, EN 10204, EN 12266-1, ISO 5208, ISO 15156 parts 1-2-3, ISO 9001, ISO 80079-36, ISO 80079-37, IEC 60079-0 MSS SP-55.

Construction materials used according to ASTM standard and subjected to Particular Material Appraisal. Alternatively, materials according to European harmonized standards are used.

***Delegate for signature***

Name: Luca Pressato
Title: Quality Assurance Manager
Date: 06/11/2024

*Signature*:

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Quality Assurance

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W www.astspa.it

# Declaration of Conformity

| | |
|---|---|
| **Manufacturer:** | **A.S.T. S.p.A.** |
| **Pressure Equipment:** | **CONTROL VALVE** |
| **Job:** | **CV2400221** |
| **Type and Size:** | **CV-8407 NPS 2" CLASS 300 RF Port 1"** |
| **Fluid:** | **Group 1 – Group 2** |
| **Temperature and Pressure:** | **80°C - 40 Bar g** |
| **Qty:** | **1** |
| **Serial Number:** | **2400591** |

**A.S.T. S.p.A. declare that the above-mentioned product has been designed and manufactured according to Customer's specifications, European Pressure Equipment Directive as follows:**

| **PED 2014/68/UE** | | | |
|---|---|---|---|
| **FLUID** | **Group no.** | **1** | **Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |
| ☒ | **Cat. I, II, III** | **Module H** | |
| ☐ | **Cat. IV** | **Module B+D** | |
| ☐ | **Art. 4.3** | | |

**and to ATEX Directive as follows:**

| **ATEX 2014/34/EU** | |
|---|---|
| ☒ CE Ex **II 2 G Ex h IIC T6…T1 Gb X** | **Technical file # TEC079 filed at Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |

The following Codes and Standards are applied, when needed
ASME B1.1, ASME B1.20.1, ASME PTC-25, ASME CA-1, ASME B16.34, ASME B16.5, ASME B16.10, ASME B16.20, ASME B16.21, ASME B16.25, ASME B16.11, ASME Sect. I, ASME Sect. II parts A-B-D, ASME Sect. V, ASME Sect. VIII, ASME BPV code cases, ASME Sect. IX, NB-23, API 6A, API 520, API 521, API 527, API 576, API 598, EN 19, EN 764-7, EN ISO 4126 parts 1-4-7-9-10, EN 1092, EN 1759, EN 12516 part 1 e 2, EN 12627, EN 12760, EN 12952-10, EN 12953-8, EN 13648-1, EN 10204, EN 12266-1, ISO 5208, ISO 15156 parts 1-2-3, ISO 9001, ISO 80079-36, ISO 80079-37, IEC 60079-0 MSS SP-55.

Construction materials used according to ASTM standard and subjected to Particular Material Appraisal. Alternatively, materials according to European harmonized standards are used.

***Delegate for signature***

Name: Luca Pressato
Title: Quality Assurance Manager
Date: 06/11/2024

*Signature*:

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# Declaration of Conformity

| | |
|---|---|
| **Manufacturer:** | **A.S.T. S.p.A.** |
| **Pressure Equipment:** | **CONTROL VALVE** |
| **Job:** | **CV2400221** |
| **Type and Size:** | **CV-8407 NPS 2" CLASS 300 RF Port 1"** |
| **Fluid:** | **Group 1 – Group 2** |
| **Temperature and Pressure:** | **80°C - 40 Bar g** |
| **Qty:** | **1** |
| **Serial Number:** | **2400592** |

**A.S.T. S.p.A. declare that the above-mentioned product has been designed and manufactured according to Customer's specifications, European Pressure Equipment Directive as follows:**

| **PED 2014/68/UE** | | | |
|---|---|---|---|
| **FLUID** | **Group no.** | **1** | **Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |
| ☒ | **Cat. I, II, III** | **Module H** | |
| ☐ | **Cat. IV** | **Module B+D** | |
| ☐ | **Art. 4.3** | | |

**and to ATEX Directive as follows:**

| **ATEX 2014/34/EU** | |
|---|---|
| ☒ CE Ex **II 2 G Ex h IIC T6…T1 Gb X** | **Technical file # TEC079 filed at Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |

The following Codes and Standards are applied, when needed
ASME B1.1, ASME B1.20.1, ASME PTC-25, ASME CA-1, ASME B16.34, ASME B16.5, ASME B16.10, ASME B16.20, ASME B16.21, ASME B16.25, ASME B16.11, ASME Sect. I, ASME Sect. II parts A-B-D, ASME Sect. V, ASME Sect. VIII, ASME BPV code cases, ASME Sect. IX, NB-23, API 6A, API 520, API 521, API 527, API 576, API 598, EN 19, EN 764-7, EN ISO 4126 parts 1-4-7-9-10, EN 1092, EN 1759, EN 12516 part 1 e 2, EN 12627, EN 12760, EN 12952-10, EN 12953-8, EN 13648-1, EN 10204, EN 12266-1, ISO 5208, ISO 15156 parts 1-2-3, ISO 9001, ISO 80079-36, ISO 80079-37, IEC 60079-0 MSS SP-55.

Construction materials used according to ASTM standard and subjected to Particular Material Appraisal. Alternatively, materials according to European harmonized standards are used.

***Delegate for signature***

Name: Luca Pressato
Title: Quality Assurance Manager
Date: 06/11/2024

*Signature:*

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# Declaration of Conformity

| | |
|---|---|
| **Manufacturer:** | **A.S.T. S.p.A.** |
| **Pressure Equipment:** | **CONTROL VALVE** |
| **Job:** | **CV2400221** |
| **Type and Size:** | **CV-8407 NPS 2" CLASS 300 RF Port 1"** |
| **Fluid:** | **Group 1 – Group 2** |
| **Temperature and Pressure:** | **80°C - 40 Bar g** |
| **Qty:** | **1** |
| **Serial Number:** | **2400593** |

**A.S.T. S.p.A. declare that the above-mentioned product has been designed and manufactured according to Customer's specifications, European Pressure Equipment Directive as follows:**

| **PED 2014/68/UE** | | | |
|---|---|---|---|
| **FLUID** | **Group no.** | **1** | **Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |
| ☒ | **Cat. I, II, III** | **Module H** | |
| ☐ | **Cat. IV** | **Module B+D** | |
| ☐ | **Art. 4.3** | | |

**and to ATEX Directive as follows:**

| **ATEX 2014/34/EU** | |
|---|---|
| ☒ CE Ex **II 2 G Ex h IIC T6…T1 Gb X** | **Technical file # TEC079 filed at Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |

The following Codes and Standards are applied, when needed
ASME B1.1, ASME B1.20.1, ASME PTC-25, ASME CA-1, ASME B16.34, ASME B16.5, ASME B16.10, ASME B16.20, ASME B16.21, ASME B16.25, ASME B16.11, ASME Sect. I, ASME Sect. II parts A-B-D, ASME Sect. V, ASME Sect. VIII, ASME BPV code cases, ASME Sect. IX, NB-23, API 6A, API 520, API 521, API 527, API 576, API 598, EN 19, EN 764-7, EN ISO 4126 parts 1-4-7-9-10, EN 1092, EN 1759, EN 12516 part 1 e 2, EN 12627, EN 12760, EN 12952-10, EN 12953-8, EN 13648-1, EN 10204, EN 12266-1, ISO 5208, ISO 15156 parts 1-2-3, ISO 9001, ISO 80079-36, ISO 80079-37, IEC 60079-0 MSS SP-55.

Construction materials used according to ASTM standard and subjected to Particular Material Appraisal. Alternatively, materials according to European harmonized standards are used.

***Delegate for signature***

Name: Luca Pressato
Title: Quality Assurance Manager
Date: 06/11/2024

*Signature:*

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# Declaration of Conformity

| | |
|---|---|
| **Manufacturer:** | **A.S.T. S.p.A.** |
| **Pressure Equipment:** | **CONTROL VALVE** |
| **Job:** | **CV2400221** |
| **Type and Size:** | **CV-8407 NPS 2" CLASS 300 RF Port 1"** |
| **Fluid:** | **Group 1 – Group 2** |
| **Temperature and Pressure:** | **80°C - 40 Bar g** |
| **Qty:** | **1** |
| **Serial Number:** | **2400594** |

**A.S.T. S.p.A. declare that the above-mentioned product has been designed and manufactured according to Customer's specifications, European Pressure Equipment Directive as follows:**

| **PED 2014/68/UE** | | | |
|---|---|---|---|
| **FLUID** | **Group no.** | **1** | **Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |
| ☒ | **Cat. I, II, III** | **Module H** | |
| ☐ | **Cat. IV** | **Module B+D** | |
| ☐ | **Art. 4.3** | | |

**and to ATEX Directive as follows:**

| **ATEX 2014/34/EU** | |
|---|---|
| ☒ CE Ex **II 2 G Ex h IIC T6…T1 Gb X** | **Technical file # TEC079 filed at Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |

The following Codes and Standards are applied, when needed
ASME B1.1, ASME B1.20.1, ASME PTC-25, ASME CA-1, ASME B16.34, ASME B16.5, ASME B16.10, ASME B16.20, ASME B16.21, ASME B16.25, ASME B16.11, ASME Sect. I, ASME Sect. II parts A-B-D, ASME Sect. V, ASME Sect. VIII, ASME BPV code cases, ASME Sect. IX, NB-23, API 6A, API 520, API 521, API 527, API 576, API 598, EN 19, EN 764-7, EN ISO 4126 parts 1-4-7-9-10, EN 1092, EN 1759, EN 12516 part 1 e 2, EN 12627, EN 12760, EN 12952-10, EN 12953-8, EN 13648-1, EN 10204, EN 12266-1, ISO 5208, ISO 15156 parts 1-2-3, ISO 9001, ISO 80079-36, ISO 80079-37, IEC 60079-0 MSS SP-55.

Construction materials used according to ASTM standard and subjected to Particular Material Appraisal. Alternatively, materials according to European harmonized standards are used.

***Delegate for signature***

Name: Luca Pressato
Title: Quality Assurance Manager
Date: 06/11/2024

*Signature*:

A.S.T. S.p.A.
Quality Assurance

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F +39 02 9362248
W www.astspa.it

# Declaration of Conformity

| | |
|---|---|
| **Manufacturer:** | **A.S.T. S.p.A.** |
| **Pressure Equipment:** | **CONTROL VALVE** |
| **Job:** | **CV2400221** |
| **Type and Size:** | **CV-8407 NPS 1 ½ ” CLASS 300 RF Port 1”** |
| **Fluid:** | **Group 1 – Group 2** |
| **Temperature and Pressure:** | **100°C - 40 Bar g** |
| **Qty:** | **1** |
| **Serial Number:** | **2400595** |

**A.S.T. S.p.A. declare that the above-mentioned product has been designed and manufactured according to Customer’s specifications, European Pressure Equipment Directive as follows:**

| **PED 2014/68/UE** | | | |
|---|---|---|---|
| **FLUID** | **Group no.** | **1** | **Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |
| ☒ | **Cat. I, II, III** | **Module H** | |
| ☐ | **Cat. IV** | **Module B+D** | |
| ☐ | **Art. 4.3** | | |

**and to ATEX Directive as follows:**

| **ATEX 2014/34/EU** | |
|---|---|
| ☒ CE Ex **II 2 G Ex h IIC T6…T1 Gb X** | **Technical file # TEC079 filed at Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |

The following Codes and Standards are applied, when needed
ASME B1.1, ASME B1.20.1, ASME PTC-25, ASME CA-1, ASME B16.34, ASME B16.5, ASME B16.10, ASME B16.20, ASME B16.21, ASME B16.25, ASME B16.11, ASME Sect. I, ASME Sect. II parts A-B-D, ASME Sect. V, ASME Sect. VIII, ASME BPV code cases, ASME Sect. IX, NB-23, API 6A, API 520, API 521, API 527, API 576, API 598, EN 19, EN 764-7, EN ISO 4126 parts 1-4-7-9-10, EN 1092, EN 1759, EN 12516 part 1 e 2, EN 12627, EN 12760, EN 12952-10, EN 12953-8, EN 13648-1, EN 10204, EN 12266-1, ISO 5208, ISO 15156 parts 1-2-3, ISO 9001, ISO 80079-36, ISO 80079-37, IEC 60079-0 MSS SP-55.

Construction materials used according to ASTM standard and subjected to Particular Material Appraisal. Alternatively, materials according to European harmonized standards are used.

***Delegate for signature***

Name: Luca Pressato
Title: Quality Assurance Manager
Date: 06/11/2024

*Signature*:

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Quality Assurance

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# Declaration of Conformity

| | |
|---|---|
| **Manufacturer:** | **A.S.T. S.p.A.** |
| **Pressure Equipment:** | **CONTROL VALVE** |
| **Job:** | **CV2400221** |
| **Type and Size:** | **CV-8407 NPS 1 ½ ” CLASS 300 RF Port 5/32”** |
| **Fluid:** | **Group 1 – Group 2** |
| **Temperature and Pressure:** | **100°C - 40 Bar g** |
| **Qty:** | **1** |
| **Serial Number:** | **2400596** |

**A.S.T. S.p.A. declare that the above-mentioned product has been designed and manufactured according to Customer’s specifications, European Pressure Equipment Directive as follows:**

| **PED 2014/68/UE** | | | |
|---|---|---|---|
| **FLUID** | **Group no.** | **1** | **Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |
| ☒ | **Cat. I, II, III** | **Module H** | |
| ☐ | **Cat. IV** | **Module B+D** | |
| ☐ | **Art. 4.3** | | |

**and to ATEX Directive as follows:**

| **ATEX 2014/34/EU** | |
|---|---|
| ☒ **II 2 G Ex h IIC T6…T1 Gb X** | **Technical file # TEC079 filed at Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |

The following Codes and Standards are applied, when needed
ASME B1.1, ASME B1.20.1, ASME PTC-25, ASME CA-1, ASME B16.34, ASME B16.5, ASME B16.10, ASME B16.20, ASME B16.21, ASME B16.25, ASME B16.11, ASME Sect. I, ASME Sect. II parts A-B-D, ASME Sect. V, ASME Sect. VIII, ASME BPV code cases, ASME Sect. IX, NB-23, API 6A, API 520, API 521, API 527, API 576, API 598, EN 19, EN 764-7, EN ISO 4126 parts 1-4-7-9-10, EN 1092, EN 1759, EN 12516 part 1 e 2, EN 12627, EN 12760, EN 12952-10, EN 12953-8, EN 13648-1, EN 10204, EN 12266-1, ISO 5208, ISO 15156 parts 1-2-3, ISO 9001, ISO 80079-36, ISO 80079-37, IEC 60079-0 MSS SP-55.

Construction materials used according to ASTM standard and subjected to Particular Material Appraisal. Alternatively, materials according to European harmonized standards are used.

***Delegate for signature***

Name: Luca Pressato
Title: Quality Assurance Manager
Date: 06/11/2024

*Signature*:

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F +39 02 9362248
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# Declaration of Conformity

| | |
|---|---|
| **Manufacturer:** | **A.S.T. S.p.A.** |
| **Pressure Equipment:** | **CONTROL VALVE** |
| **Job:** | **CV2400221** |
| **Type and Size:** | **CV-8407 NPS 1" CLASS 150 RF Port 3/8"** |
| **Fluid:** | **Group 1 – Group 2** |
| **Temperature and Pressure:** | **100°C - 10 Bar g** |
| **Qty:** | **1** |
| **Serial Number:** | **2400597** |

**A.S.T. S.p.A. declare that the above-mentioned product has been designed and manufactured according to Customer's specifications, European Pressure Equipment Directive as follows:**

| **PED 2014/68/UE** | | | |
|---|---|---|---|
| **FLUID** | **Group no.** | **1** | **Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |
| ☒ | **Cat. I, II, III** | **Module H** | |
| ☐ | **Cat. IV** | **Module B+D** | |
| ☐ | **Art. 4.3** | | |

**and to ATEX Directive as follows:**

| **ATEX 2014/34/EU** | |
|---|---|
| ☒ CE Ex **II 2 G Ex h IIC T6…T1 Gb X** | **Technical file # TEC079 filed at Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |

The following Codes and Standards are applied, when needed
ASME B1.1, ASME B1.20.1, ASME PTC-25, ASME CA-1, ASME B16.34, ASME B16.5, ASME B16.10, ASME B16.20, ASME B16.21, ASME B16.25, ASME B16.11, ASME Sect. I, ASME Sect. II parts A-B-D, ASME Sect. V, ASME Sect. VIII, ASME BPV code cases, ASME Sect. IX, NB-23, API 6A, API 520, API 521, API 527, API 576, API 598, EN 19, EN 764-7, EN ISO 4126 parts 1-4-7-9-10, EN 1092, EN 1759, EN 12516 part 1 e 2, EN 12627, EN 12760, EN 12952-10, EN 12953-8, EN 13648-1, EN 10204, EN 12266-1, ISO 5208, ISO 15156 parts 1-2-3, ISO 9001, ISO 80079-36, ISO 80079-37, IEC 60079-0 MSS SP-55.

Construction materials used according to ASTM standard and subjected to Particular Material Appraisal. Alternatively, materials according to European harmonized standards are used.

***Delegate for signature***

Name: Luca Pressato
Title: Quality Assurance Manager
Date: 06/11/2024

*Signature*:

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# Declaration of Conformity

| | |
|---|---|
| **Manufacturer:** | **A.S.T. S.p.A.** |
| **Pressure Equipment:** | **CONTROL VALVE** |
| **Job:** | **CV2400221** |
| **Type and Size:** | **CV-8407 NPS 1" CLASS 150 RF Port 3/8"** |
| **Fluid:** | **Group 1 – Group 2** |
| **Temperature and Pressure:** | **100°C - 10 Bar g** |
| **Qty:** | **1** |
| **Serial Number:** | **2400598** |

**A.S.T. S.p.A. declare that the above-mentioned product has been designed and manufactured according to Customer's specifications, European Pressure Equipment Directive as follows:**

| **PED 2014/68/UE** | | | |
|---|---|---|---|
| **FLUID** | **Group no.** | **1** | **Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |
| ☒ | **Cat. I, II, III** | **Module H** | |
| ☐ | **Cat. IV** | **Module B+D** | |
| ☐ | **Art. 4.3** | | |

**and to ATEX Directive as follows:**

| **ATEX 2014/34/EU** | |
|---|---|
| ☒ CE Ex **II 2 G Ex h IIC T6…T1 Gb X** | **Technical file # TEC079 filed at Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |

The following Codes and Standards are applied, when needed
ASME B1.1, ASME B1.20.1, ASME PTC-25, ASME CA-1, ASME B16.34, ASME B16.5, ASME B16.10, ASME B16.20, ASME B16.21, ASME B16.25, ASME B16.11, ASME Sect. I, ASME Sect. II parts A-B-D, ASME Sect. V, ASME Sect. VIII, ASME BPV code cases, ASME Sect. IX, NB-23, API 6A, API 520, API 521, API 527, API 576, API 598, EN 19, EN 764-7, EN ISO 4126 parts 1-4-7-9-10, EN 1092, EN 1759, EN 12516 part 1 e 2, EN 12627, EN 12760, EN 12952-10, EN 12953-8, EN 13648-1, EN 10204, EN 12266-1, ISO 5208, ISO 15156 parts 1-2-3, ISO 9001, ISO 80079-36, ISO 80079-37, IEC 60079-0 MSS SP-55.

Construction materials used according to ASTM standard and subjected to Particular Material Appraisal. Alternatively, materials according to European harmonized standards are used.

***Delegate for signature***

Name: Luca Pressato
Title: Quality Assurance Manager
Date: 06/11/2024

*Signature*:

A.S.T. S.p.A.
Quality Assurance

Fiditas
explosion safety solutions

17065 · HAA
3635

[1] # EU – TYPE EXAMINATION CERTIFICATE

[2] Equipment or Protective Systems Intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU.

[3] EU-Type Examination Certificate Number: **FIDI 20 ATEX 0039X** Issue: **1**

[4] Product: **Limit switch box**

Type: **Guardbox – GD series**

[5] Manufacturer: **Eisenbau s.r.l.**

[6] Address: **Viale Europa 39, 20047 Cusago (MI), Italy**

[7] This product and any acceptable variation thereto is specified in the schedule to this certificate and documents therein referred to.

[8] FIDITAS Ltd., Notified Body number 2829 in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II of the Directive.

The examination and test results are recorded in confidential Report No: **FIDI 20 CR 030**

[9] Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

**EN IEC 60079-0:2018** **EN 60079-1:2014** **EN 60079-31:2014**

except in respect of those requirements listed at item 18 of the Schedule.

[10] If the sign 'X' is placed after the certificate number, it indicates that the product is subject to Specific Conditions of Use specified in the schedule to this certificate.

[11] This EU-Type Examination Certificate relates only to the design, examination and test of the specified product in accordance with Annex III. Further requirements of the Directive apply to the manufacturing process and supply of this products. These are not covered by this certificate.

[12] The marking of the product shall include the following:

**II 2G Ex db IIC T6...T4 Gb**

**II 2D Ex tb IIIC T85°C...T135°C Db**

Our ref.: 20.CRT.261

Date: 30.10.2020.

Fiditas d.o.o. ZAGREB

**FIDITAS Ltd.**
**Certification department**
Approved:

Marino Kelava, M.E.Eng.


This certificate may only be reproduced in its entirety, without any change, schedule included

**[13]** **SCHEDULE**

**[14]** **EU - TYPE EXAMINATION CERTIFICATE No.:** **FIDI 20 ATEX 0039X**

**[15]** **Description of product**

Guardbox limit switch boxes are electromechanical devices used for the monitoring of the operation of industrial valves in facilities. Guardbox devices are used to control the position of the valve and to provide electrical feedback signal of valve position status to plant control system. They are equipped with a visible position indicator that represents a true indication of valve position.

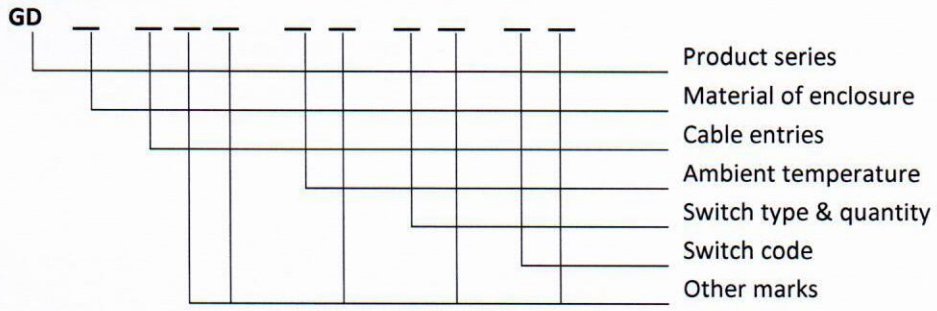
Separately certified cable glands in type of protection flameproof enclosure "db" and protection by enclosure "tb" shall be used for cable entry.

**Technical data:**

| | |
|---|---|
| Nominal voltage: | 0 Vdc - 125 Vdc<br>0 Vac - 250 Vac |
| Nominal current: | 0.1 A – 10 A |
| Ambient temperature range: | -60°C to +105°C |
| Mechanical protection: | IP 66 according to EN IEC 60079-0 and EN 60529<br>IP 68 (20 m / 2h) according to EN 60529 |

| $T_{a\ max}$ [°C] | Maximally allowed power dissipation [W] | Temperature class | Maximum surface temperature | Min. cable temperature resistance [°C] |
|---|---|---|---|---|
| 40 | 10 | T6 | T85°C | 70 |
| 65 | 4 | T6 | T85°C | 80 |
| | 10 | T5 | T100°C | 100 |
| 85 | 4 | T5 | T100°C | 100 |
| | 10 | T4 | T135°C | 120 |
| 90 | 4 | T4 | T135°C | 105 |
| | 10 | | | 125 |
| 105 | 4 | T4 | T135°C | 120 |

**Marking:**




**Warning markings:**

"DO NOT OPEN IN A GAS/DUST EXPLOSIVE ATMOSPHERE"
"DUE TO RISK OF STATIC HAZARD, THE ENCLOSURE MUST ONLY BE CLEANED WITH A DAMP CLOTH"


Fiditas Ltd. Karlovačka cesta 197, 10250 Zagreb-Lučko, Croatia
Phone: +385 1 5578565; info@fiditas.com ; www.fiditas.com

**[16] Confidential Report No.** FIDI 20 CR 030

**[16.1 ] Routine testing**

None

**[17] Specific Conditions of Use**

- Flameproof joints are not intended to be repaired.
- An appropriate method of installation, maintenance and operation should prevent the accumulation of static charges on the enclosure of the device.
- Use screws of quality A2-70 or A4-70 according to UNI 5931 with the ultimate tensile strength of at least 700 N/mm$^2$.

**[18] Essential Health and Safety Requirements**

Covered by the conformity with harmonized standards listed under item 9.

**[19] Drawings and Documents**

| Title: | Drawing No.: | Rev. level: | Date: |
|---|---|---|---|
| Installation, Operation & Maintenance Manual | 0100-ENG | 6 | 21.10.2020. |
| Certification drawings: | | | |
| Stainless steel body GD | EC-0101005-02 | 02 | 14.10.2020. |
| Cover GD | EC-0102002-02 | 02 | 21.10.2020. |
| Part list switch box blind GD | EC-0120003-02 | 02 | 21.10.2020. |
| Body GD | EC-0101002-01 | 01 | 10.02.2015 |
| Stainless steel cover GD | EC-0102009-02 | 02 | 14.10.2020. |
| Part list GD | EC-0120001-02 | 02 | 21.10.2020. |
| Part list GD stainless steel | EC-0120002-02 | 02 | 21.10.2020. |
| Blind cover GD | EC-0102008-01 | 02 | 21.10.2020. |
| Part list switch box blind stainless GD | EC-0120004-02 | 02 | 21.10.2020. |
| Stainless steel cover blind GD | EC-0102010-02 | 02 | 14.10.2020. |
| Shaft box GD certification | EC-0104001-00 | 00 | 10.07.2014. |
| Shaft switch box blind certification | EC-0104003-00 | 00 | 10.07.2014. |
| GD limit switch box gasket | EC-0107002-00 | 00 | 18.12.2014. |
| External nameplate with certification data | EC-0108001-01 | 01 | 14.10.2020. |
| Screw box | EC-0109001-00 | 00 | 30.07.2014. |
| Width of flameproof joint GD | EC-0120011-00 | 00 | 15.09.2014. |
| Width of flameproof joint GD stainless steel | EC-0120012-00 | 00 | 15.09.2014. |
| External nameplate for marking operating parameters | EC-0108005-00 | 00 | 14.10.2020. |

(1) # EU - Type Examination Certificate

(2) Equipment and protective systems intended for use in potentially explosive atmospheres – **Directive 2014/34/EU**

(3) EU - Type Examination Certificate Number

**EPS 19 ATEX 1 112 X** **Revision 1**

(4) Equipment: Smart Valve Positioner TS900*******, TS905*******

(5) Manufacturer: Tissin Co., Ltd

(6) Address: 201-1105, No 397, Seokcheon-ro
Ojeong-gu, Bucheon-Si, 14449
Korea

(7) This equipment and any acceptable variation thereto are specified in the annex to this certificate and the documentation therein referred to.

(8) Bureau Veritas Consumer Products Services Germany GmbH, notified body No. 2004 in accordance with Article 21 given in the Directive 2014/34/EU of the European Parliament and of the Council of 26 February 2014, certifies that this equipment has been found to comply with the essential health and safety requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II of the Directive. The examination and test results are recorded in the confidential documentation under the reference number 19TH0274.

(9) Compliance with the essential health and safety requirements has been assured by compliance with:

**EN IEC 60079-0:2018** **EN 60079-1:2014**

**EN 60079-31:2014**

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the annex to this certificate.

(11) This EU - Type Examination Certificate relates only to the design and construction of the specified equipment in accordance with Directive 2014/34/EU. Further requirements of this Directive apply to the manufacture of this equipment and its placing on the market. Those requirements are not covered by this certificate.

(12) The marking of the equipment shall include the following:

II 2G Ex db IIC T5/T6 Gb
II 2G Ex tb IIIC T100°C/T85°C Db IP66



Certification department of explosion protection

Tuerkheim, 2022-06-14

Ulrich Feike

ZERTIFIZIERUNGSSTELLE BUREAU VERITAS Bureau Veritas Consumer Products Services Germany GmbH 1828

Certificates without signature and seal are void. This certificate is allowed to be distributed only if not modified. Extracts or modifications must be authorized by Bureau Veritas Consumer Products Services Germany GmbH.

(13) # Annex

(14) **EU - Type Examination Certificate EPS 19 ATEX 1 112 X** **Revision 1**

(15) Description of equipment:

Smart valve positioner controls the valve stroke in response to an input signal of 4~20mA DC from the control panel, DCS or calibrator. Smart valve positioner is composed of body and cover, made of aluminium alloy (TS900) or made of stainless steel (TS905). There is one flameproof compartment with electronic board, terminals inside.

Electrical data:

Alarm signal, Feedback signal: 9 ~ 30V DC

Input signal: 4 ~ 20mA.

(16) Reference number: 19TH0274

(17) Special conditions for safe use:

When installed in explosive gas atmosphere, separate cable gland with marking of Ex db IIC Gb in accordance with EN 60079-0:2018 and EN 60079-1:2014 shall be incorporated.

When installed in combustible dust atmosphere, separate cable gland with marking of Ex tb IIIC Db in accordance with EN 60079-0:2018 and EN 60079-31:2014 shall be incorporated.

Contact the original manufacturer for the information of flameproof joint dimension and fasteners(A2-70).

The relation between temperature class, ambient temperature and process medium temperature is following.

| Temperature class | | Ambient temperature |
|---|---|---|
| T6 | T85 °C | (-40~+70) °C |
| T5 | T100 °C | (-40~+80) °C |

(18) Essential health and safety requirements:

Met by compliance with standards.

Certification department of explosion protection

Tuerkheim, 2022-06-14

Ulrich Feike

Trace No: 24/1638

**Dichiarazione di conformità UE**
In accordo con la Direttiva Europea 2014/34/UE

**EU-Declaration of Conformity**
In accordance with Directive 2014/34/EU

Noi, Sitecna Srl, dichiariamo che i seguenti prodotti / Sitecna Srl declares that the following equipment:

**Filter regulator model/ filtro regolatore modello: FR04411S00SSNB2**

Sono conformi alla normativa di armonizzazione dell'Unione / They comply with the Union harmonization legislation:

| | |
|---|---|
| **Direttiva 2014/34/UE ATEX** | Direttiva 2014/34/UE del Parlamento europeo e del Consiglio, del 26 febbraio 2014, concernente l'armonizzazione delle legislazioni degli Stati membri relative agli apparecchi e sistemi di protezione destinati a essere utilizzati in atmosfera potenzialmente esplosiva (rifusione) Testo rilevante ai fini del SEE. |
| | Directive 2014/34/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to equipment and protective systems intended for use in potentially explosive atmospheres (recast) Text with EEA relevance. |

Secondo le seguenti Norme di riferimento / As per folowing reference Normative Documents:

| | |
|---|---|
| **EN ISO 80079-36:2016** | Atmosfere esplosive - Apparecchi non elettrici per atmosfere esplosive - Metodo di base e requisiti |
| | Explosive atmospheres - Non-Electrical equipment for explosive atmospheres - Basic method and requirements |
| **EN ISO 80079-37:2016** | Atmosfere esplosive - Apparecchi non elettrici per atmosfere esplosive – Tipo di protezione non elettrica per sicurezza costruttiva "c", per controllo della sorgente di accensione "b", per immersione in liquido "k" |
| | Explosive atmospheres - Non-Electrical equipment for explosive atmospheres - Non-electrical type of protection constructional safety "c", control of ignition sources "b", liquid immersion "k" |
| **N 1127-1:2019** | Atmosfere esplosive - Prevenzione dell'esplosione e protezione contro l'esplosione - Concetti fondamentali e metodologia |
| | Explosive atmospheres - Explosion prevention and protection - Basic concepts and methodology |

Ai sensi della Direttiva 2014/34/EU, i prodotti sopra indicati riportano la seguente marcatura / According to the Directive 2014/34/EU, above mentioned products reports the following marking:

**II 2G Ex h IIC T6/T5 Gb X**
**II 2D Ex h IIIC T85°C/T100°C Db X**

Inoltre, ai sensi della direttiva 2014/34/UE, i prodotti sopra menzionati sono oggetto, per gli aspetti relativi sia alla progettazione sia alla fabbricazione, al controllo interno di fabbricazione (Allegato VIII – Modulo A). **Ref 557/Ex-Ab 3213/20 c/o N° 0035 TÜV Rheinland.**
In conformity to Directive 2014/34/EU, the afore mentioned equipment, regarding their design and production, are object to internal manufacturing check (Attachment VIII – Module A**). Ref 557/Ex-Ab 3213/20 c/o N° 0035 TÜV Rheinland.**

La presente dichiarazione di conformità è rilasciata sotto la responsabilità esclusiva del fabbricante.
This declaration of conformity is issued under exclusive responsibility of the manufacturer.

Milan, 25/10/2024
Davide Matteo De Corrado
**Managing Director**

**Dichiarazione di conformità UE**
In accordo con la Direttiva Europea 2014/34/UE

**EU-Declaration of Conformity**
In accordance with Directive 2014/34/EU

Noi, Sitecna Srl, dichiariamo che i seguenti prodotti / Sitecna Srl declares that the following equipment:

**Pressure gauge model/ Manometro modello: MBS6P4S2PN07-ATEX**

Sono conformi alla normativa di armonizzazione dell'Unione / They comply with the Union harmonization legislation:

| | |
|---|---|
| **Direttiva 2014/34/UE ATEX** | Direttiva 2014/34/UE del Parlamento europeo e del Consiglio, del 26 febbraio 2014, concernente l'armonizzazione delle legislazioni degli Stati membri relative agli apparecchi e sistemi di protezione destinati a essere utilizzati in atmosfera potenzialmente esplosiva (rifusione) Testo rilevante ai fini del SEE. |
| | Directive 2014/34/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to equipment and protective systems intended for use in potentially explosive atmospheres (recast) Text with EEA relevance. |

Secondo le seguenti Norme di riferimento / As per folowing reference Normative Documents:

| | |
|---|---|
| **EN ISO 80079-36:2016** | Atmosfere esplosive - Apparecchi non elettrici per atmosfere esplosive - Metodo di base e requisiti |
| | Explosive atmospheres - Non-Electrical equipment for explosive atmospheres - Basic method and requirements |
| **EN ISO 80079-37:2016** | Atmosfere esplosive - Apparecchi non elettrici per atmosfere esplosive – Tipo di protezione non elettrica per sicurezza costruttiva "c", per controllo della sorgente di accensione "b", per immersione in liquido "k" |
| | Explosive atmospheres - Non-Electrical equipment for explosive atmospheres - Non-electrical type of protection constructional safety "c", control of ignition sources "b", liquid immersion "k" |
| **N 1127-1:2019** | Atmosfere esplosive - Prevenzione dell'esplosione e protezione contro l'esplosione - Concetti fondamentali e metodologia |
| | Explosive atmospheres - Explosion prevention and protection - Basic concepts and methodology |

Ai sensi della Direttiva 2014/34/EU, i prodotti sopra indicati riportano la seguente marcatura / According to the Directive 2014/34/EU, above mentioned products reports the following marking:

**II 2G Ex h IIC T6/T5 Gb X**
**II 2D Ex h IIIC T85°C/T100°C Db X**

Inoltre, ai sensi della direttiva 2014/34/UE, i prodotti sopra menzionati sono oggetto, per gli aspetti relativi sia alla progettazione sia alla fabbricazione, al controllo interno di fabbricazione (Allegato VIII – Modulo A). **Ref 557/Ex-Ab 3213/20 c/o N° 0035 TÜV Rheinland.**
In conformity to Directive 2014/34/EU, the afore mentioned equipment, regarding their design and production, are object to internal manufacturing check (Attachment VIII – Module A**). Ref 557/Ex-Ab 3213/20 c/o N° 0035 TÜV Rheinland.**

La presente dichiarazione di conformità è rilasciata sotto la responsabilità esclusiva del fabbricante.
This declaration of conformity is issued under exclusive responsibility of the manufacturer.

Milan, 25/10/2024
Davide Matteo De Corrado
**Managing Director**

# UE / EU

## DICHIARAZIONE DI CONFORMITA'
*DECLARATION OF CONFORMITY*

**In accordo alla direttiva europea 2014/34/UE – (ATEX) CATEGORY 2 GROUP II DG, NON ELETTRICO**
**Ed alle seguenti norme armonizzate: EN ISO 80079-36:2016, EN ISO 80079-37:2016**

*According to the European directive 2014/34/EU – (ATEX)* CATEGORY 2 GROUP II DG, NON ELECTRICAL
*And to the following harmonized std: EN ISO 80079-36:2016, EN ISO 80079-37:2016*

**Prescrizioni particolari: il pericolo derivante da elevate temperature di superficie, è funzione del fluido di processo e non delle caratteristiche della valvola di sicurezza.**
*Particular prescription: hazard due to high surface temperature is function of the process medium and not of safety valve characteristics.*

| | |
|---|---|
| **Descrizione prodotto** / *Product Description:* | **VALVOLE DI SICUREZZA**<br>**SAFETY RELIEF VALVE** |
| **Serie valvola** / *Valve series:* | **SLK** |
| **Codice valvola** / *Valve code:* | **SLKL-08HA74-015** |
| **Matricola** / *Serial Number:* | **24-03790** |
| **Rif. n° d'ordine** / Ref. Order n°: | **AO2400788** |

| | |
|---|---|
| **N° certificato** / *Certificate n°:* | **557/Ex-Ab 3487/21** |
| **Fascicolo tecnico** / Technical pamphlet: | **FT V.S. ATEX rev 03** |
| **N° identificazione** / Identification n°: | **CE 0035** |
| **Nome e indirizzo dell'organismo notificato:**<br>*Name and address of the notified body* | TÜV Rheinland Industrie Service GmbH<br>Am Grauen Stein - 51105 Koln - Germany |

**Data / Date: 07/10/2024**

**Nome e posizione / Name and position:** *Simos Xeniadis / Sales Director*

**Firma autorizzata / Authorized signature:**

**This declaration of conformity is issued under the sole responsibility of the manufacturer**

COI TECHNOLOGY S.r.l.
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Tel.:+39-0236689480 - Fax:+39-0299767875
VAT CODE IT06359220966 - P.IVA 06359220966
E-mail: info@coitech.it - Web Site: www.coitech.it

# UE / EU

## DICHIARAZIONE DI CONFORMITA'
*DECLARATION OF CONFORMITY*

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*According to the European directive 2014/34/EU – (ATEX)* CATEGORY 2 GROUP II DG, NON ELECTRICAL
*And to the following harmonized std: EN ISO 80079-36:2016, EN ISO 80079-37:2016*

**Prescrizioni particolari: il pericolo derivante da elevate temperature di superficie, è funzione del fluido di processo e non delle caratteristiche della valvola di sicurezza.**
*Particular prescription: hazard due to high surface temperature is function of the process medium and not of safety valve characteristics.*

| | |
|---|---|
| **Descrizione prodotto** / *Product Description:* | **VALVOLE DI SICUREZZA**<br>**SAFETY RELIEF VALVE** |
| **Serie valvola** / *Valve series:* | **SLK** |
| **Codice valvola** / *Valve code:* | **SLKL-08HA74-015** |
| **Matricola** / *Serial Number:* | **24-03791** |
| **Rif. n° d'ordine** / Ref. Order n°: | **AO2400788** |

| | |
|---|---|
| **N° certificato** / *Certificate n°:* | **557/Ex-Ab 3487/21** |
| **Fascicolo tecnico** / Technical pamphlet: | **FT V.S. ATEX rev 03** |
| **N° identificazione** / Identification n°: | **CE 0035** |
| **Nome e indirizzo dell'organismo notificato:**<br>*Name and address of the notified body* | TÜV Rheinland Industrie Service GmbH<br>Am Grauen Stein - 51105 Koln - Germany |

**Data / Date: 07/10/2024**

**Nome e posizione / Name and position:** *Simos Xeniadis / Sales Director*

**Firma autorizzata / Authorized signature:**

**This declaration of conformity is issued under the sole responsibility of the manufacturer**

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# UE / EU

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*DECLARATION OF CONFORMITY*

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**Prescrizioni particolari: il pericolo derivante da elevate temperature di superficie, è funzione del fluido di processo e non delle caratteristiche della valvola di sicurezza.**
*Particular prescription: hazard due to high surface temperature is function of the process medium and not of safety valve characteristics.*

| | |
|---|---|
| **Descrizione prodotto** / *Product Description:* | **VALVOLE DI SICUREZZA**<br>**SAFETY RELIEF VALVE** |
| **Serie valvola** / *Valve series:* | **SLK** |
| **Codice valvola** / *Valve code:* | **SLKL-08HA74-015** |
| **Matricola** / *Serial Number:* | **24-03792** |
| **Rif. n° d'ordine** / Ref. Order n°: | **AO2400788** |

| | |
|---|---|
| **N° certificato** / *Certificate n°:* | **557/Ex-Ab 3487/21** |
| **Fascicolo tecnico** / Technical pamphlet: | **FT V.S. ATEX rev 03** |
| **N° identificazione** / Identification n°: | **CE 0035** |
| **Nome e indirizzo dell'organismo notificato:**<br>*Name and address of the notified body* | TÜV Rheinland Industrie Service GmbH<br>Am Grauen Stein - 51105 Koln - Germany |

**Data / Date: 07/10/2024**

**Nome e posizione / Name and position:** *Simos Xeniadis / Sales Director*

**Firma autorizzata / Authorized signature:**

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# UE / EU

## DICHIARAZIONE DI CONFORMITA'
*DECLARATION OF CONFORMITY*

**In accordo alla direttiva europea 2014/34/UE – (ATEX) CATEGORY 2 GROUP II DG, NON ELETTRICO**
**Ed alle seguenti norme armonizzate: EN ISO 80079-36:2016, EN ISO 80079-37:2016**

*According to the European directive 2014/34/EU – (ATEX)* CATEGORY 2 GROUP II DG, NON ELECTRICAL
*And to the following harmonized std: EN ISO 80079-36:2016, EN ISO 80079-37:2016*

**Prescrizioni particolari: il pericolo derivante da elevate temperature di superficie, è funzione del fluido di processo e non delle caratteristiche della valvola di sicurezza.**
*Particular prescription: hazard due to high surface temperature is function of the process medium and not of safety valve characteristics.*

| | |
|---|---|
| **Descrizione prodotto** / *Product Description:* | **VALVOLE DI SICUREZZA**<br>**SAFETY RELIEF VALVE** |
| **Serie valvola** / *Valve series:* | **SLK** |
| **Codice valvola** / *Valve code:* | **SLKL-08HA74-015** |
| **Matricola** / *Serial Number:* | **24-03793** |
| **Rif. n° d'ordine** / Ref. Order n°: | **AO2400788** |

| | |
|---|---|
| **N° certificato** / *Certificate n°:* | **557/Ex-Ab 3487/21** |
| **Fascicolo tecnico** / Technical pamphlet: | **FT V.S. ATEX rev 03** |
| **N° identificazione** / Identification n°: | **CE 0035** |
| **Nome e indirizzo dell'organismo notificato:**<br>*Name and address of the notified body* | TÜV Rheinland Industrie Service GmbH<br>Am Grauen Stein - 51105 Koln - Germany |

**Data / Date: 07/10/2024**

**Nome e posizione / Name and position:** *Simos Xeniadis / Sales Director*

**Firma autorizzata / Authorized signature:**

**This declaration of conformity is issued under the sole responsibility of the manufacturer**

COI TECHNOLOGY S.r.l.
Via Della Liberazione 29/d – 20098 San Giuliano Milanese (MI)
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# UE / EU

## DICHIARAZIONE DI CONFORMITA'
*DECLARATION OF CONFORMITY*

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**Prescrizioni particolari: il pericolo derivante da elevate temperature di superficie, è funzione del fluido di processo e non delle caratteristiche della valvola di sicurezza.**
*Particular prescription: hazard due to high surface temperature is function of the process medium and not of safety valve characteristics.*

| | |
|---|---|
| **Descrizione prodotto** / *Product Description:* | **VALVOLE DI SICUREZZA**<br>**SAFETY RELIEF VALVE** |
| **Serie valvola** / *Valve series:* | **SLK** |
| **Codice valvola** / *Valve code:* | **SLKL-08HA74-015** |
| **Matricola** / *Serial Number:* | **24-03794** |
| **Rif. n° d'ordine** / Ref. Order n°: | **AO2400788** |

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|---|---|
| **N° certificato** / *Certificate n°:* | **557/Ex-Ab 3487/21** |
| **Fascicolo tecnico** / Technical pamphlet: | **FT V.S. ATEX rev 03** |
| **N° identificazione** / Identification n°: | **CE 0035** |
| **Nome e indirizzo dell'organismo notificato:**<br>*Name and address of the notified body* | TÜV Rheinland Industrie Service GmbH<br>Am Grauen Stein - 51105 Koln - Germany |

**Data / Date: 07/10/2024**

**Nome e posizione / Name and position:** *Simos Xeniadis / Sales Director*

**Firma autorizzata / Authorized signature:**

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**Prescrizioni particolari: il pericolo derivante da elevate temperature di superficie, è funzione del fluido di processo e non delle caratteristiche della valvola di sicurezza.**
*Particular prescription: hazard due to high surface temperature is function of the process medium and not of safety valve characteristics.*

| | |
|---|---|
| **Descrizione prodotto** / *Product Description:* | **VALVOLE DI SICUREZZA**<br>**SAFETY RELIEF VALVE** |
| **Serie valvola** / *Valve series:* | **SLK** |
| **Codice valvola** / *Valve code:* | **SLKL-08HA74-015** |
| **Matricola** / *Serial Number:* | **24-03795** |
| **Rif. n° d'ordine** / Ref. Order n°: | **AO2400788** |

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|---|---|
| **N° certificato** / *Certificate n°:* | **557/Ex-Ab 3487/21** |
| **Fascicolo tecnico** / Technical pamphlet: | **FT V.S. ATEX rev 03** |
| **N° identificazione** / Identification n°: | **CE 0035** |
| **Nome e indirizzo dell'organismo notificato:**<br>*Name and address of the notified body* | TÜV Rheinland Industrie Service GmbH<br>Am Grauen Stein - 51105 Koln - Germany |

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**Prescrizioni particolari: il pericolo derivante da elevate temperature di superficie, è funzione del fluido di processo e non delle caratteristiche della valvola di sicurezza.**
*Particular prescription: hazard due to high surface temperature is function of the process medium and not of safety valve characteristics.*

| | |
|---|---|
| **Descrizione prodotto** / *Product Description:* | **VALVOLE DI SICUREZZA**<br>**SAFETY RELIEF VALVE** |
| **Serie valvola** / *Valve series:* | **SLK** |
| **Codice valvola** / *Valve code:* | **SLKL-08HA74-015** |
| **Matricola** / *Serial Number:* | **24-03796** |
| **Rif. n° d'ordine** / Ref. Order n°: | **AO2400788** |

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|---|---|
| **N° certificato** / *Certificate n°:* | **557/Ex-Ab 3487/21** |
| **Fascicolo tecnico** / Technical pamphlet: | **FT V.S. ATEX rev 03** |
| **N° identificazione** / Identification n°: | **CE 0035** |
| **Nome e indirizzo dell'organismo notificato:**<br>*Name and address of the notified body* | TÜV Rheinland Industrie Service GmbH<br>Am Grauen Stein - 51105 Koln - Germany |

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*Particular prescription: hazard due to high surface temperature is function of the process medium and not of safety valve characteristics.*

| | |
|---|---|
| **Descrizione prodotto** / *Product Description:* | **VALVOLE DI SICUREZZA**<br>**SAFETY RELIEF VALVE** |
| **Serie valvola** / *Valve series:* | **SLK** |
| **Codice valvola** / *Valve code:* | **SLKL-08HA74-015** |
| **Matricola** / *Serial Number:* | **24-03797** |
| **Rif. n° d'ordine** / Ref. Order n°: | **AO2400788** |

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| **N° certificato** / *Certificate n°:* | **557/Ex-Ab 3487/21** |
| **Fascicolo tecnico** / Technical pamphlet: | **FT V.S. ATEX rev 03** |
| **N° identificazione** / Identification n°: | **CE 0035** |
| **Nome e indirizzo dell'organismo notificato:**<br>*Name and address of the notified body* | TÜV Rheinland Industrie Service GmbH<br>Am Grauen Stein - 51105 Koln - Germany |

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*Particular prescription: hazard due to high surface temperature is function of the process medium and not of safety valve characteristics.*

| | |
|---|---|
| **Descrizione prodotto** / *Product Description:* | **VALVOLE DI SICUREZZA**<br>**SAFETY RELIEF VALVE** |
| **Serie valvola** / *Valve series:* | **SLK** |
| **Codice valvola** / *Valve code:* | **SLKL-08HA74-015** |
| **Matricola** / *Serial Number:* | **24-03798** |
| **Rif. n° d'ordine** / Ref. Order n°: | **AO2400788** |

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| **N° certificato** / *Certificate n°:* | **557/Ex-Ab 3487/21** |
| **Fascicolo tecnico** / Technical pamphlet: | **FT V.S. ATEX rev 03** |
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*Particular prescription: hazard due to high surface temperature is function of the process medium and not of safety valve characteristics.*

| | |
|---|---|
| **Descrizione prodotto** / *Product Description:* | **VALVOLE DI SICUREZZA**<br>**SAFETY RELIEF VALVE** |
| **Serie valvola** / *Valve series:* | **SLK** |
| **Codice valvola** / *Valve code:* | **SLKL-08HA74-015** |
| **Matricola** / *Serial Number:* | **24-03799** |
| **Rif. n° d'ordine** / Ref. Order n°: | **AO2400788** |

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| **N° certificato** / *Certificate n°:* | **557/Ex-Ab 3487/21** |
| **Fascicolo tecnico** / Technical pamphlet: | **FT V.S. ATEX rev 03** |
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**Prescrizioni particolari: il pericolo derivante da elevate temperature di superficie, è funzione del fluido di processo e non delle caratteristiche della valvola di sicurezza.**
*Particular prescription: hazard due to high surface temperature is function of the process medium and not of safety valve characteristics.*

| | |
|---|---|
| **Descrizione prodotto** / *Product Description:* | **VALVOLE DI SICUREZZA**<br>**SAFETY RELIEF VALVE** |
| **Serie valvola** / *Valve series:* | **SLK** |
| **Codice valvola** / *Valve code:* | **SLKL-08HA74-015** |
| **Matricola** / *Serial Number:* | **24-03800** |
| **Rif. n° d'ordine** / Ref. Order n°: | **AO2400788** |

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| **N° certificato** / *Certificate n°:* | **557/Ex-Ab 3487/21** |
| **Fascicolo tecnico** / Technical pamphlet: | **FT V.S. ATEX rev 03** |
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**Prescrizioni particolari: il pericolo derivante da elevate temperature di superficie, è funzione del fluido di processo e non delle caratteristiche della valvola di sicurezza.**
*Particular prescription: hazard due to high surface temperature is function of the process medium and not of safety valve characteristics.*

| | |
|---|---|
| **Descrizione prodotto** / *Product Description:* | **VALVOLE DI SICUREZZA**<br>**SAFETY RELIEF VALVE** |
| **Serie valvola** / *Valve series:* | **SLK** |
| **Codice valvola** / *Valve code:* | **SLKL-08HA74-015** |
| **Matricola** / *Serial Number:* | **24-03801** |
| **Rif. n° d'ordine** / Ref. Order n°: | **AO2400788** |

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|---|---|
| **N° certificato** / *Certificate n°:* | **557/Ex-Ab 3487/21** |
| **Fascicolo tecnico** / Technical pamphlet: | **FT V.S. ATEX rev 03** |
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*Particular prescription: hazard due to high surface temperature is function of the process medium and not of safety valve characteristics.*

| | |
|---|---|
| **Descrizione prodotto** / *Product Description:* | **VALVOLE DI SICUREZZA**<br>**SAFETY RELIEF VALVE** |
| **Serie valvola** / *Valve series:* | **SLK** |
| **Codice valvola** / *Valve code:* | **SLKL-08HA74-015** |
| **Matricola** / *Serial Number:* | **24-03802** |
| **Rif. n° d'ordine** / Ref. Order n°: | **AO2400788** |

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| **N° certificato** / *Certificate n°:* | **557/Ex-Ab 3487/21** |
| **Fascicolo tecnico** / Technical pamphlet: | **FT V.S. ATEX rev 03** |
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*Particular prescription: hazard due to high surface temperature is function of the process medium and not of safety valve characteristics.*

| | |
|---|---|
| **Descrizione prodotto** / *Product Description:* | **VALVOLE DI SICUREZZA**<br>**SAFETY RELIEF VALVE** |
| **Serie valvola** / *Valve series:* | **SLK** |
| **Codice valvola** / *Valve code:* | **SLKL-08HA74-015** |
| **Matricola** / *Serial Number:* | **24-03803** |
| **Rif. n° d'ordine** / Ref. Order n°: | **AO2400788** |

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| **N° certificato** / *Certificate n°:* | **557/Ex-Ab 3487/21** |
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*Particular prescription: hazard due to high surface temperature is function of the process medium and not of safety valve characteristics.*

| | |
|---|---|
| **Descrizione prodotto** / *Product Description:* | **VALVOLE DI SICUREZZA**<br>**SAFETY RELIEF VALVE** |
| **Serie valvola** / *Valve series:* | **SLK** |
| **Codice valvola** / *Valve code:* | **SLKL-08HA74-015** |
| **Matricola** / *Serial Number:* | **24-03804** |
| **Rif. n° d'ordine** / Ref. Order n°: | **AO2400788** |

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|---|---|
| **N° certificato** / *Certificate n°:* | **557/Ex-Ab 3487/21** |
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| | |
|---|---|
| **Descrizione prodotto** / *Product Description:* | **VALVOLE DI SICUREZZA**<br>**SAFETY RELIEF VALVE** |
| **Serie valvola** / *Valve series:* | **SLK** |
| **Codice valvola** / *Valve code:* | **SLKL-08HA74-015** |
| **Matricola** / *Serial Number:* | **24-03805** |
| **Rif. n° d'ordine** / Ref. Order n°: | **AO2400788** |

| | |
|---|---|
| **N° certificato** / *Certificate n°:* | **557/Ex-Ab 3487/21** |
| **Fascicolo tecnico** / Technical pamphlet: | **FT V.S. ATEX rev 03** |
| **N° identificazione** / Identification n°: | **CE 0035** |
| **Nome e indirizzo dell'organismo notificato:**<br>*Name and address of the notified body* | TÜV Rheinland Industrie Service GmbH<br>Am Grauen Stein - 51105 Koln - Germany |

**Data / Date: 07/10/2024**

**Nome e posizione / Name and position:** *Simos Xeniadis / Sales Director*

**Firma autorizzata / Authorized signature:**

**This declaration of conformity is issued under the sole responsibility of the manufacturer**

COI TECHNOLOGY S.r.l.
Via Della Liberazione 29/d – 20098 San Giuliano Milanese (MI)
Tel.:+39-0236689480 - Fax:+39-0299767875
VAT CODE IT06359220966 - P.IVA 06359220966
E-mail: info@coitech.it - Web Site: www.coitech.it

# PART 2-CERTIFICATION DOSSIER

# Section 2.1

Material test certificates (including NDE report)

**AST S.p.A.**
Via R. Merendi, 40
I-20007 Cornaredo MI

P +39 02 934848.1
F +39 02 9362248
W www.astspa.it

**MATERIAL CERTIFICATES INDEX**
**CERTIFICATO DEI MATERIALI** **No.** 2400583

EN 10204 3.1

**Customer**
ROSETTI MARINO S.P.A.

**P.Order / Project**
1724000740 123A90A Rev. 1

**ITEM Number**
10-60

**Tag**
25-FV-031

**Quantity delivered**
1

**AST Job**
CV2400221

**AST Code**
CV2400221CV8407A000

**Serial Number**
2400583

**Valve Type**
Valvole Regolazione

**Size**
NPS 1" CLASS 300 RF

**Port Size**
1/4"

| Part Name | Material | Heat No. | Certificate No. | Supplier |
|---|---|---|---|---|
| BODY | ASTM A351 CF3M | E360 | E360 | SGA Alloys Private Limited |
| SEAT RING | ASTM A479 316/316L | 372445 | 2023016714 | COGNE ACCIAI SPECIALI SPA |
| PLUG | F316 + PTFE | 290960 | MEST091967/2023/ | ACCIAIERIE VALBRUNA |
| BONNET | ASTM A479 316/316L | 476355 | 2024015321 | COGNE ACCIAI SPECIALI SPA |
| STEM | ASTM A479 316/316L | 276383 | MEST112865-2022 | ACCIAIERIE VALBRUNA |

08 NOV. 2024
FRANCO CORBELLINI
QBO
CROSSWIND

☒ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

**Remarks** :

**AST Q.C. Department** **Customer's Inspector** **Third Party Inspection**

**Date** : 05.11.2024 **Date** : _____ **Date** : _____

# SGA ALLOYS PRIVATE LIMITED

( Formerly Known as Sri Ganapathy Steel Alloy Casting )
ISO 9001 : 2015 CERTIFIED COMPANY
SF.NO:10/1,NALLAGOUNDENPALAYAM,,KADUVETTIPALAYAM POST,SULUR TKCOIMBATORE Pin :641659,
Phone :9159530466,9159533064, email :sgaalloys2018@gmail.com

## MATERIAL TEST CERTIFICATE
AS PER EN 10204 - 3.1

**Customer** : ECO TECH CASTINGS INDIA (P) LTD
COIMBATORE 641018

T.C. No. : **E360**
T.C.Date : **20/09/2021**

**P.Order No.** : ECO/21-22/134 Dt. 05/08/2021

Heat No. : **E360**
Pouring Date : **02/09/2021**

**Specification** :**ASTM A351 Gr.CF3M - 2018**

CASTING PROCESSED BY INDUCTION MELTING
FOUNDRY IDENTIFICATION :SGA

**TEST SPEC AS PER ASTM A703-2020 CHEMICAL COMPOSITION - %**

| Element | | C | Mn | Si | P | S | Cr | Ni | Mo |
|---|---|---|---|---|---|---|---|---|---|
| Req. | Min | --- | --- | --- | --- | --- | 17.000 | 9.000 | 2.000 |
| | Max | 0.030 | 1.500 | 1.500 | 0.040 | 0.040 | 21.000 | 13.000 | 3.000 |
| Actual | | **0.023** | **0.937** | **0.560** | **0.028** | **0.001** | **17.698** | **9.662** | **2.166** |

**HEAT TREATMENT :** SOLUTION ANNEALING: Heated to 1080 ° C, Soaked for 3 Hrs and then water Quenched.

**TENSILE TEST AS PER ASTM A370-2020 MECHANICAL PROPERTIES IMPACT TEST AS PER ASTM E23-16**

| Requirments | Yield Strength Mpa | Tensile Strength MPa | % Elongation GL :50 mm | % Reduction of Area | Hardness BHN | Bend Test D =3T | Impact Test In (Joules) (10mm X 10mm X 55mm) Impact at -196°c & 40jmin | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 0.2% Proof Stress | - | - | - | - | at 120 ° | | | | |
| **Minimum** | 205 | 485 | 30.00 | --- | --- | | | | | |
| **Maximum** | --- | --- | --- | --- | 237 | - | 1 | 2 | 3 | Avg |
| **Actual** | **243** | **534** | **51.60** | **---** | 160 | **--** | **82** | **78** | **76** | **78.67** |

**ITEM DESCRIPTION**

| SL.No. | Product | Description | Drawing No. | Part No. | Poured Qty |
|---|---|---|---|---|---|
| 1 | C20005 | BODY CV 8400(AT220) | M028 REV.0 | CABDWG0028 | 5 |

Remarks : **Separate test bar poured and the same bar tested for chemical and mechanical properties**
**Tensile Testing conducted on round specimen at room temperature**
**These casting has been acid pickled and passivated**
**Casting meet the requirement of NACE MR0175 / ISO 15156**
**Radio activity checked and found to be 0.10 Bequerel/Gram**
**Carbon steel fully killed Condition**
**Visual Inspection carried out at as per MSS SP-55, found satisfied**

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND R

We here by certify that the items mentioned above have been tested, inspected and found to be in accordance with customer's drawing, specification, purchase order and satisfy the requirements of ASTM A351 Gr.CF3M - 2018,

for SGA ALLOYS PRIVATE LIMITED

K.ARUNKUMAR
Prepared By

K.KARTHIKEYAN
QUALITY ASSURANCE

Page 1 of 1

REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA FINA DATE 08 NOV 2024

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL. +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 250.000.000 EUR INT. VERS.
C.F. 02187350967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.

# INSPECTION CERTIFICATE 3.1 (EN 10204:2004)

DOCUMENT NUMBER 2023016714



| | | | |
|---|---|---|---|
| CUSTOMER: | A.S.T. SPA | | |
| CUSTOMER'S ORDER: | AQ2301925 | | |
| MANUFACTURER'S WORKS: | AOSTA, VIA PARAVERA 16 - ITALY | | |
| PRODUCER OF THE DOC: | QUALITY DEPARTMENT | | |
| MANUFACTURER'S WORKS ORDER NO: | 0001136538 / 000020 | | |
| MARK OF THE MANUFACTURER: | **COGNE** | | |
| DISPATCH NOTE: | 0081566096 / 000020 WEIGHT: 190 KG / 419 LB | | |
| INTERNAL SPEC: | STOCKBARREW2 | TECHNICAL RULE: | AD2000 |
| PRODUCT: | PEL PEELED ROUND BARS TOLERANCE: ISOK11 | | |
| SURFACE FINISH: | 2B Cold Finished | | |
| PRODUCT DELIVERY CONDITION: | RS SOLUTION ANNEALED | | |
| PRODUCT DIMENSIONS (mm): | 50,000 ( 1,969 in) | LENGTH (mm) | 03000 03100 ( 00118 00122 in) |
| GRADE: | 316L-S31600/31603-1.4404/4401 | INTERNAL GRADE: | F316L IMCO |
| IDENTIFICATION HEAT NO: | 372445 | IDENTIFICATION LOT NO: | 725970 |
| MARKING OF THE PRODUCT: | 1.4404 | TEST PIECE N: | 597 |

REFERENCE NORMS: EN 10088-3 2014, EN 10272 2016, ASTM A276/A276M, ASTM A479/A479M, ASTM A193 B8MCLASSE 1D, ASME SA276/SA276M, ASME SA479/SA479M, AMS 5653J, AMS 5648N, ISO15156-3/NACE MR0175 2015, NACE MR0103/ISO 17945, NORSOK M630 MDSS01 REV5.
REFERENCE NORMS FOR CHEMICAL COMPOSITION AND MECHANICAL PROPERTIES: ASTM A182, ASME SA182.
REFERENCE NORMS ONLY FOR CHEMICAL COMPOSITION: EN 10222-5 2017,ASTM A403-07a, ASTM A484-18a,ASTM A314-08, AMS-QQ-S-763D.
ASME SECT.II PART A EDITION 2015-2017-2019-2021
AISI 316/316L - UNS S31600/S31603 - 1.4404/1.4401
THE PRODUCT IS CONFORMING TO THE CONTRACT AGREEMENT AND TO THE RULE AD2000-MERKBLATT W0/W2.
STEELMAKING EAF + AOD + CONTINUOUS CASTING
ASTM A484 DOES NOT APPLY FOR SIZE AND LENGTH TOLERANCES.
STEELMAKING EAF + AOD + CONTINUOUS CASTING
REFERENCE FOR APPLICABLE ASME STANDARD: SECTION II PART A ED. 2015-2017-2019-2021
HOT ROLLED
REDUCTION RATIO 11,8

CHEMICAL LADLE ANALYSIS ACCORDING TO ASTM A751 - EN ISO 14284
Control lot No. - Weight :020000959742 - 85.921 KG - 189.420 LB

| ELEMENTS | C | Si | Mn | P | S | N | Cr | Mo | Ni | Cu |
|---|---|---|---|---|---|---|---|---|---|---|
| MEASUREMENT UNIT | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w |
| OBTAINED | 0,018 | 0,26 | 1,77 | 0,026 | 0,028 | 0,077 | 16,97 | 2,04 | 10,28 | 0,46 |

| ELEMENTS | Co |
|---|---|
| MEASUREMENT UNIT | % w/w |
| OBTAINED | 0,16 |

HARDNESS TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000960410 - 7.449 KG - 16.422 LB
SPECIFICATION ENISO6506 HARDNESS TEST HB TESTING METHOD: 10/3000
OBTAINED 157

REVIEW WITNESS
ON BEHALF OF RINA
A. BELLADINA DATE 08 NOV 2024

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSWIND

DATE 05.04.2023

BARBARA VIETTI MV(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

-Cogne

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 250.000.000 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, IFAF 16949, EN 9100, ISO 14001 and ISO 45001.



1724000740-QC-DB-00016_01

IMPACT TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000960410 - 7.449 KG - 16.422 LB
SPECIFICATION EN ISO 148-1-KV2 DIRECTION OF THE TEST PIECE: L
TYPE OF TEST PIECE KV
TEST TEMPERATURE °C 20
MEASUREMENT UNIT J

| OBTAINED | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 435 | 430 | 428 | 435 | 438 | 439 | 429 | 435 | 436 | 426 |
| | 432 | 434 | | | | | | | | |

TENSILE TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000960410 - 7.449 KG - 16.422 LB
SPECIFICATION EN-ISO6892-1 DIRECTION OF THE TEST PIECE: L

| MEASUREMENT UNIT | RM MPA | RP02 MPA | A5 % | Z % | RP1 NMM |
|---|---|---|---|---|---|
| | | | 5.0 D | | |
| OBTAINED | 611 | 282 | 55,2 | 78,3 | 325 |
| | 613 | 287 | 51,3 | 72,1 | 342 |
| | 614 | 301 | 48,8 | 73,1 | 341 |
| | 612 | 272 | 56,7 | 76,3 | 325 |

GRAIN SIZE
Control lot No. - Weight :020000960410 - 7.449 KG - 16.422 LB
SPECIFICATION ASTME112 --
OBTAINED 6

MATERIAL IN COMPLIANCE WITH THE NORSOK M-630 MDS S01
IMPACT TEST
Control lot No. - Weight :020000960410 - 7.449 KG - 16.422 LB
SPECIFICATION EN ISO 148-1 DIRECTION OF THE TEST PIECE: L
TYPE OF TEST PIECE KV
TEST TEMPERATURE °C 196-
MEASUREMENT UNIT J

| OBTAINED | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 198 | 185 | 195 | 190 | 177 | 173 | 173 | 173 | 197 | 175 |
| | 192 | 179 | | | | | | | | |

TENSILE TEST
Control lot No. - Weight :020000960410 - 7.449 KG - 16.422 LB
SPECIFICATION ASTMA370-E8-0.5"SPEC DIRECTION OF THE TEST PIECE: L

| MEASUREMENT UNIT | RMB KSI | RP02B KSI | ZB % | AL2B % |
|---|---|---|---|---|
| | | | | 4,0 D |
| OBTAINED | 88 | 40 | 78,0 | 57,6 |
| | 89 | 41 | 73,3 | 55,7 |
| | 89 | 41 | 72,9 | 54,0 |
| | 89 | 40 | 78,1 | 61,1 |

FRANCO CORBELLINI
CROSWELD
08 NOV. 2024

☒ REVIEW ☐ WITNESS
ON BEHALF OF RTG
A. DELLAPINA DATE 08 NOV 2024

DATE 05.04.2023

BARBARA VIETTI MV(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

-Cogne

COGNE ACCIAI SPECIALI S.p.a.

ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 250.000.000 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.



1724000740-QC-DB-00016_01

COUNTRY OF MELTING AND ORIGIN: ITALY, THE MATERIAL COMPLIES WITH FAR DFARS 252.225-7009 ALT 1.
The products delivered are conforming to EN10088-5 and bear the CE marking on the basis of the test results here reported and the continuous surveillance, assessment and approval by MPA NRW (certificate no. 0432-CPR-00166-01)
Material produced according to the system #Regulation 305/2011/EU of the European Parliament and of the Council of 9 March 2011#
DOCUMENT ISSUED IN AGREEMENT WITH TUEV BAYERN(11.1972) WAVING OF COUNTERSIGNING (SEE TUEV BAYERN LETTER DATED 17.01.80).
MARKING: SYMBOL OF THE MANUF. WORK, MATERIAL N. , CAST N., LOT N., RECEIVING AGENT STAMP
CORROSION TEST ACCORDING TO ASTM A262 PRACTICE E EN ISO 3651-2 PRACTICE A: SATISFACTORY.
ANTIMIXING TEST BY PORTABLE SPECTROMETRE: CONFORMING
EDDY CURRENT INSPECTION OF SURFACE ACCORDING TO EN 10277 CLASS 4.
DIMENSIONAL CONTROL ACCORDING TO EN 10278: SATISFACTORY.
NO WELDING REPAIR ON THE MATERIAL.
ULTRASONIC TEST ACCORDING TO EN 10308 Class.3: SATISFACTORY
QUALITY SYSTEM CERTIFIED BY KIWA CERMET ACCORDING TO UNI EN ISO 9001:2015 -IATF 16949:2016 (THE LAST ONE ONLY FOR WIRE ROD AND HOT ROLLED-PEELED-GROUND STAINLESS STEEL BARS).
INSPECTOR'S STAMP LF
MATERIAL CONFORM TO: 2015/863/UE (RoHS3) - 2011/65/UE (RoHS2) - 2000/53/UE - 2002/95/UE (RoHS) - 2003/11/UE - 2005/618/UE - PED 2014/68/UE e PE(S)R 2016/1105
THE MATERIAL IS FREE OF ANY MERCURY, MERCURY COMPOUNDS AND OR RADIUM CONTAMINATION AT TIME OF SHIPMENT AND WAS PRODUCED WITHOUT USING OZONE DEPLETING SUBSTANCES OF CLASS I AND II.
RADIOACTIVITY CONTROL PERFORMED WITH A GAMMA SPECTROMETER: ASTM E181.
GAMMA ACTIVITY ON THE PRODUCTS BELOW 0.1 BQ/G ACCORDING TO EU RESOLUTION 2013/59/EURATOM , IAEA RS-G-1.7 AND IAEA SSG-17.

CE 0432

WITNESS
DATE 08 NOV 2024

08 NOV. 2024
FRANCO CORBELLINI
CROSWIND

DATE 05.04.2023

BARBARA VIETTI MV(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

-Cogne

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a : EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1
Nach/According to/Selon

Certificato nr. MEST091967 / 2023 /
Prüfung/Test/Essai

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Ordine nr: ORD N AQ2301562
Bestell
Your order
Commande

Conferma ordine nr: MI23005383
Werks/Our Order/Ref nr.

Avviso di Spedizione: A-MI23004303
Lieferanzeige/Packing list/B.L.

Stato di fornitura : Laminato - Solubilizzato Trafilato
Lieferzustand
Delivery state
Etat de livraison

Tipo di Elaborazione: E+AOD
Erschmelzungsart
Melting process
Mode d'elaboration

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung
Brand / Nuance

Produttore :
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Marchi di Fabbrica:
Zeichen des Liefernwerkes
Trade marks
Sigles de l'usine productrice
AV

Punzone del Collaudatore:
Stempel des Werksachverständigen
Inspector's stamp/Poinçon de l' assayeur
MR

Punzonatura: 1.4401/1.4404
Kennzeichnung
Marking
Marquage

**SPECIFICHE :**
Anforderungen / Requirements / Exigences

VAL STOCK W2 A/1 1.4404/316L A,CF
AD 2000-M. W 2 01/20 1.4401 A,CF (0)
AD 2000-M. W 2 01/20 1.4404 A,CF (1)
AISI . 316/316L
ASME SA182 2021 S31600/03 A (2)
ASME SA276 2021 S31600/03 A,CF (3)
ASME SA479 2021 S31600/03 A (4)
ASTM A182 2022A S31600/03 A (5)
ASTM A262 PR. E 2015 316/316L (6)
ASTM A276 2017 S31600/03 A,CF
ASTM A370 2022 .
ASTM A479 2021 S31600/03 A
ASTM E10 2018 .
ASTM E8 2022 .
EN 10088 PART 3 2014 1.4401 A,CF
EN 10088 PART 3 2014 1.4404 A,CF
EN 10272 2016. 1.4401 A,CF
EN 10272 2016. 1.4404 A,CF
ISO 148-1 2016 .
ISO 3651-2 98 METHOD A T1
ISO 6506-1 2014 .
ISO 6892-1 2019 .
ACH CO . .
PME HB L . .

Note:
Aufzeichnungen / Notes / Notes

(0)AD 2000-MERKBLATT W 2 edition 01.2020 AD 2000-MERKBLATT W 10 edition 01.2020
(1)AD 2000-MERKBLATT W 2 edition 01.2020 AD 2000-MERKBLATT W 10 edition 01.2020

(2)Section II Part A 2021 EDITION For products machined directly from bar refer to ASME SA479.
(3)Section II Part A 2021 EDITION

(4)Section II Part A 2021 EDITION
(5)For products machined directly from bar refer also to ASTM A479.
(6)Reapproved 2021

08 NOV. 2024
FRANCO CORRELLINI
QBO
CROSSWIND R

Tolleranza: h9 - DIN671/EN10278
Toleranz/Allowance/Tolerance

| Pos. nr. Pos. nr. Item nr. Nr. de poste | Oggetto Gegenstand Product description Descrip. du produit | Dimensioni - mm Abmessungen Dimension Dimension | Lunghezza - mm Länge Length Longueur | Colata Schmelze Heat Coulée | Pezzi Stückzahl Pieces Pièces | Peso - KG Gewicht Weight Poids | Lotto nr. Losnr. Lot nr. Lot nr. |
|---|---|---|---|---|---|---|---|
| 0030 | Tondo | 13,000 | 3000/ 3040 | 290960 | | 32,0 | 217704330 |

WITNESS
QBO
ULTRASONIC DATE 08 NOV 2024

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| Vicenza, 13/07/2023 | Direzione Qualità | Direzione Prodotto | Pagina |
|---|---|---|---|
| VCQ008 - MEST091967 | Qualitätsmanagement/Quality Management/Gestion Qualité | Produktmanagement/Product Management/Direction Produit | 1 di 4 |
| | R.BERTELLI | P.MESSORI | |

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1
Nach/According to/Selon

Certificato nr. MEST091967 / 2023 /
Prüfung/Test/Essai

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura: Laminato - Solubilizzato Trafilato
Lieferzustand / Delivery state / Etat de livraison

Produttore:
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Ordine nr: ORD N AQ2301562
Bestell / Your order / Commande

Tipo di Elaborazione: E+AOD
Erschmelzungsart / Melting process / Mode d'elaboration

Marchi di Fabbrica:
Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice

Conferma ordine nr: MI23005383
Werks/Our Order/Ref nr

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Punzone del Collaudatore:
Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur

Avviso di Spedizione: A-MI23004303
Lieferanzeige/Packing list/B.L.

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung / Brand / Nuance

Punzonatura: 1.4401/1.4404
Kennzeichnung / Marking / Marquage

### TEST ALLO STATO DI FORNITURA
Test on delivery condition / Prüefung auf lieferbereitem produkt / test a l'etat de fourniture / Prueba sobre el material así come entregado

1) L=longitudinale/langs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | Posiz. Saggio Probentage Location Emplacement 1) | Snervamento Streckgrenze Yield Stress Limite elastique Rp 0,2% N/mm2 | Snervamento Streckgrenze Yield Stress Limite elastique Rp 1% N/mm2 | Resistenza Zugfestigkeit Tensile strength Resistance à traction Rm N/mm2 | Allungamento Bruchdehnung Elongation Allongement A5 % | | Strizione Einschnürung Reduction of area Striction Z % | | Resilienza Kerbschlagarbeit Impact Value Resilience | | | Durezza Haerte Hardness Durete HB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti / Anforderungen/Required values / Valeurs demandées | | min / max | | 200 | 235 | 500 / 900 | 20 | - | - | - | - | - | - | - / 315 | | |
| A | 10 | 20 | L | 585 | 679 | 785 | 33 | | 67 | | | | | 255 | | |
| F | 10 | 20 | L | 588 | 681 | 789 | 32 | | 64 | | | | | 258 | | |

### TEST ALLO STATO DI FORNITURA
Test on delivery condition / Prüefung auf lieferbereitem produkt / Test a l'etat de fourniture / Prueba sobre el material así come entregado

| TEST | | min | max | |
|---|---|---|---|---|
| F | Dimensioni grano x ASTM E112 | | | 6 |

### Test allo stato di fornitura per ASTM A370

1) L=longitudinale/langs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | Posiz. Saggio Probentage Location Emplacement 1) | Snervamento Streckgrenze Yield Stress Limite elastique Rp 0,2% N/mm2 | Snervamento Streckgrenze Yield Stress Limite elastique | Resistenza Zugfestigkeit Tensile strength Resistance à traction Rm N/mm2 | Allungamento Bruchdehnung Elongation Allongement E 4d % | | Strizione Einschnürung Reduction of area Striction RA % | | Resilienza Kerbschlagarbeit Impact Value Resilience | | | Durezza Haerte Hardness Durete HB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti / Anforderungen/Required values / Valeurs demandées | | min / max | | 205 | - | 515 | - | 30 | - | 50 | - | | | - | | |
| B | 12,5 | 20 | L | 579 | | 780 | | 35 | | 68 | | | | 253 | | |

### Charpy per ISO 148-1

1) L=longitudinale/langs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | Posiz. Saggio Probentage Location Emplacement 1) | Resilienza Kerbschlagarbeit Impact Value Resilience KV2 J | | | Espansione laterale Lateral Expansion | | | Shear Shear | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti / Anforderungen/Required values / Valeurs demandées | | min / max | | 50 | 50 | 50 | - | - | - | - | - | - |
| E | 10X5 | 20 | L | 99 | 89 | 94 | | | | | | |
| G | 10X5 | 20 | L | 102 | 86 | 84 | | | | | | |

Tensile testing according to ISO 6892-1
Impact testing according to ISO 148-1
Mechanical properties according to ASTM A370.
Brinnell hardness according to ASTM E10

TUEVIT WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

FRANCO CORBELLINI
08 NOV. 2024
CROSSWIND

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| Vicenza, 13/07/2023<br>VCQ008 - MEST091967 | Direzione Qualità<br>Qualitätsmanagement/Quality Management/Gestion Qualité<br>R.BERTELLI | Direzione Prodotto<br>Produktmanagement/Product Management/Direction Produit<br>P.MESSORI | Pagina 2 di 4 |
|---|---|---|---|

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a / Nach/According to/Selon: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. / Prüfung/Test/Essai: MEST091967 / 2023 /

Cliente / Besteller/Purchaser/Client:
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Ordine nr: ORD N AQ2301562
Bestell / Your order / Commande

Conferma ordine nr: MI23005383
Werks/Our Order/Ref nr.

Avviso di Spedizione: A-MI23004303
Lieferanzeige/Packing list/B.L.

Stato di fornitura: Laminato - Solubilizzato Trafilato
Lieferzustand / Delivery state / Etat de livraison

Tipo di Elaborazione: E+AOD
Erschmelzungsart / Melting process / Mode d'elaboration

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung / Brand / Nuance

Produttore:
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Marchi di Fabbrica: AV
Zeichen des Herstellerwerkes / Trade marks / Sigles de l'usine productrice

Punzone del Collaudatore: MR
Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur

Punzonatura: 1.4401/1.4404
Kennzeichnung / Marking / Marquage

Tensile testing according to ASTM E8

Brinnell hardness according to ISO 6506-1

## Analisi chimica

Chemische Zusammensetzung/Chemical Analysis/Analyse chimique

| Colata / Heat Schmelze/Coulée | | C % | Si % | Mn % | Cr % | Mo % | Ni % | Co % | P % | S % | N % | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | min - max | - 0,030 | - 1,00 | - 2,00 | 16,50 - 18,00 | 2,00 - 2,50 | 10,00 - 13,00 | - - | - 0,045 | - 0,030 | - 0,100 | - - | - - | - - | - - | - - |
| 290960 | | 0,015 | 0,46 | 1,56 | 16,74 | 2,02 | 10,00 | 0,125 | 0,029 | 0,027 | 0,063 | | | | | |

**Corrosion test in 16% sulfuric acid and copper sulfate solutions**

**Test standard:** UNI EN ISO 3651-2 Method A

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitized T1 | 20 | boil | 90 | 5 | Absence of cracks | **SATISFACTORY** |

**Corrosion test in 16% sulfuric acid and copper sulfate solutions**

**Test standard:** ASTM A262-Practice E

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitization | 15 | boil | 180 | 5 | Absence of cracks | **SATISFACTORY** |

Reduction ratio = 210,6 : 1
Material solution annealed 1040°C for 135'(total time)/ water cooled.
SURFACE QUALITY COMPLIANT TO EN 10088-3 TAB.1 COND. 2H
"Issued in agreement with TÜV SÜD Industrie Service GMBH (07/1972)"
"Qs approved according to PED, Annex I, Para. 4.3 by Notified Body 0036"
"(Certification no. DGR-0036-QS-W 23/2002/MUC)"

☑ REVIEW ☐ WITNESS
ON BEHALF OF RTG
A. DELLA PINA DATE 08 NOV 2024

Sono state soddisfatte tutte le condizioni richieste
Die geetellen Anforderungen sind it. Anlage erfüllt
The material has been furnished in accordance with the requirements
Le materiel à été trouvé conforme aux exigences

Controllo antimescolanza con tecnica XRF/OES portatile : OK
Verwechslungprüfung: durch XRF/OES Gerät geführt : OK
Antimixing testing performed with XRF/OES portable : OK
Contrôle antimélange svt technique XRF/OES portable : OK

08 NOV 2024

Controllo visivo e dimensionale: soddisfa le esigenze
Besichtigung und Ausmessung: ohne Beanstandung
Visual inspection and dimensional checks:satisfactory
Contrôle visuel et dimensions: satisfaisant

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497

## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a : Nach/According to/Selon: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. Prüfung/Test/Essai: MEST091967 / 2023 /

Cliente / Besteller/Purchaser/Client:
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura : Lieferzustand / Delivery state / Etat de livraison: Laminato - Solubilizzato Trafilato

Produttore : Hersteller/Item/Usine productrice:
ACCIAIERIE VALBRUNA S.P.A.

Ordine nr: Bestell / Your order / Commande: ORD N AQ2301562

Tipo di Elaborazione: Erschmelzungsart / Melting process / Mode d'elaboration: E+AOD

Marchi di Fabbrica: Zeichen des Liefernwerkes / Trade marks / Sigles de l'usine productrice: AV

Conferma ordine nr: Werks/Our Order/Ref nr.: MI23005383

Qualità: Werkstoff/Grade/Nuance: 1.4401/1.4404/316/316L

Punzone del Collaudatore: Stempel des Werksachverständigen / Inspector's stamp/Poinçon de l'assayeur: MR

Avviso di Spedizione: Lieferanzeige/Packing list/B.L.: A-MI23004303

Marca: Markenbezeichnung / Brand / Nuance: MVAPML ( MAXIVAL )

Punzonatura: 1.4401/1.4404
Kennzeichnung / Marking / Marquage

Melted, poured and manufactured in Italy  No welding or weld repair  Material free from Mercury contamination

We declare that the finished product is checked for radioactive contamination by the portal system when it leaves the production plant.

The Quality Management System is also Certified according to Pressure Equipment Directive 2014/68/EU Annex 1,chapt.4.3 by TÜV and LLOYD'S
The Quality Management System is also Certified according to PER 2016/1105, Schedule 2, Part 4, Para 31 (8) by Competent Body TÜV SUD BABT Unlimited.
Any act of tampering, modification, alteration, counterfeiting and/or falsification and/or any other action which modifies the contents of this test certificate shall constitute a violation of applicable civil and criminal laws. Acciaierie Valbruna shall protect its rights and interests before any competent court, authority and jurisdiction.
Maxival and/or Valplus grades/products are manufactured with ladle techniques to control composition, distribution, size and shape of non-metallic inclusions for improved machinability.
The supplied product conforms to requirements expressly requested by the purchaser and conforms to requirements specified by certified norms and standards. Should the product be used for more severe, critical and/ or in any case different applications than those the material is generally intended for, any different and/or supplementary requirements shall be specifically demanded, at least, upon order of the Product by the Purchaser. Acciaierie Valbruna SpA shall not be responsible for any improper use of the Products.

08 NOV. 2024
FRANCO CORBELLINI
QBO
CROSSWIND R

☒ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| | | | |
|---|---|---|---|
| Vicenza, 13/07/2023<br>VCQ008 - MEST091967 | Direzione Qualità<br>Qualitätsmanagement/Quality Management/Gestion Qualité<br>R.BERTELLI | Direzione Prodotto<br>Produktmanagement/Product Management/Direction Produit<br>P.MESSORI | Pagina 4 di 4 |

COGNE ACCIAI SPECIALI S.p.a.

ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 405.563.167,00 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.

# INSPECTION CERTIFICATE 3.1 (EN 10204:2004)

DOCUMENT NUMBER 2024015321



| | | | |
|---|---|---|---|
| CUSTOMER: | A.S.T. SPA | | |
| CUSTOMER'S ORDER: | AQ2400838 | | |
| MANUFACTURER'S WORKS: | AOSTA, VIA PARAVERA 16 - ITALY | | |
| PRODUCER OF THE DOC: | QUALITY DEPARTMENT | | |
| MANUFACTURER'S WORKS ORDER NO: | 0001140435 / 000020 | | |
| MARK OF THE MANUFACTURER: | **COGNE** | | |
| DISPATCH NOTE: | 0081605841 / 000010 WEIGHT: 588 KG / 1296 LB | | |
| INTERNAL SPEC: | STOCKBARREW2 | TECHNICAL RULE: | AD2000 |
| PRODUCT: | SPE ROUGHPEELED ROUND BARS | TOLERANCE: | + 1,500 - 0,0000 (+ 0,0591 - 0 in) |
| SURFACE FINISH: | 1X Hot Finished | | |
| PRODUCT DELIVERY CONDITION: | RS SOLUTION ANNEALED | | |
| PRODUCT DIMENSIONS (mm): | 125,000 ( 4,921 in) | LENGTH (mm) | 04000 06000 ( 00157 00236 in) |
| GRADE: | 316L-S31600/31603-1.4404/4401 | INTERNAL GRADE: | F316L IMCO |
| IDENTIFICATION HEAT NO: | 476355 | IDENTIFICATION LOT NO: | 172480 |
| MARKING OF THE PRODUCT: | 1.4404 | TEST PIECE N: | 248 |

STEELMAKING EAF + AOD + CONTINUOUS CASTING
AISI 316/316L - UNS S31600/S31603 - 1.4404/1.4401
ASTM A484 DOES NOT APPLY FOR SIZE AND LENGTH TOLERANCES.
REFERENCE NORMS: EN 10088-3 (14), EN 10272 (16), ASTM A276-r17/ASME SA276-21, ASTM A479/A479M-r21, ASTM A193-23 B8MCLASSE 1D, ASME SA276/SA276M-21,ASME SA479/SA479M-21, AMS 5653J, AMS 5648N, ISO15156-3/NACE MR0175 (15), NACE MR0103/ISO 17945 (15), NORSOK M630 MDSS01 REV5.
REFERENCE NORMS FOR CHEMICAL COMPOSITION AND MECHANICAL PROPERTIES: ASTM A182-23/ ASME SA182-21.
REFERENCE NORMS ONLY FOR CHEMICAL COMPOSITION: EN 10222-5 (17),ASTM A403-22b, ASTM A484-22, ASTM A314-23, AMS-QQ-S-763D.
ASME SECT.II PART A EDITION 2015-2017-2019-2021.
REFERENCE FOR APPLICABLE ASME STANDARD: SECTION II PART A ED. 2015-2017-2019-2021
HOT ROLLED
REDUCTION RATIO 4,3

CHEMICAL LADLE ANALYSIS ACCORDING TO ASTM A751 - EN ISO 14284
Control lot No. - Weight :020000997421 - 87.475 KG - 192.846 LB

| ELEMENTS | C | Si | Mn | P | S | N | Cr | Mo | Ni | Cu |
|---|---|---|---|---|---|---|---|---|---|---|
| MEASUREMENT UNIT | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w |
| OBTAINED | 0,016 | 0,37 | 1,80 | 0,027 | 0,028 | 0,076 | 16,76 | 2,08 | 10,15 | 0,63 |

| ELEMENTS | Co |
|---|---|
| MEASUREMENT UNIT | % w/w |
| OBTAINED | 0,21 |

HARDNESS TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000998222 - 7.789 KG - 17.172 LB
SPECIFICATION ENISO6506 HARDNESS TEST HB TESTING METHOD: 10/3000
OBTAINED 148

☑ REVIEW ☐ WITNESS
ON BEHALF OF RDG
A. DELLA TINA DATE 08 NOV 2024

08 NOV. 2024
FRANCO CORBELLINI
QBO
CROSSWIND

DATE 27.03.2024

MORABITO ROSA CF(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

-Cogne

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 405.563.167,00 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.



1724000740-QC-DB-00016_01

IMPACT TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000998222 - 7.789 KG - 17.172 LB
SPECIFICATION EN ISO 148-1-KV2 DIRECTION OF THE TEST PIECE: L
TYPE OF TEST PIECE KV
TEST TEMPERATURE °C 20
MEASUREMENT UNIT J
OBTAINED 438 426 430 430 439 428 427 426 438 440
434 432

TENSILE TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000998222 - 7.789 KG - 17.172 LB
SPECIFICATION EN-ISO6892-1 DIRECTION OF THE TEST PIECE: L

| MEASUREMENT UNIT | RM MPA | RP02 MPA | A5 % 5.0 D | Z % | RP1 MPA |
|---|---|---|---|---|---|
| OBTAINED | 565 | 265 | 55,8 | 73,1 | 303 |
| | 571 | 265 | 54,0 | 76,3 | 306 |
| | 560 | 255 | 60,5 | 78,0 | 296 |
| | 558 | 247 | 58,0 | 80,4 | 298 |

GRAIN SIZE
Control lot No. - Weight :020000998222 - 7.789 KG - 17.172 LB
SPECIFICATION ASTME112 --
OBTAINED 5

IMPACT TEST
Control lot No. - Weight :020000998222 - 7.789 KG - 17.172 LB
SPECIFICATION EN ISO 148-1 DIRECTION OF THE TEST PIECE: L
TYPE OF TEST PIECE KV
TEST TEMPERATURE °C 196-
MEASUREMENT UNIT J
OBTAINED 196 217 190 198 207 206 206 203 193 203
195 196

TENSILE TEST
Control lot No. - Weight :020000998222 - 7.789 KG - 17.172 LB
SPECIFICATION ASTMA370-E8-0.5"SPEC DIRECTION OF THE TEST PIECE: L

| MEASUREMENT UNIT | TS KSI | YS KSI | RA % | EL % 4,0 D |
|---|---|---|---|---|
| OBTAINED | 82 | 37 | 74,8 | 60,0 |
| | 82 | 37 | 76,4 | 65,3 |
| | 82 | 37 | 77,9 | 59,3 |
| | 81 | 37 | 81,3 | 66,0 |

REVIEW WITNESS
ON BEHALF OF RINA
A. DELLAPINA DATE 8 NOV 2024

08 NOV. 2024
FRANCO CORNELLINI
QSO
CROSSWIND

R

COGNE ACCIAI SPECIALI S.p.a.

ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 405.563.167,00 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.



1724000740-QC-DB-00016_01

COUNTRY OF MELTING AND ORIGIN: ITALY, THE MATERIAL COMPLIES WITH FAR DFARS 252.225-7009 ALT 1.
DOCUMENT ISSUED IN AGREEMENT WITH TUEV BAYERN(11.1972) WAVING OF COUNTERSIGNING (SEE TUEV BAYERN LETTER DATED 17.01.80).
MARKING: SYMBOL OF THE MANUF. WORK, MATERIAL N. , CAST N., LOT N., RECEIVING AGENT STAMP
CORROSION TEST ACCORDING TO ASTM A262/02A Practice.E EN ISO 3651-2 A: SATISFACTORY.
VISUAL INSPECTION OF SURFACE AND DIMENSIONAL CONTROL ACCORDING TO EN 10221 CLASS C AND EN 10060: SATISFACTORY.
ULTRASONIC TEST ACCORDING TO EN 10308 Class 3, equivalent to ASTM A388 FBH 5 (DIAM. 100-250) and FBH 8 (DIAM. 250-400) or to EN10228-4 Class 3: SATISFACTORY.
ANTIMIX TEST WITH PORTABLE SPECTROMETER: SATISFACTORY.
NO WELDING REPAIR ON THE MATERIAL.
FREE FROM RADIOACTIVE CONTAMINATION.
ULTRASONIC TEST ACCORDING TO EN 10308 Class.3, EN 10228 Class.3, ASTM A388 FBH 5 (diam. 102-250), FBH 8 (diam. 250,01-400).
MATERIAL IN COMPLIANCE WITH THE NORSOK M-630 MDS S01
RADIOACTIVITY CONTROL PERFORMED WITH A GAMMA SPECTROMETER: ASTM E181.
GAMMA ACTIVITY ON THE PRODUCTS BELOW 0.1 BQ/G ACCORDING TO EU RESOLUTION 2013/59/EURATOM , IAEA RS-G-1.7 AND IAEA SSG-17.
QUALITY SYSTEM CERTIFIED BY KIWA CERMET ACCORDING TO UNI EN ISO 9001:2015 -IATF 16949:2016 (THE LAST ONE ONLY FOR WIRE ROD AND HOT ROLLED-PEELED-GROUND STAINLESS STEEL BARS).
THE PRODUCT IS CONFORMING TO THE CONTRACT AGREEMENT AND TO THE RULE AD2000-MERKBLATT W0/W2.
INSPECTOR'S STAMP LF
MATERIAL CONFORM TO: 2015/863/EU (RoHS3) - 2011/65/EU (RoHS2) - 2000/53/EU - 2002/95/EU (RoHS) - 2003/11/EU - 2005/618/EU - PED 2014/68/EU e PE(S)R 2016/1105
THE MATERIAL IS FREE OF ANY MERCURY, MERCURY COMPOUNDS AND OR RADIUM CONTAMINATION AT TIME OF SHIPMENT AND WAS PRODUCED WITHOUT USING OZONE DEPLETING SUBSTANCES OF CLASS I AND II.
REFERENCE NORMS: EN 10088-3 (14), EN 10272 (16), ASTM A276-r17/ASME SA276-21, ASTM A479/A479M-r21, ASTM A193-23 B8MCLASSE 1D, ASME SA276/SA276M-21,ASME SA479/SA479M-21, AMS 5653J, AMS 5648N, ISO15156-3/NACE MR0175 (15), NACE MR0103/ISO 17945 (15), NORSOK M630 MDSS01 REV5.
REFERENCE NORMS FOR CHEMICAL COMPOSITION AND MECHANICAL PROPERTIES: ASTM A182-23/ ASME SA182-21.
REFERENCE NORMS ONLY FOR CHEMICAL COMPOSITION: EN 10222-5 (17),ASTM A403-22b, ASTM A484-22, ASTM A314-23, AMS-QQ-S-763D.
ASME SECT.II PART A EDITION 2015-2017-2019-2021.
WHERE NOT SPECIFIED ALL THE NORMS MENTIONED ARE INTENDED IN THEIR LAST REVISION AT THE DATE OF ISSUE OF THIS DOCUMENT.
ASTM A484 DOES NOT APPLY FOR SIZE AND LENGTH TOLERANCES.

REVIEW ☐ WITNESS
ON BEHALF OF RTG
A. DELLA GINA DATE 08 NOV 2024

08 NOV. 2024

FRANCO CUBELLI
UBO
CROSSWIND

DATE 27.03.2024

MORABITO ROSA CF(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

-Cogne

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a : EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1
Nach/According to/Selon

Certificato nr. MEST112865 / 2022 /
Prüfung/Test/Essai

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura : Laminato - Solubilizzato Rettificato
Lieferzustand / Delivery state / Etat de livraison

Produttore :
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Ordine nr: ORD.N.AQ2202071
Bestell / Your order / Commande

Tipo di Elaborazione: E+AOD
Erschmelzungsart / Melting process / Mode d'elaboration

Marchi di Fabbrica:
Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice
AV

Conferma ordine nr: MI22008136
Werks/Our Order/Ref nr.

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Punzone del Collaudatore:
Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur
MR

Avviso di Spedizione: A-MI22006725
Lieferanzeige/Packing list/B.L.

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung / Brand / Nuance

Punzonatura: 1.4401/4/316/L
Kennzeichnung / Marking / Marquage

**SPECIFICHE :**
Anforderungen / Requirements / Exigences

VAL STOCK 2020 1.4404/316L A,CF
AISI 316
AISI 316L
ASME SA276 2019 S31600 A,CF (0)
ASME SA276 2019 S31603 A,CF (1)
ASME SA479 2019 S31600 A (2)
ASME SA479 2019 S31603 A (3)
ASTM A262 2015 PRACTICE E (4)
ASTM A276 2017 S31600 A,CF
ASTM A276 2017 S31603 A,CF
ASTM A370 2020 .
ASTM A479 2020 S31600 A
ASTM A479 2020 S31603 A
ASTM E10 2018 .
ASTM E8 2021 .
EN 10088-3 2014 1.4401 A,CF
EN 10088-3 2014 1.4404 A,CF
EN 10272 2007 1.4401 A,CF
EN 10272 2007 1.4404 A,CF
ISO 6506-1 2014 .
ISO 6892-1 2019 .

Note:
Aufzeichnungen / Notes / Notes

(0)Section II Part A 2019 EDITION
(1)Section II Part A 2019 EDITION
(2)Section II Part A 2019 EDITION
(3)Section II Part A 2019 EDITION
(4)Reapproved 2021

08 NOV. 2024
FRANCO CORBELLINI
CROSSWIND

| | | Tolleranza: h8 - DIN670/EN10278<br>Toleranz/Allowance/Tolerance | | | | | |
|---|---|---|---|---|---|---|---|
| Pos. nr.<br>Pos. nr.<br>Item nr.<br>Nr. de poste | Oggetto<br>Gegenstand<br>Product description<br>Descrip. du produit | Dimensioni - mm<br>Abmessungen<br>Dimension<br>Dimension | Lunghezza - mm<br>Lange<br>Length<br>Longueur | Colata<br>Schmelze<br>Heat<br>Coulée | Pezzi<br>Stückzahl<br>Pieces<br>Pieces | Peso - KG<br>Gewicht<br>Weight<br>Poids | Lotto nr.<br>Losnr.<br>Lot nr.<br>Lot nr. |
| 0070 | Tondo | 10,000 | 2900/ 3100 | 276383 | | 18,0 | 729305910 |

REVIEW ☐ WITNESS
ON BEHALF OF RTC
A. DELLA PINA DATE 08 NOV 2024

**QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D**

| | | | |
|---|---|---|---|
| **Vicenza, 09/11/2022**<br>VCQ052 - MEST112865 | **Direzione Qualità**<br>Qualitätsmanagement/Quality Management/Gestion Qualité<br>**R.BERTELLI** | **Direzione Prodotto**<br>Produktmanagement/Product Management/Direction Produit<br>**P.MESSORI** | Pagina<br>1 di 3 |

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a / Nach/According to/Selon: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. / Prüfung/Test/Essai: MEST112865 / 2022 /

Cliente / Besteller/Purchaser/Client:
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura / Lieferzustand / Delivery state / Etat de livraison: Laminato - Solubilizzato Rettificato

Produttore / Hersteller/Item/Usine productrice:
**ACCIAIERIE VALBRUNA S.P.A.**

Ordine nr. / Bestell / Your order / Commande: ORD.N.AQ2202071

Tipo di Elaborazione / Erschmelzungsart / Melting process / Mode d'elaboration: E+AOD

Marchi di Fabbrica / Zeichen des Liefernwerkes / Trade marks / Sigles de l'usine productrice: AV

Conferma ordine nr. / Werks/Our Order/Ref nr.: MI22008136

Qualità / Werkstoff/Grade/Nuance: 1.4401/1.4404/316/316L

Punzone del Collaudatore / Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur: MR

Avviso di Spedizione / Lieferanzeige/Packing list/B.L.: A-MI22006725

Marca / Markenbezeichnung / Brand / Nuance: MVAPML ( MAXIVAL )

Punzonatura / Kennzeichnung / Marking / Marquage: 1.4401/4/316/L

### TEST ALLO STATO DI FORNITURA

Test on delivery condition Prüefung auf lieferbereitem produkt test a l'etat de fourniture Prueba sobre el material así come entregado

1) L=longitudinale/längs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg.diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | Posiz. Saggio Probentage Location Emplacement 1) | Snervamento Streckgrenze Yield Stress Limite elastique Rp 0,2% N/mm2 | Snervamento Streckgrenze Yield Stress Limite elastique Rp 1% N/mm2 | Resistenza Zugfestigkeit Tensile strength Resistance à traction Rm N/mm2 | Allungamento Bruchdehnung Elongation Allongement A5 % | Allungamento E 4d % | Strizione Einschnürung Reduction of area Striction Z % | Strizione RA % | Resilienza Kerbschlagarbeit Impact Value Resilience | | | Durezza Haerte Hardness Durete HB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti Anforderungen/Required values Valeurs démandées | | min | | 310 | 235 | 620 | 20 | 30 | - | 40 | - | | | - | | |
| | | max | | | | 900 | | | | | | | | 315 | | |
| A | 10 | 20 | L | 477 | 559 | 665 | 47 | 50 | 70 | 70 | | | | 225 | | |
| B | 10 | 20 | L | 482 | 561 | 669 | 46 | 50 | 69 | 69 | | | | 228 | | |

### TEST ALLO STATO DI FORNITURA

Test on delivery condition / Prüefung auf lieferbereitem produkt / Test a l'etat de fourniture / Prueba sobre el material así come entregado

| TEST | | min | max | |
|---|---|---|---|---|
| A | Dimensioni grano x ASTM E112 | | | 7 |

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND

Mechanical properties according to ASTM A370.
Brinnell hardness according to ASTM E10
Tensile testing according to ASTM E8
Brinnell hardness according to ISO 6506-1
Tensile testing according to ISO 6892-1

### Analisi chimica

Chemische Zusammensetzung/Chemical Analysis/Analyse chimique

| Colata /Heat Schmelze/Coulée | min - max | - | - | 16,50 | 2,00 | 10,00 | - | - | - | - | - | - | - | - | - | - |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0,030 | 1,00 | 2,00 | 18,00 | 2,50 | 13,00 | 0,045 | 0,030 | 0,100 | - | - | - | - | - | - | - |
| | C % | Si % | Mn % | Cr % | Mo % | Ni % | P % | S % | N % | | | | | | | |
| 276383 | 0,014 | 0,63 | 1,44 | 16,84 | 2,07 | 10,06 | 0,028 | 0,026 | 0,061 | | | | | | | |

### Corrosion test in 16% sulfuric acid and copper sulfate solutions

**Test standard:** ASTM A262-Practice E

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitization | 15 | boil | 180 | 5 | Absence of cracks | **SATISFACTORY** |

☒ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV. 2024

**QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D**

| | | | |
|---|---|---|---|
| **Vicenza, 09/11/2022**<br>VCQ052 - MEST112865 | **Direzione Qualità**<br>Qualitätsmanagement/Quality Management/Gestion Qualité<br>**R.BERTELLI** | **Direzione Prodotto**<br>Produktmanagement/Product Management/Direction Produit<br>**P.MESSORI** | Pagina 2 di 3 |

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
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## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a : EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1
Nach/According to/Selon

Certificato nr. MEST112865 / 2022 /
Prüfung/Test/Essai

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura : Laminato - Solubilizzato Rettificato
Lieferzustand / Delivery state / Etat de livraison

Produttore :
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Ordine nr: ORD.N.AQ2202071
Bestell / Your order / Commande

Tipo di Elaborazione: E+AOD
Erschmelzungsart / Melting process / Mode d'elaboration

Marchi di Fabbrica:
Zeichen des Liefernwerkes / Trade marks / Sigles de l'usine productrice
AV

Conferma ordine nr: MI22008136
Werks/Our Order/Ref nr.

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Punzone del Collaudatore:
Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur
MR

Avviso di Spedizione: A-MI22006725
Lieferanzeige/Packing list/B.L.

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung / Brand / Nuance

Punzonatura: 1.4401/4/316/L
Kennzeichnung / Marking / Marquage

**Corrosion test in 16% sulfuric acid and copper sulfate solutions**

**Test standard:** UNI EN ISO 3651-2 Method A

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitized T1 | 20 | boil | 90 | 5 | Absence of cracks | **SATISFACTORY** |

Reduction ratio = 374,4 : 1
Material solution annealed 1060° C for 0.5h/air cooled.

Sono state soddisfatte tutte le condizioni richieste
Die gestellen Anforderungen sind it. Anlage erfüllt
The material has been furnished in accordance with the requirements
Le materiel â été trouvé conforme aux exigences

Controllo antimescolanza con tecnica XRF/OES portatile : OK
Verwechslungprüfung: durch XRF/QES Gerät geführt : OK
Antimixing testing performed with XRF/OES portable : OK
Contrôle antimélange svt technique XRF/QES portable : OK

Controllo visivo e dimensionale: soddisfa le esigenze
Besichtigung und Ausmessung: ohne Beanstandung
Visual inspection and dimensional checks:satisfactory
Contrôle visuel et dimensions: satisfaisant

Melted, poured and manufactured in Italy  No welding or weld repair  Material free from Mercury contamination

We declare that the finished product is checked for radioactive contamination by the portal system when it leaves the production plant.

The Quality Management System is also Certified according Pressure Equipment Directive 2014/68/EU Annex 1,chapt.4.3 by TÜV and LLOYD'S
Any act of tampering, modification, alteration, counterfeiting and/or falsification and/or any other action which modifies the contents of this test certificate shall constitute a violation of applicable civil and criminal laws. Acciaierie Valbruna shall protect its rights and interests before any competent court, authority and jurisdiction.
Maxival and/or Valplus grades/products are manufactured with ladle techniques to control composition, distribution, size and shape of non-metallic inclusions for improved machinability.
The supplied product conforms to requirements expressly requested by the purchaser and conforms to requirements specified by certified norms and standards. Should the product be used for more severe, critical and/ or in any case different applications than those the material is generally intended for, any different and/or supplementary requirements shall be specifically demanded, at least, upon order of the Product by the Purchaser. Acciaierie Valbruna SpA shall not be responsible for any improper use of the Products.

WSPC3700C07C1B05017D4051F8036E460C2

08 NOV. 2024
FRANCO CORBELLINI
CBO
CROSSWIND

☑ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08/11/2024

**QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D**

| | | | |
|---|---|---|---|
| **Vicenza, 09/11/2022**<br>VCQ052 - MEST112865 | **Direzione Qualità**<br>Qualitätsmanagement/Quality Management/Gestion Qualité<br>**R.BERTELLI** | **Direzione Prodotto**<br>Produktmanagement/Product Management/Direction Produit<br>**P.MESSORI** | Pagina 3 di 3 |

**AST S.p.A.**
Via R. Merendi, 40
I-20007 Cornaredo MI

P +39 02 934848.1
F +39 02 9362248
W www.astspa.it

**MATERIAL CERTIFICATES INDEX**
**CERTIFICATO DEI MATERIALI** **No.** 2400584

EN 10204 3.1

**Customer**
ROSETTI MARINO S.P.A.

**P.Order / Project**
1724000740 123A90A Rev. 1

**ITEM Number**
10-60

**Tag**
25-FV-032

**Quantity delivered**
1

**AST Job**
CV2400221

**AST Code**
CV2400221CV8407A000

**Serial Number**
2400584

**Valve Type**
Valvole Regolazione

**Size**
NPS 1" CLASS 300 RF

**Port Size**
1/4"

| Part Name | Material | Heat No. | Certificate No. | Supplier |
|---|---|---|---|---|
| BODY | ASTM A351 CF3M | E360 | E360 | SGA Alloys Private Limited |
| SEAT RING | ASTM A479 316/316L | 372445 | 2023016714 | COGNE ACCIAI SPECIALI SPA |
| PLUG | F316 + PTFE | 290960 | MEST091967/2023/ | ACCIAIERIE VALBRUNA |
| BONNET | ASTM A479 316/316L | 476355 | 2024015321 | COGNE ACCIAI SPECIALI SPA |
| STEM | ASTM A479 316/316L | 276383 | MEST112865-2022 | ACCIAIERIE VALBRUNA |

08 NOV. 2024
FRANCO CORBELLINI
QSO
CROSSWIND R

☑ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA FINA DATE 08 NOV 2024

**Remarks** :

**AST Q.C. Department** **Customer's Inspector** **Third Party Inspection**

**Date** : 05.11.2024 **Date** : _____ **Date** : _____

# SGA ALLOYS PRIVATE LIMITED

( Formerly Known as Sri Ganapathy Steel Alloy Casting )
ISO 9001 : 2015 CERTIFIED COMPANY
SF.NO:10/1,NALLAGOUNDENPALAYAM,,KADUVETTIPALAYAM POST,SULUR TKCOIMBATORE Pin :641659,
Phone :9159530466,9159533064, email :sgaalloys2018@gmail.com

## MATERIAL TEST CERTIFICATE
## AS PER EN 10204 - 3.1

**Customer** : ECO TECH CASTINGS INDIA (P) LTD
COIMBATORE 641018

T.C. No. : **E360**
T.C.Date : **20/09/2021**

**P.Order No.** : ECO/21-22/134 Dt. 05/08/2021

Heat No. : **E360**
Pouring Date : **02/09/2021**

**Specification** :**ASTM A351 Gr.CF3M - 2018**

CASTING PROCESSED BY INDUCTION MELTING

FOUNDRY IDENTIFICATION :SGA

**TEST SPEC AS PER ASTM A703-2020 CHEMICAL COMPOSITION - %**

| Element | | C | Mn | Si | P | S | Cr | Ni | Mo | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Req. | Min | --- | --- | --- | --- | --- | 17.000 | 9.000 | 2.000 | | | | | | |
| | Max | 0.030 | 1.500 | 1.500 | 0.040 | 0.040 | 21.000 | 13.000 | 3.000 | | | | | | |
| **Actual** | | **0.023** | **0.937** | **0.560** | **0.028** | **0.001** | **17.698** | **9.662** | **2.166** | | | | | | |

**HEAT TREATMENT :** SOLUTION ANNEALING: Heated to 1080 ° C, Soaked for 3 Hrs and then water Quenched.

**TENSILE TEST AS PER ASTM A370-2020 MECHANICAL PROPERTIES IMPACT TEST AS PER ASTM E23-16**

| Requirments | Yield Strength | Tensile Strength | % Elongation | % Reduction | Hardness | Bend Test | Impact Test In (Joules) (10mm X 10mm X 55mm) Impact at -196°c & 40jmin | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Mpa | MPa | GL :50 mm | of Area | BHN | D =3T | | | | |
| | 0.2% Proof Stress | - | - | - | - | at 120 ° | | | | |
| **Minimum** | 205 | 485 | 30.00 | --- | --- | | | | | |
| **Maximum** | --- | --- | --- | --- | 237 | - | 1 | 2 | 3 | Avg |
| **Actual** | **243** | **534** | **51.60** | **---** | 160 | **--** | **82** | **78** | **76** | **78.67** |

**ITEM DESCRIPTION**

| SL.No. | Product | Description | Drawing No. | Part No. | Poured Qty |
|---|---|---|---|---|---|
| 1 | C20005 | BODY CV 8400(AT220) | M028 REV.0 | CABDWG0028 | 5 |

Remarks : **Separate test bar poured and the same bar tested for chemical and mechanical properties**
**Tensile Testing conducted on round specimen at room temperature**
**These casting has been acid pickled and passivated**
**Casting meet the requirement of NACE MR0175 / ISO 15156**
**Radio activity checked and found to be 0.10 Bequerel/Gram**
**Carbon steel fully killed Condition**
**Visual Inspection carried out at as per MSS SP-55, found satisfied**

☑ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA VINA DATE 08 NOV 2024

We here by certify that the items mentioned above have been tested, inspected and found to be in accordance with customer's drawing, specification, purchase order and satisfy the requirements of ASTM A351 Gr.CF3M - 2018,

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND

for SGA ALLOYS PRIVATE LIMITED

K.ARUNKUMAR
Prepared By

K.KARTHIKEYAN
QUALITY ASSURANCE

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 250.000.000 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.

# INSPECTION CERTIFICATE 3.1 (EN 10204:2004)

DOCUMENT NUMBER 2023016714



| | |
|---|---|
| CUSTOMER: | A.S.T. SPA |
| CUSTOMER'S ORDER: | AQ2301925 |
| MANUFACTURER'S WORKS: | AOSTA, VIA PARAVERA 16 - ITALY |
| PRODUCER OF THE DOC: | QUALITY DEPARTMENT |
| MANUFACTURER'S WORKS ORDER NO: | 0001136538 / 000020 |
| MARK OF THE MANUFACTURER: | **COGNE** |
| DISPATCH NOTE: | 0081566096 / 000020 WEIGHT: 190 KG / 419 LB |
| INTERNAL SPEC: | STOCKBARREW2 TECHNICAL RULE: AD2000 |
| PRODUCT: | PEL PEELED ROUND BARS TOLERANCE: ISOK11 |
| SURFACE FINISH: | 2B Cold Finished |
| PRODUCT DELIVERY CONDITION: | RS SOLUTION ANNEALED |
| PRODUCT DIMENSIONS (mm): | 50,000 ( 1,969 in) LENGTH (mm) 03000 03100 ( 00118 00122 in) |
| GRADE: | 316L-S31600/31603-1.4404/4401 INTERNAL GRADE: F316L IMCO |
| IDENTIFICATION HEAT NO: | 372445 IDENTIFICATION LOT NO: 725970 |
| MARKING OF THE PRODUCT: | 1.4404 TEST PIECE N: 597 |

REFERENCE NORMS: EN 10088-3 2014, EN 10272 2016, ASTM A276/A276M, ASTM A479/A479M, ASTM A193 B8MCLASSE 1D, ASME SA276/SA276M, ASME SA479/SA479M, AMS 5653J, AMS 5648N, ISO15156-3/NACE MR0175 2015, NACE MR0103/ISO 17945, NORSOK M630 MDSS01 REV5.
REFERENCE NORMS FOR CHEMICAL COMPOSITION AND MECHANICAL PROPERTIES: ASTM A182, ASME SA182.
REFERENCE NORMS ONLY FOR CHEMICAL COMPOSITION: EN 10222-5 2017,ASTM A403-07a, ASTM A484-18a,ASTM A314-08, AMS-QQ-S-763D.
ASME SECT.II PART A EDITION 2015-2017-2019-2021
AISI 316/316L - UNS S31600/S31603 - 1.4404/1.4401
THE PRODUCT IS CONFORMING TO THE CONTRACT AGREEMENT AND TO THE RULE AD2000-MERKBLATT W0/W2.
STEELMAKING EAF + AOD + CONTINUOUS CASTING
ASTM A484 DOES NOT APPLY FOR SIZE AND LENGTH TOLERANCES.
STEELMAKING EAF + AOD + CONTINUOUS CASTING
REFERENCE FOR APPLICABLE ASME STANDARD: SECTION II PART A ED. 2015-2017-2019-2021
HOT ROLLED
REDUCTION RATIO 11,8

CHEMICAL LADLE ANALYSIS ACCORDING TO ASTM A751 - EN ISO 14284
Control lot No. - Weight :020000959742 - 85.921 KG - 189.420 LB

| ELEMENTS | C | Si | Mn | P | S | N | Cr | Mo | Ni | Cu |
|---|---|---|---|---|---|---|---|---|---|---|
| MEASUREMENT UNIT | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w |
| OBTAINED | 0,018 | 0,26 | 1,77 | 0,026 | 0,028 | 0,077 | 16,97 | 2,04 | 10,28 | 0,46 |

| ELEMENTS | Co |
|---|---|
| MEASUREMENT UNIT | % w/w |
| OBTAINED | 0,16 |

HARDNESS TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000960410 - 7.449 KG - 16.422 LB
SPECIFICATION ENISO6506 HARDNESS TEST HB TESTING METHOD: 10/3000
OBTAINED 157

☒ REVIEW ☐ WITNESS
ON BEHALF OF RTG
A. DELLA PINA DATE 08 NOV. 2024

FRANCO CORBELLINI
CROSSWIND

DATE 05.04.2023

BARBARA VIETTI MV(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

-Cogne

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
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Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.



IMPACT TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000960410 - 7.449 KG - 16.422 LB
SPECIFICATION EN ISO 148-1-KV2 DIRECTION OF THE TEST PIECE: L
TYPE OF TEST PIECE KV
TEST TEMPERATURE °C 20
MEASUREMENT UNIT J

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| OBTAINED | 435 | 430 | 428 | 435 | 438 | 439 | 429 | 435 | 436 | 426 |
| | 432 | 434 | | | | | | | | |

TENSILE TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000960410 - 7.449 KG - 16.422 LB
SPECIFICATION EN-ISO6892-1 DIRECTION OF THE TEST PIECE: L

| MEASUREMENT UNIT | RM MPA | RP02 MPA | A5 % | Z % | RP1 NMM |
|---|---|---|---|---|---|
| | | | 5.0 D | | |
| OBTAINED | 611 | 282 | 55,2 | 78,3 | 325 |
| | 613 | 287 | 51,3 | 72,1 | 342 |
| | 614 | 301 | 48,8 | 73,1 | 341 |
| | 612 | 272 | 56,7 | 76,3 | 325 |

GRAIN SIZE
Control lot No. - Weight :020000960410 - 7.449 KG - 16.422 LB
SPECIFICATION ASTME112 --
OBTAINED 6

MATERIAL IN COMPLIANCE WITH THE NORSOK M-630 MDS S01
IMPACT TEST
Control lot No. - Weight :020000960410 - 7.449 KG - 16.422 LB
SPECIFICATION EN ISO 148-1 DIRECTION OF THE TEST PIECE: L
TYPE OF TEST PIECE KV
TEST TEMPERATURE °C 196-
MEASUREMENT UNIT J

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| OBTAINED | 198 | 185 | 195 | 190 | 177 | 173 | 173 | 173 | 197 | 175 |
| | 192 | 179 | | | | | | | | |

TENSILE TEST
Control lot No. - Weight :020000960410 - 7.449 KG - 16.422 LB
SPECIFICATION ASTMA370-E8-0.5"SPEC DIRECTION OF THE TEST PIECE: L

| MEASUREMENT UNIT | RMB KSI | RP02B KSI | ZB % | AL2B % |
|---|---|---|---|---|
| | | | | 4,0 D |
| OBTAINED | 88 | 40 | 78,0 | 57,6 |
| | 89 | 41 | 73,3 | 55,7 |
| | 89 | 41 | 72,9 | 54,0 |
| | 89 | 40 | 78,1 | 61,1 |

FRANCO CORBELLINI
CROSSWIND QBO
08 NOV. 2024

☐REVIEW ☐WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

DATE 05.04.2023

BARBARA VIETTI MV(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

-Cogne

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
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Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.



COUNTRY OF MELTING AND ORIGIN: ITALY, THE MATERIAL COMPLIES WITH FAR DFARS 252.225-7009 ALT 1.
The products delivered are conforming to EN10088-5 and bear the CE marking on the basis of the test results here reported and the continuous surveillance, assessment and approval by MPA NRW (certificate no. 0432-CPR-00166-01)
Material produced according to the system #Regulation 305/2011/EU of the European Parliament and of the Council of 9 March 2011#
DOCUMENT ISSUED IN AGREEMENT WITH TUEV BAYERN(11.1972) WAVING OF COUNTERSIGNING (SEE TUEV BAYERN LETTER DATED 17.01.80).
MARKING: SYMBOL OF THE MANUF. WORK, MATERIAL N. , CAST N., LOT N., RECEIVING AGENT STAMP
CORROSION TEST ACCORDING TO ASTM A262 PRACTICE E EN ISO 3651-2 PRACTICE A: SATISFACTORY.
ANTIMIXING TEST BY PORTABLE SPECTROMETRE: CONFORMING
EDDY CURRENT INSPECTION OF SURFACE ACCORDING TO EN 10277 CLASS 4.
DIMENSIONAL CONTROL ACCORDING TO EN 10278: SATISFACTORY.
NO WELDING REPAIR ON THE MATERIAL.
ULTRASONIC TEST ACCORDING TO EN 10308 Class.3: SATISFACTORY
QUALITY SYSTEM CERTIFIED BY KIWA CERMET ACCORDING TO UNI EN ISO 9001:2015 -IATF 16949:2016 (THE LAST ONE ONLY FOR WIRE ROD AND HOT ROLLED-PEELED-GROUND STAINLESS STEEL BARS).
INSPECTOR'S STAMP LF
MATERIAL CONFORM TO: 2015/863/UE (RoHS3) - 2011/65/UE (RoHS2) - 2000/53/UE - 2002/95/UE (RoHS) - 2003/11/UE - 2005/618/UE - PED 2014/68/UE e PE(S)R 2016/1105
THE MATERIAL IS FREE OF ANY MERCURY, MERCURY COMPOUNDS AND OR RADIUM CONTAMINATION AT TIME OF SHIPMENT AND WAS PRODUCED WITHOUT USING OZONE DEPLETING SUBSTANCES OF CLASS I AND II.
RADIOACTIVITY CONTROL PERFORMED WITH A GAMMA SPECTROMETER: ASTM E181.
GAMMA ACTIVITY ON THE PRODUCTS BELOW 0.1 BQ/G ACCORDING TO EU RESOLUTION 2013/59/EURATOM , IAEA RS-G-1.7 AND IAEA SSG-17.

CE 0432

08 NOV. 2024
FRANCO CORBELLINI
CROSSWIND

☑ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. BELLAPINA DATE 6 NOV 2024

DATE 05.04.2023

BARBARA VIETTI MV(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

-Cogne

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a / Nach/According to/Selon: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. / Prüfung/Test/Essai: MEST091967 / 2023 /

Cliente / Besteller/Purchaser/Client:
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura / Lieferzustand / Delivery state / Etat de livraison: Laminato - Solubilizzato Trafilato

Produttore / Hersteller/Item/Usine productrice:
ACCIAIERIE VALBRUNA S.P.A.

Tipo di Elaborazione / Erschmelzungsart / Melting process / Mode d'elaboration: E+AOD

Marchi di Fabbrica / Zeichen des Liefernwerkes / Trade marks / Sigles de l'usine productrice: AV

Ordine nr. / Bestell / Your order / Commande: ORD N AQ2301562

Qualità / Werkstoff/Grade/Nuance: 1.4401/1.4404/316/316L

Punzone del Collaudatore / Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur: MR

Conferma ordine nr. / Werks/Our Order/Rel nr.: MI23005383

Marca / Markenbezeichnung / Brand / Nuance: MVAPML ( MAXIVAL )

Punzonatura / Kennzeichnung / Marking / Marquage: 1.4401/1.4404

Avviso di Spedizione / Lieferanzeige/Packing list/B.L.: A-MI23004303

**SPECIFICHE :** / Anforderungen / Requirements / Exigences

VAL STOCK W2 A/1 1.4404/316L A,CF
AD 2000-M. W 2 01/20 1.4401 A,CF (0)
AD 2000-M. W 2 01/20 1.4404 A,CF (1)
AISI . 316/316L
ASME SA182 2021 S31600/03 A (2)
ASME SA276 2021 S31600/03 A,CF (3)
ASME SA479 2021 S31600/03 A (4)
ASTM A182 2022A S31600/03 A (5)
ASTM A262 PR. E 2015 316/316L (6)
ASTM A276 2017 S31600/03 A,CF
ASTM A370 2022 .
ASTM A479 2021 S31600/03 A
ASTM E10 2018 .
ASTM E8 2022 .
EN 10088 PART 3 2014 1.4401 A,CF
EN 10088 PART 3 2014 1.4404 A,CF
EN 10272 2016. 1.4401 A,CF
EN 10272 2016. 1.4404 A,CF
ISO 148-1 2016 .
ISO 3651-2 98 METHOD A T1
ISO 6506-1 2014 .
ISO 6892-1 2019 .
ACH CO . .
PME HB L . .

Note: / Aufzeichnungen / Notes / Notes

(0)AD 2000-MERKBLATT W 2 edition 01.2020 AD 2000-MERKBLATT W 10 edition 01.2020
(1)AD 2000-MERKBLATT W 2 edition 01.2020 AD 2000-MERKBLATT W 10 edition 01.2020

(2)Section II Part A 2021 EDITION For products machined directly from bar refer to ASME SA479.
(3)Section II Part A 2021 EDITION

(4)Section II Part A 2021 EDITION
(5)For products machined directly from bar refer also to ASTM A479.
(6)Reapproved 2021

08 NOV. 2024
FRANCO CORBELLINI
CROSSWIND

| Pos. nr. / Pos. nr. / Item nr. / Nr. de poste | Oggetto / Gegenstand / Product description / Descrip. du produit | Tolleranza: h9 - DIN671/EN10278 / Toleranz/Allowance/Tolerance — Dimensioni - mm / Abmessungen / Dimension / Dimension | Lunghezza - mm / Länge / Length / Longueur | Colata / Schmelze / Heat / Coulée | Pezzi / Stückzahl / Pieces / Pièces | Peso - KG / Gewicht / Weight / Poids | Lotto nr. / Losnr. / Lot nr. / Lot nr. |
|---|---|---|---|---|---|---|---|
| 0030 | Tondo | 13,000 | 3000/ 3040 | 290960 | | 32,0 | 217704330 |

REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| Vicenza, 13/07/2023 | Direzione Qualità / Qualitätsmanagement/Quality Management/Gestion Qualité | Direzione Prodotto / Produktmanagement/Product Management/Direction Produit | Pagina |
|---|---|---|---|
| VCQ008 - MEST091967 | R.BERTELLI | P.MESSORI | 1 di 4 |

0 8 NOV. 2024
FRANCO CORSELLINI
080
CROSSWIND

**Acciaierie Valbruna S.p.A.**

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497

# CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1
Nach/According to/Selon

Certificato nr. MEST091967 / 2023 /
Prüfung/Test/Essai

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura: Laminato - Solubilizzato Trafilato
Lieferzustand / Delivery state / Etat de livraison

Produttore:
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Ordine nr: ORD N AQ2301562
Bestell / Your order / Commande

Tipo di Elaborazione: E+AOD
Erschmelzungsart / Melting process / Mode d'elaboration

Marchi di Fabbrica:
Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice

Conferma ordine nr: MI23005383
Werks/Our Order/Ref nr

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Punzone del Collaudatore:
Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur
MR

Avviso di Spedizione: A-MI23004303
Lieferanzeige/Packing list/B.L.

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung / Brand / Nuance

Punzonatura: 1.4401/1.4404
Kennzeichnung / Marking / Marquage

## TEST ALLO STATO DI FORNITURA

Test on delivery condition / Prüefung auf lieferbereitem produkt / Test a l'etat de fourniture / Prueba sobre el material así come entregado

1) L=longitudinale/längs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | Posiz. Saggio Probenlage Location Emplacement 1) | Snervamento Streckgrenze Yield Stress Limite elastique Rp 0,2% N/mm2 | Snervamento Streckgrenze Yield Stress Limite elastique Rp 1% N/mm2 | Resistenza Zugfestigkeit Tensile strength Resistance à traction Rm N/mm2 | Allungamento Bruchdehnung Elongation Allongement A5 % | | Strizione Einschnürung Reduction of area Striction Z % | | Resilienza Kerbschlagarbeit Impact Value Resilience | | | Durezza Haerte Hardness Durete HB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti<br>Anforderungen/Required values<br>Valeurs demandées | | min<br>max | | 200 | 235 | 500<br>900 | 20 | - | - | - | - | | | - | | |
| A | 10 | 20 | L | 585 | 679 | 785 | 33 | | 67 | | | | | 315 | | |
| F | 10 | 20 | L | 588 | 681 | 789 | 32 | | 64 | | | | | 255 | | |
| | | | | | | | | | | | | | | 258 | | |

## TEST ALLO STATO DI FORNITURA

Test on delivery condition / Prüefung auf lieferbereitem produkt / Test a l'etat de fourniture / Prueba sobre el material así come entregado

| TEST | | min | max | |
|---|---|---|---|---|
| F | Dimensioni grano x ASTM E112 | | | 6 |

## Test allo stato di fornitura per ASTM A370

1) L=longitudinale/längs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | Posiz. Saggio Probenlage Location Emplacement 1) | Snervamento Streckgrenze Yield Stress Limite elastique Rp 0,2% N/mm2 | Snervamento Streckgrenze Yield Stress Limite elastique | Resistenza Zugfestigkeit Tensile strength Resistance à traction Rm N/mm2 | Allungamento Bruchdehnung Elongation Allongement E 4d % | | Strizione Einschnürung Reduction of area Striction RA % | | Resilienza Kerbschlagarbeit Impact Value Resilience | | | Durezza Haerte Hardness Durete HB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti<br>Anforderungen/Required values<br>Valeurs demandées | | min<br>max | | 205 | - | 515 | - | 30 | - | 50 | - | | | - | | |
| B | 12,5 | 20 | L | 579 | | 780 | | 35 | | 68 | | | | 253 | | |

## Charpy per ISO 148-1

1) L=longitudinale/längs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | Posiz. Saggio Probenlage Location Emplacement 1) | Resilienza Kerbschlagarbeit Impact Value Resilience KV2 J | | | Espansione laterale Lateral Expansion | | | Shear Shear | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti<br>Anforderungen/Required values<br>Valeurs demandées | | min<br>max | | 50 | 50 | 50 | - | - | - | - | - | - |
| E | 10X5 | 20 | L | 99 | 89 | 94 | | | | | | |
| G | 10X5 | 20 | L | 102 | 86 | 84 | | | | | | |

Tensile testing according to ISO 6892-1
Impact testing according to ISO 148-1
Mechanical properties according to ASTM A370.
Brinnell hardness according to ASTM E10

REVIEW WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| Vicenza, 13/07/2023<br>VCQ008 - MEST091967 | Direzione Qualità<br>Qualitätsmanagement/Quality Management/Gestion Qualité<br>R.BERTELLI | Direzione Prodotto<br>Produktmanagement/Product Management/Direction Produit<br>P.MESSORI | Pagina<br>2 di 4 |
|---|---|---|---|

# Acciaierie Valbruna S.p.A.

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Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a : Nach/According to/Selon: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. Prüfung/Test/Essai: MEST091967 / 2023 /

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Ordine nr: ORD N AQ2301562
Bestell / Your order / Commande

Conferma ordine nr: MI23005383
Werks/Our Order/Ref nr.

Avviso di Spedizione: A-MI23004303
Lieferanzeige/Packing list/B L.

Stato di fornitura : Laminato - Solubilizzato Trafilato
Lieferzustand / Delivery state / Etat de livraison

Tipo di Elaborazione: E+AOD
Erschmelzungsart / Melting process / Mode d'elaboration

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung / Brand / Nuance

Produttore :
Hersteller/Item/Usine productrice

**ACCIAIERIE VALBRUNA S.P.A.**

Marchi di Fabbrica: AV
Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice

Punzone del Collaudatore: MR
Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur

Punzonatura: 1.4401/1.4404
Kennzeichnung / Marking / Marquage

Tensile testing according to ASTM E8

Brinnell hardness according to ISO 6506-1

### Analisi chimica

Chemische Zusammensetzung/Chemical Analysis/Analyse chimique

| Colata /Heat<br>Schmelze/Coulée | min -<br>max 0,030 | -<br>1,00 | -<br>2,00 | 16,50<br>18,00 | 2,00<br>2,50 | 10,00<br>13,00 | - | 0,045 | 0,030 | 0,100 | - | - | - | - | - |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | C % | Si % | Mn % | Cr % | Mo % | Ni % | Co % | P % | S % | N % | | | | | |
| 290960 | 0,015 | 0,46 | 1,56 | 16,74 | 2,02 | 10,00 | 0,125 | 0,029 | 0,027 | 0,063 | | | | | |

**Corrosion test in 16% sulfuric acid and copper sulfate solutions**

**Test standard:** UNI EN ISO 3651-2 Method A

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitized T1 | 20 | boil | 90 | 5 | Absence of cracks | **SATISFACTORY** |

**Corrosion test in 16% sulfuric acid and copper sulfate solutions**

**Test standard:** ASTM A262-Practice E

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitization | 15 | boil | 180 | 5 | Absence of cracks | **SATISFACTORY** |

Reduction ratio = 210,6 : 1
Material solution annealed 1040°C for 135'(total time)/ water cooled.
SURFACE QUALITY COMPLIANT TO EN 10088-3 TAB.1 COND. 2H
"Issued in agreement with TÜV SÜD Industrie Service GMBH (07/1972)"
"Qs approved according to PED, Annex I, Para. 4.3 by Notified Body 0036"
"(Certification no. DGR-0036-QS-W 23/2002/MUC)"

REVIEW WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

08 NOV 2024

Sono state soddisfatte tutte le condizioni richieste
Die gestellten Anforderungen sind it. Anlage erfüllt
The material has been furnished in accordance with the requirements
Le materiel à été trouvé conforme aux exigences

Controllo antimescolanza con tecnica XRF/OES portatile : OK
Verwechslungprüfung: durch XRF/QES Gerät geführt : OK
Antimixing testing performed with XRF/OES portable : OK
Contrôle antimélange svt technique XRF/QES portable : OK

Controllo visivo e dimensionale: soddisfa le esigenze
Besichtigung und Ausmessung: ohne Beanstandung
Visual inspection and dimensional checks:satisfactory
Contrôle visuel et dimensions: satisfaisant

QBO
CROSSWIND

# Acciaierie Valbruna S.p.A.

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Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a : Nach/According to/Selon: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. Prüfung/Test/Essai: MEST091967 / 2023 /

Cliente / Besteller/Purchaser/Client:
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura : Lieferzustand / Delivery state / Etat de livraison: Laminato - Solubilizzato Trafilato

Produttore : Hersteller/Item/Usine productrice:
ACCIAIERIE VALBRUNA S.P.A.

Ordine nr: Bestell / Your order / Commande: ORD N AQ2301562

Tipo di Elaborazione: Erschmelzungsart / Melting process / Mode d'elaboration: E+AOD

Marchi di Fabbrica: Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice: AV

Conferma ordine nr: Werks/Our Order/Ref nr.: MI23005383

Qualità: Werkstoff/Grade/Nuance: 1.4401/1.4404/316/316L

Punzone del Collaudatore: Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur: MR

Avviso di Spedizione: Lieferanzeige/Packing list/B.L.: A-MI23004303

Marca: Markenbezeichnung / Brand / Nuance: MVAPML ( MAXIVAL )

Punzonatura: Kennzeichnung / Marking / Marquage: 1.4401/1.4404

Melted, poured and manufactured in Italy  No welding or weld repair  Material free from Mercury contamination

We declare that the finished product is checked for radioactive contamination by the portal system when it leaves the production plant.

The Quality Management System is also Certified according to Pressure Equipment Directive 2014/68/EU Annex 1,chapt.4.3 by TÜV and LLOYD`S
The Quality Management System is also Certified according to PER 2016/1105, Schedule 2, Part 4, Para 31 (8) by Competent Body TÜV SUD BABT Unlimited.
Any act of tampering, modification, alteration, counterfeiting and/or falsification and/or any other action which modifies the contents of this test certificate shall constitute a violation of applicable civil and criminal laws. Acciaierie Valbruna shall protect its rights and interests before any competent court, authority and jurisdiction.
Maxival and/or Valplus grades/products are manufactured with ladle techniques to control composition, distribution, size and shape of non-metallic inclusions for improved machinability.
The supplied product conforms to requirements expressly requested by the purchaser and conforms to requirements specified by certified norms and standards. Should the product be used for more severe, critical and/ or in any case different applications than those the material is generally intended for, any different and/or supplementary requirements shall be specifically demanded, at least, upon order of the Product by the Purchaser. Acciaierie Valbruna SpA shall not be responsible for any improper use of the Products.

08 NOV. 2024
FRANCO CORBELLINI
QBO
CROSSWIND

REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| | | | |
|---|---|---|---|
| Vicenza, 13/07/2023<br>VCQ008 - MEST091967 | Direzione Qualità<br>Qualitätsmanagement/Quality Management/Gestion Qualité<br>R.BERTELLI | Direzione Prodotto<br>Produktmanagement/Product Management/Direction Produit<br>P.MESSORI | Pagina 4 di 4 |

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 405.563.167,00 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.

INSPECTION CERTIFICATE 3.1 (EN 10204:2004)
DOCUMENT NUMBER 2024015321


| | | | |
|---|---|---|---|
| CUSTOMER: | A.S.T. SPA | | |
| CUSTOMER'S ORDER: | AQ2400838 | | |
| MANUFACTURER'S WORKS: | AOSTA, VIA PARAVERA 16 - ITALY | | |
| PRODUCER OF THE DOC: | QUALITY DEPARTMENT | | |
| MANUFACTURER'S WORKS ORDER NO: | 0001140435 / 000020 | | |
| MARK OF THE MANUFACTURER: | **COGNE** | | |
| DISPATCH NOTE: | 0081605841 / 000010 WEIGHT: 588 KG / 1296 LB | | |
| INTERNAL SPEC: | STOCKBARREW2 | TECHNICAL RULE: | AD2000 |
| PRODUCT: | SPE ROUGHPEELED ROUND BARS | TOLERANCE: | + 1,500 - 0,0000 (+ 0,0591 - 0 in) |
| SURFACE FINISH: | 1X Hot Finished | | |
| PRODUCT DELIVERY CONDITION: | RS SOLUTION ANNEALED | | |
| PRODUCT DIMENSIONS (mm): | 125,000 ( 4,921 in) | LENGTH (mm) | 04000 06000 ( 00157 00236 in) |
| GRADE: | 316L-S31600/31603-1.4404/4401 | INTERNAL GRADE: | F316L IMCO |
| IDENTIFICATION HEAT NO: | 476355 | IDENTIFICATION LOT NO: | 172480 |
| MARKING OF THE PRODUCT: | 1.4404 | TEST PIECE N: | 248 |

STEELMAKING EAF + AOD + CONTINUOUS CASTING
AISI 316/316L - UNS S31600/S31603 - 1.4404/1.4401
ASTM A484 DOES NOT APPLY FOR SIZE AND LENGTH TOLERANCES.
REFERENCE NORMS: EN 10088-3 (14), EN 10272 (16), ASTM A276-r17/ASME SA276-21, ASTM A479/A479M-r21, ASTM A193-23 B8MCLASSE 1D, ASME SA276/SA276M-21,ASME SA479/SA479M-21, AMS 5653J, AMS 5648N, ISO15156-3/NACE MR0175 (15), NACE MR0103/ISO 17945 (15), NORSOK M630 MDSS01 REV5.
REFERENCE NORMS FOR CHEMICAL COMPOSITION AND MECHANICAL PROPERTIES: ASTM A182-23/ ASME SA182-21.
REFERENCE NORMS ONLY FOR CHEMICAL COMPOSITION: EN 10222-5 (17),ASTM A403-22b, ASTM A484-22, ASTM A314-23, AMS-QQ-S-763D.
ASME SECT.II PART A EDITION 2015-2017-2019-2021.
REFERENCE FOR APPLICABLE ASME STANDARD: SECTION II PART A ED. 2015-2017-2019-2021
HOT ROLLED
REDUCTION RATIO 4,3

CHEMICAL LADLE ANALYSIS ACCORDING TO ASTM A751 - EN ISO 14284
Control lot No. - Weight :020000997421 - 87.475 KG - 192.846 LB

| ELEMENTS | C | Si | Mn | P | S | N | Cr | Mo | Ni | Cu |
|---|---|---|---|---|---|---|---|---|---|---|
| MEASUREMENT UNIT | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w |
| OBTAINED | 0,016 | 0,37 | 1,80 | 0,027 | 0,028 | 0,076 | 16,76 | 2,08 | 10,15 | 0,63 |

| ELEMENTS | Co |
|---|---|
| MEASUREMENT UNIT | % w/w |
| OBTAINED | 0,21 |

HARDNESS TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000998222 - 7.789 KG - 17.172 LB
SPECIFICATION ENISO6506 HARDNESS TEST HB TESTING METHOD: 10/3000
OBTAINED 148

0 8 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND

☑ REVIEW ☐ WITNESS
ON BEHALF OF RQG
A. DELLA PINA DATE 08.11.24

DATE 27.03.2024

MORABITO ROSA CF(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

-Cogne

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 405.563.167,00 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.

INSPECTION CERTIFICATE 3.1 (EN 10204:2004)
DOCUMENT NUMBER 2024015321


IMPACT TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000998222 - 7.789 KG - 17.172 LB
SPECIFICATION EN ISO 148-1-KV2 DIRECTION OF THE TEST PIECE: L
TYPE OF TEST PIECE KV
TEST TEMPERATURE °C 20
MEASUREMENT UNIT J

| OBTAINED | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 438 | 426 | 430 | 430 | 439 | 428 | 427 | 426 | 438 | 440 |
| | 434 | 432 | | | | | | | | |

TENSILE TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000998222 - 7.789 KG - 17.172 LB
SPECIFICATION EN-ISO6892-1 DIRECTION OF THE TEST PIECE: L

| MEASUREMENT UNIT | RM MPA | RP02 MPA | A5 % | Z % | RP1 MPA |
|---|---|---|---|---|---|
| | | | 5.0 D | | |
| OBTAINED | 565 | 265 | 55,8 | 73,1 | 303 |
| | 571 | 265 | 54,0 | 76,3 | 306 |
| | 560 | 255 | 60,5 | 78,0 | 296 |
| | 558 | 247 | 58,0 | 80,4 | 298 |

GRAIN SIZE
Control lot No. - Weight :020000998222 - 7.789 KG - 17.172 LB
SPECIFICATION ASTME112 --
OBTAINED 5

IMPACT TEST
Control lot No. - Weight :020000998222 - 7.789 KG - 17.172 LB
SPECIFICATION EN ISO 148-1 DIRECTION OF THE TEST PIECE: L
TYPE OF TEST PIECE KV
TEST TEMPERATURE °C 196-
MEASUREMENT UNIT J

| OBTAINED | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 196 | 217 | 190 | 198 | 207 | 206 | 206 | 203 | 193 | 203 |
| | 195 | 196 | | | | | | | | |

TENSILE TEST
Control lot No. - Weight :020000998222 - 7.789 KG - 17.172 LB
SPECIFICATION ASTMA370-E8-0.5"SPEC DIRECTION OF THE TEST PIECE: L

| MEASUREMENT UNIT | TS KSI | YS KSI | RA % | EL % |
|---|---|---|---|---|
| | | | | 4,0 D |
| OBTAINED | 82 | 37 | 74,8 | 60,0 |
| | 82 | 37 | 76,4 | 65,3 |
| | 82 | 37 | 77,9 | 59,3 |
| | 81 | 37 | 81,3 | 66,0 |

08 NOV. 2024
FRANCO CORBELLINI
CROSSWIND

☐ REVIEW ☐ WITNESS
ON BEHALF OF RTG
A. BELLA PINA DATE

DATE 27.03.2024

MORABITO ROSA CF(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

-Cogne

COGNE ACCIAI SPECIALI S.p.a.

ITALY - 11100 AOSTA - VIA PARAVERA, 16
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CAP. SOC. 405.563.167,00 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.



COUNTRY OF MELTING AND ORIGIN: ITALY, THE MATERIAL COMPLIES WITH FAR DFARS 252.225-7009 ALT 1.
DOCUMENT ISSUED IN AGREEMENT WITH TUEV BAYERN(11.1972) WAVING OF COUNTERSIGNING (SEE TUEV BAYERN LETTER DATED 17.01.80).
MARKING: SYMBOL OF THE MANUF. WORK, MATERIAL N. , CAST N., LOT N., RECEIVING AGENT STAMP
CORROSION TEST ACCORDING TO ASTM A262/02A Practice.E EN ISO 3651-2 A: SATISFACTORY.
VISUAL INSPECTION OF SURFACE AND DIMENSIONAL CONTROL ACCORDING TO EN 10221 CLASS C AND EN 10060: SATISFACTORY.
ULTRASONIC TEST ACCORDING TO EN 10308 Class 3, equivalent to ASTM A388 FBH 5 (DIAM. 100-250) and FBH 8 (DIAM. 250-400) or to EN10228-4 Class 3: SATISFACTORY.
ANTIMIX TEST WITH PORTABLE SPECTROMETER: SATISFACTORY.
NO WELDING REPAIR ON THE MATERIAL.
FREE FROM RADIOACTIVE CONTAMINATION.
ULTRASONIC TEST ACCORDING TO EN 10308 Class.3, EN 10228 Class.3, ASTM A388 FBH 5 (diam. 102-250), FBH 8 (diam. 250,01-400).
MATERIAL IN COMPLIANCE WITH THE NORSOK M-630 MDS S01
RADIOACTIVITY CONTROL PERFORMED WITH A GAMMA SPECTROMETER: ASTM E181.
GAMMA ACTIVITY ON THE PRODUCTS BELOW 0.1 BQ/G ACCORDING TO EU RESOLUTION 2013/59/EURATOM , IAEA RS-G-1.7 AND IAEA SSG-17.
QUALITY SYSTEM CERTIFIED BY KIWA CERMET ACCORDING TO UNI EN ISO 9001:2015 -IATF 16949:2016 (THE LAST ONE ONLY FOR WIRE ROD AND HOT ROLLED-PEELED-GROUND STAINLESS STEEL BARS).
THE PRODUCT IS CONFORMING TO THE CONTRACT AGREEMENT AND TO THE RULE AD2000-MERKBLATT W0/W2.
INSPECTOR'S STAMP LF
MATERIAL CONFORM TO: 2015/863/EU (RoHS3) - 2011/65/EU (RoHS2) - 2000/53/EU - 2002/95/EU (RoHS) - 2003/11/EU - 2005/618/EU - PED 2014/68/EU e PE(S)R 2016/1105
THE MATERIAL IS FREE OF ANY MERCURY, MERCURY COMPOUNDS AND OR RADIUM CONTAMINATION AT TIME OF SHIPMENT AND WAS PRODUCED WITHOUT USING OZONE DEPLETING SUBSTANCES OF CLASS I AND II.
REFERENCE NORMS: EN 10088-3 (14), EN 10272 (16), ASTM A276-r17/ASME SA276-21, ASTM A479/A479M-r21, ASTM A193-23 B8MCLASSE 1D, ASME SA276/SA276M-21,ASME SA479/SA479M-21, AMS 5653J, AMS 5648N, ISO15156-3/NACE MR0175 (15), NACE MR0103/ISO 17945 (15), NORSOK M630 MDSS01 REV5.
REFERENCE NORMS FOR CHEMICAL COMPOSITION AND MECHANICAL PROPERTIES: ASTM A182-23/ ASME SA182-21.
REFERENCE NORMS ONLY FOR CHEMICAL COMPOSITION: EN 10222-5 (17),ASTM A403-22b, ASTM A484-22, ASTM A314-23, AMS-QQ-S-763D.
ASME SECT.II PART A EDITION 2015-2017-2019-2021.
WHERE NOT SPECIFIED ALL THE NORMS MENTIONED ARE INTENDED IN THEIR LAST REVISION AT THE DATE OF ISSUE OF THIS DOCUMENT.
ASTM A484 DOES NOT APPLY FOR SIZE AND LENGTH TOLERANCES.

REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV. 2024

FRANCO CORBELLINI
QBQ
CROSSWIND

DATE 27.03.2024

MORABITO ROSA CF(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

-Cogne

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497

## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a : Nach/According to/Selon: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. Prüfung/Test/Essai: MEST112865 / 2022 /

Cliente / Besteller/Purchaser/Client:
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura: Lieferzustand / Delivery state / Etat de livraison: Laminato - Solubilizzato Rettificato

Produttore: Hersteller/Item/Usine productrice:
**ACCIAIERIE VALBRUNA S.P.A.**

Ordine nr: Bestell / Your order / Commande: ORD.N.AQ2202071

Tipo di Elaborazione: Erschmelzungsart / Melting process / Mode d'elaboration: E+AOD

Marchi di Fabbrica: Zeichen des Liefernwerkes / Trade marks / Sigles de l'usine productrice: AV

Conferma ordine nr: Werks/Our Order/Ref nr.: MI22008136

Qualità: Werkstoff/Grade/Nuance: 1.4401/1.4404/316/316L

Punzone del Collaudatore: Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur: MR

Avviso di Spedizione: Lieferanzeige/Packing list/B.L.: A-MI22006725

Marca: Markenbezeichnung / Brand / Nuance: MVAPML ( MAXIVAL )

Punzonatura: Kennzeichnung / Marking / Marquage: 1.4401/4/316/L

**SPECIFICHE :**
Anforderungen / Requirements / Exigences

VAL STOCK 2020 1.4404/316L A,CF
AISI 316
AISI 316L
ASME SA276 2019 S31600 A,CF (0)
ASME SA276 2019 S31603 A,CF (1)
ASME SA479 2019 S31600 A (2)
ASME SA479 2019 S31603 A (3)
ASTM A262 2015 PRACTICE E (4)
ASTM A276 2017 S31600 A,CF
ASTM A276 2017 S31603 A,CF
ASTM A370 2020 .
ASTM A479 2020 S31600 A
ASTM A479 2020 S31603 A
ASTM E10 2018 .
ASTM E8 2021 .
EN 10088-3 2014 1.4401 A,CF
EN 10088-3 2014 1.4404 A,CF
EN 10272 2007 1.4401 A,CF
EN 10272 2007 1.4404 A,CF
ISO 6506-1 2014 .
ISO 6892-1 2019 .

Note:
Aufzeichnungen / Notes / Notes

(0)Section II Part A 2019 EDITION
(1)Section II Part A 2019 EDITION
(2)Section II Part A 2019 EDITION
(3)Section II Part A 2019 EDITION
(4)Reapproved 2021

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND R

| Pos. nr. (Pos. nr. / Item nr. / Nr. de poste) | Oggetto (Gegenstand / Product description / Descrip. du produit) | Tolleranza: h8 - DIN670/EN10278 (Toleranz/Allowance/Tolerance) Dimensioni - mm (Abmessungen / Dimension / Dimension) | Lunghezza - mm (Lange / Length / Longueur) | Colata (Schmelze / Heat / Coulée) | Pezzi (Stückzahl / Pieces / Pieces) | Peso - KG (Gewicht / Weight / Poids) | Lotto nr. (Losnr. / Lot nr. / Lot nr.) |
|---|---|---|---|---|---|---|---|
| 0070 | Tondo | 10,000 | 2900/ 3100 | 276383 | | 18,0 | 729305910 |

☑ REVIEW ☐ WITNESS
ON BEHALF OF RZC
A. DELLA PINA DATE 08/11/2024

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| Vicenza, 09/11/2022 | Direzione Qualità<br>Qualitätsmanagement/Quality Management/Gestion Qualité | Direzione Prodotto<br>Produktmanagement/Product Management/Direction Produit | Pagina |
|---|---|---|---|
| VCQ052 - MEST112865 | R.BERTELLI | P.MESSORI | 1 di 3 |

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a / Nach/According to/Selon: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. / Prüfung/Test/Essai: MEST112865 / 2022 /

Cliente / Besteller/Purchaser/Client:
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura / Lieferzustand / Delivery state / Etat de livraison: Laminato - Solubilizzato Rettificato

Produttore / Hersteller/Item/Usine productrice:
**ACCIAIERIE VALBRUNA S.P.A.**

Ordine nr. / Bestell / Your order / Commande: ORD.N.AQ2202071

Tipo di Elaborazione / Erschmelzungsart / Melting process / Mode d'elaboration: E+AOD

Marchi di Fabbrica / Zeichen des Liefernwerkes / Trade marks / Sigles de l'usine productrice: AV

Conferma ordine nr. / Werks/Our Order/Ref nr.: MI22008136

Qualità / Werkstoff/Grade/Nuance: 1.4401/1.4404/316/316L

Punzone del Collaudatore / Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur: MR

Avviso di Spedizione / Lieferanzeige/Packing list/B.L.: A-MI22006725

Marca / Markenbezeichnung / Brand / Nuance: MVAPML ( MAXIVAL )

Punzonatura / Kennzeichnung / Marking / Marquage: 1.4401/4/316/L

### TEST ALLO STATO DI FORNITURA

Test on delivery condition / Prüefung auf lieferbereitem produkt / test a l'etat de fourniture / Prueba sobre el material así come entregado

1) L=longitudinale/längs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta / Probestab / Specimen/Eprouvette Larg.diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. spais mm | °C | Posiz. Saggio / Probenlage / Location / Emplacement 1) | Snervamento / Streckgrenze / Yield Stress / Limite elastique Rp 0,2% N/mm2 | Snervamento / Streckgrenze / Yield Stress / Limite elastique Rp 1% N/mm2 | Resistenza / Zugfestigkeit / Tensile strength / Resistance à traction Rm N/mm2 | Allungamento / Bruchdehnung / Elongation / Allongement A5 % | Allungamento E 4d % | Strizione / Einschnürung / Reduction of area / Striction Z % | Strizione RA % | Resilienza / Kerbschlagarbeit / Impact Value / Resilience | | | Durezza / Haerte / Hardness / Durete HB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti / Anforderungen/Required values / Valeurs demandées | | min max | | 310 | 235 | 620 900 | 20 | 30 | - | 40 | - | | | - 315 | | |
| A | 10 | 20 | L | 477 | 559 | 665 | 47 | 50 | 70 | 70 | | | | 225 | | |
| B | 10 | 20 | L | 482 | 561 | 669 | 46 | 50 | 69 | 69 | | | | 228 | | |

### TEST ALLO STATO DI FORNITURA

Test on delivery condition / Prüefung auf lieferbereitem produkt / Test a l'etat de fourniture / Prueba sobre el material así come entregado

| TEST | | min | max |
|---|---|---|---|
| A | Dimensioni grano x ASTM E112 | | |

Mechanical properties according to ASTM A370.
Brinnell hardness according to ASTM E10
Tensile testing according to ASTM E8
Brinnell hardness according to ISO 6506-1
Tensile testing according to ISO 6892-1

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND R

### Analisi chimica

Chemische Zusammensetzung/Chemical Analysis/Analyse chimique

| Colata /Heat / Schmelze/Coulée | C % | Si % | Mn % | Cr % | Mo % | Ni % | P % | S % | N % |
|---|---|---|---|---|---|---|---|---|---|
| min - max | - 0,030 | - 1,00 | - 2,00 | 16,50 18,00 | 2,00 2,50 | 10,00 13,00 | - 0,045 | - 0,030 | - 0,100 |
| 276383 | 0,014 | 0,63 | 1,44 | 16,84 | 2,07 | 10,06 | 0,028 | 0,026 | 0,061 |

### Corrosion test in 16% sulfuric acid and copper sulfate solutions

**Test standard:** ASTM A262-Practice E

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitization | 15 | boil | 180 | 5 | Absence of cracks | SATISFACTORY |

☒ REVIEW ☐ WITNESS
ON BEHALF OF RTZ
A. BELLABINA DATE 08 NOV. 2024

**QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D**

| Vicenza, 09/11/2022 | Direzione Qualità / Qualitätsmanagement/Quality Management/Gestion Qualité | Direzione Prodotto / Produktmanagement/Product Management/Direction Produit | Pagina |
|---|---|---|---|
| VCQ052 - MEST112865 | R.BERTELLI | P.MESSORI | 2 di 3 |

# Acciaierie Valbruna S.p.A.

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Telefono 0471.924111 - Fax 0471.924497

## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a : Nach/According to/Selon: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. Prüfung/Test/Essai: MEST112865 / 2022 /

Cliente / Besteller/Purchaser/Client:
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura : Lieferzustand / Delivery state / Etat de livraison: Laminato - Solubilizzato Rettificato

Produttore : Hersteller/Item/Usine productrice:
ACCIAIERIE VALBRUNA S.P.A.

Ordine nr: Bestell / Your order / Commande: ORD.N.AQ2202071

Tipo di Elaborazione: Erschmelzungsart / Melting process / Mode d'elaboration: E+AOD

Marchi di Fabbrica: Zeichen des Liefernwerkes / Trade marks / Sigles de l'usine productrice: AV

Conferma ordine nr: Werks/Our Order/Ref nr.: MI22008136

Qualità: Werkstoff/Grade/Nuance: 1.4401/1.4404/316/316L

Punzone del Collaudatore: Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur: MR

Avviso di Spedizione: Lieferanzeige/Packing list/B.L.: A-MI22006725

Marca: Markenbezeichnung / Brand / Nuance: MVAPML ( MAXIVAL )

Punzonatura: Kennzeichnung / Marking / Marquage: 1.4401/4/316/L

**Corrosion test in 16% sulfuric acid and copper sulfate solutions**

**Test standard:** UNI EN ISO 3651-2 Method A

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitized T1 | 20 | boil | 90 | 5 | Absence of cracks | SATISFACTORY |

Reduction ratio = 374,4 : 1
Material solution annealed 1060° C for 0.5h/air cooled.

Sono state soddisfatte tutte le condizioni richieste
Die gestellen Anforderungen sind it. Anlage erfüllt
The material has been furnished in accordance with the requirements
Le materiel â eté trouvé conforme aux exigences

Controllo antimescolanza con tecnica XRF/OES portatile : OK
Verwechslungprüfung: durch XRF/QES Gerät geführt : OK
Antimixing testing performed with XRF/OES portable : OK
Contrôle antimélange svt technique XRF/QES portable : OK

Controllo visivo e dimensionale: soddisfa le esigenze
Besichtigung und Ausmessung: ohne Beanstandung
Visual inspection and dimensional checks:satisfactory
Contrôle visuel et dimensions: satisfaisant

Melted, poured and manufactured in Italy  No welding or weld repair  Material free from Mercury contamination

We declare that the finished product is checked for radioactive contamination by the portal system when it leaves the production plant.

The Quality Management System is also Certified according Pressure Equipment Directive 2014/68/EU Annex 1,chapt.4.3 by TÜV and LLOYD'S
Any act of tampering, modification, alteration, counterfeiting and/or falsification and/or any other action which modifies the contents of this test certificate shall constitute a violation of applicable civil and criminal laws. Acciaierie Valbruna shall protect its rights and interests before any competent court, authority and jurisdiction.
Maxival and/or Valplus grades/products are manufactured with ladle techniques to control composition, distribution, size and shape of non-metallic inclusions for improved machinability.
The supplied product conforms to requirements expressly requested by the purchaser and conforms to requirements specified by certified norms and standards. Should the product be used for more severe, critical and/ or in any case different applications than those the material is generally intended for, any different and/or supplementary requirements shall be specifically demanded, at least, upon order of the Product by the Purchaser. Acciaierie Valbruna SpA shall not be responsible for any improper use of the Products.

WSPC37000C7C1E09C17D451F4D06E46DC2

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND R

REVIEW WITNESS
ON BEHALF OF RMC
A. DELLA FINA RMTE

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| Vicenza, 09/11/2022<br>VCQ052 - MEST112865 | Direzione Qualità<br>Qualitätsmanagement/Quality Management/Gestion Qualité<br>R.BERTELLI | Direzione Prodotto<br>Produktmanagement/Product Management/Direction Produit<br>P.MESSORI | Pagina 3 di 3 |
|---|---|---|---|

**AST S.p.A.**
Via R. Merendi, 40
I-20007 Cornaredo MI

P +39 02 934848.1
F +39 02 9362248
W www.astspa.it

**MATERIAL CERTIFICATES INDEX**
**CERTIFICATO DEI MATERIALI** **No.** 2400585

EN 10204 3.1

**Customer**
ROSETTI MARINO S.P.A.

**P.Order / Project**
1724000740 123A90A Rev. 1

**ITEM Number**
10-60

**Tag**
25-FV-033

**Quantity delivered**
1

**AST Job**
CV2400221

**AST Code**
CV2400221CV8407A000

**Serial Number**
2400585

**Valve Type**
Valvole Regolazione

**Size**
NPS 1" CLASS 300 RF

**Port Size**
1/4"

| Part Name | Material | Heat No. | Certificate No. | Supplier |
|---|---|---|---|---|
| BODY | ASTM A351 CF3M | E360 | E360 | SGA Alloys Private Limited |
| SEAT RING | ASTM A479 316/316L | 372445 | 2023016714 | COGNE ACCIAI SPECIALI SPA |
| PLUG | F316 + PTFE | 290960 | MEST091967/2023/ | ACCIAIERIE VALBRUNA |
| BONNET | ASTM A479 316/316L | 476355 | 2024015321 | COGNE ACCIAI SPECIALI SPA |
| STEM | ASTM A479 316/316L | 276383 | MEST112865-2022 | ACCIAIERIE VALBRUNA |

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND

☐ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. MELLA PINA DATE 08/11/2024

**Remarks** :

**AST Q.C. Department**

**Customer's Inspector**

**Third Party Inspection**

**Date** : 05.11.2024 **Date** : _____ **Date** : _____

# SGA ALLOYS PRIVATE LIMITED

( Formerly Known as Sri Ganapathy Steel Alloy Casting )
ISO 9001 : 2015 CERTIFIED COMPANY
SF.NO:10/1,NALLAGOUNDENPALAYAM,,KADUVETTIPALAYAM POST,SULUR TKCOIMBATORE Pin :641659,
Phone :9159530466,9159533064, email :sgaalloys2018@gmail.com

## MATERIAL TEST CERTIFICATE
## AS PER EN 10204 - 3.1

**Customer** : ECO TECH CASTINGS INDIA (P) LTD
COIMBATORE 641018

T.C. No. : **E360**
T.C.Date : **20/09/2021**

**P.Order No.** : ECO/21-22/134 Dt. 05/08/2021

Heat No. : **E360**
Pouring Date : **02/09/2021**

**Specification** :**ASTM A351 Gr.CF3M - 2018**

CASTING PROCESSED BY INDUCTION MELTING

FOUNDRY IDENTIFICATION :SGA

**TEST SPEC AS PER ASTM A703-2020 CHEMICAL COMPOSITION - %**

| Element | | C | Mn | Si | P | S | Cr | Ni | Mo | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Req. | Min | --- | --- | --- | --- | --- | 17.000 | 9.000 | 2.000 | | | | | | |
| | Max | 0.030 | 1.500 | 1.500 | 0.040 | 0.040 | 21.000 | 13.000 | 3.000 | | | | | | |
| **Actual** | | **0.023** | **0.937** | **0.560** | **0.028** | **0.001** | **17.698** | **9.662** | **2.166** | | | | | | |

**HEAT TREATMENT :** SOLUTION ANNEALING: Heated to 1080 ° C, Soaked for 3 Hrs and then water Quenched.

**TENSILE TEST AS PER ASTM A370-2020 MECHANICAL PROPERTIES IMPACT TEST AS PER ASTM E23-16**

| Requirments | Yield Strength | Tensile Strength | % Elongation | % Reduction of Area | Hardness | Bend Test | Impact Test In (Joules) (10mm X 10mm X 55mm) Impact at -196 °c & 40jmin | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Mpa | MPa | GL :50 mm | | BHN | D =3T | | | | |
| | 0.2% Proof Stress | - | - | - | - | at 120 ° | | | | |
| **Minimum** | 205 | 485 | 30.00 | --- | --- | | | | | |
| **Maximum** | --- | --- | --- | --- | 237 | - | 1 | 2 | 3 | Avg |
| **Actual** | **243** | **534** | **51.60** | **---** | 160 | **--** | **82** | **78** | **76** | **78.67** |

**ITEM DESCRIPTION**

| SL.No. | Product | Description | Drawing No. | Part No. | Poured Qty |
|---|---|---|---|---|---|
| 1 | C20005 | BODY CV 8400(AT220) | M028 REV.0 | CABDWG0028 | 5 |

Remarks : **Separate test bar poured and the same bar tested for chemical and mechanical properties**
**Tensile Testing conducted on round specimen at room temperature**
**These casting has been acid pickled and passivated**
**Casting meet the requirement of NACE MR0175 / ISO 15156**
**Radio activity checked and found to be 0.10 Bequerel/Gram**
**Carbon steel fully killed Condition**
**Visual Inspection carried out at as per MSS SP-55, found satisfied**

We here by certify that the items mentioned above have been tested, inspected and found to be in accordance with customer's drawing, specification, purchase order and satisfy the requirements of ASTM A351 Gr.CF3M - 2018,

for SGA ALLOYS PRIVATE LIMITED

K.ARUNKUMAR
Prepared By

K.KARTHIKEYAN
QUALITY ASSURANCE



08 NOV. 2024
FRANCO CORBELLINI
089
CROSSWING

REVIEW WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 250.000.000 EUR INT. VERS.
C.F. 02187350967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.

INSPECTION CERTIFICATE 3.1 (EN 10204:2004)
DOCUMENT NUMBER 2023016714


| | | | |
|---|---|---|---|
| CUSTOMER: | A.S.T. SPA | | |
| CUSTOMER'S ORDER: | AQ2301925 | | |
| MANUFACTURER'S WORKS: | AOSTA, VIA PARAVERA 16 - ITALY | | |
| PRODUCER OF THE DOC: | QUALITY DEPARTMENT | | |
| MANUFACTURER'S WORKS ORDER NO: | 0001136538 / 000020 | | |
| MARK OF THE MANUFACTURER: | **COGNE** | | |
| DISPATCH NOTE: | 0081566096 / 000020 WEIGHT: 190 KG / 419 LB | | |
| INTERNAL SPEC: | STOCKBARREW2 | TECHNICAL RULE: | AD2000 |
| PRODUCT: | PEL PEELED ROUND BARS TOLERANCE: ISOK11 | | |
| SURFACE FINISH: | 2B Cold Finished | | |
| PRODUCT DELIVERY CONDITION: | RS SOLUTION ANNEALED | | |
| PRODUCT DIMENSIONS (mm): | 50,000 ( 1,969 in) | LENGTH (mm) | 03000 03100 ( 00118 00122 in) |
| GRADE: | 316L-S31600/31603-1.4404/4401 | INTERNAL GRADE: | F316L IMCO |
| IDENTIFICATION HEAT NO: | 372445 | IDENTIFICATION LOT NO: | 725970 |
| MARKING OF THE PRODUCT: | 1.4404 | TEST PIECE N: | 597 |

REFERENCE NORMS: EN 10088-3 2014, EN 10272 2016, ASTM A276/A276M, ASTM A479/A479M, ASTM A193 B8MCLASSE 1D, ASME SA276/SA276M, ASME SA479/SA479M, AMS 5653J, AMS 5648N, ISO15156-3/NACE MR0175 2015, NACE MR0103/ISO 17945, NORSOK M630 MDSS01 REV5.
REFERENCE NORMS FOR CHEMICAL COMPOSITION AND MECHANICAL PROPERTIES: ASTM A182, ASME SA182.
REFERENCE NORMS ONLY FOR CHEMICAL COMPOSITION: EN 10222-5 2017,ASTM A403-07a, ASTM A484-18a,ASTM A314-08, AMS-QQ-S-763D.
ASME SECT.II PART A EDITION 2015-2017-2019-2021
AISI 316/316L - UNS S31600/S31603 - 1.4404/1.4401
THE PRODUCT IS CONFORMING TO THE CONTRACT AGREEMENT AND TO THE RULE AD2000-MERKBLATT W0/W2.
STEELMAKING EAF + AOD + CONTINUOUS CASTING
ASTM A484 DOES NOT APPLY FOR SIZE AND LENGTH TOLERANCES.
STEELMAKING EAF + AOD + CONTINUOUS CASTING
REFERENCE FOR APPLICABLE ASME STANDARD: SECTION II PART A ED. 2015-2017-2019-2021
HOT ROLLED
REDUCTION RATIO 11,8

CHEMICAL LADLE ANALYSIS ACCORDING TO ASTM A751 - EN ISO 14284
Control lot No. - Weight :020000959742 - 85.921 KG - 189.420 LB

| ELEMENTS | C | Si | Mn | P | S | N | Cr | Mo | Ni | Cu |
|---|---|---|---|---|---|---|---|---|---|---|
| MEASUREMENT UNIT | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w |
| OBTAINED | 0,018 | 0,26 | 1,77 | 0,026 | 0,028 | 0,077 | 16,97 | 2,04 | 10,28 | 0,46 |

| ELEMENTS | Co |
|---|---|
| MEASUREMENT UNIT | % w/w |
| OBTAINED | 0,16 |

HARDNESS TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000960410 - 7.449 KG - 16.422 LB
SPECIFICATION ENISO6506 HARDNESS TEST HB TESTING METHOD: 10/3000
OBTAINED 157

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND R

☑ REVIEW ☐ WITNESS
ON BEHALF OF RDC
A. DELLA PINA DATE 08 NOV 2024

DATE 05.04.2023

BARBARA VIETTI MV(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE



1724000740-QC-DB-00016_01

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 250.000.000 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.



1724000740-QC-DB-00016_01

IMPACT TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000960410 - 7.449 KG - 16.422 LB
SPECIFICATION EN ISO 148-1-KV2 DIRECTION OF THE TEST PIECE: L
TYPE OF TEST PIECE KV
TEST TEMPERATURE °C 20
MEASUREMENT UNIT J

| OBTAINED | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 435 | 430 | 428 | 435 | 438 | 439 | 429 | 435 | 436 | 426 |
| | 432 | 434 | | | | | | | | |

TENSILE TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000960410 - 7.449 KG - 16.422 LB
SPECIFICATION EN-ISO6892-1 DIRECTION OF THE TEST PIECE: L

| MEASUREMENT UNIT | RM MPA | RP02 MPA | A5 % 5.0 D | Z % | RP1 NMM |
|---|---|---|---|---|---|
| OBTAINED | 611 | 282 | 55,2 | 78,3 | 325 |
| | 613 | 287 | 51,3 | 72,1 | 342 |
| | 614 | 301 | 48,8 | 73,1 | 341 |
| | 612 | 272 | 56,7 | 76,3 | 325 |

GRAIN SIZE
Control lot No. - Weight :020000960410 - 7.449 KG - 16.422 LB
SPECIFICATION ASTME112 --
OBTAINED 6

MATERIAL IN COMPLIANCE WITH THE NORSOK M-630 MDS S01
IMPACT TEST
Control lot No. - Weight :020000960410 - 7.449 KG - 16.422 LB
SPECIFICATION EN ISO 148-1 DIRECTION OF THE TEST PIECE: L
TYPE OF TEST PIECE KV
TEST TEMPERATURE °C 196-
MEASUREMENT UNIT J

| OBTAINED | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 198 | 185 | 195 | 190 | 177 | 173 | 173 | 173 | 197 | 175 |
| | 192 | 179 | | | | | | | | |

TENSILE TEST
Control lot No. - Weight :020000960410 - 7.449 KG - 16.422 LB
SPECIFICATION ASTMA370-E8-0.5"SPEC DIRECTION OF THE TEST PIECE: L

| MEASUREMENT UNIT | RMB KSI | RP02B KSI | ZB % | AL2B % 4,0 D |
|---|---|---|---|---|
| OBTAINED | 88 | 40 | 78,0 | 57,6 |
| | 89 | 41 | 73,3 | 55,7 |
| | 89 | 41 | 72,9 | 54,0 |
| | 89 | 40 | 78,1 | 61,1 |

08 NOV. 2024
FRANCO CORBELLINI
083
CROSSWIND

REVIEW ☐ WITNESS
ON BEHALF OF RINA
AUTHORIZED SIGNATURE DATE

DATE 05.04.2023

BARBARA VIETTI MV(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

COGNE ACCIAI SPECIALI S.p.a.

ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 250.000.000 EUR INT. VERS.
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VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.



1724000740-QC-DB-00016_01

COUNTRY OF MELTING AND ORIGIN: ITALY, THE MATERIAL COMPLIES WITH FAR DFARS 252.225-7009 ALT 1.
The products delivered are conforming to EN10088-5 and bear the CE marking on the basis of the test results here reported and the continuous surveillance, assessment and approval by MPA NRW (certificate no. 0432-CPR-00166-01)
Material produced according to the system #Regulation 305/2011/EU of the European Parliament and of the Council of 9 March 2011#
DOCUMENT ISSUED IN AGREEMENT WITH TUEV BAYERN(11.1972) WAVING OF COUNTERSIGNING (SEE TUEV BAYERN LETTER DATED 17.01.80).
MARKING: SYMBOL OF THE MANUF. WORK, MATERIAL N. , CAST N., LOT N., RECEIVING AGENT STAMP
CORROSION TEST ACCORDING TO ASTM A262 PRACTICE E EN ISO 3651-2 PRACTICE A: SATISFACTORY.
ANTIMIXING TEST BY PORTABLE SPECTROMETRE: CONFORMING
EDDY CURRENT INSPECTION OF SURFACE ACCORDING TO EN 10277 CLASS 4.
DIMENSIONAL CONTROL ACCORDING TO EN 10278: SATISFACTORY.
NO WELDING REPAIR ON THE MATERIAL.
ULTRASONIC TEST ACCORDING TO EN 10308 Class.3: SATISFACTORY
QUALITY SYSTEM CERTIFIED BY KIWA CERMET ACCORDING TO UNI EN ISO 9001:2015 -IATF 16949:2016 (THE LAST ONE ONLY FOR WIRE ROD AND HOT ROLLED-PEELED-GROUND STAINLESS STEEL BARS).
INSPECTOR'S STAMP LF
MATERIAL CONFORM TO: 2015/863/UE (RoHS3) - 2011/65/UE (RoHS2) - 2000/53/UE - 2002/95/UE (RoHS) - 2003/11/UE - 2005/618/UE - PED 2014/68/UE e PE(S)R 2016/1105
THE MATERIAL IS FREE OF ANY MERCURY, MERCURY COMPOUNDS AND OR RADIUM CONTAMINATION AT TIME OF SHIPMENT AND WAS PRODUCED WITHOUT USING OZONE DEPLETING SUBSTANCES OF CLASS I AND II.
RADIOACTIVITY CONTROL PERFORMED WITH A GAMMA SPECTROMETER: ASTM E181.
GAMMA ACTIVITY ON THE PRODUCTS BELOW 0.1 BQ/G ACCORDING TO EU RESOLUTION 2013/59/EURATOM , IAEA RS-G-1.7 AND IAEA SSG-17.

CE 0432

08 NOV. 2024
FRANCO CORBELLINI
QSQ
CROSSWIND

☑ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

DATE 05.04.2023

BARBARA VIETTI MV(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

-Cogne

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a : EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1
Nach/According to/Selon

Certificato nr. MEST091967 / 2023 /
Prüfung/Test/Essai

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura : Laminato - Solubilizzato Trafilato
Lieferzustand / Delivery state / Etat de livraison

Produttore :
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Tipo di Elaborazione: E+AOD
Erschmelzungsart / Melting process / Mode d'elaboration

Marchi di Fabbrica:
Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice
AV

Ordine nr: ORD N AQ2301562
Bestell / Your order / Commande

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Punzone del Collaudatore:
Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur
MR

Conferma ordine nr: MI23005383
Werks/Our Order/Rel nr.

Avviso di Spedizione: A-MI23004303
Lieferanzeige/Packing list/B.L.

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung / Brand / Nuance

Punzonatura: 1.4401/1.4404
Kennzeichnung / Marking / Marquage

**SPECIFICHE :**
Anforderungen / Requirements / Exigences

VAL STOCK W2 A/1 1.4404/316L A,CF
AD 2000-M. W 2 01/20 1.4401 A,CF (0)
AD 2000-M. W 2 01/20 1.4404 A,CF (1)
AISI . 316/316L
ASME SA182 2021 S31600/03 A (2)
ASME SA276 2021 S31600/03 A,CF (3)
ASME SA479 2021 S31600/03 A (4)
ASTM A182 2022A S31600/03 A (5)
ASTM A262 PR. E 2015 316/316L (6)
ASTM A276 2017 S31600/03 A,CF
ASTM A370 2022 .
ASTM A479 2021 S31600/03 A
ASTM E10 2018 .
ASTM E8 2022 .
EN 10088 PART 3 2014 1.4401 A,CF
EN 10088 PART 3 2014 1.4404 A,CF
EN 10272 2016. 1.4401 A,CF
EN 10272 2016. 1.4404 A,CF
ISO 148-1 2016 .
ISO 3651-2 98 METHOD A T1
ISO 6506-1 2014 .
ISO 6892-1 2019 .
ACH CO . .
PME HB L . .

Note:
Aufzeichnungen / Notes / Notes

(0)AD 2000-MERKBLATT W 2 edition 01.2020 AD 2000-MERKBLATT W 10 edition 01.2020
(1)AD 2000-MERKBLATT W 2 edition 01.2020 AD 2000-MERKBLATT W 10 edition 01.2020

(2)Section II Part A 2021 EDITION For products machined directly from bar refer to ASME SA479.
(3)Section II Part A 2021 EDITION

(4)Section II Part A 2021 EDITION
(5)For products machined directly from bar refer also to ASTM A479.
(6)Reapproved 2021

| | | Tolleranza: h9 - DIN671/EN10278<br>Toleranz/Allowance/Tolerance | | | | | |
|---|---|---|---|---|---|---|---|
| Pos. nr.<br>Pos. nr.<br>Item nr.<br>Nr. de poste | Oggetto<br>Gegenstand<br>Product description<br>Designation du produit | Dimensioni - mm<br>Abmessungen<br>Dimension<br>Dimension | Lunghezza - mm<br>Länge<br>Length<br>Longueur | Colata<br>Schmelze<br>Heat<br>Coulée | Pezzi<br>Stückzahl<br>Pieces<br>Pieces | Peso - KG<br>Gewicht<br>Weight<br>Poids | Lotto nr.<br>Losnr.<br>Lot nr.<br>Lot nr. |
| 0030 | Tondo | 13,000 | 3000/ 3040 | 290960 | | 32,0 | 217704330 |

C B NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND

REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 6 NOV 2024

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| | | | |
|---|---|---|---|
| **Vicenza, 13/07/2023**<br>VCQ008 - MEST091967 | **Direzione Qualità**<br>Qualitätsmanagement/Quality Management/Gestion Qualité<br>**R.BERTELLI** | **Direzione Prodotto**<br>Produktmanagement/Product Management/Direction Produit<br>**P.MESSORI** | Pagina<br>1 di 4 |

06 NOV. 2024 080
CROSSWIND R

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497

## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a: Nach/According to/Selon: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. Prüfung/Test/Essai: MEST091967 / 2023 /

Cliente / Besteller/Purchaser/Client:
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Ordine nr: ORD N AQ2301562
Bestell / Your order / Commande

Conferma ordine nr: MI23005383
Werks/Our Order/Ref nr

Avviso di Spedizione: A-MI23004303
Lieferanzeige/Packing list/B.L.

Stato di fornitura: Laminato - Solubilizzato Trafilato
Lieferzustand / Delivery state / Etat de livraison

Tipo di Elaborazione: E+AOD
Erschmelzungsart / Melting process / Mode d'elaboration

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung / Brand / Nuance

Produttore: ACCIAIERIE VALBRUNA S.P.A.
Hersteller/Item/Usine productrice

Marchi di Fabbrica: AV
Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice

Punzone del Collaudatore: MR
Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur

Punzonatura: 1.4401/1.4404
Kennzeichnung / Marking / Marquage

### TEST ALLO STATO DI FORNITURA
Test on delivery condition – Prüefung auf lieferbereitem produkt – test a l'etat de fourniture – Prueba sobre el material así come entregado

1) L=longitudinale/längs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | Posiz. Saggio Probenlage Location Emplacement 1) | Snervamento Streckgrenze Yield Stress Limite elastique Rp 0,2% N/mm2 | Snervamento Streckgrenze Yield Stress Limite elastique Rp 1% N/mm2 | Resistenza Zugfestigkeit Tensile strength Resistance à traction Rm N/mm2 | Allungamento Bruchdehnung Elongation Allongement A5 % | | Strizione Einschnürung Reduction of area Striction Z % | | Resilienza Kerbschlagarbeit Impact Value Resilience | | | Durezza Haerte Hardness Durete HB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti Anforderungen/Required values Valeurs demandées | | min / max | | 200 | 235 | 500 / 900 | 20 | - | - | - | - | | | - | | |
| A | 10 | 20 | L | 585 | 679 | 785 | 33 | | 67 | | | | | 255 | | |
| F | 10 | 20 | L | 588 | 681 | 789 | 32 | | 64 | | | | | 258 | | |

### TEST ALLO STATO DI FORNITURA
Test on delivery condition / Prüefung auf lieferbereitem produkt / Test a l'etat de fourniture / Prueba sobre el material así come entregado

| TEST | | min | max | |
|---|---|---|---|---|
| F | Dimensioni grano x ASTM E112 | | | 6 |

### Test allo stato di fornitura per ASTM A370

1) L=longitudinale/längs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | Posiz. Saggio Probenlage Location Emplacement 1) | Snervamento Streckgrenze Yield Stress Limite elastique Rp 0,2% N/mm2 | Snervamento Streckgrenze Yield Stress Limite elastique | Resistenza Zugfestigkeit Tensile strength Resistance à traction Rm N/mm2 | Allungamento Bruchdehnung Elongation Allongement E 4d % | | Strizione Einschnürung Reduction of area Striction RA % | | Resilienza Kerbschlagarbeit Impact Value Resilience | | | Durezza Haerte Hardness Durete HB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti Anforderungen/Required values Valeurs demandées | | min / max | | 205 | - | 515 | - | 30 | - | 50 | - | | | - | | |
| B | 12,5 | 20 | L | 579 | | 780 | | 35 | | 68 | | | | 253 | | |

### Charpy per ISO 148-1

1) L=longitudinale/längs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | Posiz. Saggio Probenlage Location Emplacement 1) | Resilienza Kerbschlagarbeit Impact Value Resilience KV2 | | | Espansione laterale Lateral Expansion | | | Shear Shear | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti Anforderungen/Required values Valeurs demandées | | min / max | | 50 | 50 | 50 | - | - | - | - | - | - |
| E | 10X5 | 20 | L | 99 | 89 | 94 | | | | | | |
| G | 10X5 | 20 | L | 102 | 86 | 84 | | | | | | |

Tensile testing according to ISO 6892-1
Impact testing according to ISO 148-1
Mechanical properties according to ASTM A370.
Brinnell hardness according to ASTM E10

REVIEW WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| Vicenza, 13/07/2023 | Direzione Qualità<br>Qualitätsmanagement/Quality Management/Gestion Qualité | Direzione Prodotto<br>Produktmanagement/Product Management/Direction Produit | Pagina |
|---|---|---|---|
| VCQ008 - MEST091967 | R.BERTELLI | P.MESSORI | 2 di 4 |

08 NOV. 2024.
CROSSWIND R


# Acciaierie Valbruna S.p.A.

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Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a : EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1
Nach/According to/Selon

Certificato nr. MEST091967 / 2023 /
Prüfung/Test/Essai

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Ordine nr: ORD N AQ2301562
Bestell
Your order
Commande

Conferma ordine nr: MI23005383
Werks/Our Order/Ref nr.

Avviso di Spedizione: A-MI23004303
Lieferanzeige/Packing list/B L

Stato di fornitura : Laminato - Solubilizzato Trafilato
Lieferzustand
Delivery state
Etat de livraison

Tipo di Elaborazione: E+AOD
Erschmelzungsart
Melting process
Mode d'elaboration

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung
Brand / Nuance

Produttore :
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Marchi di Fabbrica: AV
Zeichen des Lieferwerkes
Trade marks
Sigles de l'usine productrice

Punzone del Collaudatore: MR
Stempel des Werkssachverständigen
Inspector's stamp/Poinçon de l'assayeur

Punzonatura: 1.4401/1.4404
Kennzeichnung
Marking
Marquage

Tensile testing according to ASTM E8
Brinnell hardness according to ISO 6506-1

### Analisi chimica
Chemische Zusammensetzung/Chemical Analysis/Analyse chimique

| Colata /Heat<br>Schmelze/Coulée | min -<br>max 0,030 | -<br>1,00 | -<br>2,00 | 16,50<br>18,00 | 2,00<br>2,50 | 10,00<br>13,00 | -<br>- | -<br>0,045 | -<br>0,030 | -<br>0,100 | - | - | - | - | - |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | C % | Si % | Mn % | Cr % | Mo % | Ni % | Co % | P % | S % | N % | | | | | |
| 290960 | 0,015 | 0,46 | 1,56 | 16,74 | 2,02 | 10,00 | 0,125 | 0,029 | 0,027 | 0,063 | | | | | |

**Corrosion test in 16% sulfuric acid and copper sulfate solutions**

**Test standard:** UNI EN ISO 3651-2 Method A

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitized T1 | 20 | boil | 90 | 5 | Absence of cracks | **SATISFACTORY** |

**Corrosion test in 16% sulfuric acid and copper sulfate solutions**

**Test standard:** ASTM A262-Practice E

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitization | 15 | boil | 180 | 5 | Absence of cracks | **SATISFACTORY** |

Reduction ratio = 210,6 : 1
Material solution annealed 1040°C for 135'(total time)/
water cooled.
SURFACE QUALITY COMPLIANT TO EN 10088-3 TAB.1 COND. 2H
"Issued in agreement with TÜV SÜD Industrie Service GMBH
(07/1972)"
"Qs approved according to PED, Annex I, Para. 4.3 by
Notified Body 0036"
"(Certification no. DGR-0036-QS-W 23/2002/MUC)"

☑ REVIEW ☐ WITNESS
ON BEHALF OF RTG
A. DELLA PINA DATE 13/07/2023

Sono state soddisfatte tutte le condizioni richieste
Die gestellen Anforderungen sind it. Anlage erfüllt
The material has been furnished in accordance with the requirements
Le materiel à été trouvé conforme aux exigences

Controllo antimescolanza con tecnica XRF/OES portatile : OK
Verwechslungprüfung: durch XRF/QES Gerät geführt : OK
Antimixing testing performed with XRF/OES portable : OK
Contrôle antimélange svt technique XRF/QES portable : OK

Controllo visivo e dimensionale: soddisfa le esigenze
Besichtigung und Ausmessung: ohne Beanstandung
Visual inspection and dimensional checks:satisfactory
Contrôle visuel et dimensions: satisfaisant

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a : Nach/According to/Selon: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. Prüfung/Test/Essai: MEST091967 / 2023 /

Cliente / Besteller/Purchaser/Client:
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura : Lieferzustand / Delivery state / Etat de livraison: Laminato - Solubilizzato Trafilato

Produttore : Hersteller/Item/Usine productrice:
ACCIAIERIE VALBRUNA S.P.A.

Ordine nr: ORD N AQ2301562
Bestell / Your order / Commande

Tipo di Elaborazione: Erschmelzungsart / Melting process / Mode d'elaboration: E+AOD

Marchi di Fabbrica: Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice: AV

Conferma ordine nr: MI23005383
Werks/Our Order/Ref nr.

Qualità: Werkstoff/Grade/Nuance: 1.4401/1.4404/316/316L

Punzone del Collaudatore: Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur: MR

Avviso di Spedizione: A-MI23004303
Lieferanzeige/Packing list/B.L.

Marca: Markenbezeichnung / Brand / Nuance: MVAPML ( MAXIVAL )

Punzonatura: 1.4401/1.4404
Kennzeichnung / Marking / Marquage

Melted, poured and manufactured in Italy  No welding or weld repair  Material free from Mercury contamination

We declare that the finished product is checked for radioactive contamination by the portal system when it leaves the production plant.

The Quality Management System is also Certified according to Pressure Equipment Directive 2014/68/EU Annex 1,chapt.4.3 by TÜV and LLOYD`S
The Quality Management System is also Certified according to PER 2016/1105, Schedule 2, Part 4, Para 31 (8) by Competent Body TÜV SUD BABT Unlimited.
Any act of tampering, modification, alteration, counterfeiting and/or falsification and/or any other action which modifies the contents of this test certificate shall constitute a violation of applicable civil and criminal laws. Acciaierie Valbruna shall protect its rights and interests before any competent court, authority and jurisdiction.
Maxival and/or Valplus grades/products are manufactured with ladle techniques to control composition, distribution, size and shape of non-metallic inclusions for improved machinability.
The supplied product conforms to requirements expressly requested by the purchaser and conforms to requirements specified by certified norms and standards. Should the product be used for more severe, critical and/ or in any case different applications than those the material is generally intended for, any different and/or supplementary requirements shall be specifically demanded, at least, upon order of the Product by the Purchaser. Acciaierie Valbruna SpA shall not be responsible for any improper use of the Products.

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND

☒ REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLA PINA DATE

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| | | | |
|---|---|---|---|
| Vicenza, 13/07/2023<br>VCQ008 - MEST091967 | Direzione Qualità<br>Qualitätsmanagement/Quality Management/Gestion Qualité<br>R.BERTELLI | Direzione Prodotto<br>Produktmanagement/Product Management/Direction Produit<br>P.MESSORI | Pagina 4 di 4 |

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 405.563.167,00 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.

INSPECTION CERTIFICATE 3.1 (EN 10204:2004)
DOCUMENT NUMBER 2024015321


| | | | |
|---|---|---|---|
| CUSTOMER: | A.S.T. SPA | | |
| CUSTOMER'S ORDER: | AQ2400838 | | |
| MANUFACTURER'S WORKS: | AOSTA, VIA PARAVERA 16 - ITALY | | |
| PRODUCER OF THE DOC: | QUALITY DEPARTMENT | | |
| MANUFACTURER'S WORKS ORDER NO: | 0001140435 / 000020 | | |
| MARK OF THE MANUFACTURER: | **COGNE** | | |
| DISPATCH NOTE: | 0081605841 / 000010 WEIGHT: 588 KG / 1296 LB | | |
| INTERNAL SPEC: | STOCKBARREW2 | TECHNICAL RULE: | AD2000 |
| PRODUCT: | SPE ROUGHPEELED ROUND BARS | TOLERANCE: | + 1,500 - 0,0000 (+ 0,0591 - 0 in) |
| SURFACE FINISH: | 1X Hot Finished | | |
| PRODUCT DELIVERY CONDITION: | RS SOLUTION ANNEALED | | |
| PRODUCT DIMENSIONS (mm): | 125,000 ( 4,921 in) | LENGTH (mm) | 04000 06000 ( 00157 00236 in) |
| GRADE: | 316L-S31600/31603-1.4404/4401 | INTERNAL GRADE: | F316L IMCO |
| IDENTIFICATION HEAT NO: | 476355 | IDENTIFICATION LOT NO: | 172480 |
| MARKING OF THE PRODUCT: | 1.4404 | TEST PIECE N: | 248 |

STEELMAKING EAF + AOD + CONTINUOUS CASTING
AISI 316/316L - UNS S31600/S31603 - 1.4404/1.4401
ASTM A484 DOES NOT APPLY FOR SIZE AND LENGTH TOLERANCES.
REFERENCE NORMS: EN 10088-3 (14), EN 10272 (16), ASTM A276-r17/ASME SA276-21, ASTM A479/A479M-r21, ASTM A193-23 B8MCLASSE 1D, ASME SA276/SA276M-21,ASME SA479/SA479M-21, AMS 5653J, AMS 5648N, ISO15156-3/NACE MR0175 (15), NACE MR0103/ISO 17945 (15), NORSOK M630 MDSS01 REV5.
REFERENCE NORMS FOR CHEMICAL COMPOSITION AND MECHANICAL PROPERTIES: ASTM A182-23/ ASME SA182-21.
REFERENCE NORMS ONLY FOR CHEMICAL COMPOSITION: EN 10222-5 (17),ASTM A403-22b, ASTM A484-22, ASTM A314-23, AMS-QQ-S-763D.
ASME SECT.II PART A EDITION 2015-2017-2019-2021.
REFERENCE FOR APPLICABLE ASME STANDARD: SECTION II PART A ED. 2015-2017-2019-2021
HOT ROLLED
REDUCTION RATIO 4,3

CHEMICAL LADLE ANALYSIS ACCORDING TO ASTM A751 - EN ISO 14284
Control lot No. - Weight :020000997421 - 87.475 KG - 192.846 LB

| ELEMENTS | C | Si | Mn | P | S | N | Cr | Mo | Ni | Cu |
|---|---|---|---|---|---|---|---|---|---|---|
| MEASUREMENT UNIT | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w |
| OBTAINED | 0,016 | 0,37 | 1,80 | 0,027 | 0,028 | 0,076 | 16,76 | 2,08 | 10,15 | 0,63 |

| ELEMENTS | Co |
|---|---|
| MEASUREMENT UNIT | % w/w |
| OBTAINED | 0,21 |

HARDNESS TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000998222 - 7.789 KG - 17.172 LB
SPECIFICATION ENISO6506 HARDNESS TEST HB TESTING METHOD: 10/3000
OBTAINED 148

FRANCO CORBELLINI
08 NOV. 2024
CROSSWIND

☑ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE

DATE 27.03.2024

MORABITO ROSA CF(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

-Cogne

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 405.563.167,00 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.

INSPECTION CERTIFICATE 3.1 (EN 10204:2004)
DOCUMENT NUMBER 2024015321


IMPACT TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000998222 - 7.789 KG - 17.172 LB
SPECIFICATION EN ISO 148-1-KV2 DIRECTION OF THE TEST PIECE: L
TYPE OF TEST PIECE KV
TEST TEMPERATURE °C 20
MEASUREMENT UNIT J
OBTAINED 438 426 430 430 439 428 427 426 438 440
434 432

TENSILE TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000998222 - 7.789 KG - 17.172 LB
SPECIFICATION EN-ISO6892-1 DIRECTION OF THE TEST PIECE: L

| MEASUREMENT UNIT | RM MPA | RP02 MPA | A5 % 5.0 D | Z % | RP1 MPA |
|---|---|---|---|---|---|
| OBTAINED | 565 | 265 | 55,8 | 73,1 | 303 |
| | 571 | 265 | 54,0 | 76,3 | 306 |
| | 560 | 255 | 60,5 | 78,0 | 296 |
| | 558 | 247 | 58,0 | 80,4 | 298 |

GRAIN SIZE
Control lot No. - Weight :020000998222 - 7.789 KG - 17.172 LB
SPECIFICATION ASTME112 --
OBTAINED 5

IMPACT TEST
Control lot No. - Weight :020000998222 - 7.789 KG - 17.172 LB
SPECIFICATION EN ISO 148-1 DIRECTION OF THE TEST PIECE: L
TYPE OF TEST PIECE KV
TEST TEMPERATURE °C 196-
MEASUREMENT UNIT J
OBTAINED 196 217 190 198 207 206 206 203 193 203
195 196

TENSILE TEST
Control lot No. - Weight :020000998222 - 7.789 KG - 17.172 LB
SPECIFICATION ASTMA370-E8-0.5"SPEC DIRECTION OF THE TEST PIECE: L

| MEASUREMENT UNIT | TS KSI | YS KSI | RA % | EL % 4,0 D |
|---|---|---|---|---|
| OBTAINED | 82 | 37 | 74,8 | 60,0 |
| | 82 | 37 | 76,4 | 65,3 |
| | 82 | 37 | 77,9 | 59,3 |
| | 81 | 37 | 81,3 | 66,0 |

CROSSWIND
FRANCO CORBELLINI
08 NOV 2024
REVIEW WITNESS
ON BEHALF OF RSQ
A. DELLA PINA DATE

DATE 27.03.2024

MORABITO ROSA CF(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

-Cogne

COGNE ACCIAI SPECIALI S.p.a.

ITALY - 11100 AOSTA - VIA PARAVERA, 16
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CAP. SOC. 405.563.167,00 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.





COUNTRY OF MELTING AND ORIGIN: ITALY, THE MATERIAL COMPLIES WITH FAR DFARS 252.225-7009 ALT 1.
DOCUMENT ISSUED IN AGREEMENT WITH TUEV BAYERN(11.1972) WAVING OF COUNTERSIGNING (SEE TUEV BAYERN LETTER DATED 17.01.80).
MARKING: SYMBOL OF THE MANUF. WORK, MATERIAL N. , CAST N., LOT N., RECEIVING AGENT STAMP
CORROSION TEST ACCORDING TO ASTM A262/02A Practice.E EN ISO 3651-2 A: SATISFACTORY.
VISUAL INSPECTION OF SURFACE AND DIMENSIONAL CONTROL ACCORDING TO EN 10221 CLASS C AND EN 10060: SATISFACTORY.
ULTRASONIC TEST ACCORDING TO EN 10308 Class 3, equivalent to ASTM A388 FBH 5 (DIAM. 100-250) and FBH 8 (DIAM. 250-400) or to EN10228-4 Class 3: SATISFACTORY.
ANTIMIX TEST WITH PORTABLE SPECTROMETER: SATISFACTORY.
NO WELDING REPAIR ON THE MATERIAL.
FREE FROM RADIOACTIVE CONTAMINATION.
ULTRASONIC TEST ACCORDING TO EN 10308 Class.3, EN 10228 Class.3, ASTM A388 FBH 5 (diam. 102-250), FBH 8 (diam. 250,01-400).
MATERIAL IN COMPLIANCE WITH THE NORSOK M-630 MDS S01
RADIOACTIVITY CONTROL PERFORMED WITH A GAMMA SPECTROMETER: ASTM E181.
GAMMA ACTIVITY ON THE PRODUCTS BELOW 0.1 BQ/G ACCORDING TO EU RESOLUTION 2013/59/EURATOM , IAEA RS-G-1.7 AND IAEA SSG-17.
QUALITY SYSTEM CERTIFIED BY KIWA CERMET ACCORDING TO UNI EN ISO 9001:2015 -IATF 16949:2016 (THE LAST ONE ONLY FOR WIRE ROD AND HOT ROLLED-PEELED-GROUND STAINLESS STEEL BARS).
THE PRODUCT IS CONFORMING TO THE CONTRACT AGREEMENT AND TO THE RULE AD2000-MERKBLATT W0/W2.
INSPECTOR'S STAMP LF
MATERIAL CONFORM TO: 2015/863/EU (RoHS3) - 2011/65/EU (RoHS2) - 2000/53/EU - 2002/95/EU (RoHS) - 2003/11/EU - 2005/618/EU - PED 2014/68/EU e PE(S)R 2016/1105
THE MATERIAL IS FREE OF ANY MERCURY, MERCURY COMPOUNDS AND OR RADIUM CONTAMINATION AT TIME OF SHIPMENT AND WAS PRODUCED WITHOUT USING OZONE DEPLETING SUBSTANCES OF CLASS I AND II.
REFERENCE NORMS: EN 10088-3 (14), EN 10272 (16), ASTM A276-r17/ASME SA276-21, ASTM A479/A479M-r21, ASTM A193-23 B8MCLASSE 1D, ASME SA276/SA276M-21,ASME SA479/SA479M-21, AMS 5653J, AMS 5648N, ISO15156-3/NACE MR0175 (15), NACE MR0103/ISO 17945 (15), NORSOK M630 MDSS01 REV5.
REFERENCE NORMS FOR CHEMICAL COMPOSITION AND MECHANICAL PROPERTIES: ASTM A182-23/ ASME SA182-21.
REFERENCE NORMS ONLY FOR CHEMICAL COMPOSITION: EN 10222-5 (17),ASTM A403-22b, ASTM A484-22, ASTM A314-23, AMS-QQ-S-763D.
ASME SECT.II PART A EDITION 2015-2017-2019-2021.
WHERE NOT SPECIFIED ALL THE NORMS MENTIONED ARE INTENDED IN THEIR LAST REVISION AT THE DATE OF ISSUE OF THIS DOCUMENT.
ASTM A484 DOES NOT APPLY FOR SIZE AND LENGTH TOLERANCES.

08 NOV. 2024
FRANCO CORBELLINI
QSQ
CROSSWIND

REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE

DATE 27.03.2024

MORABITO ROSA CF(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

-Cogne

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497

## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a : EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1
Nach/According to/Selon

Certificato nr. MEST112865 / 2022 /
Prüfung/Test/Essai

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura : Laminato - Solubilizzato Rettificato
Lieferzustand / Delivery state / Etat de livraison

Produttore :
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Ordine nr: ORD.N.AQ2202071
Bestell / Your order / Commande

Tipo di Elaborazione: E+AOD
Erschmelzungsart / Melting process / Mode d'elaboration

Marchi di Fabbrica: AV
Zeichen des Liefernwerkes / Trade marks / Sigles de l'usine productrice

Conferma ordine nr: MI22008136
Werks/Our Order/Ref nr.

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Punzone del Collaudatore: MR
Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur

Avviso di Spedizione: A-MI22006725
Lieferanzeige/Packing list/B.L.

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung / Brand / Nuance

Punzonatura: 1.4401/4/316/L
Kennzeichnung / Marking / Marquage

**SPECIFICHE :**
Anforderungen / Requirements / Exigences

VAL STOCK 2020 1.4404/316L A,CF
AISI 316
AISI 316L
ASME SA276 2019 S31600 A,CF (0)
ASME SA276 2019 S31603 A,CF (1)
ASME SA479 2019 S31600 A (2)
ASME SA479 2019 S31603 A (3)
ASTM A262 2015 PRACTICE E (4)
ASTM A276 2017 S31600 A,CF
ASTM A276 2017 S31603 A,CF
ASTM A370 2020 .
ASTM A479 2020 S31600 A
ASTM A479 2020 S31603 A
ASTM E10 2018 .
ASTM E8 2021 .
EN 10088-3 2014 1.4401 A,CF
EN 10088-3 2014 1.4404 A,CF
EN 10272 2007 1.4401 A,CF
EN 10272 2007 1.4404 A,CF
ISO 6506-1 2014 .
ISO 6892-1 2019 .

Note:
Aufzeichnungen / Notes / Notes

(0)Section II Part A 2019 EDITION
(1)Section II Part A 2019 EDITION
(2)Section II Part A 2019 EDITION
(3)Section II Part A 2019 EDITION
(4)Reapproved 2021

| | | Tolleranza: h8 - DIN670/EN10278<br>Toleranz/Allowance/Tolerance | | | | | |
|---|---|---|---|---|---|---|---|
| Pos. nr.<br>Pos. nr.<br>Item nr.<br>Nr. de poste | Oggetto<br>Gegenstand<br>Product description<br>Descrip. du produit | Dimensioni - mm<br>Abmessungen<br>Dimension<br>Dimension | Lunghezza - mm<br>Lange<br>Length<br>Longueur | Colata<br>Schmelze<br>Heat<br>Coulée | Pezzi<br>Stückzahl<br>Pieces<br>Pieces | Peso - KG<br>Gewicht<br>Weight<br>Poids | Lotto nr.<br>Losnr.<br>Lot nr.<br>Lot nr. |
| 0070 | Tondo | 10,000 | 2900/ 3100 | 276383 | | 18,0 | 729305910 |

08 NOV. 2024
FRANCO CORBELLINI
080
CROSSWIND

REVIEW WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| | | | |
|---|---|---|---|
| **Vicenza, 09/11/2022**<br>VCQ052 - MEST112865 | **Direzione Qualità**<br>Qualitätsmanagement/Quality Management/Gestion Qualité<br>**R.BERTELLI** | **Direzione Prodotto**<br>Produktmanagement/Product Management/Direction Produit<br>**P.MESSORI** | Pagina 1 di 3 |

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a : EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1
Nach/According to/Selon

Certificato nr. MEST112865 / 2022 /
Prüfung/Test/Essai

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura : Laminato - Solubilizzato Rettificato
Lieferzustand / Delivery state / Etat de livraison

Produttore :
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Ordine nr: ORD.N.AQ2202071
Bestell / Your order / Commande

Tipo di Elaborazione: E+AOD
Erschmelzungsart / Melting process / Mode d'elaboration

Marchi di Fabbrica:
Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice
AV

Conferma ordine nr: MI22008136
Werks/Our Order/Ref nr.

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Punzone del Collaudatore:
Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur
MR

Avviso di Spedizione: A-MI22006725
Lieferanzeige/Packing list/B.L.

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung / Brand / Nuance

Punzonatura: 1.4401/4/316/L
Kennzeichnung / Marking / Marquage

### TEST ALLO STATO DI FORNITURA
Test on delivery condition Prüefung auf lieferbereitem produkt test a l'etat de fourniture Prueba sobre el material así come entregado

1) L=longitudinale/längs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg.diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | Posiz. Saggio Probentage Location Emplacement 1) | Snervamento Streckgrenze Yield Stress Limite elastique Rp 0,2% N/mm2 | Snervamento Streckgrenze Yield Stress Limite elastique Rp 1% N/mm2 | Resistenza Zugfestigkeit Tensile strength Resistance à traction Rm N/mm2 | Allungamento Bruchdehnung Elongation Allongement A5 % | Allungamento E 4d % | Strizione Einschnürung Reduction of area Striction Z % | Strizione RA % | Resilienza Kerbschlagarbeit Impact Value Resilience | | | Durezza Haerte Hardness Durete HB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti Anforderungen/Required values Valeurs demandées | | min | | 310 | 235 | 620 | 20 | 30 | - | 40 | - | | | - | | |
| | | max | | | | 900 | | | | | | | | 315 | | |
| A | 10 | 20 | L | 477 | 559 | 665 | 47 | 50 | 70 | 70 | | | | 225 | | |
| B | 10 | 20 | L | 482 | 561 | 669 | 46 | 50 | 69 | 69 | | | | 228 | | |

### TEST ALLO STATO DI FORNITURA
Test on delivery condition / Prüefung auf lieferbereitem produkt / Test a l'etat de fourniture / Prueba sobre el material así come entregado

| TEST | | min | max | |
|---|---|---|---|---|
| A | Dimensioni grano x ASTM E112 | | | 7 |

Mechanical properties according to ASTM A370.
Brinnell hardness according to ASTM E10
Tensile testing according to ASTM E8
Brinnell hardness according to ISO 6506-1
Tensile testing according to ISO 6892-1

### Analisi chimica
Chemische Zusammensetzung/Chemical Analysis/Analyse chimique

| Colata /Heat Schmelze/Coulée | min - max | - 1,00 | - 2,00 | 16,50 18,00 | 2,00 2,50 | 10,00 13,00 | - 0,045 | - 0,030 | - 0,100 | - | - | - | - | - | - |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | C % | Si % | Mn % | Cr % | Mo % | Ni % | P % | S % | N % | | | | | | |
| 276383 | 0,014 | 0,63 | 1,44 | 16,84 | 2,07 | 10,06 | 0,028 | 0,026 | 0,061 | | | | | | |

**Corrosion test in 16% sulfuric acid and copper sulfate solutions**

**Test standard:** ASTM A262-Practice E

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitization | 15 | boil | 180 | 5 | Absence of cracks | SATISFACTORY |

FRANCO CORBELLINI
08 NOV. 2024
CROSSWIND

REVIEW WITNESS
ON BEHALF OF RTC
A. DELLA VINA DATE

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| Vicenza, 09/11/2022 | Direzione Qualità | Direzione Prodotto | Pagina |
|---|---|---|---|
| VCQ052 - MEST112865 | Qualitätsmanagement/Quality Management/Gestion Qualité | Produktmanagement/Product Management/Direction Produit | 2 di 3 |
| | R.BERTELLI | P.MESSORI | |

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a : Nach/According to/Selon: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. Prüfung/Test/Essai: MEST112865 / 2022 /

Cliente / Besteller/Purchaser/Client:
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura : Lieferzustand / Delivery state / Etat de livraison: Laminato - Solubilizzato Rettificato

Produttore : Hersteller/Item/Usine productrice:
**ACCIAIERIE VALBRUNA S.P.A.**

Ordine nr: Bestell / Your order / Commande: ORD.N.AQ2202071

Tipo di Elaborazione: Erschmelzungsart / Melting process / Mode d'elaboration: E+AOD

Marchi di Fabbrica: Zeichen des Liefernwerkes / Trade marks / Sigles de l'usine productrice: AV

Conferma ordine nr: Werks/Our Order/Ref nr.: MI22008136

Qualità: Werkstoff/Grade/Nuance: 1.4401/1.4404/316/316L

Punzone del Collaudatore: Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur: MR

Avviso di Spedizione: Lieferanzeige/Packing list/B.L.: A-MI22006725

Marca: Markenbezeichnung / Brand / Nuance: MVAPML ( MAXIVAL )

Punzonatura: Kennzeichnung / Marking / Marquage: 1.4401/4/316/L

**Corrosion test in 16% sulfuric acid and copper sulfate solutions**

**Test standard:** UNI EN ISO 3651-2 Method A

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitized T1 | 20 | boil | 90 | 5 | Absence of cracks | SATISFACTORY |

Reduction ratio = 374,4 : 1
Material solution annealed 1060° C for 0.5h/air cooled.

Sono state soddisfatte tutte le condizioni richieste
Die gestellen Anforderungen sind it. Anlage erfüllt
The material has been furnished in accordance with the requirements
Le materiel â eté trouvé conforme aux exigences

Controllo antimescolanza con tecnica XRF/OES portatile : OK
Verwechslungprüfung: durch XRF/QES Gerät geführt : OK
Antimixing testing performed with XRF/OES portable : OK
Contrôle antimélange svt technique XRF/QES portable : OK

Controllo visivo e dimensionale: soddisfa le esigenze
Besichtigung und Ausmessung: ohne Beanstandung
Visual inspection and dimensional checks:satisfactory
Contrôle visuel et dimensions: satisfaisant

Melted, poured and manufactured in Italy  No welding or weld repair  Material free from Mercury contamination

We declare that the finished product is checked for radioactive contamination by the portal system when it leaves the production plant.

The Quality Management System is also Certified according Pressure Equipment Directive 2014/68/EU Annex 1,chapt.4.3 by TÜV and LLOYD'S
Any act of tampering, modification, alteration, counterfeiting and/or falsification and/or any other action which modifies the contents of this test certificate shall constitute a violation of applicable civil and criminal laws. Acciaierie Valbruna shall protect its rights and interests before any competent court, authority and jurisdiction.
Maxival and/or Valplus grades/products are manufactured with ladle techniques to control composition, distribution, size and shape of non-metallic inclusions for improved machinability.
The supplied product conforms to requirements expressly requested by the purchaser and conforms to requirements specified by certified norms and standards. Should the product be used for more severe, critical and/ or in any case different applications than those the material is generally intended for, any different and/or supplementary requirements shall be specifically demanded, at least, upon order of the Product by the Purchaser. Acciaierie Valbruna SpA shall not be responsible for any improper use of the Products.

V3PC37000C7C1BD9C17D4051FBD36E48DC2

08 NOV. 2024
FRANCO CORBELLINI
CROSSWING

REVIEW ☐ WITNESS
ON BEHALF OF RTC
A. BELLAPINA DATE

**QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D**

| | | | |
|---|---|---|---|
| **Vicenza, 09/11/2022**<br>VCQ052 - MEST112865 | **Direzione Qualità**<br>Qualitätsmanagement/Quality Management/Gestion Qualité<br>**R.BERTELLI** | **Direzione Prodotto**<br>Produktmanagement/Product Management/Direction Produit<br>**P.MESSORI** | Pagina 3 di 3 |

**AST S.p.A.**
Via R. Merendi, 40
I-20007 Cornaredo MI

P +39 02 934848.1
F +39 02 9362248
W www.astspa.it

**MATERIAL CERTIFICATES INDEX**
**CERTIFICATO DEI MATERIALI**

**No.** 2400586

EN 10204 3.1

**Customer**
ROSETTI MARINO S.P.A.

**P.Order / Project**
1724000740 123A90A Rev. 1

**ITEM Number**
10-60

**Tag**
25-FV-034

**Quantity delivered**
1

**AST Job**
CV2400221

**AST Code**
CV2400221CV8407A000

**Serial Number**
2400586

**Valve Type**
Valvole Regolazione

**Size**
NPS 1" CL.300 RF

**Port Size**
1/4"

| Part Name | Material | Heat No. | Certificate No. | Supplier |
|---|---|---|---|---|
| BODY | ASTM A351 CF3M | E360 | E360 | SGA Alloys Private Limited |
| SEAT RING | ASTM A479 316/316L | 372445 | 2023016714 | COGNE ACCIAI SPECIALI SPA |
| PLUG | F316 + PTFE | 290960 | MEST091967/2023/ | ACCIAIERIE VALBRUNA |
| BONNET | ASTM A479 316/316L | 476355 | 2024015321 | COGNE ACCIAI SPECIALI SPA |
| STEM | ASTM A479 316/316L | 276383 | MEST112865-2022 | ACCIAIERIE VALBRUNA |

08 NOV. 2024
FRANCO CORBELLINI
QBO
CROSSWIND

☒ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

**Remarks** :

**AST Q.C. Department**

**Customer's Inspector**

**Third Party Inspection**

**Date** : 05.11.2024 **Date** : _____ **Date** : _____

# SGA ALLOYS PRIVATE LIMITED

( Formerly Known as Sri Ganapathy Steel Alloy Casting )
ISO 9001 : 2015 CERTIFIED COMPANY
SF.NO:10/1,NALLAGOUNDENPALAYAM,,KADUVETTIPALAYAM POST,SULUR TKCOIMBATORE Pin :641659,
Phone :9159530466,9159533064, email :sgaalloys2018@gmail.com

## MATERIAL TEST CERTIFICATE
AS PER EN 10204 - 3.1

**Customer** : ECO TECH CASTINGS INDIA (P) LTD
COIMBATORE 641018

T.C. No. : **E360**
T.C.Date : **20/09/2021**

**P.Order No.** : ECO/21-22/134 Dt. 05/08/2021

Heat No. : **E360**
Pouring Date : **02/09/2021**

**Specification** : **ASTM A351 Gr.CF3M - 2018**

CASTING PROCESSED BY INDUCTION MELTING

FOUNDRY IDENTIFICATION :SGA

**TEST SPEC AS PER ASTM A703-2020 CHEMICAL COMPOSITION - %**

| Element | | C | Mn | Si | P | S | Cr | Ni | Mo | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Req. | Min | --- | --- | --- | --- | --- | 17.000 | 9.000 | 2.000 | | | | | | |
| | Max | 0.030 | 1.500 | 1.500 | 0.040 | 0.040 | 21.000 | 13.000 | 3.000 | | | | | | |
| **Actual** | | **0.023** | **0.937** | **0.560** | **0.028** | **0.001** | **17.698** | **9.662** | **2.166** | | | | | | |

**HEAT TREATMENT :** SOLUTION ANNEALING: Heated to 1080 ° C, Soaked for 3 Hrs and then water Quenched.

**TENSILE TEST AS PER ASTM A370-2020 MECHANICAL PROPERTIES IMPACT TEST AS PER ASTM E23-16**

| Requirments | Yield Strength | Tensile Strength | % Elongation | % Reduction of Area | Hardness | Bend Test | Impact Test In (Joules) (10mm X 10mm X 55mm) Impact at -196 °c & 40jmin | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Mpa | MPa | GL :50 mm | | BHN | D =3T | | | | |
| | 0.2% Proof Stress | - | - | - | - | at 120 ° | | | | |
| **Minimum** | 205 | 485 | 30.00 | --- | --- | | | | | |
| **Maximum** | --- | --- | --- | --- | 237 | - | 1 | 2 | 3 | Avg |
| **Actual** | **243** | **534** | **51.60** | **---** | 160 | **--** | **82** | **78** | **76** | **78.67** |

**ITEM DESCRIPTION**

| SL.No. | Product | Description | Drawing No. | Part No. | Poured Qty |
|---|---|---|---|---|---|
| 1 | C20005 | BODY CV 8400(AT220) | M028 REV.0 | CABDWG0028 | 5 |

Remarks : **Separate test bar poured and the same bar tested for chemical and mechanical properties**
**Tensile Testing conducted on round specimen at room temperature**
**These casting has been acid pickled and passivated**
**Casting meet the requirement of NACE MR0175 / ISO 15156**
**Radio activity checked and found to be 0.10 Bequerel/Gram**
**Carbon steel fully killed Condition**
**Visual inspection carried out at as per MSS SP-55, found satisfied**

08 NOV. 2024
FRANCO CORBELLINI
QBO
CROSSWIND

We here by certify that the items mentioned above have been tested, Inspected and found to be in accordance with customer's drawing, specification, purchase order and satisfy the requirements of ASTM A351 Gr.CF3M - 2018,

for SGA ALLOYS PRIVATE LIMITED

K.ARUNKUMAR
Prepared By

☐ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLAPINA DATE 08 NOV 2024

K.KARTHIKEYAN
QUALITY ASSURANCE

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 250.000.000 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.

# INSPECTION CERTIFICATE 3.1 (EN 10204:2004)

DOCUMENT NUMBER 2023016714



| | |
|---|---|
| CUSTOMER: | A.S.T. SPA |
| CUSTOMER'S ORDER: | AQ2301925 |
| MANUFACTURER'S WORKS: | AOSTA, VIA PARAVERA 16 - ITALY |
| PRODUCER OF THE DOC: | OUALITY DEPARTMENT |
| MANUFACTURER'S WORKS ORDER NO: | 0001136538 / 000020 |
| MARK OF THE MANUFACTURER: | **COGNE** |
| DISPATCH NOTE: | 0081566096 / 000020 WEIGHT: 190 KG / 419 LB |
| INTERNAL SPEC: | STOCKBARREW2 TECHNICAL RULE: AD2000 |
| PRODUCT: | PEL PEELED ROUND BARS TOLERANCE: ISOK11 |
| SURFACE FINISH: | 2B Cold Finished |
| PRODUCT DELIVERY CONDITION: | RS SOLUTION ANNEALED |
| PRODUCT DIMENSIONS (mm): | 50,000 ( 1,969 in) LENGTH (mm) 03000 03100 ( 00118 00122 in) |
| GRADE: | 316L-S31600/31603-1.4404/4401 INTERNAL GRADE: F316L IMCO |
| IDENTIFICATION HEAT NO: | 372445 IDENTIFICATION LOT NO: 725970 |
| MARKING OF THE PRODUCT: | 1.4404 TEST PIECE N: 597 |

REFERENCE NORMS: EN 10088-3 2014, EN 10272 2016, ASTM A276/A276M, ASTM A479/A479M, ASTM A193 B8MCLASSE 1D, ASME SA276/SA276M, ASME SA479/SA479M, AMS 5653J, AMS 5648N, ISO15156-3/NACE MR0175 2015, NACE MR0103/ISO 17945, NORSOK M630 MDSS01 REV5.
REFERENCE NORMS FOR CHEMICAL COMPOSITION AND MECHANICAL PROPERTIES: ASTM A182, ASME SA182.
REFERENCE NORMS ONLY FOR CHEMICAL COMPOSITION: EN 10222-5 2017,ASTM A403-07a, ASTM A484-18a,ASTM A314-08, AMS-QQ-S-763D.
ASME SECT.II PART A EDITION 2015-2017-2019-2021
AISI 316/316L - UNS S31600/S31603 - 1.4404/1.4401
THE PRODUCT IS CONFORMING TO THE CONTRACT AGREEMENT AND TO THE RULE AD2000-MERKBLATT W0/W2.
STEELMAKING EAF + AOD + CONTINUOUS CASTING
ASTM A484 DOES NOT APPLY FOR SIZE AND LENGTH TOLERANCES.
STEELMAKING EAF + AOD + CONTINUOUS CASTING
REFERENCE FOR APPLICABLE ASME STANDARD: SECTION II PART A ED. 2015-2017-2019-2021
HOT ROLLED
REDUCTION RATIO 11,8

CHEMICAL LADLE ANALYSIS ACCORDING TO ASTM A751 - EN ISO 14284
Control lot No. - Weight :020000959742 - 85.921 KG - 189.420 LB

| ELEMENTS | C | Si | Mn | P | S | N | Cr | Mo | Ni | Cu |
|---|---|---|---|---|---|---|---|---|---|---|
| MEASUREMENT UNIT | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w |
| OBTAINED | 0,018 | 0,26 | 1,77 | 0,026 | 0,028 | 0,077 | 16,97 | 2,04 | 10,28 | 0,46 |
| ELEMENTS | Co | | | | | | | | | |
| MEASUREMENT UNIT | % w/w | | | | | | | | | |
| OBTAINED | 0,16 | | | | | | | | | |

HARDNESS TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000960410 - 7.449 KG - 16.422 LB

| SPECIFICATION | | HARDNESS TEST | TESTING METHOD: |
|---|---|---|---|
| OBTAINED | 157 | ENISO6506 | HB 10/3000 |

REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLA PINA DATE 08 NOV 2024

08 NOV. 2024

FRANCO CORBELLINI
QSO
CROSSWIND

DATE 05.04.2023

BARBARA VIETTI MV(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

-Cogne

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 250.000.000 EUR INT. VERS.
C.F. 02167360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.

INSPECTION CERTIFICATE 3.1 (EN 10204:2004)
DOCUMENT NUMBER 2023016714


1724000740-QC-DB-00016_01

IMPACT TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000960410 - 7.449 KG - 16.422 LB
SPECIFICATION EN ISO 148-1-KV2
TYPE OF TEST PIECE DIRECTION OF THE TEST PIECE: L
TEST TEMPERATURE °C KV
MEASUREMENT UNIT 20
OBTAINED J

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 435 | 430 | 428 | 435 | 438 | 439 | 429 | 435 | 436 | 426 |
| 432 | 434 | | | | | | | | |

TENSILE TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000960410 - 7.449 KG - 16.422 LB
SPECIFICATION EN-ISO6892-1 DIRECTION OF THE TEST PIECE: L

| MEASUREMENT UNIT | RM MPA | RP02 MPA | A5 % 5.0 D | Z % | RP1 NMM |
|---|---|---|---|---|---|
| OBTAINED | 611 | 282 | 55,2 | 78,3 | 325 |
| | 613 | 287 | 51,3 | 72,1 | 342 |
| | 614 | 301 | 48,8 | 73,1 | 341 |
| | 612 | 272 | 56,7 | 76,3 | 325 |

GRAIN SIZE
Control lot No. - Weight :020000960410 - 7.449 KG - 16.422 LB
SPECIFICATION ASTME112 --
OBTAINED 6

MATERIAL IN COMPLIANCE WITH THE NORSOK M-630 MDS S01
IMPACT TEST
Control lot No. - Weight :020000960410 - 7.449 KG - 16.422 LB
SPECIFICATION EN ISO 148-1
TYPE OF TEST PIECE DIRECTION OF THE TEST PIECE: L
TEST TEMPERATURE °C KV
MEASUREMENT UNIT 196-
OBTAINED J

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 198 | 185 | 195 | 190 | 177 | 173 | 173 | 173 | 197 | 175 |
| 192 | 179 | | | | | | | | |

TENSILE TEST
Control lot No. - Weight :020000960410 - 7.449 KG - 16.422 LB
SPECIFICATION ASTMA370-E8-0.5"SPEC DIRECTION OF THE TEST PIECE: L

| MEASUREMENT UNIT | RMB KSI | RP02B KSI | ZB % | AL2B % 4,0 D |
|---|---|---|---|---|
| OBTAINED | 88 | 40 | 78,0 | 57,6 |
| | 89 | 41 | 73,3 | 55,7 |
| | 89 | 41 | 72,9 | 54,0 |
| | 89 | 40 | 78,1 | 61,1 |

☐REVIEW ☐WITNESS
ON BEHALF OF
A. DELLA PINA DATE 08 NOV 2024

08 NOV. 2024
FRANCO CORBELLINI
CROSSWIN

DATE 05.04.2023

BARBARA VIETTI MV(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

-Cogne

COGNE ACCIAI SPECIALI S.p.a.

ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 250.000.000 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.



1724000740-QC-DB-00016_01

COUNTRY OF MELTING AND ORIGIN: ITALY, THE MATERIAL COMPLIES WITH FAR DFARS 252.225-7009 ALT 1.
The products delivered are conforming to EN10088-5 and bear the CE marking on the basis of the test results here reported and the continuous surveillance, assessment and approval by MPA NRW (certificate no. 0432-CPR-00166-01)
Material produced according to the system #Regulation 305/2011/EU of the European Parliament and of the Council of 9 March 2011#
DOCUMENT ISSUED IN AGREEMENT WITH TUEV BAYERN(11.1972) WAVING OF COUNTERSIGNING (SEE TUEV BAYERN LETTER DATED 17.01.80).
MARKING: SYMBOL OF THE MANUF. WORK, MATERIAL N. , CAST N., LOT N., RECEIVING AGENT STAMP
CORROSION TEST ACCORDING TO ASTM A262 PRACTICE E EN ISO 3651-2 PRACTICE A: SATISFACTORY.
ANTIMIXING TEST BY PORTABLE SPECTROMETRE: CONFORMING
EDDY CURRENT INSPECTION OF SURFACE ACCORDING TO EN 10277 CLASS 4.
DIMENSIONAL CONTROL ACCORDING TO EN 10278: SATISFACTORY.
NO WELDING REPAIR ON THE MATERIAL.
ULTRASONIC TEST ACCORDING TO EN 10308 Class.3: SATISFACTORY
QUALITY SYSTEM CERTIFIED BY KIWA CERMET ACCORDING TO UNI EN ISO 9001:2015 -IATF 16949:2016 (THE LAST ONE ONLY FOR WIRE ROD AND HOT ROLLED-PEELED-GROUND STAINLESS STEEL BARS).
INSPECTOR'S STAMP LF
MATERIAL CONFORM TO: 2015/863/UE (RoHS3) - 2011/65/UE (RoHS2) - 2000/53/UE - 2002/95/UE (RoHS) - 2003/11/UE - 2005/618/UE - PED 2014/68/UE e PE(S)R 2016/1105
THE MATERIAL IS FREE OF ANY MERCURY, MERCURY COMPOUNDS AND OR RADIUM CONTAMINATION AT TIME OF SHIPMENT AND WAS PRODUCED WITHOUT USING OZONE DEPLETING SUBSTANCES OF CLASS I AND II.
RADIOACTIVITY CONTROL PERFORMED WITH A GAMMA SPECTROMETER: ASTM E181.
GAMMA ACTIVITY ON THE PRODUCTS BELOW 0.1 BQ/G ACCORDING TO EU RESOLUTION 2013/59/EURATOM , IAEA RS-G-1.7 AND IAEA SSG-17.

CE 0432

FRANCO CORBELLINI
DBO
CROSSWIND
08 NOV. 2024

☑ REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLA PINA DATE 08 NOV 2024

DATE 05.04.2023

BARBARA VIETTI MV(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

-Cogne

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a : EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1
Nach/According to/Selon

Certificato nr. MEST091967 / 2023 /
Prüfung/Test/Essai

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Ordine nr: ORD N AQ2301562
Bestell
Your order
Commande

Conferma ordine nr: MI23005383
Werks/Our Order/Ref nr.

Avviso di Spedizione: A-MI23004303
Lieferanzeige/Packing list/B L.

Stato di fornitura : Laminato - Solubilizzato Trafilato
Lieferzustand
Delivery state
Etat de livraison

Tipo di Elaborazione: E+AOD
Erschmelzungsart
Melting process
Mode d'elaboration

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung
Brand / Nuance

Produttore :
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Marchi di Fabbrica:
Zeichen des Liefernwerkes
Trade marks
Sigles de l'usine productrice
AV

Punzone del Collaudatore:
Stempel des Werkssachverständigen
Inspector's stamp/Poinçon de l'assayeur
MR

Punzonatura: 1.4401/1.4404
Kennzeichnung
Marking
Marquage

**SPECIFICHE :**
Anforderungen / Requirements / Exigences

VAL STOCK W2 A/1 1.4404/316L A,CF
AD 2000-M. W 2 01/20 1.4401 A,CF (0)
AD 2000-M. W 2 01/20 1.4404 A,CF (1)
AISI . 316/316L
ASME SA182 2021 S31600/03 A (2)
ASME SA276 2021 S31600/03 A,CF (3)
ASME SA479 2021 S31600/03 A (4)
ASTM A182 2022A S31600/03 A (5)
ASTM A262 PR. E 2015 316/316L (6)
ASTM A276 2017 S31600/03 A,CF
ASTM A370 2022 .
ASTM A479 2021 S31600/03 A
ASTM E10 2018 .
ASTM E8 2022 .
EN 10088 PART 3 2014 1.4401 A,CF
EN 10088 PART 3 2014 1.4404 A,CF
EN 10272 2016. 1.4401 A,CF
EN 10272 2016. 1.4404 A,CF
ISO 148-1 2016 .
ISO 3651-2 98 METHOD A T1
ISO 6506-1 2014 .
ISO 6892-1 2019 .
ACH CO . .
PME HB L . .

Note:
Aufzeichnungen / Notes / Notes

(0)AD 2000-MERKBLATT W 2 edition 01.2020 AD 2000-MERKBLATT W 10 edition 01.2020
(1)AD 2000-MERKBLATT W 2 edition 01.2020 AD 2000-MERKBLATT W 10 edition 01.2020

(2)Section II Part A 2021 EDITION For products machined directly from bar refer to ASME SA479.
(3)Section II Part A 2021 EDITION
(4)Section II Part A 2021 EDITION
(5)For products machined directly from bar refer also to ASTM A479.
(6)Reapproved 2021

08 NOV. 2024
FRANCO CORBELLINI
QBO
CROSSWIND R

| | | Tolleranza: h9 - DIN671/EN10278<br>Toleranz/Allowance/Tolerance | | | | | |
|---|---|---|---|---|---|---|---|
| Pos. nr.<br>Pos. nr.<br>Item nr.<br>Nr. de poste | Oggetto<br>Gegenstand<br>Product description<br>Descrip. del prodotto | Dimensioni - mm<br>Abmessungen<br>Dimension<br>Dimension | Lunghezza - mm<br>Länge<br>Length<br>Longueur | Colata<br>Schmelze<br>Heat<br>Coulée | Pezzi<br>Stückzahl<br>Pieces<br>Pièces | Peso - KG<br>Gewicht<br>Weight<br>Poids | Lotto nr.<br>Losnr.<br>Lot nr.<br>Lot nr. |
| 0030 | Tondo | 13,000 | 3000/ 3040 | 290960 | | 32,0 | 217704330 |

☒ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

FRANCO CORBELLINI
OBO
CROSSWIND R


# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1
Nach/According to/Selon

Certificato nr. MEST091967 / 2023 /
Prüfung/Test/Essai

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura: Laminato - Solubilizzato Trafilato
Lieferzustand / Delivery state / Etat de livraison

Produttore:
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Tipo di Elaborazione: E+AOD
Erschmelzungsart / Melting process / Mode d'elaboration

Marchi di Fabbrica: AV
Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice

Ordine nr: ORD N AQ2301562
Bestell / Your order / Commande

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Punzone del Collaudatore: MR
Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur

Conferma ordine nr: MI23005383
Werks/Our Order/Ref nr

Avviso di Spedizione: A-MI23004303
Lieferanzeige/Packing list/B.L.

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung / Brand / Nuance

Punzonatura: 1.4401/1.4404
Kennzeichnung / Marking / Marquage

### TEST ALLO STATO DI FORNITURA
Test on delivery condition / Prüefung auf lieferbereitem produkt / test a l'etat de fourniture / Prueba sobre el material asi come entregado

1) L=longitudinale/längs, T=trasversale/quer, O=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | Posiz. Saggio Probenlage Location Emplacement 1) | Snervamento Streckgrenze Yield Stress Limite elastique Rp 0,2% N/mm2 | Snervamento Streckgrenze Yield Stress Limite elastique Rp 1% N/mm2 | Resistenza Zugfestigkeit Tensile strength Resistance à traction Rm N/mm2 | Allungamento Bruchdehnung Elongation Allongement A5 % | | Strizione Einschnürung Reduction of area Striction Z % | | Resilienza Kerbschlagarbeit Impact Value Resilience | | | Durezza Haerte Hardness Durete HB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti / Anforderungen/Required values / Valeurs demandées | | min / max | | 200 | 235 | 500 / 900 | 20 | - | - | - | - | - | - | - | 315 | |
| A | 10 | 20 | L | 585 | 679 | 785 | 33 | | 67 | | | | | 255 | | |
| F | 10 | 20 | L | 588 | 681 | 789 | 32 | | 64 | | | | | 258 | | |

### TEST ALLO STATO DI FORNITURA
Test on delivery condition / Prüefung auf lieferbereitem produkt / Test a l'etat de fourniture / Prueba sobre el material asi come entregado

| TEST | | min | max | |
|---|---|---|---|---|
| F | Dimensioni grano x ASTM E112 | | | 6 |

### Test allo stato di fornitura per ASTM A370

1) L=longitudinale/längs, T=trasversale/quer, O=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | Posiz. Saggio Probenlage Location Emplacement 1) | Snervamento Streckgrenze Yield Stress Limite elastique Rp 0,2% N/mm2 | Snervamento Streckgrenze Yield Stress Limite elastique | Resistenza Zugfestigkeit Tensile strength Resistance à traction Rm N/mm2 | Allungamento Bruchdehnung Elongation Allongement E 4d % | | Strizione Einschnürung Reduction of area Striction RA % | | Resilienza Kerbschlagarbeit Impact Value Resilience | | | Durezza Haerte Hardness Durete HB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti / Anforderungen/Required values / Valeurs demandées | | min / max | | 205 | - | 515 | - | 30 | - | 50 | - | | | - | | |
| B | 12,5 | 20 | L | 579 | | 780 | | 35 | | 68 | | | | 253 | | |

### Charpy per ISO 148-1

1) L=longitudinale/längs, T=trasversale/quer, O=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | Posiz. Saggio Probenlage Location Emplacement 1) | Resilienza Kerbschlagarbeit Impact Value Resilience KV2 | | | Espansione laterale Lateral Expansion | | | Shear Shear | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti / Anforderungen/Required values / Valeurs demandées | | min / max | | 50 | 50 | 50 | - | - | - | - | - | - |
| E | 10X5 | 20 | L | 99 | 89 | 94 | | | | | | |
| G | 10X5 | 20 | L | 102 | 86 | 84 | | | | | | |

Tensile testing according to ISO 6892-1
Impact testing according to ISO 148-1
Mechanical properties according to ASTM A370.
Brinnell hardness according to ASTM E10

REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| Vicenza, 13/07/2023 | Direzione Qualità<br>Qualitätsmanagement/Quality Management/Gestion Qualité | Direzione Prodotto<br>Produktmanagement/Product Management/Direction Produit | Pagina 2 di 4 |
|---|---|---|---|
| VCQ008 - MEST091967 | R.BERTELLI | P.MESSORI | |

# Acciaierie Valbruna S.p.A.

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Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a : Nach/According to/Selon: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. Prüfung/Test/Essai: MEST091967 / 2023 /

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Ordine nr: ORD N AQ2301562
Bestell
Your order
Commande

Conferma ordine nr: MI23005383
Werks/Our Order/Ref nr

Avviso di Spedizione: A-MI23004303
Lieferanzeige/Packing list/B.L.

Stato di fornitura : Laminato - Solubilizzato Trafilato
Lieferzustand
Delivery state
Etat de livraison

Tipo di Elaborazione: E+AOD
Erschmelzungsart
Melting process
Mode d'elaboration

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung
Brand / Nuance

Produttore :
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Marchi di Fabbrica: AV
Zeichen des Lieferwerkes
Trade marks
Sigles de l'usine productrice

Punzone del Collaudatore: MR
Stempel des Werkssachverständigen
Inspector's stamp/Poinçon de l'assayeur

Punzonatura: 1.4401/1.4404
Kennzeichnung
Marking
Marquage

Tensile testing according to ASTM E8
Brinnell hardness according to ISO 6506-1

### Analisi chimica
Chemische Zusammensetzung/Chemical Analysis/Analyse chimique

| Colata /Heat / Schmelze/Coulée | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | min - max | - 0,030 | - 1,00 | - 2,00 | 16,50 18,00 | 2,00 2,50 | 10,00 13,00 | - - | - 0,045 | - 0,030 | - 0,100 | - | - | - | - | - |
| | C % | Si % | Mn % | Cr % | Mo % | Ni % | Co % | P % | S % | N % | | | | | |
| 290960 | 0,015 | 0,46 | 1,56 | 16,74 | 2,02 | 10,00 | 0,125 | 0,029 | 0,027 | 0,063 | | | | | |

**Corrosion test in 16% sulfuric acid and copper sulfate solutions**

**Test standard:** UNI EN ISO 3651-2 Method A

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitized T1 | 20 | boil | 90 | 5 | Absence of cracks | **SATISFACTORY** |

**Corrosion test in 16% sulfuric acid and copper sulfate solutions**

**Test standard:** ASTM A262-Practice E

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitization | 15 | boil | 180 | 5 | Absence of cracks | **SATISFACTORY** |

Reduction ratio = 210,6 : 1
Material solution annealed 1040°C for 135'(total time)/ water cooled.
SURFACE QUALITY COMPLIANT TO EN 10088-3 TAB.1 COND. 2H
"Issued in agreement with TÜV SÜD Industrie Service GMBH (07/1972)"
"Qs approved according to PED, Annex I, Para. 4.3 by Notified Body 0036"
"(Certification no. DGR-0036-QS-W 23/2002/MUC)"

08 NOV. 2024

REVIEW ☐ WITNESS
ON BEHALF OF RTG
A. DELLA PINA DATE 08 NOV 2024

Sono state soddisfatte tutte le condizioni richieste
Die gestellen Anforderungen sind it. Anlage erfüllt
The material has been furnished in accordance with the requirements
Le materiel à été trouvé conforme aux exigences

Controllo antimescolanza con tecnica XRF/OES portatile : OK
Verwechslungprüfung: durch XRF/QES Gerät geführt : OK
Antimixing testing performed with XRF/OES portable : OK
Contrôle antimélange svt technique XRF/QES portable : OK

Controllo visivo e dimensionale: soddisfa le esigenze
Besichtigung und Ausmessung: ohne Beanstandung
Visual inspection and dimensional checks:satisfactory
Contrôle visuel et dimensions: satisfaisant

# Acciaierie Valbruna S.p.A.

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In conformità a : Nach/According to/Selon — EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. Prüfung/Test/Essai — MEST091967 / 2023 /

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Ordine nr: ORD N AQ2301562
Bestell / Your order / Commande

Conferma ordine nr: MI23005383
Werks/Our Order/Ref nr.

Avviso di Spedizione: A-MI23004303
Lieferanzeige/Packing list/B.L.

Stato di fornitura : Laminato - Solubilizzato Trafilato
Lieferzustand / Delivery state / Etat de livraison

Tipo di Elaborazione: E+AOD
Erschmelzungsart / Melting process / Mode d'elaboration

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung / Brand / Nuance

Produttore :
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Marchi di Fabbrica:
Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice
AV

Punzone del Collaudatore:
Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur
MR

Punzonatura: 1.4401/1.4404
Kennzeichnung / Marking / Marquage

Melted, poured and manufactured in Italy  No welding or weld repair  Material free from Mercury contamination

We declare that the finished product is checked for radioactive contamination by the portal system when it leaves the production plant.

The Quality Management System is also Certified according to Pressure Equipment Directive 2014/68/EU Annex 1,chapt.4.3 by TÜV and LLOYD`S
The Quality Management System is also Certified according to PER 2016/1105, Schedule 2, Part 4, Para 31 (8) by Competent Body TÜV SUD BABT Unlimited.
Any act of tampering, modification, alteration, counterfeiting and/or falsification and/or any other action which modifies the contents of this test certificate shall constitute a violation of applicable civil and criminal laws. Acciaierie Valbruna shall protect its rights and interests before any competent court, authority and jurisdiction.
Maxival and/or Valplus grades/products are manufactured with ladle techniques to control composition, distribution, size and shape of non-metallic inclusions for improved machinability.
The supplied product conforms to requirements expressly requested by the purchaser and conforms to requirements specified by certified norms and standards. Should the product be used for more severe, critical and/ or in any case different applications than those the material is generally intended for, any different and/or supplementary requirements shall be specifically demanded, at least, upon order of the Product by the Purchaser. Acciaierie Valbruna SpA shall not be responsible for any improper use of the Products.

08 NOV. 2024
FRANCO CORBELLINI
ORO
GROSSWIND R

☒ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| Vicenza, 13/07/2023 | Direzione Qualità | Direzione Prodotto | |
|---|---|---|---|
| VCQ008 - MEST091967 | Qualitätsmanagement/Quality Management/Gestion Qualité | Produktmanagement/Product Management/Direction Produit | Pagina 4 di 4 |
| | R.BERTELLI | P.MESSORI | |

COGNE ACCIAI SPECIALI S.p.a.

ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 405.563.167,00 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.

INSPECTION CERTIFICATE 3.1 (EN 10204:2004)
DOCUMENT NUMBER 2024015321


| | | | |
|---|---|---|---|
| CUSTOMER: | A.S.T. SPA | | |
| CUSTOMER'S ORDER: | AQ2400838 | | |
| MANUFACTURER'S WORKS: | AOSTA, VIA PARAVERA 16 - ITALY | | |
| PRODUCER OF THE DOC: | QUALITY DEPARTMENT | | |
| MANUFACTURER'S WORKS ORDER NO: | 0001140435 / 000020 | | |
| MARK OF THE MANUFACTURER: | **COGNE** | | |
| DISPATCH NOTE: | 0081605841 / 000010 WEIGHT: | 588 KG / 1296 LB | |
| INTERNAL SPEC: | STOCKBARREW2 | TECHNICAL RULE: | AD2000 |
| PRODUCT: | SPE ROUGHPEELED ROUND BARS | TOLERANCE: | + 1,500 - 0,0000 (+ 0,0591 - 0 in) |
| SURFACE FINISH: | 1X Hot Finished | | |
| PRODUCT DELIVERY CONDITION: | RS SOLUTION ANNEALED | | |
| PRODUCT DIMENSIONS (mm): | 125,000 ( 4,921 in) | LENGTH (mm) | 04000 06000 ( 00157 00236 in) |
| GRADE: | 316L-S31600/31603-1.4404/4401 | INTERNAL GRADE: | F316L IMCO |
| IDENTIFICATION HEAT NO: | 476355 | IDENTIFICATION LOT NO: | 172480 |
| MARKING OF THE PRODUCT: | 1.4404 | TEST PIECE N: | 248 |

STEELMAKING EAF + AOD + CONTINUOUS CASTING
AISI 316/316L - UNS S31600/S31603 - 1.4404/1.4401
ASTM A484 DOES NOT APPLY FOR SIZE AND LENGTH TOLERANCES.
REFERENCE NORMS: EN 10088-3 (14), EN 10272 (16), ASTM A276-r17/ASME SA276-21, ASTM A479/A479M-r21, ASTM A193-23 B8MCLASSE 1D, ASME SA276/SA276M-21,ASME SA479/SA479M-21, AMS 5653J, AMS 5648N, ISO15156-3/NACE MR0175 (15), NACE MR0103/ISO 17945 (15), NORSOK M630 MDSS01 REV5.
REFERENCE NORMS FOR CHEMICAL COMPOSITION AND MECHANICAL PROPERTIES: ASTM A182-23/ ASME SA182-21.
REFERENCE NORMS ONLY FOR CHEMICAL COMPOSITION: EN 10222-5 (17),ASTM A403-22b, ASTM A484-22, ASTM A314-23, AMS-QQ-S-763D.
ASME SECT.II PART A EDITION 2015-2017-2019-2021.
REFERENCE FOR APPLICABLE ASME STANDARD: SECTION II PART A ED. 2015-2017-2019-2021
HOT ROLLED
REDUCTION RATIO 4,3

CHEMICAL LADLE ANALYSIS ACCORDING TO ASTM A751 - EN ISO 14284
Control lot No. - Weight :020000997421 - 87.475 KG - 192.846 LB

| ELEMENTS | C | Si | Mn | P | S | N | Cr | Mo | Ni | Cu |
|---|---|---|---|---|---|---|---|---|---|---|
| MEASUREMENT UNIT | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w |
| OBTAINED | 0,016 | 0,37 | 1,80 | 0,027 | 0,028 | 0,076 | 16,76 | 2,08 | 10,15 | 0,63 |

| ELEMENTS | Co |
|---|---|
| MEASUREMENT UNIT | % w/w |
| OBTAINED | 0,21 |

HARDNESS TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000998222 - 7.789 KG - 17.172 LB
SPECIFICATION ENISO6506 HARDNESS TEST HB TESTING METHOD: 10/3000
OBTAINED 148

☑REVIEW ☐WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

08 NOV. 2024
FRANCO CORBELLINI
DB
CROSSWIND

DATE 27.03.2024 MORABITO ROSA CF(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE -Cogne

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 405.563.167,00 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.



1724000740-QC-DB-00016_01

IMPACT TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000998222 - 7.789 KG - 17.172 LB
SPECIFICATION EN ISO 148-1-KV2
TYPE OF TEST PIECE KV
TEST TEMPERATURE °C 20
MEASUREMENT UNIT J
OBTAINED 438 426 430 430 439 428 427 426 438 440
434 432

TENSILE TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000998222 - 7.789 KG - 17.172 LB
SPECIFICATION EN-ISO6892-1 DIRECTION OF THE TEST PIECE: L

| MEASUREMENT UNIT | RM MPA | RP02 MPA | A5 % | Z % | RP1 MPA |
|---|---|---|---|---|---|
| | | | 5.0 D | | |
| OBTAINED | 565 | 265 | 55,8 | 73,1 | 303 |
| | 571 | 265 | 54,0 | 76,3 | 306 |
| | 560 | 255 | 60,5 | 78,0 | 296 |
| | 558 | 247 | 58,0 | 80,4 | 298 |

GRAIN SIZE
Control lot No. - Weight :020000998222 - 7.789 KG - 17.172 LB
SPECIFICATION ASTME112 --
OBTAINED 5

IMPACT TEST
Control lot No. - Weight :020000998222 - 7.789 KG - 17.172 LB
SPECIFICATION EN ISO 148-1
TYPE OF TEST PIECE KV
TEST TEMPERATURE °C 196-
MEASUREMENT UNIT J
OBTAINED 196 217 190 198 207 206 206 203 193 203
195 196

TENSILE TEST
Control lot No. - Weight :020000998222 - 7.789 KG - 17.172 LB
SPECIFICATION ASTMA370-E8-0.5"SPEC DIRECTION OF THE TEST PIECE: L

| MEASUREMENT UNIT | TS KSI | YS KSI | RA % | EL % |
|---|---|---|---|---|
| | | | | 4,0 D |
| OBTAINED | 82 | 37 | 74,8 | 60,0 |
| | 82 | 37 | 76,4 | 65,3 |
| | 82 | 37 | 77,9 | 59,3 |
| | 81 | 37 | 81,3 | 66,0 |

0 8 NOV, 2024
FRANCO CUMBELLINI
CROSSWIND

☐ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 0 8 NOV 2024

DATE 27.03.2024

MORABITO ROSA CF(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

-Cogne

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
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VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.





COUNTRY OF MELTING AND ORIGIN: ITALY, THE MATERIAL COMPLIES WITH FAR DFARS 252.225-7009 ALT 1.
DOCUMENT ISSUED IN AGREEMENT WITH TUEV BAYERN(11.1972) WAVING OF COUNTERSIGNING (SEE TUEV BAYERN LETTER DATED 17.01.80).
MARKING: SYMBOL OF THE MANUF. WORK, MATERIAL N. , CAST N., LOT N., RECEIVING AGENT STAMP
CORROSION TEST ACCORDING TO ASTM A262/02A Practice.E EN ISO 3651-2 A: SATISFACTORY.
VISUAL INSPECTION OF SURFACE AND DIMENSIONAL CONTROL ACCORDING TO EN 10221 CLASS C AND EN 10060: SATISFACTORY.
ULTRASONIC TEST ACCORDING TO EN 10308 Class 3, equivalent to ASTM A388 FBH 5 (DIAM. 100-250) and FBH 8 (DIAM. 250-400) or to EN10228-4 Class 3: SATISFACTORY.
ANTIMIX TEST WITH PORTABLE SPECTROMETER: SATISFACTORY.
NO WELDING REPAIR ON THE MATERIAL.
FREE FROM RADIOACTIVE CONTAMINATION.
ULTRASONIC TEST ACCORDING TO EN 10308 Class.3, EN 10228 Class.3, ASTM A388 FBH 5 (diam. 102-250), FBH 8 (diam. 250,01-400).
MATERIAL IN COMPLIANCE WITH THE NORSOK M-630 MDS S01
RADIOACTIVITY CONTROL PERFORMED WITH A GAMMA SPECTROMETER: ASTM E181.
GAMMA ACTIVITY ON THE PRODUCTS BELOW 0.1 BQ/G ACCORDING TO EU RESOLUTION 2013/59/EURATOM , IAEA RS-G-1.7 AND IAEA SSG-17.
QUALITY SYSTEM CERTIFIED BY KIWA CERMET ACCORDING TO UNI EN ISO 9001:2015 -IATF 16949:2016 (THE LAST ONE ONLY FOR WIRE ROD AND HOT ROLLED-PEELED-GROUND STAINLESS STEEL BARS).
THE PRODUCT IS CONFORMING TO THE CONTRACT AGREEMENT AND TO THE RULE AD2000-MERKBLATT W0/W2.
INSPECTOR'S STAMP LF
MATERIAL CONFORM TO: 2015/863/EU (RoHS3) - 2011/65/EU (RoHS2) - 2000/53/EU - 2002/95/EU (RoHS) - 2003/11/EU - 2005/618/EU - PED 2014/68/EU e PE(S)R 2016/1105
THE MATERIAL IS FREE OF ANY MERCURY, MERCURY COMPOUNDS AND OR RADIUM CONTAMINATION AT TIME OF SHIPMENT AND WAS PRODUCED WITHOUT USING OZONE DEPLETING SUBSTANCES OF CLASS I AND II.
REFERENCE NORMS: EN 10088-3 (14), EN 10272 (16), ASTM A276-r17/ASME SA276-21, ASTM A479/A479M-r21, ASTM A193-23 B8MCLASSE 1D, ASME SA276/SA276M-21,ASME SA479/SA479M-21, AMS 5653J, AMS 5648N, ISO15156-3/NACE MR0175 (15), NACE MR0103/ISO 17945 (15), NORSOK M630 MDSS01 REV5.
REFERENCE NORMS FOR CHEMICAL COMPOSITION AND MECHANICAL PROPERTIES: ASTM A182-23/ ASME SA182-21.
REFERENCE NORMS ONLY FOR CHEMICAL COMPOSITION: EN 10222-5 (17),ASTM A403-22b, ASTM A484-22, ASTM A314-23, AMS-QQ-S-763D.
ASME SECT.II PART A EDITION 2015-2017-2019-2021.
WHERE NOT SPECIFIED ALL THE NORMS MENTIONED ARE INTENDED IN THEIR LAST REVISION AT THE DATE OF ISSUE OF THIS DOCUMENT.
ASTM A484 DOES NOT APPLY FOR SIZE AND LENGTH TOLERANCES.

☑ REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLA PINA DATE 08 NOV 2024

FRANCO CORBELLINI
CROSSWIND
08 NOV. 2024

DATE 27.03.2024

MORABITO ROSA CF(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a : EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1
Nach/According to/Selon

Certificato nr. MEST112865 / 2022 /
Prüfung/Test/Essai

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura : Laminato - Solubilizzato Rettificato
Lieferzustand / Delivery state / Etat de livraison

Produttore :
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Ordine nr: ORD.N.AQ2202071
Bestell / Your order / Commande

Tipo di Elaborazione: E+AOD
Erschmelzungsart / Melting process / Mode d'elaboration

Marchi di Fabbrica:
Zeichen des Liefernwerkes / Trade marks / Sigles de l'usine productrice
AV

Conferma ordine nr: MI22008136
Werks/Our Order/Ref nr.

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Punzone del Collaudatore:
Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur
MR

Avviso di Spedizione: A-MI22006725
Lieferanzeige/Packing list/B.L.

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung / Brand / Nuance

Punzonatura: 1.4401/4/316/L
Kennzeichnung / Marking / Marquage

**SPECIFICHE :**
Anforderungen / Requirements / Exigences

VAL STOCK 2020 1.4404/316L A,CF
AISI 316
AISI 316L
ASME SA276 2019 S31600 A,CF (0)
ASME SA276 2019 S31603 A,CF (1)
ASME SA479 2019 S31600 A (2)
ASME SA479 2019 S31603 A (3)
ASTM A262 2015 PRACTICE E (4)
ASTM A276 2017 S31600 A,CF
ASTM A276 2017 S31603 A,CF
ASTM A370 2020 .
ASTM A479 2020 S31600 A
ASTM A479 2020 S31603 A
ASTM E10 2018 .
ASTM E8 2021 .
EN 10088-3 2014 1.4401 A,CF
EN 10088-3 2014 1.4404 A,CF
EN 10272 2007 1.4401 A,CF
EN 10272 2007 1.4404 A,CF
ISO 6506-1 2014 .
ISO 6892-1 2019 .

Note:
Aufzeichnungen / Notes / Notes

(0)Section II Part A 2019 EDITION
(1)Section II Part A 2019 EDITION
(2)Section II Part A 2019 EDITION
(3)Section II Part A 2019 EDITION
(4)Reapproved 2021

| | | Tolleranza: h8 - DIN670/EN10278<br>Toleranz/Allowance/Tolerance | | | | | |
|---|---|---|---|---|---|---|---|
| Pos. nr.<br>Pos. nr.<br>Item nr.<br>Nr. de poste | Oggetto<br>Gegenstand<br>Product description<br>Descrip. du produit | Dimensioni - mm<br>Abmessungen<br>Dimension<br>Dimension | Lunghezza - mm<br>Lange<br>Length<br>Longueur | Colata<br>Schmelze<br>Heat<br>Coulée | Pezzi<br>StückzaN<br>Pieces<br>Pièces | Peso - KG<br>Gewicht<br>Weight<br>Poids | Lotto nr.<br>Losnr.<br>Lot nr.<br>Lot nr. |
| 0070 | Tondo | 10,000 | 2900/ 3100 | 276383 | | 18,0 | 729305910 |

08 NOV. 2024
FRANCO CORBELLINI
080
CROSSWIND

☑ REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLA PINA DATE 08 NOV 2024

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| | | | |
|---|---|---|---|
| **Vicenza, 09/11/2022**<br>VCQ052 - MEST112865 | **Direzione Qualità**<br>Qualitätsmanagement/Quality Management/Gestion Qualité<br>**R.BERTELLI** | **Direzione Prodotto**<br>Produktmanagement/Product Management/Direction Produit<br>**P.MESSORI** | Pagina<br>1 di 3 |

# Acciaierie Valbruna S.p.A.

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Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497

## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1
Nach/According to/Selon

Certificato nr. MEST112865 / 2022 /
Prüfung/Test/Essai

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura: Laminato - Solubilizzato Rettificato
Lieferzustand / Delivery state / Etat de livraison

Produttore:
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Ordine nr: ORD.N.AQ2202071
Bestell / Your order / Commande

Tipo di Elaborazione: E+AOD
Erschmelzungsart / Melting process / Mode d'elaboration

Marchi di Fabbrica:
Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice

Conferma ordine nr: MI22008136
Werks/Our Order/Ref nr.

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Punzone del Collaudatore:
Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur

Avviso di Spedizione: A-MI22006725
Lieferanzeige/Packing list/B.L.

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung / Brand / Nuance

Punzonatura: 1.4401/4/316/L
Kennzeichnung / Marking / Marquage

### TEST ALLO STATO DI FORNITURA
Test on delivery condition Prüefung auf lieferbereitem produkt test a l'etat de fourniture Prueba sobre el material así come entregado

1) L=longitudinale/längs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg.diam.Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | Posiz. Saggio Probestage Location Emplacement 1) | Snervamento Streckgrenze Yield Stress Limite elastique Rp 0,2% N/mm2 | Snervamento Streckgrenze Yield Stress Limite elastique Rp 1% N/mm2 | Resistenza Zugfestigkeit Tensile strength Resistance à traction Rm N/mm2 | Allungamento Bruchdehnung Elongation Allongement A5 % | Allungamento E 4d % | Strizione Einschnürung Reduction of area Striction Z % | Strizione RA % | Resilienza Kerbschlagarbeit Impact Value Resilience | | | Durezza Haerte Hardness Durete HB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti Anforderungen/Required values Valeurs demandées | | min max | | 310 | 235 | 620 900 | 20 | 30 | - | 40 | - | | | - 315 | | |
| A | 10 | 20 | L | 477 | 559 | 665 | 47 | 50 | 70 | 70 | | | | 225 | | |
| B | 10 | 20 | L | 482 | 561 | 669 | 46 | 50 | 69 | 69 | | | | 228 | | |

### TEST ALLO STATO DI FORNITURA
Test on delivery condition / Prüefung auf lieferbereitem produkt / Test a l'etat de fourniture / Prueba sobre el material así come entregado

| TEST | | min | max | |
|---|---|---|---|---|
| A | Dimensioni grano x ASTM E112 | | | 7 |

Mechanical properties according to ASTM A370.
Brinnell hardness according to ASTM E10
Tensile testing according to ASTM E8
Brinnell hardness according to ISO 6506-1
Tensile testing according to ISO 6892-1

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND

### Analisi chimica
Chemische Zusammensetzung/Chemical Analysis/Analyse chimique

| Colata /Heat Schmelze/Coulée | C % | Si % | Mn % | Cr % | Mo % | Ni % | P % | S % | N % | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| min - max | - 0,030 | - 1,00 | - 2,00 | 16,50 18,00 | 2,00 2,50 | 10,00 13,00 | - 0,045 | - 0,030 | - 0,100 | - | - | - | - | - | - |
| 276383 | 0,014 | 0,63 | 1,44 | 16,84 | 2,07 | 10,06 | 0,028 | 0,026 | 0,061 | | | | | | |

### Corrosion test in 16% sulfuric acid and copper sulfate solutions

**Test standard:** ASTM A262-Practice E

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitization | 15 | boil | 180 | 5 | Absence of cracks | **SATISFACTORY** |

☒ REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLA PINA DATE 08 NOV 2024

**QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D**

| Vicenza, 09/11/2022 | Direzione Qualità | Direzione Prodotto | Pagina |
|---|---|---|---|
| VCQ052 - MEST112865 | Qualitätsmanagement/Quality Management/Gestion Qualité | Produktmanagement/Product Management/Direction Produit | 2 di 3 |
| | R.BERTELLI | P.MESSORI | |

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a : Nach/According to/Selon: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. Prüfung/Test/Essai: MEST112865 / 2022 /

Cliente / Besteller/Purchaser/Client:
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura : Lieferzustand / Delivery state / Etat de livraison: Laminato - Solubilizzato Rettificato

Produttore : Hersteller/Item/Usine productrice:
**ACCIAIERIE VALBRUNA S.P.A.**

Ordine nr: Bestell / Your order / Commande: ORD.N.AQ2202071

Tipo di Elaborazione: Erschmelzungsart / Melting process / Mode d'elaboration: E+AOD

Marchi di Fabbrica: Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice: AV

Conferma ordine nr: Werks/Our Order/Ref nr.: MI22008136

Qualità: Werkstoff/Grade/Nuance: 1.4401/1.4404/316/316L

Punzone del Collaudatore: Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur: MR

Avviso di Spedizione: Lieferanzeige/Packing list/B.L.: A-MI22006725

Marca: Markenbezeichnung / Brand / Nuance: MVAPML ( MAXIVAL )

Punzonatura: Kennzeichnung / Marking / Marquage: 1.4401/4/316/L

**Corrosion test in 16% sulfuric acid and copper sulfate solutions**

**Test standard:** UNI EN ISO 3651-2 Method A

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitized T1 | 20 | boil | 90 | 5 | Absence of cracks | SATISFACTORY |

Reduction ratio = 374,4 : 1
Material solution annealed 1060° C for 0.5h/air cooled.

Sono state soddisfatte tutte le condizioni richieste
Die gestellen Anforderungen sind it. Anlage erfüllt
The material has been furnished in accordance with the requirements
Le materiel á eté trouvé conforme aux exigences

Controllo antimescolanza con tecnica XRF/OES portatile : OK
Verwechslungprüfung: durch XRF/QES Gerät geführt : OK
Antimixing testing performed with XRF/OES portable : OK
Contrôle antimélange svt technique XRF/QES portable : OK

Controllo visivo e dimensionale: soddisfa le esigenze
Besichtigung und Ausmessung: ohne Beanstandung
Visual inspection and dimensional checks:satisfactory
Contrôle visuel et dimensions: satisfaisant

Melted, poured and manufactured in Italy — No welding or weld repair — Material free from Mercury contamination

We declare that the finished product is checked for radioactive contamination by the portal system when it leaves the production plant.

The Quality Management System is also Certified according Pressure Equipment Directive 2014/68/EU Annex 1,chapt.4.3 by TÜV and LLOYD'S
Any act of tampering, modification, alteration, counterfeiting and/or falsification and/or any other action which modifies the contents of this test certificate shall constitute a violation of applicable civil and criminal laws. Acciaierie Valbruna shall protect its rights and interests before any competent court, authority and jurisdiction.
Maxival and/or Valplus grades/products are manufactured with ladle techniques to control composition, distribution, size and shape of non-metallic inclusions for improved machinability.
The supplied product conforms to requirements expressly requested by the purchaser and conforms to requirements specified by certified norms and standards. Should the product be used for more severe, critical and/ or in any case different applications than those the material is generally intended for, any different and/or supplementary requirements shall be specifically demanded, at least, upon order of the Product by the Purchaser. Acciaierie Valbruna SpA shall not be responsible for any improper use of the Products.

WSPC37000C7CB2BC17D451FA006E460C3

08 NOV. 2024
FRANCO CORBELLINI
CBO
CROSSWIND R

REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

**QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D**

| | | | |
|---|---|---|---|
| **Vicenza, 09/11/2022**<br>VCQ052 - MEST112865 | **Direzione Qualità**<br>Qualitätsmanagement/Quality Management/Gestion Qualité<br>**R.BERTELLI** | **Direzione Prodotto**<br>Produktmanagement/Product Management/Direction Produit<br>**P.MESSORI** | Pagina 3 di 3 |

**AST S.p.A.**
Via R. Merendi, 40
I-20007 Cornaredo MI

P +39 02 934848.1
F +39 02 9362248
W www.astspa.it

**MATERIAL CERTIFICATES INDEX**
**CERTIFICATO DEI MATERIALI**

**No.** 2400587

EN 10204 3.1

**Customer**
ROSETTI MARINO S.P.A.

**P.Order / Project**
1724000740 123A90A Rev. 1

**ITEM Number**
10-60

**Tag**
25-FV-036

**Quantity delivered**
1

**AST Job**
CV2400221

**AST Code**
CV2400221CV8407A000

**Serial Number**
2400587

**Valve Type**
Valvole Regolazione

**Size**
NPS 1" CLASS 300 RF

**Port Size**
1/4"

| Part Name | Material | Heat No. | Certificate No. | Supplier |
|---|---|---|---|---|
| BODY | ASTM A351 CF3M | E360 | E360 | SGA Alloys Private Limited |
| SEAT RING | ASTM A479 316/316L | 372445 | 2023016714 | COGNE ACCIAI SPECIALI SPA |
| PLUG | F316 + PTFE | 290960 | MEST091967/2023/ | ACCIAIERIE VALBRUNA |
| BONNET | ASTM A479 316/316L | 476355 | 2024015321 | COGNE ACCIAI SPECIALI SPA |
| STEM | ASTM A479 316/316L | 276383 | MEST112865-2022 | ACCIAIERIE VALBRUNA |

08 NOV. 2024
FRANCO CORBELLINI
QSQ
CROSSWIND

☒ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

**Remarks** :

**AST Q.C. Department**

**Customer's Inspector**

**Third Party Inspection**

**Date** : 05.11.2024 **Date** : _____ **Date** : _____

# SGA ALLOYS PRIVATE LIMITED

( Formerly Known as Sri Ganapathy Steel Alloy Casting )
ISO 9001 : 2015 CERTIFIED COMPANY
SF.NO:10/1,NALLAGOUNDENPALAYAM,,KADUVETTIPALAYAM POST,SULUR TKCOIMBATORE Pin :641659,
Phone :9159530466,9159533064, email :sgaalloys2018@gmail.com

## MATERIAL TEST CERTIFICATE
AS PER EN 10204 - 3.1

**Customer** : ECO TECH CASTINGS INDIA (P) LTD
COIMBATORE 641018

T.C. No. : **E360**
T.C.Date : **20/09/2021**

**P.Order No.** : ECO/21-22/134 Dt. 05/08/2021

Heat No. : **E360**
Pouring Date : **02/09/2021**

**Specification** :**ASTM A351 Gr.CF3M - 2018**

CASTING PROCESSED BY INDUCTION MELTING

FOUNDRY IDENTIFICATION :SGA

**TEST SPEC AS PER ASTM A703-2020 CHEMICAL COMPOSITION - %**

| Element | | C | Mn | Si | P | S | Cr | Ni | Mo | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Req. | Min | --- | --- | --- | --- | --- | 17.000 | 9.000 | 2.000 | | | | | | |
| | Max | 0.030 | 1.500 | 1.500 | 0.040 | 0.040 | 21.000 | 13.000 | 3.000 | | | | | | |
| **Actual** | | **0.023** | **0.937** | **0.560** | **0.028** | **0.001** | **17.698** | **9.662** | **2.166** | | | | | | |

**HEAT TREATMENT :** SOLUTION ANNEALING: Heated to 1080 ° C, Soaked for 3 Hrs and then water Quenched.

**TENSILE TEST AS PER ASTM A370-2020 MECHANICAL PROPERTIES IMPACT TEST AS PER ASTM E23-16**

| Requirments | Yield Strength | Tensile Strength | % Elongation | % Reduction of Area | Hardness | Bend Test | Impact Test In (Joules) (10mm X 10mm X 55mm) Impact at -196 °c & 40jmin | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Mpa | MPa | GL :50 mm | | BHN | D =3T | | | | |
| | 0.2% Proof Stress | - | - | - | - | at 120 ° | | | | |
| **Minimum** | 205 | 485 | 30.00 | --- | --- | | | | | |
| **Maximum** | --- | --- | --- | --- | 237 | - | 1 | 2 | 3 | Avg |
| **Actual** | **243** | **534** | **51.60** | **---** | 160 | **--** | **82** | **78** | **76** | **78.67** |

**ITEM DESCRIPTION**

| SL.No. | Product | Description | Drawing No. | Part No. | Poured Qty |
|---|---|---|---|---|---|
| 1 | C20005 | BODY CV 8400(AT220) | M028 REV.0 | CABDWG0028 | 5 |

Remarks : **Separate test bar poured and the same bar tested for chemical and mechanical properties**
**Tensile Testing conducted on round specimen at room temperature**
**These casting has been acid pickled and passivated**
**Casting meet the requirement of NACE MR0175 / ISO 15156**
**Radio activity checked and found to be 0.10 Bequerel/Gram**
**Carbon steel fully killed Condition**
**Visual inspection carried out at as per MSS SP-55, found satisfied**

08 NOV. 2024
FRANCO CORBELLINI
QBO
CROSSWIND

We here by certify that the items mentioned above have been tested, inspected and found to be in accordance with customer's drawing, specification, purchase order and satisfy the requirements of ASTM A351 Gr.CF3M - 2018,

for SGA ALLOYS PRIVATE LIMITED

K.ARUNKUMAR
Prepared By

☑ REVIEW ☐ WITNESS
ON BEHALF OF RINA C.
A. DELLAPINA RINA
08 NOV 2024

K.KARTHIKEYAN
QUALITY ASSURANCE

Page 1 of 1

COGNE ACCIAI SPECIALI S.p.a.

ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 250.000.000 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.

# INSPECTION CERTIFICATE 3.1 (EN 10204:2004)

DOCUMENT NUMBER 2023016714



| | | | |
|---|---|---|---|
| CUSTOMER: | A.S.T. SPA | | |
| CUSTOMER'S ORDER: | AQ2301925 | | |
| MANUFACTURER'S WORKS: | AOSTA, VIA PARAVERA 16 - ITALY | | |
| PRODUCER OF THE DOC: | QUALITY DEPARTMENT | | |
| MANUFACTURER'S WORKS ORDER NO: | 0001136538 / 000020 | | |
| MARK OF THE MANUFACTURER: | **COGNE** | | |
| DISPATCH NOTE: | 0081566096 / 000020 WEIGHT: 190 KG / 419 LB | | |
| INTERNAL SPEC: | STOCKBARREW2 | TECHNICAL RULE: | AD2000 |
| PRODUCT: | PEL PEELED ROUND BARS TOLERANCE: ISOK11 | | |
| SURFACE FINISH: | 2B Cold Finished | | |
| PRODUCT DELIVERY CONDITION: | RS SOLUTION ANNEALED | | |
| PRODUCT DIMENSIONS (mm): | 50,000 ( 1,969 in) | LENGTH (mm) | 03000 03100 ( 00118 00122 in) |
| GRADE: | 316L-S31600/31603-1.4404/4401 | INTERNAL GRADE: | F316L IMCO |
| IDENTIFICATION HEAT NO: | 372445 | IDENTIFICATION LOT NO: | 725970 |
| MARKING OF THE PRODUCT: | 1.4404 | TEST PIECE N: | 597 |

REFERENCE NORMS: EN 10088-3 2014, EN 10272 2016, ASTM A276/A276M, ASTM A479/A479M, ASTM A193 B8MCLASSE 1D, ASME SA276/SA276M, ASME SA479/SA479M, AMS 5653J, AMS 5648N, ISO15156-3/NACE MR0175 2015, NACE MR0103/ISO 17945, NORSOK M630 MDSS01 REV5.
REFERENCE NORMS FOR CHEMICAL COMPOSITION AND MECHANICAL PROPERTIES: ASTM A182, ASME SA182.
REFERENCE NORMS ONLY FOR CHEMICAL COMPOSITION: EN 10222-5 2017,ASTM A403-07a, ASTM A484-18a,ASTM A314-08, AMS-QQ-S-763D.
ASME SECT.II PART A EDITION 2015-2017-2019-2021
AISI 316/316L - UNS S31600/S31603 - 1.4404/1.4401
THE PRODUCT IS CONFORMING TO THE CONTRACT AGREEMENT AND TO THE RULE AD2000-MERKBLATT W0/W2.
STEELMAKING EAF + AOD + CONTINUOUS CASTING
ASTM A484 DOES NOT APPLY FOR SIZE AND LENGTH TOLERANCES.
STEELMAKING EAF + AOD + CONTINUOUS CASTING
REFERENCE FOR APPLICABLE ASME STANDARD: SECTION II PART A ED. 2015-2017-2019-2021
HOT ROLLED
REDUCTION RATIO 11,8

CHEMICAL LADLE ANALYSIS ACCORDING TO ASTM A751 - EN ISO 14284
Control lot No. - Weight :020000959742 - 85.921 KG - 189.420 LB

| ELEMENTS | C | Si | Mn | P | S | N | Cr | Mo | Ni | Cu |
|---|---|---|---|---|---|---|---|---|---|---|
| MEASUREMENT UNIT | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w |
| OBTAINED | 0,018 | 0,26 | 1,77 | 0,026 | 0,028 | 0,077 | 16,97 | 2,04 | 10,28 | 0,46 |

| ELEMENTS | Co |
|---|---|
| MEASUREMENT UNIT | % w/w |
| OBTAINED | 0,16 |

HARDNESS TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000960410 - 7.449 KG - 16.422 LB

| SPECIFICATION | ENISO6506 | HARDNESS TEST | HB | TESTING METHOD: 10/3000 |
|---|---|---|---|---|
| OBTAINED | 157 | | | |

☑ REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLA PINA DATE 08 NOV. 2024

08 NOV. 2024
FRANCO CONSELLIN
DSQ
CROSSWIND

DATE 05.04.2023

BARBARA VIETTI MV(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

-Cogne

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 250.000.000 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.

INSPECTION CERTIFICATE 3.1 (EN 10204:2004)
DOCUMENT NUMBER 2023016714


IMPACT TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000960410 - 7.449 KG - 16.422 LB
SPECIFICATION EN ISO 148-1-KV2 DIRECTION OF THE TEST PIECE: L
TYPE OF TEST PIECE KV
TEST TEMPERATURE °C 20
MEASUREMENT UNIT J

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| OBTAINED | 435 | 428 | 435 | 438 | 439 | 429 | 435 | 436 | 426 |
| | 432 | 434 | | | | | | | |

TENSILE TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000960410 - 7.449 KG - 16.422 LB
SPECIFICATION EN-ISO6892-1 DIRECTION OF THE TEST PIECE: L

| MEASUREMENT UNIT | RM MPA | RP02 MPA | A5 % 5.0 D | Z % | RP1 NMM |
|---|---|---|---|---|---|
| OBTAINED | 611 | 282 | 55,2 | 78,3 | 325 |
| | 613 | 287 | 51,3 | 72,1 | 342 |
| | 614 | 301 | 48,8 | 73,1 | 341 |
| | 612 | 272 | 56,7 | 76,3 | 325 |

GRAIN SIZE
Control lot No. - Weight :020000960410 - 7.449 KG - 16.422 LB
SPECIFICATION ASTME112 --
OBTAINED 6

MATERIAL IN COMPLIANCE WITH THE NORSOK M-630 MDS S01
IMPACT TEST
Control lot No. - Weight :020000960410 - 7.449 KG - 16.422 LB
SPECIFICATION EN ISO 148-1 DIRECTION OF THE TEST PIECE: L
TYPE OF TEST PIECE KV
TEST TEMPERATURE °C 196-
MEASUREMENT UNIT J

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| OBTAINED | 198 | 185 | 195 | 190 | 177 | 173 | 173 | 173 | 197 | 175 |
| | 192 | 179 | | | | | | | |

TENSILE TEST
Control lot No. - Weight :020000960410 - 7.449 KG - 16.422 LB
SPECIFICATION ASTMA370-E8-0.5"SPEC DIRECTION OF THE TEST PIECE: L

| MEASUREMENT UNIT | RMB KSI | RP02B KSI | ZB % | AL2B % 4,0 D |
|---|---|---|---|---|
| OBTAINED | 88 | 40 | 78,0 | 57,6 |
| | 89 | 41 | 73,3 | 55,7 |
| | 89 | 41 | 72,9 | 54,0 |
| | 89 | 40 | 78,1 | 61,1 |

08 NOV. 2024
FRANCO CORBELLINI
QSA
CROSSWIND

☑ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLAPINA DATE 08 NOV 2024

DATE 05.04.2023

BARBARA VIETTI MV(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

-Cogne

1724000740-QC-DB-00016_01

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 250.000.000 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.



1724000740-QC-DB-00016_01

COUNTRY OF MELTING AND ORIGIN: ITALY, THE MATERIAL COMPLIES WITH FAR DFARS 252.225-7009 ALT 1.
The products delivered are conforming to EN10088-5 and bear the CE marking on the basis of the test results here reported and the continuous surveillance, assessment and approval by MPA NRW (certificate no. 0432-CPR-00166-01)
Material produced according to the system #Regulation 305/2011/EU of the European Parliament and of the Council of 9 March 2011#
DOCUMENT ISSUED IN AGREEMENT WITH TUEV BAYERN(11.1972) WAVING OF COUNTERSIGNING (SEE TUEV BAYERN LETTER DATED 17.01.80).
MARKING: SYMBOL OF THE MANUF. WORK, MATERIAL N. , CAST N., LOT N., RECEIVING AGENT STAMP
CORROSION TEST ACCORDING TO ASTM A262 PRACTICE E EN ISO 3651-2 PRACTICE A: SATISFACTORY.
ANTIMIXING TEST BY PORTABLE SPECTROMETRE: CONFORMING
EDDY CURRENT INSPECTION OF SURFACE ACCORDING TO EN 10277 CLASS 4.
DIMENSIONAL CONTROL ACCORDING TO EN 10278: SATISFACTORY.
NO WELDING REPAIR ON THE MATERIAL.
ULTRASONIC TEST ACCORDING TO EN 10308 Class.3: SATISFACTORY
QUALITY SYSTEM CERTIFIED BY KIWA CERMET ACCORDING TO UNI EN ISO 9001:2015 -IATF 16949:2016 (THE LAST ONE ONLY FOR WIRE ROD AND HOT ROLLED-PEELED-GROUND STAINLESS STEEL BARS).
INSPECTOR'S STAMP LF
MATERIAL CONFORM TO: 2015/863/UE (RoHS3) - 2011/65/UE (RoHS2) - 2000/53/UE - 2002/95/UE (RoHS) - 2003/11/UE - 2005/618/UE - PED 2014/68/UE e PE(S)R 2016/1105
THE MATERIAL IS FREE OF ANY MERCURY, MERCURY COMPOUNDS AND OR RADIUM CONTAMINATION AT TIME OF SHIPMENT AND WAS PRODUCED WITHOUT USING OZONE DEPLETING SUBSTANCES OF CLASS I AND II.
RADIOACTIVITY CONTROL PERFORMED WITH A GAMMA SPECTROMETER: ASTM E181.
GAMMA ACTIVITY ON THE PRODUCTS BELOW 0.1 BQ/G ACCORDING TO EU RESOLUTION 2013/59/EURATOM , IAEA RS-G-1.7 AND IAEA SSG-17.

CE 0432

☑REVIEW ☐WITNESS
ON BEHALF OF
A. DELLA PINA DATE 08 NOV 2024

08 NOV. 2024
FRANCO CORSELLINI
QSQ
CROSSWIND

DATE 05.04.2023

BARBARA VIETTI MV(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

-Cogne

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a / Nach/According to/Selon: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. / Prüfung/Test/Essai: MEST091967 / 2023 /

Cliente / Besteller/Purchaser/Client:
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Ordine nr: ORD N AQ2301562
Bestell / Your order / Commande

Conferma ordine nr: MI23005383
Werks/Our Order/Ref nr.

Avviso di Spedizione: A-MI23004303
Lieferanzeige/Packing list/B.L.

Stato di fornitura: Laminato - Solubilizzato Trafilato
Lieferzustand / Delivery state / Etat de livraison

Tipo di Elaborazione: E+AOD
Erschmelzungsart / Melting process / Mode d'elaboration

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung / Brand / Nuance

Produttore:
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Marchi di Fabbrica: AV
Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice

Punzone del Collaudatore: MR
Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur

Punzonatura: 1.4401/1.4404
Kennzeichnung / Marking / Marquage

**SPECIFICHE:**
Anforderungen / Requirements / Exigences

VAL STOCK W2 A/1 1.4404/316L A,CF
AD 2000-M. W 2 01/20 1.4401 A,CF (0)
AD 2000-M. W 2 01/20 1.4404 A,CF (1)
AISI . 316/316L
ASME SA182 2021 S31600/03 A (2)
ASME SA276 2021 S31600/03 A,CF (3)
ASME SA479 2021 S31600/03 A (4)
ASTM A182 2022A S31600/03 A (5)
ASTM A262 PR. E 2015 316/316L (6)
ASTM A276 2017 S31600/03 A,CF
ASTM A370 2022 .
ASTM A479 2021 S31600/03 A
ASTM E10 2018 .
ASTM E8 2022 .
EN 10088 PART 3 2014 1.4401 A,CF
EN 10088 PART 3 2014 1.4404 A,CF
EN 10272 2016. 1.4401 A,CF
EN 10272 2016. 1.4404 A,CF
ISO 148-1 2016 .
ISO 3651-2 98 METHOD A T1
ISO 6506-1 2014 .
ISO 6892-1 2019 .
ACH CO . .
PME HB L . .

Note:
Aufzeichnungen / Notes / Notes

(0)AD 2000-MERKBLATT W 2 edition 01.2020 AD 2000-MERKBLATT W 10 edition 01.2020
(1)AD 2000-MERKBLATT W 2 edition 01.2020 AD 2000-MERKBLATT W 10 edition 01.2020

(2)Section II Part A 2021 EDITION For products machined directly from bar refer to ASME SA479.
(3)Section II Part A 2021 EDITION

(4)Section II Part A 2021 EDITION
(5)For products machined directly from bar refer also to ASTM A479.
(6)Reapproved 2021

| | | Tolleranza: h9 - DIN671/EN10278<br>Toleranz/Allowance/Tolerance | | | | | |
|---|---|---|---|---|---|---|---|
| Pos. nr.<br>Pos. nr.<br>Item nr.<br>Nr. de poste | Oggetto<br>Gegenstand<br>Product description<br>Designation du produit | Dimensioni - mm<br>Abmessungen<br>Dimension<br>Dimension | Lunghezza - mm<br>Länge<br>Length<br>Longueur | Colata<br>Schmelze<br>Heat<br>Coulée | Pezzi<br>Stückzahl<br>Pieces<br>Pieces | Peso - KG<br>Gewicht<br>Weight<br>Poids | Lotto nr.<br>Loser.<br>Lot nr.<br>Lot nr. |
| 0030 | Tondo | 13,000 | 3000/ 3040 | 290960 | | 32,0 | 217704330 |

08 NOV. 2024
FRANCO CORBELLINI
QSQ
CROSSWIND R

☑ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| Vicenza, 13/07/2023<br>VCQ008 - MEST091967 | Direzione Qualità<br>Qualitätsmanagement/Quality Management/Gestion Qualité<br>R.BERTELLI | Direzione Prodotto<br>Produktmanagement/Product Management/Direction Produit<br>P.MESSORI | Pagina<br>1 di 4 |
|---|---|---|---|

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a : EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1
Nach/According to/Selon

Certificato nr. MEST091967 / 2023 /
Prüfung/Test/Essai

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Ordine nr: ORD N AQ2301562
Bestell
Your order
Commande

Conferma ordine nr: MI23005383
Werks/Our Order/Ref nr

Avviso di Spedizione: A-MI23004303
Lieferanzeige/Packing list/B.L.

Stato di fornitura : Laminato - Solubilizzato Trafilato
Lieferzustand
Delivery state
Etat de livraison

Tipo di Elaborazione: E+AOD
Erschmelzungsart
Melting process
Mode d'elaboration

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung
Brand / Nuance

Produttore :
Hersteller/Item/Usine productrice

**ACCIAIERIE VALBRUNA S.P.A.**

Marchi di Fabbrica: AV
Zeichen des Lieferwerkes
Trade marks
Sigles de l'usine productrice

Punzone del Collaudatore: MR
Stempel des Werkssachverständigen
Inspector's stamp/Poinçon de l'assayeur

Punzonatura: 1.4401/1.4404
Kennzeichnung
Marking
Marquage

### TEST ALLO STATO DI FORNITURA
Test on delivery condition Prüefung auf lieferbereitem produkt test a l'etat de fourniture Prueba sobre el material asi come entregado

1) L=longitudinale/langs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | Posiz. Saggio Prelevatogo Location Emplacement 1) | Snervamento Streckgrenze Yield Stress Limite elastique Rp 0,2% N/mm2 | Snervamento Streckgrenze Yield Stress Limite elastique Rp 1% N/mm2 | Resistenza Zugfestigkeit Tensile strength Resistance à traction Rm N/mm2 | Allungamento Bruchdehnung Elongation Allongement A5 % | | Strizione Einschnürung Reduction of area Striction Z % | | Resilienza Kerbschlagarbeit Impact Value Resilience | | | Durezza Haerte Hardness Durete HB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti Anforderungen/Required values Valeurs demandées | | min max | | 200 | 235 | 500 900 | 20 | - | - | - | - | | | - 315 | | |
| A | 10 | 20 | L | 585 | 679 | 785 | 33 | | 67 | | | | | 255 | | |
| F | 10 | 20 | L | 588 | 681 | 789 | 32 | | 64 | | | | | 258 | | |

### TEST ALLO STATO DI FORNITURA
Test on delivery condition / Prüefung auf lieferbereitem produkt / Test a l'etat de fourniture / Prueba sobre el material asi come entregado

| TEST | | min | max | |
|---|---|---|---|---|
| F | Dimensioni grano x ASTM E112 | | | 6 |

### Test allo stato di fornitura per ASTM A370

1) L=longitudinale/langs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | Posiz. Saggio Prelevatogo Location Emplacement 1) | Snervamento Streckgrenze Yield Stress Limite elastique Rp 0,2% N/mm2 | Snervamento Streckgrenze Yield Stress Limite elastique | Resistenza Zugfestigkeit Tensile strength Resistance à traction Rm N/mm2 | Allungamento Bruchdehnung Elongation Allongement E 4d % | | Strizione Einschnürung Reduction of area Striction RA % | | Resilienza Kerbschlagarbeit Impact Value Resilience | | | Durezza Haerte Hardness Durete HB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti Anforderungen/Required values Valeurs demandées | | min max | | 205 | - | 515 | - | 30 | - | 50 | - | | | - | | |
| B | 12,5 | 20 | L | 579 | | 780 | | 35 | | 68 | | | | 253 | | |

### Charpy per ISO 148-1

1) L=longitudinale/langs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | Posiz. Saggio Prelevatogo Location Emplacement 1) | Resilienza Kerbschlagarbeit Impact Value Resilience KV2 | | | Espansione laterale Lateral Expansion | | | Shear Shear | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti Anforderungen/Required values Valeurs demandées | | min max | | 50 | 50 | 50 | - | - | - | - | - | - |
| E | 10X5 | 20 | L | 99 | 89 | 94 | | | | | | |
| G | 10X5 | 20 | L | 102 | 86 | 84 | | | | | | |

Tensile testing according to ISO 6892-1
Impact testing according to ISO 148-1
Mechanical properties according to ASTM A370.
Brinnell hardness according to ASTM E10

FRANCO CORBELLINI
08 NOV. 2024
CROSSWIND

☒ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

**QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D**

| | | | |
|---|---|---|---|
| **Vicenza, 13/07/2023**<br>VCQ008 - MEST091967 | **Direzione Qualità**<br>Qualitätsmanagement/Quality Management/Gestion Qualité<br>**R.BERTELLI** | **Direzione Prodotto**<br>Produktmanagement/Product Management/Direction Produit<br>**P.MESSORI** | Pagina 2 di 4 |

# Acciaierie Valbruna S.p.A.

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Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a : EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1
Nach/According to/Selon

Certificato nr. MEST091967 / 2023 /
Prüfung/Test/Essai

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Ordine nr: ORD N AQ2301562
Bestell
Your order
Commande

Conferma ordine nr: MI23005383
Werks/Our Order/Ref nr

Avviso di Spedizione: A-MI23004303
Lieferanzeige/Packing list/B L

Stato di fornitura : Laminato - Solubilizzato Trafilato
Lieferzustand
Delivery state
Etat de livraison

Tipo di Elaborazione: E+AOD
Erschmelzungsart
Melting process
Mode d'elaboration

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung
Brand / Nuance

Produttore :
Hersteller/Item/Usine productrice

**ACCIAIERIE VALBRUNA S.P.A.**

Marchi di Fabbrica:
Zeichen des Lieferwerkes
Trade marks
Sigles de l'usine productrice

Punzone del Collaudatore:
Stempel des Werkssachverständigen
Inspector's stamp/Poinçon de l'assayeur
MR

Punzonatura: 1.4401/1.4404
Kennzeichnung
Marking
Marquage

Tensile testing according to ASTM E8

Brinnell hardness according to ISO 6506-1

### Analisi chimica

Chemische Zusammensetzung/Chemical Analysis/Analyse chimique

| Colata /Heat / Schmelze/Coulée | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | min - max 0,030 | - 1,00 | - 2,00 | 16,50 - 18,00 | 2,00 - 2,50 | 10,00 - 13,00 | - - | - 0,045 | - 0,030 | - 0,100 | - - | - - | - - | - - | - - |
| | C % | Si % | Mn % | Cr % | Mo % | Ni % | Co % | P % | S % | N % | | | | | |
| 290960 | 0,015 | 0,46 | 1,56 | 16,74 | 2,02 | 10,00 | 0,125 | 0,029 | 0,027 | 0,063 | | | | | |

**Corrosion test in 16% sulfuric acid and copper sulfate solutions**

**Test standard:** UNI EN ISO 3651-2 Method A

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitized T1 | 20 | boil | 90 | 5 | Absence of cracks | **SATISFACTORY** |

**Corrosion test in 16% sulfuric acid and copper sulfate solutions**

**Test standard:** ASTM A262-Practice E

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitization | 15 | boil | 180 | 5 | Absence of cracks | **SATISFACTORY** |

Reduction ratio = 210,6 : 1
Material solution annealed 1040°C for 135'(total time)/ water cooled.
SURFACE QUALITY COMPLIANT TO EN 10088-3 TAB.1 COND. 2H
"Issued in agreement with TÜV SÜD Industrie Service GMBH (07/1972)"
"Qs approved according to PED, Annex I, Para. 4.3 by Notified Body 0036"
"(Certification no. DGR-0036-QS-W 23/2002/MUC)"

☒ REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLA PINA DATE 08 NOV 2024

Sono state soddisfatte tutte le condizioni richieste
Die gestellen Anforderungen sind it. Anlage erfüllt
The material has been furnished in accordance with the requirements
Le materiel à été trouvé conforme aux exigences

Controllo antimescolanza con tecnica XRF/OES portatile : OK
Verwechslungprüfung: durch XRF/QES Gerät geführt : OK
Antimixing testing performed with XRF/OES portable : OK
Contrôle antimélange svt technique XRF/QES portable : OK

Controllo visivo e dimensionale: soddisfa le esigenze
Besichtigung und Ausmessung: ohne Beanstandung
Visual inspection and dimensional checks:satisfactory
Contrôle visuel et dimensions: satisfaisant

08 NOV. 2024
CROSSWIND

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497

## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a : EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1
Nach/According to/Selon

Certificato nr. MEST091967 / 2023 /
Prüfung/Test/Essai

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura : Laminato - Solubilizzato Trafilato
Lieferzustand / Delivery state / Etat de livraison

Produttore :
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Ordine nr: ORD N AQ2301562
Bestell / Your order / Commande

Tipo di Elaborazione: E+AOD
Erschmelzungsart / Melting process / Mode d'elaboration

Marchi di Fabbrica:
Zeichen des Liefernwerkes / Trade marks / Sigles de l'usine productrice
AV

Conferma ordine nr: MI23005383
Werks/Our Order/Ref nr.

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Punzone del Collaudatore:
Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur
MR

Avviso di Spedizione: A-MI23004303
Lieferanzeige/Packing list/B.L.

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung / Brand / Nuance

Punzonatura: 1.4401/1.4404
Kennzeichnung / Marking / Marquage

Melted, poured and manufactured in Italy  No welding or weld repair  Material free from Mercury contamination

We declare that the finished product is checked for radioactive contamination by the portal system when it leaves the production plant.

The Quality Management System is also Certified according to Pressure Equipment Directive 2014/68/EU Annex 1,chapt.4.3 by TÜV and LLOYD`S
The Quality Management System is also Certified according to PER 2016/1105, Schedule 2, Part 4, Para 31 (8) by Competent Body TÜV SUD BABT Unlimited.
Any act of tampering, modification, alteration, counterfeiting and/or falsification and/or any other action which modifies the contents of this test certificate shall constitute a violation of applicable civil and criminal laws. Acciaierie Valbruna shall protect its rights and interests before any competent court, authority and jurisdiction.
Maxival and/or Valplus grades/products are manufactured with ladle techniques to control composition, distribution, size and shape of non-metallic inclusions for improved machinability.
The supplied product conforms to requirements expressly requested by the purchaser and conforms to requirements specified by certified norms and standards. Should the product be used for more severe, critical and/ or in any case different applications than those the material is generally intended for, any different and/or supplementary requirements shall be specifically demanded, at least, upon order of the Product by the Purchaser. Acciaierie Valbruna SpA shall not be responsible for any improper use of the Products.

08 NOV. 2024
FRANCO CORBELLINI
089
CROSSWIND

☒ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| Vicenza, 13/07/2023<br>VCQ008 - MEST091967 | Direzione Qualità<br>Qualitätsmanagement/Quality Management/Gestion Qualité<br>R.BERTELLI | Direzione Prodotto<br>Produktmanagement/Product Management/Direction Produit<br>P.MESSORI | Pagina 4 di 4 |
|---|---|---|---|

1724000740-QC-DB-00016_01

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 405.563.167,00 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.

# INSPECTION CERTIFICATE 3.1 (EN 10204:2004)

DOCUMENT NUMBER 2024015321



| | | | |
|---|---|---|---|
| CUSTOMER: | A.S.T. SPA | | |
| CUSTOMER'S ORDER: | AQ2400838 | | |
| MANUFACTURER'S WORKS: | AOSTA, VIA PARAVERA 16 - ITALY | | |
| PRODUCER OF THE DOC: | QUALITY DEPARTMENT | | |
| MANUFACTURER'S WORKS ORDER NO: | 0001140435 / 000020 | | |
| MARK OF THE MANUFACTURER: | **COGNE** | | |
| DISPATCH NOTE: | 0081605841 / 000010 WEIGHT: 588 KG / 1296 LB | | |
| INTERNAL SPEC: | STOCKBARREW2 | TECHNICAL RULE: | AD2000 |
| PRODUCT: | SPE ROUGHPEELED ROUND BARS | TOLERANCE: | + 1,500 - 0,0000 (+ 0,0591 - 0 in) |
| SURFACE FINISH: | 1X Hot Finished | | |
| PRODUCT DELIVERY CONDITION: | RS SOLUTION ANNEALED | | |
| PRODUCT DIMENSIONS (mm): | 125,000 ( 4,921 in) | LENGTH (mm) | 04000 06000 ( 00157 00236 in) |
| GRADE: | 316L-S31600/31603-1.4404/4401 | INTERNAL GRADE: | F316L IMCO |
| IDENTIFICATION HEAT NO: | 476355 | IDENTIFICATION LOT NO: | 172480 |
| MARKING OF THE PRODUCT: | 1.4404 | TEST PIECE N: | 248 |

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STEELMAKING EAF + AOD + CONTINUOUS CASTING
AISI 316/316L - UNS S31600/S31603 - 1.4404/1.4401
ASTM A484 DOES NOT APPLY FOR SIZE AND LENGTH TOLERANCES.
REFERENCE NORMS: EN 10088-3 (14), EN 10272 (16), ASTM A276-r17/ASME SA276-21, ASTM A479/A479M-r21, ASTM A193-23 B8MCLASSE 1D, ASME SA276/SA276M-21,ASME SA479/SA479M-21, AMS 5653J, AMS 5648N, ISO15156-3/NACE MR0175 (15), NACE MR0103/ISO 17945 (15), NORSOK M630 MDSS01 REV5.
REFERENCE NORMS FOR CHEMICAL COMPOSITION AND MECHANICAL PROPERTIES: ASTM A182-23/ ASME SA182-21.
REFERENCE NORMS ONLY FOR CHEMICAL COMPOSITION: EN 10222-5 (17),ASTM A403-22b, ASTM A484-22, ASTM A314-23, AMS-QQ-S-763D.
ASME SECT.II PART A EDITION 2015-2017-2019-2021.
REFERENCE FOR APPLICABLE ASME STANDARD: SECTION II PART A ED. 2015-2017-2019-2021
HOT ROLLED
REDUCTION RATIO 4,3

08 NOV. 2024
FRANCO CORBELLINI
QB3
CROSSWIND

CHEMICAL LADLE ANALYSIS ACCORDING TO ASTM A751 - EN ISO 14284
Control lot No. - Weight :020000997421 - 87.475 KG - 192.846 LB

| ELEMENTS | C | Si | Mn | P | S | N | Cr | Mo | Ni | Cu |
|---|---|---|---|---|---|---|---|---|---|---|
| MEASUREMENT UNIT | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w |
| OBTAINED | 0,016 | 0,37 | 1,80 | 0,027 | 0,028 | 0,076 | 16,76 | 2,08 | 10,15 | 0,63 |

| ELEMENTS | Co |
|---|---|
| MEASUREMENT UNIT | % w/w |
| OBTAINED | 0,21 |

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HARDNESS TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000998222 - 7.789 KG - 17.172 LB
SPECIFICATION ENISO6506 HARDNESS TEST HB TESTING METHOD: 10/3000
OBTAINED 148

☑ REVIEW ☐ WITNESS
ON BEHALF OF R.T.C.
A. DELLA PINA DATE 08 NOV 2024

DATE 27.03.2024 MORABITO ROSA CF(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE -Cogne

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 405.563.167,00 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.



1724000740-QC-DB-00016_01

IMPACT TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000998222 - 7.789 KG - 17.172 LB
SPECIFICATION EN ISO 148-1-KV2 DIRECTION OF THE TEST PIECE: L
TYPE OF TEST PIECE KV
TEST TEMPERATURE °C 20
MEASUREMENT UNIT J

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| OBTAINED | 438 | 426 | 430 | 430 | 439 | 428 | 427 | 426 | 438 | 440 |
| | 434 | 432 | | | | | | | | |

TENSILE TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000998222 - 7.789 KG - 17.172 LB
SPECIFICATION EN-ISO6892-1 DIRECTION OF THE TEST PIECE: L

| MEASUREMENT UNIT | RM MPA | RP02 MPA | A5 % | Z % | RP1 MPA |
|---|---|---|---|---|---|
| | | | 5.0 D | | |
| OBTAINED | 565 | 265 | 55,8 | 73,1 | 303 |
| | 571 | 265 | 54,0 | 76,3 | 306 |
| | 560 | 255 | 60,5 | 78,0 | 296 |
| | 558 | 247 | 58,0 | 80,4 | 298 |

GRAIN SIZE
Control lot No. - Weight :020000998222 - 7.789 KG - 17.172 LB
SPECIFICATION ASTME112 --
OBTAINED 5

IMPACT TEST
Control lot No. - Weight :020000998222 - 7.789 KG - 17.172 LB
SPECIFICATION EN ISO 148-1 DIRECTION OF THE TEST PIECE: L
TYPE OF TEST PIECE KV
TEST TEMPERATURE °C 196-
MEASUREMENT UNIT J

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| OBTAINED | 196 | 217 | 190 | 198 | 207 | 206 | 206 | 203 | 193 | 203 |
| | 195 | 196 | | | | | | | | |

TENSILE TEST
Control lot No. - Weight :020000998222 - 7.789 KG - 17.172 LB
SPECIFICATION ASTMA370-E8-0.5"SPEC DIRECTION OF THE TEST PIECE: L

| MEASUREMENT UNIT | TS KSI | YS KSI | RA % | EL % |
|---|---|---|---|---|
| | | | | 4,0 D |
| OBTAINED | 82 | 37 | 74,8 | 60,0 |
| | 82 | 37 | 76,4 | 65,3 |
| | 82 | 37 | 77,9 | 59,3 |
| | 81 | 37 | 81,3 | 66,0 |

08 NOV. 2024
FRANCO CORBELLINI
QSO
CROSSWIND R

☐ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

DATE 27.03.2024 MORABITO ROSA CF(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE -Cogne

COGNE ACCIAI SPECIALI S.p.a.

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C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.



1724000740-QC-DB-00016_01

COUNTRY OF MELTING AND ORIGIN: ITALY, THE MATERIAL COMPLIES WITH FAR DFARS 252.225-7009 ALT 1.
DOCUMENT ISSUED IN AGREEMENT WITH TUEV BAYERN(11.1972) WAVING OF COUNTERSIGNING (SEE TUEV BAYERN LETTER DATED 17.01.80).
MARKING: SYMBOL OF THE MANUF. WORK, MATERIAL N. , CAST N., LOT N., RECEIVING AGENT STAMP
CORROSION TEST ACCORDING TO ASTM A262/02A Practice.E EN ISO 3651-2 A: SATISFACTORY.
VISUAL INSPECTION OF SURFACE AND DIMENSIONAL CONTROL ACCORDING TO EN 10221 CLASS C AND EN 10060: SATISFACTORY.
ULTRASONIC TEST ACCORDING TO EN 10308 Class 3, equivalent to ASTM A388 FBH 5 (DIAM. 100-250) and FBH 8 (DIAM. 250-400) or to EN10228-4 Class 3: SATISFACTORY.
ANTIMIX TEST WITH PORTABLE SPECTROMETER: SATISFACTORY.
NO WELDING REPAIR ON THE MATERIAL.
FREE FROM RADIOACTIVE CONTAMINATION.
ULTRASONIC TEST ACCORDING TO EN 10308 Class.3, EN 10228 Class.3, ASTM A388 FBH 5 (diam. 102-250), FBH 8 (diam. 250,01-400).
MATERIAL IN COMPLIANCE WITH THE NORSOK M-630 MDS S01
RADIOACTIVITY CONTROL PERFORMED WITH A GAMMA SPECTROMETER: ASTM E181.
GAMMA ACTIVITY ON THE PRODUCTS BELOW 0.1 BQ/G ACCORDING TO EU RESOLUTION 2013/59/EURATOM , IAEA RS-G-1.7 AND IAEA SSG-17.
QUALITY SYSTEM CERTIFIED BY KIWA CERMET ACCORDING TO UNI EN ISO 9001:2015 -IATF 16949:2016 (THE LAST ONE ONLY FOR WIRE ROD AND HOT ROLLED-PEELED-GROUND STAINLESS STEEL BARS).
THE PRODUCT IS CONFORMING TO THE CONTRACT AGREEMENT AND TO THE RULE AD2000-MERKBLATT W0/W2.
INSPECTOR'S STAMP LF
MATERIAL CONFORM TO: 2015/863/EU (RoHS3) - 2011/65/EU (RoHS2) - 2000/53/EU - 2002/95/EU (RoHS) - 2003/11/EU - 2005/618/EU - PED 2014/68/EU e PE(S)R 2016/1105
THE MATERIAL IS FREE OF ANY MERCURY, MERCURY COMPOUNDS AND OR RADIUM CONTAMINATION AT TIME OF SHIPMENT AND WAS PRODUCED WITHOUT USING OZONE DEPLETING SUBSTANCES OF CLASS I AND II.
REFERENCE NORMS: EN 10088-3 (14), EN 10272 (16), ASTM A276-r17/ASME SA276-21, ASTM A479/A479M-r21, ASTM A193-23 B8MCLASSE 1D, ASME SA276/SA276M-21,ASME SA479/SA479M-21, AMS 5653J, AMS 5648N, ISO15156-3/NACE MR0175 (15), NACE MR0103/ISO 17945 (15), NORSOK M630 MDSS01 REV5.
REFERENCE NORMS FOR CHEMICAL COMPOSITION AND MECHANICAL PROPERTIES: ASTM A182-23/ ASME SA182-21.
REFERENCE NORMS ONLY FOR CHEMICAL COMPOSITION: EN 10222-5 (17),ASTM A403-22b, ASTM A484-22, ASTM A314-23, AMS-QQ-S-763D.
ASME SECT.II PART A EDITION 2015-2017-2019-2021.
WHERE NOT SPECIFIED ALL THE NORMS MENTIONED ARE INTENDED IN THEIR LAST REVISION AT THE DATE OF ISSUE OF THIS DOCUMENT.
ASTM A484 DOES NOT APPLY FOR SIZE AND LENGTH TOLERANCES.

☑ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

08 NOV. 2024
FRANCO CORBELLINI
QB1
CROSSWIND R

DATE 27.03.2024 MORABITO ROSA CF(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE -Cogne

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1
Nach/According to/Selon

Certificato nr. MEST112865 / 2022 /
Prüfung/Test/Essai

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura: Laminato - Solubilizzato Rettificato
Lieferzustand / Delivery state / Etat de livraison

Produttore:
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Ordine nr: ORD.N.AQ2202071
Bestell / Your order / Commande

Tipo di Elaborazione: E+AOD
Erschmelzungsart / Melting process / Mode d'elaboration

Marchi di Fabbrica:
Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice

Conferma ordine nr: MI22008136
Werks/Our Order/Ref nr.

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Punzone del Collaudatore:
Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur

Avviso di Spedizione: A-MI22006725
Lieferanzeige/Packing list/B.L.

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung / Brand / Nuance

Punzonatura: 1.4401/4/316/L
Kennzeichnung / Marking / Marquage

**SPECIFICHE :**
Anforderungen / Requirements / Exigences

VAL STOCK 2020 1.4404/316L A,CF
AISI 316
AISI 316L
ASME SA276 2019 S31600 A,CF (0)
ASME SA276 2019 S31603 A,CF (1)
ASME SA479 2019 S31600 A (2)
ASME SA479 2019 S31603 A (3)
ASTM A262 2015 PRACTICE E (4)
ASTM A276 2017 S31600 A,CF
ASTM A276 2017 S31603 A,CF
ASTM A370 2020 .
ASTM A479 2020 S31600 A
ASTM A479 2020 S31603 A
ASTM E10 2018 .
ASTM E8 2021 .
EN 10088-3 2014 1.4401 A,CF
EN 10088-3 2014 1.4404 A,CF
EN 10272 2007 1.4401 A,CF
EN 10272 2007 1.4404 A,CF
ISO 6506-1 2014 .
ISO 6892-1 2019 .

Note:
Aufzeichnungen / Notes / Notes

(0)Section II Part A 2019 EDITION
(1)Section II Part A 2019 EDITION
(2)Section II Part A 2019 EDITION
(3)Section II Part A 2019 EDITION
(4)Reapproved 2021

| | | Tolleranza: h8 - DIN670/EN10278 Toleranz/Allowance/Tolerance | | | | | |
|---|---|---|---|---|---|---|---|
| Pos. nr. Pos. nr. Item nr. Nr. de poste | Oggetto Gegenstand Product description Descrip. du produit | Dimensioni - mm Abmessungen Dimension Dimension | Lunghezza - mm Lange Length Longueur | Colata Schmelze Heat Coulée | Pezzi Stückzahl Pieces Pieces | Peso - KG Gewicht Weight Poids | Lotto nr. Losnr. Lot nr. Lot nr. |
| 0070 | Tondo | 10,000 | 2900/ 3100 | 276383 | | 18,0 | 729305910 |

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND

☒ REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLA PINA DATE 08 NOV 2024

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| | | | |
|---|---|---|---|
| **Vicenza, 09/11/2022**<br>VCQ052 - MEST112865 | **Direzione Qualità**<br>Qualitätsmanagement/Quality Management/Gestion Qualité<br>**R.BERTELLI** | **Direzione Prodotto**<br>Produktmanagement/Product Management/Direction Produit<br>**P.MESSORI** | Pagina 1 di 3 |

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
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Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a : EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1
Nach/According to/Selon

Certificato nr. MEST112865 / 2022 /
Prüfung/Test/Essai

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura : Laminato - Solubilizzato Rettificato
Lieferzustand / Delivery state / Etat de livraison

Produttore :
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Ordine nr: ORD.N.AQ2202071
Bestell / Your order / Commande

Tipo di Elaborazione: E+AOD
Erschmelzungsart / Melting process / Mode d'elaboration

Marchi di Fabbrica:
Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice
AV

Conferma ordine nr: MI22008136
Werks/Our Order/Ref nr.

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Punzone del Collaudatore:
Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur
MR

Avviso di Spedizione: A-MI22006725
Lieferanzeige/Packing list/B.L.

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung / Brand / Nuance

Punzonatura: 1.4401/4/316/L
Kennzeichnung / Marking / Marquage

### TEST ALLO STATO DI FORNITURA
Test on delivery condition  Prüefung auf lieferbereitem produkt  test a l'etat de fourniture  Prueba sobre el material así come entregado

1) L=longitudinale/längs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg.diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | Posiz. Saggio Probentage Location Emplacement 1) | Snervamento Streckgrenze Yield Stress Limite elastique Rp 0,2% N/mm2 | Snervamento Streckgrenze Yield Stress Limite elastique Rp 1% N/mm2 | Resistenza Zugfestigkeit Tensile strength Resistance à traction Rm N/mm2 | Allungamento Bruchdehnung Elongation Allongement A5 % | Allungamento E 4d % | Strizione Einschnürung Reduction of area Striction Z % | Strizione RA % | Resilienza Kerbschlagarbeit Impact Value Resilience | | | Durezza Haerte Hardness Durete HB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti Anforderungen/Required values Valeurs démandées | | min max | | 310 | 235 | 620 900 | 20 | 30 | - | 40 | - | | | - 315 | | |
| A | 10 | 20 | L | 477 | 559 | 665 | 47 | 50 | 70 | 70 | | | | 225 | | |
| B | 10 | 20 | L | 482 | 561 | 669 | 46 | 50 | 69 | 69 | | | | 228 | | |

### TEST ALLO STATO DI FORNITURA
Test on delivery condition / Prüefung auf lieferbereitem produkt / Test a l'etat de fourniture / Prueba sobre el material así come entregado

| TEST | | min | max | |
|---|---|---|---|---|
| A | Dimensioni grano x ASTM E112 | | | 7 |

Mechanical properties according to ASTM A370.
Brinnell hardness according to ASTM E10
Tensile testing according to ASTM E8
Brinnell hardness according to ISO 6506-1
Tensile testing according to ISO 6892-1

### Analisi chimica
Chemische Zusammensetzung/Chemical Analysis/Analyse chimique

| Colata /Heat Schmelze/Coulée | C % | Si % | Mn % | Cr % | Mo % | Ni % | P % | S % | N % |
|---|---|---|---|---|---|---|---|---|---|
| min - max | - 0,030 | - 1,00 | - 2,00 | 16,50 18,00 | 2,00 2,50 | 10,00 13,00 | - 0,045 | - 0,030 | - 0,100 |
| 276383 | 0,014 | 0,63 | 1,44 | 16,84 | 2,07 | 10,06 | 0,028 | 0,026 | 0,061 |

### Corrosion test in 16% sulfuric acid and copper sulfate solutions
**Test standard:** ASTM A262-Practice E

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitization | 15 | boil | 180 | 5 | Absence of cracks | SATISFACTORY |

FRANCO CORBELLINI
08 NOV. 2024
CROSSWIND

REVIEW ☐ WITNESS
ON BEHALF OF RINA
DELLA PINA DATE 08 NOV 2024

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| Vicenza, 09/11/2022 | Direzione Qualità<br>Qualitätsmanagement/Quality Management/Gestion Qualité | Direzione Prodotto<br>Produktmanagement/Product Management/Direction Produit | Pagina |
|---|---|---|---|
| VCQ052 - MEST112865 | R.BERTELLI | P.MESSORI | 2 di 3 |

# Acciaierie Valbruna S.p.A.

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Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a : Nach/According to/Selon: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. Prüfung/Test/Essai: MEST112865 / 2022 /

Cliente / Besteller/Purchaser/Client:
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura : Lieferzustand / Delivery state / Etat de livraison: Laminato - Solubilizzato Rettificato

Produttore : Hersteller/Item/Usine productrice:
**ACCIAIERIE VALBRUNA S.P.A.**

Ordine nr: Bestell / Your order / Commande: ORD.N.AQ2202071

Tipo di Elaborazione: Erschmelzungsart / Melting process / Mode d'elaboration: E+AOD

Marchi di Fabbrica: Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice: AV

Conferma ordine nr: Werks/Our Order/Ref nr.: MI22008136

Qualità: Werkstoff/Grade/Nuance: 1.4401/1.4404/316/316L

Punzone del Collaudatore: Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur: MR

Avviso di Spedizione: Lieferanzeige/Packing list/B.L.: A-MI22006725

Marca: Markenbezeichnung / Brand / Nuance: MVAPML ( MAXIVAL )

Punzonatura: Kennzeichnung / Marking / Marquage: 1.4401/4/316/L

**Corrosion test in 16% sulfuric acid and copper sulfate solutions**

**Test standard:** UNI EN ISO 3651-2 Method A

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitized T1 | 20 | boil | 90 | 5 | Absence of cracks | **SATISFACTORY** |

Reduction ratio = 374,4 : 1
Material solution annealed 1060° C for 0.5h/air cooled.

Sono state soddisfatte tutte le condizioni richieste
Die gestellen Anforderungen sind it. Anlage erfüllt
The material has been furnished in accordance with the requirements
Le materiel á eté trouvé conforme aux exigences

Controllo antimescolanza con tecnica XRF/OES portatile : OK
Verwechslungprüfung: durch XRF/QES Gerät geführt : OK
Antimixing testing performed with XRF/OES portable : OK
Contrôle antimélange svt technique XRF/QES portable : OK

Controllo visivo e dimensionale: soddisfa le esigenze
Besichtigung und Ausmessung: ohne Beanstandung
Visual inspection and dimensional checks:satisfactory
Contrôle visuel et dimensions: satisfaisant

Melted, poured and manufactured in Italy  No welding or weld repair  Material free from Mercury contamination

We declare that the finished product is checked for radioactive contamination by the portal system when it leaves the production plant.

The Quality Management System is also Certified according Pressure Equipment Directive 2014/68/EU Annex 1,chapt.4.3 by TÜV and LLOYD'S
Any act of tampering, modification, alteration, counterfeiting and/or falsification and/or any other action which modifies the contents of this test certificate shall constitute a violation of applicable civil and criminal laws. Acciaierie Valbruna shall protect its rights and interests before any competent court, authority and jurisdiction.
Maxival and/or Valplus grades/products are manufactured with ladle techniques to control composition, distribution, size and shape of non-metallic inclusions for improved machinability.
The supplied product conforms to requirements expressly requested by the purchaser and conforms to requirements specified by certified norms and standards. Should the product be used for more severe, critical and/ or in any case different applications than those the material is generally intended for, any different and/or supplementary requirements shall be specifically demanded, at least, upon order of the Product by the Purchaser. Acciaierie Valbruna SpA shall not be responsible for any improper use of the Products.

WSPC3780DC7C1825C17D4551FA056EA50C2

08 NOV. 2024
FRANCO CORBELLINI
QBJ
CROSSWIND R

☒ REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLAPINA DATE 08 NOV 2024

**QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D**

| Vicenza, 09/11/2022<br>VCQ052 - MEST112865 | Direzione Qualità<br>Qualitätsmanagement/Quality Management/Gestion Qualité<br>R.BERTELLI | Direzione Prodotto<br>Produktmanagement/Product Management/Direction Produit<br>P.MESSORI | Pagina 3 di 3 |
|---|---|---|---|

**AST S.p.A.**
Via R. Merendi, 40
I-20007 Cornaredo MI

P +39 02 934848.1
F +39 02 9362248
W www.astspa.it

# DECLARATION ACCORDING TO EN 10204 3.1 / 3.2

We hereby declare that below listed components are in compliance with the Purchase Order specifications and requirements.

**Customer**
ROSETTI MARINO S.P.A.

**P.Order / Project**
1724000740 123A90A Rev. 1

**ITEM Number**
10-60

**Tag**
25-FV-038

**Quantity delivered**
1

**AST Job**
CV2400221

**AST Code**
CV2400221CV8407A000

**Serial Number**
2400588

**Valve Type**
Valvole Regolazione

**Size IN**
NPS 1

**Size OUT**
1/4"

| Part Name | Material | Heat No. | Certificate No. | Supplier |
|---|---|---|---|---|
| BODY | ASTM A351 CF3M | E276 | E276 | SGA Alloys Private Limited |
| SEAT RING | ASTM A479 316/316L | 372445 | 2023016714 | COGNE ACCIAI SPECIALI SPA |
| PLUG | F316 + PTFE | 290960 | MEST091967/2023/ | ACCIAIERIE VALBRUNA |
| BONNET | ASTM A479 316/316L | 476355 | 2024015321 | COGNE ACCIAI SPECIALI SPA |
| STEM | ASTM A479 316/316L | 276383 | MEST112865-2022 | ACCIAIERIE VALBRUNA |

**Remarks** : DOCUMENT REVISED FOR MISTAKE HEAT OF BODY

**AST Q.C. Department**

**Customer's Inspector**

**Third Party Inspection**

**Date** : 27.06.2025 **Date** : _____ **Date** : _____

# SGA ALLOYS PRIVATE LIMITED

( Formerly Known as Sri Ganapathy Steel Alloy Casting )
ISO 9001 : 2015 CERTIFIED COMPANY
SF.NO:10/1,NALLAGOUNDENPALAYAM,,KADUVETTIPALAYAM POST,SULUR TKCOIMBATORE Pin :641659,
Phone :9159530466,9159533064, email :sgaalloys2018@gmail.com

## MATERIAL TEST CERTIFICATE
## AS PER EN 10204 - 3.1

**Customer** : ECO TECH CASTINGS INDIA (P) LTD
COIMBATORE 641018

T.C. No. : **E276**
T.C.Date : **20/09/2021**

**P.Order No.** : ECO/21-22/134 Dt. 05/08/2021

Heat No. : **E276**
Pouring Date : **12/08/2021**

**Specification** : **ASTM A351 Gr.CF3M - 2018**

CASTING PROCESSED BY INDUCTION MELTING

FOUNDRY IDENTIFICATION :SGA

**TEST SPEC AS PER ASTM A703-2020 — CHEMICAL COMPOSITION - %**

| Element | | C | Mn | Si | P | S | Cr | Ni | Mo | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Req. | Min | --- | --- | --- | --- | --- | 17.000 | 9.000 | 2.000 | | | | | | |
| | Max | 0.030 | 1.500 | 1.500 | 0.040 | 0.040 | 21.000 | 13.000 | 3.000 | | | | | | |
| **Actual** | | **0.028** | **0.827** | **0.787** | **0.035** | **0.001** | **17.312** | **9.482** | **2.101** | | | | | | |

**HEAT TREATMENT :** SOLUTION ANNEALING: Heated to 1080 ° C, Soaked for 3 Hrs and then water Quenched.

**TENSILE TEST AS PER ASTM A370-2020 — MECHANICAL PROPERTIES — IMPACT TEST AS PER ASTM E23-16**

| Requirments | Yield Strength | Tensile Strength | % Elongation | % Reduction of Area | Hardness | Bend Test | Impact Test in (Joules) (10mm X 10mm X 55mm) Impact at -196°c & 40jmin | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Mpa | MPa | GL :50 mm | | BHN | D =3T | | | | |
| | 0.2% Proof Stress | - | - | - | - | at 120 ° | | | | |
| **Minimum** | 205 | 485 | 30.00 | --- | --- | | | | | |
| **Maximum** | --- | --- | --- | --- | 237 | - | 1 | 2 | 3 | Avg |
| **Actual** | **262** | **539** | **52.80** | **---** | 160 | **--** | **74** | **76** | **74** | **74.67** |

**ITEM DESCRIPTION**

| SL.No. | Product | Description | Drawing No. | Part No. | Poured Qty |
|---|---|---|---|---|---|
| 1 | C20005 | BODY CV 8400(AT220) | M028 REV.0 | CABDWG0028 | 4 |

Remarks : **Separate test bar poured and the same bar tested for chemical and mechanical properties**
**Tensile Testing conducted on round specimen at room temperature**
**These casting has been acid pickled and passivated**
**Casting meet the requirement of NACE MR0175 / ISO 15156**
**Radio activity checked and found to be 0.10 Bequerel/Gram**
**Carbon steel fully killed Condition**
**Visual inspection carried out at as per MSS SP-55, found satisfied**

We here by certify that the items mentioned above have been tested, inspected and found to be in accordance with customer's drawing, specification, purchase order and satisfy the requirements of ASTM A351 Gr.CF3M - 2018,

for SGA ALLOYS PRIVATE LIMITED

K.ARUNKUMAR
Prepared By

K.KARTHIKEYAN
QUALITY ASSURANCE

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 250.000.000 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.

# INSPECTION CERTIFICATE 3.1 (EN 10204:2004)

DOCUMENT NUMBER 2023016714



| | | | |
|---|---|---|---|
| CUSTOMER: | A.S.T. SPA | | |
| CUSTOMER'S ORDER: | AQ2301925 | | |
| MANUFACTURER'S WORKS: | AOSTA, VIA PARAVERA 16 - ITALY | | |
| PRODUCER OF THE DOC: | QUALITY DEPARTMENT | | |
| MANUFACTURER'S WORKS ORDER NO: | 0001136538 / 000020 | | |
| MARK OF THE MANUFACTURER: | COGNE | | |
| DISPATCH NOTE: | 0081566096 / 000020 WEIGHT: 190 KG / 419 LB | | |
| INTERNAL SPEC: | STOCKBARREW2 | TECHNICAL RULE: | AD2000 |
| PRODUCT: | PEL PEELED ROUND BARS TOLERANCE: ISOK11 | | |
| SURFACE FINISH: | 2B Cold Finished | | |
| PRODUCT DELIVERY CONDITION: | RS SOLUTION ANNEALED | | |
| PRODUCT DIMENSIONS (mm): | 50,000 ( 1,969 in) | LENGTH (mm) | 03000 03100 ( 00118 00122 in) |
| GRADE: | 316L-S31600/31603-1.4404/4401 | INTERNAL GRADE: | F316L IMCO |
| IDENTIFICATION HEAT NO: | 372445 | IDENTIFICATION LOT NO: | 725970 |
| MARKING OF THE PRODUCT: | 1.4404 | TEST PIECE N: | 597 |

REFERENCE NORMS: EN 10088-3 2014, EN 10272 2016, ASTM A276/A276M, ASTM A479/A479M, ASTM A193 B8MCLASSE 1D, ASME SA276/SA276M, ASME SA479/SA479M, AMS 5653J, AMS 5648N, ISO15156-3/NACE MR0175 2015, NACE MR0103/ISO 17945, NORSOK M630 MDSS01 REV5.
REFERENCE NORMS FOR CHEMICAL COMPOSITION AND MECHANICAL PROPERTIES: ASTM A182, ASME SA182.
REFERENCE NORMS ONLY FOR CHEMICAL COMPOSITION: EN 10222-5 2017,ASTM A403-07a, ASTM A484-18a,ASTM A314-08, AMS-QQ-S-763D.
ASME SECT.II PART A EDITION 2015-2017-2019-2021
AISI 316/316L - UNS S31600/S31603 - 1.4404/1.4401
THE PRODUCT IS CONFORMING TO THE CONTRACT AGREEMENT AND TO THE RULE AD2000-MERKBLATT W0/W2.
STEELMAKING EAF + AOD + CONTINUOUS CASTING
ASTM A484 DOES NOT APPLY FOR SIZE AND LENGTH TOLERANCES.
STEELMAKING EAF + AOD + CONTINUOUS CASTING
REFERENCE FOR APPLICABLE ASME STANDARD: SECTION II PART A ED. 2015-2017-2019-2021
HOT ROLLED
REDUCTION RATIO 11,8

CHEMICAL LADLE ANALYSIS ACCORDING TO ASTM A751 - EN ISO 14284
Control lot No. - Weight :020000959742 - 85.921 KG - 189.420 LB

| ELEMENTS | C | Si | Mn | P | S | N | Cr | Mo | Ni | Cu |
|---|---|---|---|---|---|---|---|---|---|---|
| MEASUREMENT UNIT | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w |
| OBTAINED | 0,018 | 0,26 | 1,77 | 0,026 | 0,028 | 0,077 | 16,97 | 2,04 | 10,28 | 0,46 |

| ELEMENTS | Co |
|---|---|
| MEASUREMENT UNIT | % w/w |
| OBTAINED | 0,16 |

HARDNESS TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000960410 - 7.449 KG - 16.422 LB
SPECIFICATION ENISO6506 HARDNESS TEST HB TESTING METHOD: 10/3000
OBTAINED 157

DATE 05.04.2023

BARBARA VIETTI MV(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
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CAP. SOC. 250.000.000 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.



IMPACT TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000960410 - 7.449 KG - 16.422 LB
SPECIFICATION EN ISO 148-1-KV2
TYPE OF TEST PIECE KV DIRECTION OF THE TEST PIECE: L
TEST TEMPERATURE °C 20
MEASUREMENT UNIT J
OBTAINED 435 430 428 435 438 439 429 435 436 426
432 434

---

TENSILE TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000960410 - 7.449 KG - 16.422 LB
SPECIFICATION EN-ISO6892-1 DIRECTION OF THE TEST PIECE: L

| MEASUREMENT UNIT | RM MPA | RP02 MPA | A5 % 5.0 D | Z % | RP1 NMM |
|---|---|---|---|---|---|
| OBTAINED | 611 | 282 | 55,2 | 78,3 | 325 |
| | 613 | 287 | 51,3 | 72,1 | 342 |
| | 614 | 301 | 48,8 | 73,1 | 341 |
| | 612 | 272 | 56,7 | 76,3 | 325 |

---

GRAIN SIZE
Control lot No. - Weight :020000960410 - 7.449 KG - 16.422 LB
SPECIFICATION ASTME112 --
OBTAINED 6

---

MATERIAL IN COMPLIANCE WITH THE NORSOK M-630 MDS S01
IMPACT TEST
Control lot No. - Weight :020000960410 - 7.449 KG - 16.422 LB
SPECIFICATION EN ISO 148-1
TYPE OF TEST PIECE KV DIRECTION OF THE TEST PIECE: L
TEST TEMPERATURE °C 196-
MEASUREMENT UNIT J
OBTAINED 198 185 195 190 177 173 173 173 197 175
192 179

---

TENSILE TEST
Control lot No. - Weight :020000960410 - 7.449 KG - 16.422 LB
SPECIFICATION ASTMA370-E8-0.5"SPEC DIRECTION OF THE TEST PIECE: L

| MEASUREMENT UNIT | RMB KSI | RP02B KSI | ZB % | AL2B % 4,0 D |
|---|---|---|---|---|
| OBTAINED | 88 | 40 | 78,0 | 57,6 |
| | 89 | 41 | 73,3 | 55,7 |
| | 89 | 41 | 72,9 | 54,0 |
| | 89 | 40 | 78,1 | 61,1 |

---

DATE 05.04.2023
BARBARA VIETTI MV(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

COGNE ACCIAI SPECIALI S.p.a.

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Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.



COUNTRY OF MELTING AND ORIGIN: ITALY, THE MATERIAL COMPLIES WITH FAR DFARS 252.225-7009 ALT 1.
The products delivered are conforming to EN10088-5 and bear the CE marking on the basis of the test results here reported and the continuous surveillance, assessment and approval by MPA NRW (certificate no. 0432-CPR-00166-01)
Material produced according to the system #Regulation 305/2011/EU of the European Parliament and of the Council of 9 March 2011#
DOCUMENT ISSUED IN AGREEMENT WITH TUEV BAYERN(11.1972) WAVING OF COUNTERSIGNING (SEE TUEV BAYERN LETTER DATED 17.01.80).
MARKING: SYMBOL OF THE MANUF. WORK, MATERIAL N. , CAST N., LOT N., RECEIVING AGENT STAMP
CORROSION TEST ACCORDING TO ASTM A262 PRACTICE E EN ISO 3651-2 PRACTICE A: SATISFACTORY.
ANTIMIXING TEST BY PORTABLE SPECTROMETRE: CONFORMING
EDDY CURRENT INSPECTION OF SURFACE ACCORDING TO EN 10277 CLASS 4.
DIMENSIONAL CONTROL ACCORDING TO EN 10278: SATISFACTORY.
NO WELDING REPAIR ON THE MATERIAL.
ULTRASONIC TEST ACCORDING TO EN 10308 Class.3: SATISFACTORY
QUALITY SYSTEM CERTIFIED BY KIWA CERMET ACCORDING TO UNI EN ISO 9001:2015 -IATF 16949:2016 (THE LAST ONE ONLY FOR WIRE ROD AND HOT ROLLED-PEELED-GROUND STAINLESS STEEL BARS).
INSPECTOR'S STAMP LF
MATERIAL CONFORM TO: 2015/863/UE (RoHS3) - 2011/65/UE (RoHS2) - 2000/53/UE - 2002/95/UE (RoHS) - 2003/11/UE - 2005/618/UE - PED 2014/68/UE e PE(S)R 2016/1105
THE MATERIAL IS FREE OF ANY MERCURY, MERCURY COMPOUNDS AND OR RADIUM CONTAMINATION AT TIME OF SHIPMENT AND WAS PRODUCED WITHOUT USING OZONE DEPLETING SUBSTANCES OF CLASS I AND II.
RADIOACTIVITY CONTROL PERFORMED WITH A GAMMA SPECTROMETER: ASTM E181.
GAMMA ACTIVITY ON THE PRODUCTS BELOW 0.1 BQ/G ACCORDING TO EU RESOLUTION 2013/59/EURATOM , IAEA RS-G-1.7 AND IAEA SSG-17.

CE 0432

DATE 05.04.2023

BARBARA VIETTI MV(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a : EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1
Nach/According to/Selon

Certificato nr. MEST091967 / 2023 /
Prüfung/Test/Essai

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura : Laminato - Solubilizzato Trafilato
Lieferzustand / Delivery state / Etat de livraison

Produttore :
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Tipo di Elaborazione: E+AOD
Erschmelzungsart / Melting process / Mode d'elaboration

Marchi di Fabbrica:
Zeichen des Liefernwerkes / Trade marks / Sigles de l'usine productrice
AV

Ordine nr: ORD N AQ2301562
Bestell / Your order / Commande

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Punzone del Collaudatore:
Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur
MR

Conferma ordine nr: MI23005383
Werks/Our Order/Ref nr.

Avviso di Spedizione: A-MI23004303
Lieferanzeige/Packing list/B.L.

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung / Brand / Nuance

Punzonatura: 1.4401/1.4404
Kennzeichnung / Marking / Marquage

**SPECIFICHE :**
Anforderungen / Requirements / Exigences

VAL STOCK W2 A/1 1.4404/316L A,CF
AD 2000-M. W 2 01/20 1.4401 A,CF (0)
AD 2000-M. W 2 01/20 1.4404 A,CF (1)
AISI . 316/316L
ASME SA182 2021 S31600/03 A (2)
ASME SA276 2021 S31600/03 A,CF (3)
ASME SA479 2021 S31600/03 A (4)
ASTM A182 2022A S31600/03 A (5)
ASTM A262 PR. E 2015 316/316L (6)
ASTM A276 2017 S31600/03 A,CF
ASTM A370 2022 .
ASTM A479 2021 S31600/03 A
ASTM E10 2018 .
ASTM E8 2022 .
EN 10088 PART 3 2014 1.4401 A,CF
EN 10088 PART 3 2014 1.4404 A,CF
EN 10272 2016. 1.4401 A,CF
EN 10272 2016. 1.4404 A,CF
ISO 148-1 2016 .
ISO 3651-2 98 METHOD A T1
ISO 6506-1 2014 .
ISO 6892-1 2019 .
ACH CO . .
PME HB L . .

Note:
Aufzeichnungen / Notes / Notes

(0)AD 2000-MERKBLATT W 2 edition 01.2020 AD 2000-MERKBLATT W 10 edition 01.2020
(1)AD 2000-MERKBLATT W 2 edition 01.2020 AD 2000-MERKBLATT W 10 edition 01.2020

(2)Section II Part A 2021 EDITION For products machined directly from bar refer to ASME SA479.
(3)Section II Part A 2021 EDITION

(4)Section II Part A 2021 EDITION
(5)For products machined directly from bar refer also to ASTM A479.
(6)Reapproved 2021

Tolleranza: h9 - DIN671/EN10278
Toleranz/Allowance/Tolerance

| Pos. nr. Pos. nr. Item nr. Nr. de poste | Oggetto Gegenstand Product description Descrip. du produit | Dimensioni - mm Abmessungen Dimension Dimension | Lunghezza - mm Länge Length Longueur | Colata Schmelze Heat Coulée | Pezzi Stückzahl Places Pieces | Peso - KG Gewicht Weight Poids | Lotto nr. Losnr. Lot nr. Lot nr. |
|---|---|---|---|---|---|---|---|
| 0030 | Tondo | 13,000 | 3000/ 3040 | 290960 | | 32,0 | 217704330 |

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a / Nach/According to/Selon: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. / Prüfung/Test/Essai: MEST091967 / 2023 /

Cliente / Besteller/Purchaser/Client:
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura / Lieferzustand / Delivery state / Etat de livraison: Laminato - Solubilizzato Trafilato

Produttore / Hersteller/Item/Usine productrice:
**ACCIAIERIE VALBRUNA S.P.A.**

Tipo di Elaborazione / Erschmelzungsart / Melting process / Mode d'elaboration: E+AOD

Marchi di Fabbrica / Zeichen des Liefernwerkes / Trade marks / Sigles de l'usine productrice: AV

Ordine nr. / Bestell / Your order / Commande: ORD N AQ2301562

Qualità / Werkstoff/Grade/Nuance: 1.4401/1.4404/316/316L

Punzone del Collaudatore / Stempel des Werksachverständigen / Inspector's stamp/Poinçon de l'assayeur: MR

Conferma ordine nr. / Werks/Our Order/Ref nr.: MI23005383

Avviso di Spedizione / Lieferanzeige/Packing list/B.L.: A-MI23004303

Marca / Markenbezeichnung / Brand / Nuance: MVAPML ( MAXIVAL )

Punzonatura / Kennzeichnung / Marking / Marquage: 1.4401/1.4404

### TEST ALLO STATO DI FORNITURA

Test on delivery condition / Prüefung auf lieferbereitem produkt / test a l'etat de fourniture / Prueba sobre el material así come entregado

1) L=longitudinale/längs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg.diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | Posiz. Saggio Probentage Location Emplacement 1) | Snervamento Streckgrenze Yield Stress Limite elastique Rp 0,2% N/mm2 | Snervamento Streckgrenze Yield Stress Limite elastique Rp 1% N/mm2 | Resistenza Zugfestigkeit Tensile strength Resistance à traction Rm N/mm2 | Allungamento Bruchdehnung Elongation Allongement A5 % | | Strizione Einschnürung Reduction of area Striction Z % | | Resilienza Kerbschlagarbeit Impact Value Resilience | | | Durezza Haerte Hardness Durete HB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti / Anforderungen/Required values / Valeurs demandées | | min / max | | 200 | 235 | 500<br>900 | 20 | - | - | - | - | | | - | | 315 |
| A | 10 | 20 | L | 585 | 679 | 785 | 33 | | 67 | | | | | 255 | | |
| F | 10 | 20 | L | 588 | 681 | 789 | 32 | | 64 | | | | | 258 | | |

### TEST ALLO STATO DI FORNITURA

Test on delivery condition / Prüefung auf lieferbereitem produkt / Test a l'etat de fourniture / Prueba sobre el material así come entregado

| TEST | | min | max | |
|---|---|---|---|---|
| F | Dimensioni grano x ASTM E112 | | | 6 |

### Test allo stato di fornitura per ASTM A370

1) L=longitudinale/längs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg.diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | Posiz. Saggio Probentage Location Emplacement 1) | Snervamento Streckgrenze Yield Stress Limite elastique Rp 0,2% N/mm2 | Snervamento Streckgrenze Yield Stress Limite elastique | Resistenza Zugfestigkeit Tensile strength Resistance à traction Rm N/mm2 | Allungamento Bruchdehnung Elongation Allongement E 4d % | | Strizione Einschnürung Reduction of area Striction RA % | | Resilienza Kerbschlagarbeit Impact Value Resilience | | | Durezza Haerte Hardness Durete HB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti / Anforderungen/Required values / Valeurs demandées | | min / max | | 205 | - | 515 | - | 30 | - | 50 | - | | | - | | |
| B | 12,5 | 20 | L | 579 | | 780 | | 35 | | 68 | | | | 253 | | |

### Charpy per ISO 148-1

1) L=longitudinale/längs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg.diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | Posiz. Saggio Probentage Location Emplacement 1) | Resilienza Kerbschlagarbeit Impact Value Resilience KV2 ↓ | | | Espansione laterale - Lateral Expansion - | | | Shear - Shear - | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti / Anforderungen/Required values / Valeurs demandées | | min / max | | 50 | 50 | 50 | - | - | - | - | - | - |
| E | 10X5 | 20 | L | 99 | 89 | 94 | | | | | | |
| G | 10X5 | 20 | L | 102 | 86 | 84 | | | | | | |

Tensile testing according to ISO 6892-1
Impact testing according to ISO 148-1
Mechanical properties according to ASTM A370.
Brinnell hardness according to ASTM E10

**QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D**

**Vicenza, 13/07/2023**
VCQ008 - MEST091967

**Direzione Qualità**
Qualitätsmanagement/Quality Management/Gestion Qualité
**R.BERTELLI**

**Direzione Prodotto**
Produktmanagement/Product Management/Direction Produit
**P.MESSORI**

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a : EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1
Nach/According to/Selon

Certificato nr. MEST091967 / 2023 /
Prüfung/Test/Essai

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Ordine nr: ORD N AQ2301562
Bestell
Your order
Commande

Conferma ordine nr: MI23005383
Werks/Our Order/Ref nr.

Avviso di Spedizione: A-MI23004303
Lieferanzeige/Packing list/B.L.

Stato di fornitura : Laminato - Solubilizzato Trafilato
Lieferzustand
Delivery state
Etat de livraison

Tipo di Elaborazione: E+AOD
Erschmelzungsart
Melting process
Mode d'elaboration

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung
Brand / Nuance

Produttore :
Hersteller/Item/Usine productrice

**ACCIAIERIE VALBRUNA S.P.A.**

Marchi di Fabbrica:
Zeichen des Liefernwerkes
Trade marks
Sigles de l'usine productrice

Punzone del Collaudatore:
Stempel des Werkssachverständigen
Inspector's stamp/Poinçon de l'assayeur

Punzonatura: 1.4401/1.4404
Kennzeichnung
Marking
Marquage

Tensile testing according to ASTM E8

Brinnell hardness according to ISO 6506-1

### Analisi chimica
Chemische Zusammensetzung/Chemical Analysis/Analyse chimique

| Colata /Heat<br>Schmelze/Coulée | min -<br>max 0,030 | -<br>1,00 | -<br>2,00 | 16,50<br>18,00 | 2,00<br>2,50 | 10,00<br>13,00 | -<br>- | -<br>0,045 | -<br>0,030 | -<br>0,100 | - | - | - | - | - |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | C % | Si % | Mn % | Cr % | Mo % | Ni % | Co % | P % | S % | N % | | | | | |
| 290960 | 0,015 | 0,46 | 1,56 | 16,74 | 2,02 | 10,00 | 0,125 | 0,029 | 0,027 | 0,063 | | | | | |

**Corrosion test in 16% sulfuric acid and copper sulfate solutions**

**Test standard:** UNI EN ISO 3651-2 Method A

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitized T1 | 20 | boil | 90 | 5 | Absence of cracks | **SATISFACTORY** |

**Corrosion test in 16% sulfuric acid and copper sulfate solutions**

**Test standard:** ASTM A262-Practice E

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitization | 15 | boil | 180 | 5 | Absence of cracks | **SATISFACTORY** |

Reduction ratio = 210,6 : 1
Material solution annealed 1040°C for 135'(total time)/
water cooled.
SURFACE QUALITY COMPLIANT TO EN 10088-3 TAB.1 COND. 2H
"Issued in agreement with TÜV SÜD Industrie Service GMBH
(07/1972)"
"Qs approved according to PED, Annex I, Para. 4.3 by
Notified Body 0036"
"(Certification no. DGR-0036-QS-W 23/2002/MUC)"

Sono state soddisfatte tutte le condizioni richieste
Die gestellen Anforderungen sind it. Anlage erfüllt
The material has been furnished in accordance with the requirements
Le materiel à été trouvé conforme aux exigences

Controllo antimescolanza con tecnica XRF/OES portatile : OK
Verwechslungprüfung: durch XRF/QES Gerät geführt : OK
Antimixing testing performed with XRF/OES portable : OK
Contrôle antimélange svt technique XRF/QES portable : OK

Controllo visivo e dimensionale: soddisfa le esigenze
Besichtigung und Ausmessung: ohne Beanstandung
Visual inspection and dimensional checks:satisfactory
Contrôle visuel et dimensions: satisfaisant

# Acciaierie Valbruna S.p.A.

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## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a : EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1
Nach/According to/Selon

Certificato nr. MEST091967 / 2023 /
Prüfung/Test/Essai

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AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura : Laminato - Solubilizzato Trafilato
Lieferzustand
Delivery state
Etat de livraison

Produttore :
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Ordine nr: ORD N AQ2301562
Bestell
Your order
Commande

Tipo di Elaborazione: E+AOD
Erschmelzungsart
Melting process
Mode d'elaboration

Marchi di Fabbrica:
Zeichen des Liefernwerkes
Trade marks
Sigles de l'usine productrice
AV

Conferma ordine nr: MI23005383
Werks/Our Order/Ref nr.

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Punzone del Collaudatore:
Stempel des Werkssachverständigen
Inspector's stamp/Poinçon de l'assayeur
MR

Avviso di Spedizione: A-MI23004303
Lieferanzeige/Packing list/B.L.

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung
Brand / Nuance

Punzonatura: 1.4401/1.4404
Kennzeichnung
Marking
Marquage

Melted, poured and manufactured in Italy  No welding or weld repair  Material free from Mercury contamination

We declare that the finished product is checked for radioactive contamination by the portal system when it leaves the production plant.

The Quality Management System is also Certified according to Pressure Equipment Directive 2014/68/EU Annex 1,chapt.4.3 by TÜV and LLOYD`S
The Quality Management System is also Certified according to PER 2016/1105, Schedule 2, Part 4, Para 31 (8) by Competent Body TÜV SUD BABT Unlimited.
Any act of tampering, modification, alteration, counterfeiting and/or falsification and/or any other action which modifies the contents of this test certificate shall constitute a violation of applicable civil and criminal laws. Acciaierie Valbruna shall protect its rights and interests before any competent court, authority and jurisdiction.
Maxival and/or Valplus grades/products are manufactured with ladle techniques to control composition, distribution, size and shape of non-metallic inclusions for improved machinability.
The supplied product conforms to requirements expressly requested by the purchaser and conforms to requirements specified by certified norms and standards. Should the product be used for more severe, critical and/ or in any case different applications than those the material is generally intended for, any different and/or supplementary requirements shall be specifically demanded, at least, upon order of the Product by the Purchaser. Acciaierie Valbruna SpA shall not be responsible for any improper use of the Products.

WBPEC01345678ABCDEF0123456789ABCD

COGNE ACCIAI SPECIALI S.p.a.

ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 405,563.167,00 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.

INSPECTION CERTIFICATE 3.1 (EN 10204:2004)
DOCUMENT NUMBER 2024015321


| | | | |
|---|---|---|---|
| CUSTOMER: | A.S.T. SPA | | |
| CUSTOMER'S ORDER: | AQ2400838 | | |
| MANUFACTURER'S WORKS: | AOSTA, VIA PARAVERA 16 - ITALY | | |
| PRODUCER OF THE DOC: | QUALITY DEPARTMENT | | |
| MANUFACTURER'S WORKS ORDER NO: | 0001140435 / 000020 | | |
| MARK OF THE MANUFACTURER: | **COGNE** | | |
| DISPATCH NOTE: | 0081605841 / 000010 WEIGHT: 588 KG / 1296 LB | | |
| INTERNAL SPEC: | STOCKBARREW2 | TECHNICAL RULE: | AD2000 |
| PRODUCT: | SPE ROUGHPEELED ROUND BARS | TOLERANCE: | + 1,500 - 0,0000 (+ 0,0591 - 0 in) |
| SURFACE FINISH: | 1X Hot Finished | | |
| PRODUCT DELIVERY CONDITION: | RS SOLUTION ANNEALED | | |
| PRODUCT DIMENSIONS (mm): | 125,000 ( 4,921 in) | LENGTH (mm) | 04000 06000 ( 00157 00236 in) |
| GRADE: | 316L-S31600/31603-1.4404/4401 | INTERNAL GRADE: | F316L IMCO |
| IDENTIFICATION HEAT NO: | 476355 | IDENTIFICATION LOT NO: | 172480 |
| MARKING OF THE PRODUCT: | 1.4404 | TEST PIECE N: | 248 |

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STEELMAKING EAF + AOD + CONTINUOUS CASTING
AISI 316/316L - UNS S31600/S31603 - 1.4404/1.4401
ASTM A484 DOES NOT APPLY FOR SIZE AND LENGTH TOLERANCES.
REFERENCE NORMS: EN 10088-3 (14), EN 10272 (16), ASTM A276-r17/ASME SA276-21, ASTM A479/A479M-r21, ASTM A193-23 B8MCLASSE 1D, ASME SA276/SA276M-21,ASME SA479/SA479M-21, AMS 5653J, AMS 5648N, ISO15156-3/NACE MR0175 (15), NACE MR0103/ISO 17945 (15), NORSOK M630 MDSS01 REV5.
REFERENCE NORMS FOR CHEMICAL COMPOSITION AND MECHANICAL PROPERTIES: ASTM A182-23/ ASME SA182-21.
REFERENCE NORMS ONLY FOR CHEMICAL COMPOSITION: EN 10222-5 (17),ASTM A403-22b, ASTM A484-22, ASTM A314-23, AMS-QQ-S-763D.
ASME SECT.II PART A EDITION 2015-2017-2019-2021.
REFERENCE FOR APPLICABLE ASME STANDARD: SECTION II PART A ED. 2015-2017-2019-2021
HOT ROLLED
REDUCTION RATIO 4,3

CHEMICAL LADLE ANALYSIS ACCORDING TO ASTM A751 - EN ISO 14284
Control lot No. - Weight :020000997421 - 87.475 KG - 192.846 LB

| ELEMENTS | C | Si | Mn | P | S | N | Cr | Mo | Ni | Cu |
|---|---|---|---|---|---|---|---|---|---|---|
| MEASUREMENT UNIT | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w |
| OBTAINED | 0,016 | 0,37 | 1,80 | 0,027 | 0,028 | 0,076 | 16,76 | 2,08 | 10,15 | 0,63 |

| ELEMENTS | Co |
|---|---|
| MEASUREMENT UNIT | % w/w |
| OBTAINED | 0,21 |

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HARDNESS TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000998222 - 7.789 KG - 17.172 LB
SPECIFICATION ENISO6506 HARDNESS TEST HB TESTING METHOD: 10/3000
OBTAINED 148

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DATE 27-03-2024 MORABITO ROSA CF(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

COGNE ACCIAI SPECIALI S.p.a.
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CAP. SOC. 405.563.167,00 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.



IMPACT TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000998222 - 7.789 KG - 17.172 LB
SPECIFICATION EN ISO 148-1-KV2 DIRECTION OF THE TEST PIECE: L
TYPE OF TEST PIECE KV
TEST TEMPERATURE °C 20
MEASUREMENT UNIT J

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| OBTAINED | 438 | 426 | 430 | 430 | 439 | 428 | 427 | 426 | 438 | 440 |
| | 434 | 432 | | | | | | | | |

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TENSILE TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000998222 - 7.789 KG - 17.172 LB
SPECIFICATION EN-ISO6892-1 DIRECTION OF THE TEST PIECE: L

| | RM | RP02 | A5 | Z | RP1 |
|---|---|---|---|---|---|
| MEASUREMENT UNIT | MPA | MPA | % | % | MPA |
| | | | 5.0 D | | |
| OBTAINED | 565 | 265 | 55,8 | 73,1 | 303 |
| | 571 | 265 | 54,0 | 76,3 | 306 |
| | 560 | 255 | 60,5 | 78,0 | 296 |
| | 558 | 247 | 58,0 | 80,4 | 298 |

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GRAIN SIZE
Control lot No. - Weight :020000998222 - 7.789 KG - 17.172 LB
SPECIFICATION ASTME112 --
OBTAINED 5

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IMPACT TEST
Control lot No. - Weight :020000998222 - 7.789 KG - 17.172 LB
SPECIFICATION EN ISO 148-1 DIRECTION OF THE TEST PIECE: L
TYPE OF TEST PIECE KV
TEST TEMPERATURE °C 196-
MEASUREMENT UNIT J

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| OBTAINED | 196 | 217 | 190 | 198 | 207 | 206 | 206 | 203 | 193 | 203 |
| | 195 | 196 | | | | | | | | |

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TENSILE TEST
Control lot No. - Weight :020000998222 - 7.789 KG - 17.172 LB
SPECIFICATION ASTMA370-E8-0.5"SPEC DIRECTION OF THE TEST PIECE: L

| | TS | YS | RA | EL |
|---|---|---|---|---|
| MEASUREMENT UNIT | KSI | KSI | % | % |
| | | | | 4,0 D |
| OBTAINED | 82 | 37 | 74,8 | 60,0 |
| | 82 | 37 | 76,4 | 65,3 |
| | 82 | 37 | 77,9 | 59,3 |
| | 81 | 37 | 81,3 | 66,0 |

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Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.



COUNTRY OF MELTING AND ORIGIN: ITALY, THE MATERIAL COMPLIES WITH FAR DFARS
252.225-7009 ALT 1.
DOCUMENT ISSUED IN AGREEMENT WITH TUEV BAYERN(11.1972) WAVING OF COUNTERSIGNING (SEE TUEV BAYERN LETTER DATED 17.01.80).
MARKING: SYMBOL OF THE MANUF. WORK, MATERIAL N. , CAST N., LOT N., RECEIVING AGENT STAMP
CORROSION TEST ACCORDING TO ASTM A262/02A Practice.E EN ISO 3651-2 A: SATISFACTORY.
VISUAL INSPECTION OF SURFACE AND DIMENSIONAL CONTROL ACCORDING TO EN 10221 CLASS C AND EN 10060: SATISFACTORY.
ULTRASONIC TEST ACCORDING TO EN 10308 Class 3, equivalent to ASTM A388 FBH 5 (DIAM. 100-250) and FBH 8 (DIAM. 250-400) or to
EN10228-4 Class 3: SATISFACTORY.
ANTIMIX TEST WITH PORTABLE SPECTROMETER: SATISFACTORY.
NO WELDING REPAIR ON THE MATERIAL.
FREE FROM RADIOACTIVE CONTAMINATION.
ULTRASONIC TEST ACCORDING TO EN 10308 Class.3, EN 10228 Class.3, ASTM A388 FBH 5 (diam. 102-250), FBH 8 (diam. 250,01-400).
MATERIAL IN COMPLIANCE WITH THE NORSOK M-630 MDS S01
RADIOACTIVITY CONTROL PERFORMED WITH A GAMMA SPECTROMETER: ASTM E181.
GAMMA ACTIVITY ON THE PRODUCTS BELOW 0.1 BQ/G ACCORDING TO EU RESOLUTION 2013/59/EURATOM , IAEA RS-G-1.7 AND IAEA SSG-17.
QUALITY SYSTEM CERTIFIED BY KIWA CERMET ACCORDING TO UNI EN ISO 9001:2015 -IATF 16949:2016 (THE LAST ONE ONLY FOR WIRE ROD AND HOT ROLLED-PEELED-GROUND STAINLESS STEEL BARS).
THE PRODUCT IS CONFORMING TO THE CONTRACT AGREEMENT AND TO THE RULE AD2000-MERKBLATT W0/W2.
INSPECTOR'S STAMP LF
MATERIAL CONFORM TO: 2015/863/EU (RoHS3) - 2011/65/EU (RoHS2) - 2000/53/EU - 2002/95/EU (RoHS) - 2003/11/EU - 2005/618/EU - PED 2014/68/EU e PE(S)R 2016/1105
THE MATERIAL IS FREE OF ANY MERCURY, MERCURY COMPOUNDS AND OR RADIUM CONTAMINATION AT TIME OF SHIPMENT AND WAS PRODUCED WITHOUT USING OZONE DEPLETING SUBSTANCES OF CLASS I AND II.
REFERENCE NORMS: EN 10088-3 (14), EN 10272 (16), ASTM A276-r17/ASME SA276-21, ASTM A479/A479M-r21, ASTM A193-23 B8MCLASSE 1D, ASME SA276/SA276M-21,ASME SA479/SA479M-21, AMS 5653J, AMS 5648N, ISO15156-3/NACE MR0175 (15), NACE MR0103/ISO 17945 (15), NORSOK M630 MDSS01 REV5.
REFERENCE NORMS FOR CHEMICAL COMPOSITION AND MECHANICAL PROPERTIES: ASTM A182-23/ ASME SA182-21.
REFERENCE NORMS ONLY FOR CHEMICAL COMPOSITION: EN 10222-5 (17),ASTM A403-22b, ASTM A484-22, ASTM A314-23, AMS-QQ-S-763D.
ASME SECT.II PART A EDITION 2015-2017-2019-2021.
WHERE NOT SPECIFIED ALL THE NORMS MENTIONED ARE INTENDED IN THEIR LAST REVISION AT THE DATE OF ISSUE OF THIS DOCUMENT.
ASTM A484 DOES NOT APPLY FOR SIZE AND LENGTH TOLERANCES.

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Nach/According to/Selon

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AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura : Laminato - Solubilizzato Rettificato
Lieferzustand
Delivery state
Etat de livraison

Produttore :
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Tipo di Elaborazione: E+AOD
Erschmelzungsart
Melting process
Mode d'elaboration

Marchi di Fabbrica:
Zeichen des Liefernwerkes
Trade marks
Sigles de l'usine productrice
AV

Ordine nr: ORD.N.AQ2202071
Bestell
Your order
Commande

Conferma ordine nr: MI22008136
Werks/Our Order/Ref nr.

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Punzone del Collaudatore:
Stempel des Werkssachverständigen
Inspector's stamp/Poinçon de l'assayeur
MR

Avviso di Spedizione: A-MI22006725
Lieferanzeige/Packing list/B.L.

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung
Brand / Nuance

Punzonatura: 1.4401/4/316/L
Kennzeichnung
Marking
Marquage

**SPECIFICHE :**
Anforderungen / Requirements / Exigences

VAL STOCK 2020 1.4404/316L A,CF
AISI 316
AISI 316L
ASME SA276 2019 S31600 A,CF (0)
ASME SA276 2019 S31603 A,CF (1)
ASME SA479 2019 S31600 A (2)
ASME SA479 2019 S31603 A (3)
ASTM A262 2015 PRACTICE E (4)
ASTM A276 2017 S31600 A,CF
ASTM A276 2017 S31603 A,CF
ASTM A370 2020 .
ASTM A479 2020 S31600 A
ASTM A479 2020 S31603 A
ASTM E10 2018 .
ASTM E8 2021 .
EN 10088-3 2014 1.4401 A,CF
EN 10088-3 2014 1.4404 A,CF
EN 10272 2007 1.4401 A,CF
EN 10272 2007 1.4404 A,CF
ISO 6506-1 2014 .
ISO 6892-1 2019 .

Note:
Aufzeichnungen / Notes / Notes

(0)Section II Part A 2019 EDITION
(1)Section II Part A 2019 EDITION
(2)Section II Part A 2019 EDITION
(3)Section II Part A 2019 EDITION
(4)Reapproved 2021

| | | Tolleranza: h8 - DIN670/EN10278<br>Toleranz/Allowance/Tolerance | | | | | |
|---|---|---|---|---|---|---|---|
| Pos. nr.<br>Pos. nr.<br>Item nr.<br>Nr. de poste | Oggetto<br>Gegenstand<br>Product description<br>Descrip. du produit | Dimensioni - mm<br>Abmessungen<br>Dimension<br>Dimension | Lunghezza - mm<br>Lange<br>Length<br>Longueur | Colata<br>Schmelze<br>Heat<br>Coulée | Pezzi<br>Stückzahl<br>Pieces<br>Pieces | Peso - KG<br>Gewicht<br>Weight<br>Poids | Lotto nr.<br>Losnr.<br>Lot nr.<br>Lot nr. |
| 0070 | Tondo | 10,000 | 2900/ 3100 | 276383 | | 18,0 | 729305910 |

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| Vicenza, 09/11/2022<br>VCQ052 - MEST112865 | Direzione Qualità<br>Qualitätsmanagement/Quality Management/Gestion Qualité<br>R.BERTELLI | Direzione Prodotto<br>Produktmanagement/Product Management/Direction Produit<br>P.MESSORI | Pagina<br>1 di 3 |
|---|---|---|---|

# Acciaierie Valbruna S.p.A.

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Cliente / Besteller/Purchaser/Client:
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura / Lieferzustand / Delivery state / Etat de livraison: Laminato - Solubilizzato Rettificato

Produttore / Hersteller/Item/Usine productrice:
**ACCIAIERIE VALBRUNA S.P.A.**

Ordine nr. / Bestell / Your order / Commande: ORD.N.AQ2202071

Tipo di Elaborazione / Erschmelzungsart / Melting process / Mode d'elaboration: E+AOD

Marchi di Fabbrica / Zeichen des Liefernwerkes / Trade marks / Sigles de l'usine productrice: AV

Conferma ordine nr. / Werks/Our Order/Ref nr.: MI22008136

Qualità / Werkstoff/Grade/Nuance: 1.4401/1.4404/316/316L

Punzone del Collaudatore / Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur: MR

Avviso di Spedizione / Lieferanzeige/Packing list/B.L.: A-MI22006725

Marca / Markenbezeichnung / Brand / Nuance: MVAPML ( MAXIVAL )

Punzonatura / Kennzeichnung / Marking / Marquage: 1.4401/4/316/L

### TEST ALLO STATO DI FORNITURA

Test on delivery condition / Prüefung auf lieferbereitem produkt / test a l'etat de fourniture / Prueba sobre el material así come entregado

1) L=longitudinale/längs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg.diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | Posiz. Saggio Probentage Location Emplacement 1) | Snervamento Streckgrenze Yield Stress Limite elastique Rp 0,2% N/mm2 | Snervamento Streckgrenze Yield Stress Limite elastique Rp 1% N/mm2 | Resistenza Zugfestigkeit Tensile strength Resistance à traction Rm N/mm2 | Allungamento Bruchdehnung Elongation Allongement A5 % | Allungamento E 4d % | Strizione Einschnürung Reduction of area Striction Z % | Strizione RA % | Resilienza Kerbschlagarbeit Impact Value Resilience | | | Durezza Haerte Hardness Durete HB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti / Anforderungen/Required values / Valeurs démandées | | min / max | | 310 | 235 | 620 / 900 | 20 | 30 | - | 40 | - | | | - / 315 | | |
| A | 10 | 20 | L | 477 | 559 | 665 | 47 | 50 | 70 | 70 | | | | 225 | | |
| B | 10 | 20 | L | 482 | 561 | 669 | 46 | 50 | 69 | 69 | | | | 228 | | |

### TEST ALLO STATO DI FORNITURA

Test on delivery condition / Prüefung auf lieferbereitem produkt / Test a l'etat de fourniture / Prueba sobre el material así come entregado

| TEST | | min | max | |
|---|---|---|---|---|
| A | Dimensioni grano x ASTM E112 | | | 7 |

Mechanical properties according to ASTM A370.
Brinnell hardness according to ASTM E10
Tensile testing according to ASTM E8
Brinnell hardness according to ISO 6506-1
Tensile testing according to ISO 6892-1

### Analisi chimica

Chemische Zusammensetzung/Chemical Analysis/Analyse chimique

| Colata /Heat Schmelze/Coulée | C % | Si % | Mn % | Cr % | Mo % | Ni % | P % | S % | N % | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| min - | - | - | - | 16,50 | 2,00 | 10,00 | - | - | - | - | - | - | - | - | - |
| max 0,030 | 1,00 | 2,00 | 18,00 | 2,50 | 13,00 | 0,045 | 0,030 | 0,100 | - | - | - | - | - | - | - |
| 276383 | 0,014 | 0,63 | 1,44 | 16,84 | 2,07 | 10,06 | 0,028 | 0,026 | 0,061 | | | | | | |

### Corrosion test in 16% sulfuric acid and copper sulfate solutions

**Test standard:** ASTM A262-Practice E

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitization | 15 | boil | 180 | 5 | Absence of cracks | **SATISFACTORY** |

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a : EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1
Nach/According to/Selon

Certificato nr. MEST112865 / 2022 /
Prüfung/Test/Essai

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura : Laminato - Solubilizzato Rettificato
Lieferzustand
Delivery state
Etat de livraison

Produttore :
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Ordine nr: ORD.N.AQ2202071
Bestell
Your order
Commande

Tipo di Elaborazione: E+AOD
Erschmelzungsart
Melting process
Mode d'elaboration

Marchi di Fabbrica:
Zeichen des Liefernwerkes
Trade marks
Sigles de l'usine productrice
AV

Conferma ordine nr: MI22008136
Werks/Our Order/Ref nr.

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Punzone del Collaudatore:
Stempel des Werkssachverständigen
Inspector's stamp/Poinçon de l'assayeur
MR

Avviso di Spedizione: A-MI22006725
Lieferanzeige/Packing list/B.L.

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung
Brand / Nuance

Punzonatura: 1.4401/4/316/L
Kennzeichnung
Marking
Marquage

**Corrosion test in 16% sulfuric acid and copper sulfate solutions**

**Test standard:** UNI EN ISO 3651-2 Method A

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitized T1 | 20 | boil | 90 | 5 | Absence of cracks | **SATISFACTORY** |

Reduction ratio = 374,4 : 1
Material solution annealed 1060° C for 0.5h/air cooled.

Sono state soddisfatte tutte le condizioni richieste
Die gestellen Anforderungen sind it. Anlage erfüllt
The material has been furnished in accordance with the requirements
Le materiel â été trouvé conforme aux exigences

Controllo antimescolanza con tecnica XRF/OES portatile : OK
Verwechslungprüfung: durch XRF/QES Gerät geführt : OK
Antimixing testing performed with XRF/OES portable : OK
Contrôle antimélange svt technique XRF/QES portable : OK

Controllo visivo e dimensionale: soddisfa le esigenze
Besichtigung und Ausmessung: ohne Beanstandung
Visual inspection and dimensional checks:satisfactory
Contrôle visuel et dimensions: satisfaisant

Melted, poured and manufactured in Italy  No welding or weld repair  Material free from Mercury contamination

We declare that the finished product is checked for radioactive contamination by the portal system when it leaves the production plant.

The Quality Management System is also Certified according Pressure Equipment Directive 2014/68/EU Annex 1,chapt.4.3 by TÜV and LLOYD`S
Any act of tampering, modification, alteration, counterfeiting and/or falsification and/or any other action which modifies the contents of this test certificate shall constitute a violation of applicable civil and criminal laws. Acciaierie Valbruna shall protect its rights and interests before any competent court, authority and jurisdiction.
Maxival and/or Valplus grades/products are manufactured with ladle techniques to control composition, distribution, size and shape of non-metallic inclusions for improved machinability.
The supplied product conforms to requirements expressly requested by the purchaser and conforms to requirements specified by certified norms and standards. Should the product be used for more severe, critical and/ or in any case different applications than those the material is generally intended for, any different and/or supplementary requirements shall be specifically demanded, at least, upon order of the Product by the Purchaser. Acciaierie Valbruna SpA shall not be responsible for any improper use of the Products.

WSPC3780DC7C1829C17D4651F8D36E460C2

**AST S.p.A.**
Via R. Merendi, 40
I-20007 Cornaredo MI

P +39 02 934848.1
F +39 02 9362248
W www.astspa.it

**MATERIAL CERTIFICATES INDEX**
**CERTIFICATO DEI MATERIALI** **No.** 2400589

EN 10204 3.1

**Customer**
ROSETTI MARINO S.P.A.

**P.Order / Project**
1724000740 123A90A Rev. 1

**ITEM Number**
70-120

**Tag**
25-PV-035

**Quantity delivered**
1

**AST Job**
CV2400221

**AST Code**
CV2400221CV8407A001

**Serial Number**
2400589

**Valve Type**
Valvole Regolazione

**Size**
NPS 2" CLASS 300 RF

**Port Size**
1"

| Part Name | Material | Heat No. | Certificate No. | Supplier |
|---|---|---|---|---|
| BODY | ASTM A351 CF3M | G1014 | PKC-G1014-AT209B-1 | PEEKAY STEEL CASTING (P) LTD |
| SEAT RING | ASTM A479 316/316L | 380150 | 2023026120 | COGNE ACCIAI SPECIALI SPA |
| PLUG | F316 + PTFE | 293368 | MEST028009/2024/ | ACCIAIERIE VALBRUNA |
| BONNET | ASTM A479 316/316L | 000082 | 2020005555 | COGNE ACCIAI SPECIALI SPA |
| STEM | ASTM A479 316/316L | 272928 | 2022045248 | COGNE ACCIAI SPECIALI SPA |

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND

☑ REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLA PINA DATE 08 NOV 2024

**Remarks** :

**AST Q.C. Department** **Customer's Inspector** **Third Party Inspection**

**Date** : 05.11.2024 **Date** : _____ **Date** : _____

# PEEKAY STEEL CASTINGS (P) LTD

**4/242 Chinnamaddampalayam, Billichi Post, Coimbatore - 641 019**
**Email: info@pkcbe.co.in, Phone: 04254 - 271610**


## INSPECTION CERTIFICATE

EN 10204.3.1

| | | | | | |
|---|---|---|---|---|---|
| Customer: | AST SPA | | | | |
| Order No and Date | | PO Line No | Heat Code | TCNo | PKC/G1014/AT209B/1 |
| AQ2101495 / 30/07/2021 | | 1 | PYM05J30 | Date | 22-Nov-2021 |
| F.P. No | Part Name | | | Item Code / Part No | |
| AT209B | 2" CL150/300 FL GLV BODY | | | CABDWG0061 | |
| Casting Drawing No and Machining Drg.No | | Pattern No | | No.of pieces | |
| **M061 Rev 7** | | | | 4 | |
| Specification /Material | | | | | |
| **ASTM A351-2018/ASME SA351-2021 Gr.CF3M** | | | | Poured Date : 30/09/2021 | |

| Heat treatment | Melting Process | State of Delivery |
|---|---|---|
| Solution Anneling at 1100°c soaked for 10 hours then water cooled.<br>HT Cycle No:E8069 Dt:06/10/2021 Sl.No:5,6,7,8 | INDUCTION | Unmachined |

08 NOV. 2024
FRANCO CANCELLINI
QBQ
CROSSWIND

Chemical Composition (%)

| Element | C | Mn | Si | P | S | Cr | Ni | Mo | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Min. Specified | ... | ... | ... | ... | ... | **17.000** | **9.000** | **2.000** | ... | ... | ... | ... | ... | | | |
| Max. Specified | **0.030** | **1.500** | **1.500** | **0.040** | **0.040** | **21.000** | **13.000** | **3.000** | ... | ... | ... | ... | ... | | | |
| Heat No | | | | | | | | | | | | | | | | |
| G1014 | 0.015 | 1.164 | 0.888 | 0.032 | 0.001 | 18.560 | 9.520 | 2.170 | | | | | | | | |

Heat Slnos: 5,6,7,8

| Mechanical Properties | Yield Strength (0.2% Offset) | Tensile Strength | % of Elongation | | Reduction of Area | Hardness | Bend Test Angle at 0° | Impact value at -196°C in Joules (10mm x 10mm x 55mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | GL=50 mm | GL=62.5 mm | | | | | | | |
| Min | **205** | **485** | **30** | ... | ... | ... | D=0t | Average 40 J | | | |
| Max | ... | ... | ... | ... | ... | **237** | | Single Value | | | |
| Heat No | Mpa | Mpa | | | | HBW | | 1 | 2 | 3 | Avg |
| G1014 | 234 | 511 | 54.76 | - | - | 163.00 | .... | 90 | 106 | 86 | 94 |

Remarks/Observations

Material conform to :AST SPA Specifications FOR 001 Rev 15 & ASTM A351-2018/ASME SA351-2021 Gr.CF3M.NACE MR0175/ISO 15156-3.Castings are acid pickled and passivated.
Penetrant Test of inspection According to ASME B16.34 Appendix III
Visual inspection of casting :Satisfactory According to MSS-SP-55
Dimensional inspection:Satisfactory,According to Approved Drawing

Certified that the products supplied is free from Radioactive element or contamination

☑ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

Certified that the above mentioned material have been manufactured,tested and inspected in compliance with the requirements of Purchase order, conform in all respects to the relevant specification and drawings.

| Suppliers Logo | Prepared by | Stamp | Approved by | |
|---|---|---|---|---|
| PKC | Ramkumar D | | Vijaya Kumar K | PK 02 |

**COGNE ACCIAI SPECIALI S.p.a.**

ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL. +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 250.000.000 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, IFAF 16949, EN 9100, ISO 14001 and ISO 45001.

INSPECTION CERTIFICATE 3.1 (EN 10204:2004)
DOCUMENT NUMBER 2023026120


| | | | |
|---|---|---|---|
| CUSTOMER: | A.S.T. SPA | | |
| CUSTOMER'S ORDER: | AQ2400201 | | |
| MANUFACTURER'S WORKS: | AOSTA, VIA PARAVERA 16 - ITALY | | |
| PRODUCER OF THE DOC: | QUALITY DEPARTMENT | | |
| MANUFACTURER'S WORKS ORDER NO: | 0001138630 / 000050 | | |
| MARK OF THE MANUFACTURER: | **COGNE** | | |
| DISPATCH NOTE: | 0081589667 / 000050 WEIGHT: 644 KG / 1420 LB | | |
| INTERNAL SPEC: | STOCKBARREW2 | TECHNICAL RULE: | AD2000 |
| PRODUCT: | PEL PEELED ROUND BARS TOLERANCE: ISOK11 | | |
| SURFACE FINISH: | 2B Cold Finished | | |
| PRODUCT DELIVERY CONDITION: | RS SOLUTION ANNEALED | | |
| PRODUCT DIMENSIONS (mm): | 75,000 ( 2,953 in) | LENGTH (mm) | 04000 06200 ( 00157 00244 in) |
| GRADE: | 316L-S31600/31603-1.4404/4401 | INTERNAL GRADE: | F316L IMCO |
| IDENTIFICATION HEAT NO: | 380150 | IDENTIFICATION LOT NO: | 725570 |
| MARKING OF THE PRODUCT: | 1.4404 | TEST PIECE N: | 557 |

REFERENCE NORMS: EN 10088-3 2014, EN 10272 2016, ASTM A276/A276M-17, ASTM A479/A479M-21, ASTM A193-20 B8MCLASSE 1D, ASME SA276/SA276M-17,ASME SA479/SA479M-21, AMS 5653J, AMS 5648N, ISO15156-3/NACE MR0175 2015, NACE MR0103/ISO 17945, NORSOK M630 MDSS01 REV5.
REFERENCE NORMS FOR CHEMICAL COMPOSITION AND MECHANICAL PROPERTIES: ASTM A182-22A, ASME SA182-22A.
REFERENCE NORMS ONLY FOR CHEMICAL COMPOSITION: EN 10222-5 2017,ASTM A403-22b, ASTM A484-22, ASTM A314-19, AMS-QQ-S-763D.
ASME SECT.II PART A EDITION 2015-2017-2019-2021
AISI 316/316L - UNS S31600/S31603 - 1.4404/1.4401
THE PRODUCT IS CONFORMING TO THE CONTRACT AGREEMENT AND TO THE RULE AD2000-MERKBLATT W0/W2.
STEELMAKING EAF + AOD + CONTINUOUS CASTING
ASTM A484 DOES NOT APPLY FOR SIZE AND LENGTH TOLERANCES.
REFERENCE FOR APPLICABLE ASME STANDARD: SECTION II PART A ED. 2015-2017-2019-2021
HOT ROLLED
REDUCTION RATIO 5,2

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND R

CHEMICAL LADLE ANALYSIS ACCORDING TO ASTM A751 - EN ISO 14284
Control lot No. - Weight :020000964940 - 82.913 KG - 182.789 LB

| ELEMENTS | C | Si | Mn | P | S | N | Cr | Mo | Ni | Cu |
|---|---|---|---|---|---|---|---|---|---|---|
| MEASUREMENT UNIT | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w |
| OBTAINED | 0,016 | 0,37 | 1,91 | 0,026 | 0,024 | 0,078 | 16,79 | 2,06 | 10,06 | 0,47 |

| ELEMENTS | Co |
|---|---|
| MEASUREMENT UNIT | % w/w |
| OBTAINED | 0,15 |

HARDNESS TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000967750 - 7.000 KG - 15.432 LB
SPECIFICATION ENISO6506 HARDNESS TEST HB TESTING METHOD: 10/3000
OBTAINED 160

☒REVIEW ☐WITNESS
ON BEHALF OF
A. DELLAPINA DATE 08 NOV 2024

DATE 25.05.2023

MORABITO ROSA CF(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

-Cogne

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 250.000.000 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.



IMPACT TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000967750 - 7.000 KG - 15.432 LB
SPECIFICATION EN ISO 148-1-KV2
TYPE OF TEST PIECE KV
TEST TEMPERATURE °C 20
MEASUREMENT UNIT J
OBTAINED 440 430 436 438 434 434 436 432 440 437
435 439

TENSILE TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000967750 - 7.000 KG - 15.432 LB
SPECIFICATION EN-ISO6892-1 DIRECTION OF THE TEST PIECE: L

| MEASUREMENT UNIT | RM MPA | RP02 MPA | A5 % | Z % | RP1 NMM |
|---|---|---|---|---|---|
| OBTAINED | | | 5.0 D | | |
| | 608 | 285 | 51,4 | 72,3 | 327 |
| | 606 | 277 | 51,6 | 72,9 | 320 |
| | 603 | 275 | 52,8 | 79,5 | 316 |
| | 604 | 264 | 54,2 | 75,4 | 312 |

08 NOV. 2024
FRANCO CORBELLINI
CROSSWIND R

GRAIN SIZE
Control lot No. - Weight :020000967750 - 7.000 KG - 15.432 LB
SPECIFICATION ASTME112 --
OBTAINED 5

MATERIAL IN COMPLIANCE WITH THE NORSOK M-630 MDS S01
IMPACT TEST
Control lot No. - Weight :020000967750 - 7.000 KG - 15.432 LB
SPECIFICATION EN ISO 148-1
TYPE OF TEST PIECE KV
TEST TEMPERATURE °C 196-
MEASUREMENT UNIT J
OBTAINED 191 198 180 200 193 181 176 189 175 174
195 175

TENSILE TEST
Control lot No. - Weight :020000967750 - 7.000 KG - 15.432 LB
SPECIFICATION ASTMA370-E8-0.5"SPEC DIRECTION OF THE TEST PIECE: L

| MEASUREMENT UNIT | RMB KSI | RP02B KSI | ZB % | AL2B % |
|---|---|---|---|---|
| OBTAINED | | | | 4,0 D |
| | 87 | 40 | 72,8 | 60,2 |
| | 88 | 39 | 72,5 | 54,7 |
| | 88 | 38 | 78,5 | 54,6 |
| | 88 | 40 | 76,5 | 54,5 |

☒ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

DATE 25.05.2023

MORABITO ROSA CF(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE



1724000740-QC-DB-00016_01

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL. +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 250.000.000 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.



COUNTRY OF MELTING AND ORIGIN: ITALY, THE MATERIAL COMPLIES WITH FAR DFARS 252.225-7009 ALT 1.
The products delivered are conforming to EN10088-5 and bear the CE marking on the basis of the test results here reported and the continuous surveillance, assessment and approval by MPA NRW (certificate no. 0432-CPR-00166-01)
Material produced according to the system #Regulation 305/2011/EU of the European Parliament and of the Council of 9 March 2011#
DOCUMENT ISSUED IN AGREEMENT WITH TUEV BAYERN(11.1972) WAVING OF COUNTERSIGNING (SEE TUEV BAYERN LETTER DATED 17.01.80).
MARKING: SYMBOL OF THE MANUF. WORK, MATERIAL N. , CAST N., LOT N., RECEIVING AGENT STAMP
CORROSION TEST ACCORDING TO ASTM A262 PRACTICE E EN ISO 3651-2 PRACTICE A: SATISFACTORY.
ANTIMIXING TEST BY PORTABLE SPECTROMETRE: CONFORMING
EDDY CURRENT INSPECTION OF SURFACE ACCORDING TO EN 10277 CLASS 4.
DIMENSIONAL CONTROL ACCORDING TO EN 10278: SATISFACTORY.
NO WELDING REPAIR ON THE MATERIAL.
ULTRASONIC TEST ACCORDING TO EN 10308 Class.3: SATISFACTORY
QUALITY SYSTEM CERTIFIED BY KIWA CERMET ACCORDING TO UNI EN ISO 9001:2015 -IATF 16949:2016 (THE LAST ONE ONLY FOR WIRE ROD AND HOT ROLLED-PEELED-GROUND STAINLESS STEEL BARS).
INSPECTOR'S STAMP LF
MATERIAL CONFORM TO: 2015/863/UE (RoHS3) - 2011/65/UE (RoHS2) - 2000/53/UE - 2002/95/UE (RoHS) - 2003/11/UE - 2005/618/UE - PED 2014/68/UE e PE(S)R 2016/1105
THE MATERIAL IS FREE OF ANY MERCURY, MERCURY COMPOUNDS AND OR RADIUM CONTAMINATION AT TIME OF SHIPMENT AND WAS PRODUCED WITHOUT USING OZONE DEPLETING SUBSTANCES OF CLASS I AND II.
RADIOACTIVITY CONTROL PERFORMED WITH A GAMMA SPECTROMETER: ASTM E181.
GAMMA ACTIVITY ON THE PRODUCTS BELOW 0.1 BQ/G ACCORDING TO EU RESOLUTION 2013/59/EURATOM , IAEA RS-G-1.7 AND IAEA SSG-17.

CE 0432

08 NOV. 2024
FRANCO CORBELLINI
QSO
CROSSWIND

☑ REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLA PINA DATE 08 NOV 2024

DATE 25.05.2023

MORABITO ROSA CF(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

-Cogne

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a : EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1
Nach/According to/Selon

Certificato nr. MEST028009 / 2024 /
Prüfung/Test/Essai

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Ordine nr: ORD N AQ2400369
Bestell
Your order
Commande

Conferma ordine nr: MI24001817
Werks/Our Order/Ref nr.

Avviso di Spedizione: A-MI24001447
Lieferanzeige/Packing list/B.L.

Stato di fornitura : Laminato - Solubilizzato FINITO A FREDDO
Lieferzustand
Delivery state
Etat de livraison

Tipo di Elaborazione: E+AOD
Erschmelzungsart
Melting process
Mode d'elaboration

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung
Brand / Nuance

Produttore :
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Marchi di Fabbrica:
Zeichen des Lieferwerkes
Trade marks
Siglea de l'usine productrice
AV

Punzone del Collaudatore:
Stempel des Werkssachverständigen
Inspector's stamp/Poinçon de l'assayeur
MR

Punzonatura: 1.4401/1.4404
Kennzeichnung
Marking
Marquage

**SPECIFICHE :**
Anforderungen / Requirements / Exigences

VAL STOCK W2 A/1 1.4404/316L A,CF
AD 2000-M. W 2 2022 1.4401 A,CF (0)
AD 2000-M. W 2 2022 1.4404 A,CF (1)
AISI . 316/316L
AMS-QQ-S-763 D 316/316L A,CF
ASME SA182 2023 S31600/03 A (2)
ASME SA276 2023 S31600/03 A,CF (3)
ASME SA479 2023 S31600/03 A (4)
ASTM A182 2023 S31600/03 A (5)
ASTM A262 PR. E 2015 316/316L (6)
ASTM A276 2023 S31600/03 A,CF
ASTM A370 2022 .
ASTM A479 2023A S31600/03 A
ASTM E10 2023 .
ASTM E8 2022 .
EN 10088 PART 3 2014 1.4401 A,CF
EN 10088 PART 3 2014 1.4404 A,CF
EN 10272 2016. 1.4401 A,CF
EN 10272 2016. 1.4404 A,CF
ISO 148-1 2016 .
ISO 3651-2 98 METHOD A T1
ISO 6506-1 2014 .
ISO 6892-1 2019 .
NACE MR0103 2015 S31600/03 A (7)
NACE MR0175 4 S31600/03 A (8)
QQ-S-763 F 316/316L A,CF
ACH CO . .
KV L -196C . ISO 148-1

Note:
Anmerkungen / Notes / Notes

(0)AD 2000-MERKBLATT W 2 edition 03.2022 AD 2000-MERKBLATT W 10 edition 06.2022
(1)AD 2000-MERKBLATT W 2 edition 03.2022 AD 2000-MERKBLATT W 10 edition 06.2022

(2)Section II Part A 2023 EDITION For products machined directly from bar refer to ASME SA479.
(3)Section II Part A 2023 EDITION
(4)Section II Part A 2023 EDITION
(5)For products machined directly from bar refer also to ASTM A479.
(6)Reapproved 2021

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND

(7)ANSI/NACE MR0103/ISO 17945 November 23, 2015
(8)ANSI/NACE MR0175/ISO 15156-3:2020 Fourth edition, approved 21 Sep 2022.

| Pos. nr. Pos. nr. Item nr. Nr. de poste | Oggetto Gegenstand Product description Designation du produit | Tolleranza: k12 Toleranz/Allowance/Tolerance Dimensioni - mm Abmessungen Dimension Dimension | Lunghezza - mm Länge Length Longueur | Colata Schmelze Heat Coulée | Pezzi Stückzahl Pieces Pieces | Peso - KG Gewicht Weight Poids | Lotto nr. Losnr. Lot nr. Lot nr. |
|---|---|---|---|---|---|---|---|
| 0030 | Tondo | 30,000 | 6000/ 6060 | 293368 | | 68,0 | 310402650 |

☒ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

**QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D**

| Vicenza, 05/03/2024 VCQ012 - MEST028009 | Direzione Qualità Qualitätsmanagement/Quality Management/Gestion Qualité R.BERTELLI | Direzione Prodotto Produktmanagement/Product Management/Direction Produit P.MESSORI | Pagina 1 di 4 |
|---|---|---|---|

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.968336
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1
Nach/According to/Selon

Certificato nr. MEST028009 / 2024 /
Prüfung/Test/Essai

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura: Laminato - Solubilizzato FINITO A FREDDO
Lieferzustand / Delivery state / Etat de livraison

Produttore:
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Tipo di Elaborazione: E+AOD
Erschmelzungsart / Melting process / Mode d'elaboration

Marchi di Fabbrica:
Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice
AV

Ordine nr: ORD N AQ2400369
Bestell / Your order / Commande

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Punzone del Collaudatore:
Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur
MR

Conferma ordine nr: MI24001817
Werks/Our Order/Ref nr.

Avviso di Spedizione: A-MI24001447
Lieferanzeige/Packing list/B.L.

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung / Brand / Nuance

Punzonatura: 1.4401/1.4404
Kennzeichnung / Marking / Marquage

### TEST ALLO STATO DI FORNITURA
Test on delivery condition / Prüefung auf lieferbereitem produkt / test a l'etat de fourniture / Prueba sobre el material asi come entregado

1) L=longitudinale/längs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg diam Spess Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | | Posiz Saggio Probenlage Location Emplacement ° | Snervamento Streckgrenze Yield Stress Limite elastique Rp 0,2% N/mm2 | Snervamento Streckgrenze Yield Stress Limite elastique Rp 1% N/mm2 | Resistenza Zugfestigkeit Tensile strength Resistance à traction Rm N/mm2 | Allungamento Bruchdehnung Elongation Allongement A5 % | | Strizione Einschnürung Reduction of area Striction Z % | | Resilienza Kerbschlagarbeit Impact Value Resilience | | | Durezza Haerte Hardness Durete HB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti Anforderungen/Required values Valeurs demandées | | min max | | | 200 | 235 | 500 900 | 20 | - | - | - | - | | | - | | 315 |
| A | 10 | 20 | L | | 458 | 535 | 678 | 44 | | 67 | | | | | 223 | | |
| G | 10 | 20 | L | | 457 | 532 | 682 | 45 | | 66 | | | | | 221 | | |

### TEST ALLO STATO DI FORNITURA
Test on delivery condition / Prüefung auf lieferbereitem produkt / Test a l'etat de fourniture / Prueba sobre el material asi come entregado

| TEST | | min | max | |
|---|---|---|---|---|
| A | Dimensioni grano x ASTM E112 | | | 4 |

### Charpy per ISO 148-1

1) L=longitudinale/längs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg diam Spess Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | | Posiz Saggio Probenlage Location Emplacement ° | Resilienza Kerbschlagarbeit Impact Value Resilience KV2 J | | | Espansione laterale Lateral Expansion Lateral ex mm | | | Shear Shear % Shear % | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti Anforderungen/Required values Valeurs demandées | | min max | | | - | - | - | - | - | - | - | - | - |
| B | 10X10 | -196 | L | | 158 | 152 | 151 | 1,700 | 1,852 | 1,705 | 59 | 61 | 57 |

### Test allo stato di fornitura per ASTM A370

1) L=longitudinale/längs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg diam Spess Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | | Posiz Saggio Probenlage Location Emplacement ° | Snervamento Streckgrenze Yield Stress Limite elastique Rp 0,2% N/mm2 | Snervamento Streckgrenze Yield Stress Limite elastique | Resistenza Zugfestigkeit Tensile strength Resistance à traction Rm N/mm2 | Allungamento Bruchdehnung Elongation Allongement E 4d % | | Strizione Einschnürung Reduction of area Striction RA % | | Resilienza Kerbschlagarbeit Impact Value Resilience | | Durezza Haerte Hardness Durete HB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti Anforderungen/Required values Valeurs demandées | | min max | | | 210 | - | 517 | - | 30 | - | 50 | - | | - | | |
| C | 12.5 | 20 | L | | 453 | | 671 | | 47 | | 68 | | | 222 | | |

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND R

☒ REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLA PINA DATE 08 NOV 2024

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| Vicenza, 05/03/2024 | Direzione Qualità<br>Qualitätsmanagement/Quality Management/Gestion Qualité | Direzione Prodotto<br>Produktmanagement/Product Management/Direction Produit | Pagina 2 di 4 |
|---|---|---|---|
| VCQ012 - MEST028009 | R.BERTELLI | P.MESSORI | |

# Acciaierie Valbruna S.p.A.

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Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a / Nach/According to/Selon: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. / Prüfung/Test/Essai: MEST028009 / 2024 /

Cliente / Besteller/Purchaser/Client:
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura / Lieferzustand / Delivery state / Etat de livraison: Laminato - Solubilizzato FINITO A FREDDO

Produttore / Hersteller/Ilem/Usine productrice:
ACCIAIERIE VALBRUNA S.P.A.

Ordine nr. / Bestell / Your order / Commande: ORD N AQ2400369

Tipo di Elaborazione / Erschmelzungsart / Melting process / Mode d'elaboration: E+AOD

Marchi di Fabbrica / Zeichen des Liefernwerkes / Trade marks / Sigles de l'usine productrice: AV

Conferma ordine nr. / Werks/Our Order/Ref nr: MI24001817

Qualità / Werkstoff/Grade/Nuance: 1.4401/1.4404/316/316L

Punzone del Collaudatore / Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur: MR

Avviso di Spedizione / Lieferanzeige/Packing list/B.L.: A-MI24001447

Marca / Markenbezeichnung / Brand / Nuance: MVAPML ( MAXIVAL )

Punzonatura / Kennzeichnung / Marking / Marquage: 1.4401/1.4404

### Charpy per ISO 148-1

1) L=longitudinale/längs, T=trasversale/quer, O=Tangenziale/tangential

| TEST | Provetta / Probestab / Specimen/Eprouvette Larg diam Spess / Breite Diam. Dicke / Width Diam. Thickness / Larg. diam. epais mm | °C | Posiz. Saggio / Probenlage / Location / Emplacement | Resilienza / Kerbschlagarbeit / Impact Value / Resilience KV2 J | | | Espansione laterale / Lateral Expansion | | | Shear / Shear % | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti / Anforderungen/Required values / Valeurs demandées | | min / max | | 100 | 100 | 100 | - | - | - | - | - | - |
| F | 10X10 | 20 | L | 199 | 194 | 193 | | | | | | |
| H | 10X10 | 20 | L | 210 | 196 | 198 | | | | | | |

Tensile testing according to ISO 6892-1
Impact testing according to ISO 148-1
Mechanical properties according to ASTM A370.
Brinnell hardness according to ASTM E10
Tensile testing according to ASTM E8
Brinnell hardness according to ISO 6506-1

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND

☑ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

### Analisi chimica

Chemische Zusammensetzung/Chemical Analysis/Analyse chimique

| Colata / Heat / Schmelze/Coulée | C % | Si % | Mn % | Cr % | Mo % | Cu % | Ni % | Co % | P % | S % | N % |
|---|---|---|---|---|---|---|---|---|---|---|---|
| min - max | - 0,030 | - 1,00 | - 2,00 | 16,50 - 18,00 | 2,00 - 2,50 | - 1,00 | 10,00 - 13,00 | - - | - 0,045 | - 0,030 | - 0,100 |
| 293368 | 0,010 | 0,56 | 1,52 | 16,68 | 2,04 | 0,57 | 10,00 | 0,156 | 0,032 | 0,027 | 0,058 |

**Corrosion test in 16% sulfuric acid and copper sulfate solutions**

Test standard: UNI EN ISO 3651-2 Method A

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitized T1 | 20 | boil | 90 | 5 | Absence of cracks | SATISFACTORY |

**Corrosion test in 16% sulfuric acid and copper sulfate solutions**

Test standard: ASTM A262-Practice E

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitization | 15 | boil | 180 | 5 | Absence of cracks | SATISFACTORY |

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| Vicenza, 05/03/2024 | Direzione Qualità / Qualitätsmanagement/Quality Management/Gestion Qualité | Direzione Prodotto / Produktmanagement/Product Management/Direction Produit | Pagina |
|---|---|---|---|
| VCQ012 - MEST028009 | R.BERTELLI | P.MESSORI | 3 di 4 |

# Acciaierie Valbruna S.p.A.

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Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a / Nach/According to/Selon: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. / Prüfung/Test/Essai: MEST028009 / 2024 /

Cliente / Besteller/Purchaser/Client:
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura / Lieferzustand / Delivery state / Etat de livraison: Laminato - Solubilizzato FINITO A FREDDO

Produttore / Hersteller/Item/Usine productrice:
ACCIAIERIE VALBRUNA S.P.A.

Ordine nr: ORD N AQ2400369
Bestell / Your order / Commande

Tipo di Elaborazione / Erschmelzungsart / Melting process / Mode d'elaboration: E+AOD

Marchi di Fabbrica / Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice: AV

Conferma ordine nr: MI24001817
Werks/Our Order/Ref nr

Qualità / Werkstoff/Grade/Nuance: 1.4401/1.4404/316/316L

Punzone del Collaudatore / Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur: MR

Avviso di Spedizione: A-MI24001447
Lieferanzeige/Packing list/B.L.

Marca / Markenbezeichnung / Brand / Nuance: MVAPML ( MAXIVAL )

Punzonatura / Kennzeichnung / Marking / Marquage: 1.4401/1.4404

Reduction ratio = 42,9 : 1
Solution annealed 1040°C for 160'(total time)/water cooled.
SURFACE QUALITY COMPLIANT TO EN 10088-3 TAB.1 COND. 2H equivalent to EN 10277-1 Cl.3
"Issued in agreement with TÜV SÜD Industrie Service GMBH
(07/1972)"
"Qs approved according to PED, Annex I, Para. 4.3 by
Notified Body 0036"
"(Certification no. DGR-0036-QS-W 23/2002/MUC)"

Sono state soddisfatte tutte le condizioni richieste / Die gestellen Anforderungen sind it. Anlage erfüllt / The material has been furnished in accordance with the requirements / Le material à été trouvé conforme aux exigences

Controllo antimescolanza con tecnica XRF/OES portatile : OK / Verwechslungprüfung durch XRF/OES Gerät geführt : OK / Antimixing testing performed with XRF/OES portable : OK / Contrôle antimélange ext technique XRF/OES portable : OK

Controllo visivo e dimensionale: soddisfa le esigenze / Besichtigung und Ausmessung ohne Beanstandung / Visual inspection and dimensional checks satisfactory / Contrôle visuel et dimensions: satisfaisant

Melted, poured and manufactured in Italy  No welding or weld repair  Material free from Mercury contamination

We declare that the finished product is checked for radioactive contamination by the portal system when it leaves the production plant.

The Quality Management System is also Certified according to Pressure Equipment Directive 2014/68/EU Annex 1,chapt.4.3 by TÜV and LLOYD'S
The Quality Management System is also Certified according to PER 2016/1105, Schedule 2, Part 4, Para 31 (8) by Competent Body TÜV SUD BABT Unlimited.
Any act of tampering, modification, alteration, counterfeiting and/or falsification and/or any other action which modifies the contents of this test certificate shall constitute a violation of applicable civil and criminal laws. Acciaierie Valbruna shall protect its rights and interests before any competent court, authority and jurisdiction.
Maxival and/or Valplus grades/products are manufactured with ladle techniques to control composition, distribution, size and shape of non-metallic inclusions for improved machinability.
The supplied product conforms to requirements expressly requested by the purchaser and conforms to requirements specified by certified norms and standards. Should the product be used for more severe, critical and/ or in any case different applications than those the material is generally intended for, any different and/or supplementary requirements shall be specifically demanded, at least, upon order of the Product by the Purchaser. Acciaierie Valbruna SpA shall not be responsible for any improper use of the Products.

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND R

☑ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| | | | |
|---|---|---|---|
| **Vicenza, 05/03/2024**<br>VCQ012 - MEST028009 | **Direzione Qualità**<br>Qualitätsmanagement/Quality Management/Gestion Qualité<br>**R.BERTELLI** | **Direzione Prodotto**<br>Produktmanagement/Product Management/Direction Produit<br>**P.MESSORI** | Pagina 4 di 4 |

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL. + 39.0165.3021 - FAX + 39.0165.302296
CAP. SOC. 140.000.000 EUR INT. VERS.
C.F. 02187360067
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, IATF 16949, EN 9100 and ISO 14001.

INSPECTION CERTIFICATE 3.1 (EN 10204:2004)
DOCUMENT NUMBER 2020005555


| | | | |
|---|---|---|---|
| CUSTOMER: | A.S.T. SPA | | |
| CUSTOMER'S ORDER: | AQ2000377 | | |
| MANUFACTURER'S WORKS: | AOSTA, VIA PARAVERA 16 - ITALY | | |
| PRODUCER OF THE DOC: | QUALITY DEPARTMENT | | |
| MANUFACTURER'S WORKS ORDER NO: 1116455 /10 | MARK OF THE MANUFACTURER: COGNE | | |
| DISPATCH NOTE: | 81329230 /10 WEIGHT: 900 KG | | |
| THE CERTIFIED PRODUCTS ARE COMPLYING TO THE PURCHASE ORDER, EXCEPT FOR EXEMPTIONS AGREED WITH THE CUSTOMER, IF ANY. | | | |
| INTERNAL SPEC: | AD2000MERKBLATTW10 | TECHNICAL RULE: | AD2000 |
| PRODUCT: | 2290 SPE ROUGHPEELED | ROUND BARS TOLERANCE: | + 1,500 - 0,0000 |
| SURFACE FINISH: | 1X Hot Finished | | |
| PRODUCT DELIVERY CONDITION: | RS SOLUTION ANNEALED | | |
| PRODUCT DIMENSIONS (mm): | 160,000 | LENGTH (mm) | 04000 /06000 |
| GRADE: | AISI 316/316L EN1.4401/4404 | INTERNAL GRADE: | F316L5 IMCO |
| IDENTIFICATION HEAT NO: | 000082 | IDENTIFICATION LOT NO: | 828080 |
| MARKING OF THE PRODUCT: | 1.4404 | TEST PIECE N: | 808 |

THE MATERIAL IS PRODUCED ACCORDING TO SPECIFICATION AD2000-MERKBLATT W2/W10
DOCUMENT ISSUED IN AGREEMENT WITH TUEV BAYERN(11.1972) WAVING OF COUNTERSIGNING (SEE TUEV BAYERN LETTER DATED 17.01.80).
REFERENCE NORMS:EN 10088-3, EN 10272, ASTM A276/ASME
SA276, ASTM A479/ASME SA479, ASTMA193 B8M CLASSE 1D,
ISO15156-3/NACE MR0175, NACE MR0103.
REFERENCE NORMS FOR CHEMICAL COMPOSITION AND MECANICHAL PROPERTIES: ASTM A182/ASME SA182
REFERENCE NORMS FOR CHEMICAL COMPOSITION ONLY: EN 10222-5, ASTM A484, ASTM A403, ASTM A314.
HOT ROLLED
REDUCTION RATIO 4,2

08 NOV. 2024
FRANCO CORBELLINI
QSO
CROSSWIND

CHEMICAL LADLE ANALYSIS ACCORDING TO ASTM A751 - EN ISO 14284
Control lot No. - Weight :020000822939 - 84.048 KG

| ELEMENTS | C | Si | Mn | P | S | N | Cr | Mo | Ni | Cu |
|---|---|---|---|---|---|---|---|---|---|---|
| OBTAINED | 0,021 | 0,39 | 1,31 | 0,026 | 0,030 | 0,087 | 16,76 | 2,05 | 10,18 | 0,40 |
| ELEMENTS | Co | | | | | | | | | |
| OBTAINED | 0,14 | | | | | | | | | |

HARDNESS TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000823509 - 23.563 KG
SPECIFICATION ENISO6506 HARDNESS TEST HB TESTING METHOD: 10/3000
OBTAINED 175

IMPACT TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000823509 - 23.563 KG
SPECIFICATION EN ISO 148-1-KV2 DIRECTION OF THE TEST PIECE: L
TYPE OF TEST PIECE KV
TEST TEMPERATURE °C 20
MEASUREMENT UNIT J

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| OBTAINED | 431 | 437 | 439 | 433 | 433 | 436 | 434 | 431 | 439 | 439 |
| | 430 | 433 | | | | | | | | |

DATE 04.02.2020

MORABITO ROSA CF(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

☑REVIEW ☐WITNESS
ON BEHALF OF
A. DELLAPINA DATE 08 NOV 2024

-Cogne

1724000740-QC-DB-00016_01

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL.+ 39.0165.3021 - FAX + 39.0165.302296
CAP. SOC. 140.000.000 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320078 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, IATF 16949, EN 9100 and ISO 14001.



1724000740-QC-DB-00016_01

TENSILE TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000823509 - 23.563 KG
SPECIFICATION EN-ISO6892-1 DIRECTION OF THE TEST PIECE: L

| MEASUREMENT UNIT | RM MPA | RP02 MPA | A5 % 5.0 D | Z % | RP1 MPA |
|---|---|---|---|---|---|
| OBTAINED | 598 | 262 | 55,5 | 78,2 | 307 |
| | 605 | 272 | 55,8 | 80,1 | 301 |
| | 597 | 266 | 54,8 | 80,6 | 304 |
| | 601 | 268 | 55,1 | 80,1 | 310 |

08 NOV. 2024
FRANCO CORBELLINI

GRAIN SIZE
Control lot No. - Weight :020000823509 - 23.563 KG
SPECIFICATION ASTME112 --

| | | |
|---|---|---|
| OBTAINED | 3 | 5 |

CROSSWIND R

CORROSION TEST ACCORDING TO ASTM A262 PRACTICE E EN ISO 3651-2 PRACTICE A: SATISFACTORY.
MATERIAL ACCORDING TO ASME SEC. II Ed. 2015
IMPACT TEST
Control lot No. - Weight :020000823509 - 23.563 KG
SPECIFICATION EN ISO 148-1 DIRECTION OF THE TEST PIECE: L
TYPE OF TEST PIECE KV
TEST TEMPERATURE °C 196-
MEASUREMENT UNIT J

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| OBTAINED | 203 | 214 | 195 | 194 | 192 | 214 | 220 | 208 | 197 | 198 |
| | 191 | 200 | | | | | | | | |

TENSILE TEST
Control lot No. - Weight :020000823509 - 23.563 KG
SPECIFICATION ASTMA370-E8-0.5"SPEC DIRECTION OF THE TEST PIECE: L

| MEASUREMENT UNIT | RMB KSI | RP02B KSI | RA % | EL4 % 4,0 D |
|---|---|---|---|---|
| OBTAINED | 86 | 39 | 77,5 | 57,5 |
| | 88 | 38 | 74,6 | 53,7 |
| | 84 | 37 | 78,8 | 61,8 |
| | 86 | 39 | 77,5 | 55,6 |

☑ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

ULTRASONIC TEST ACCORDING TO EN 10308 Class.3, EN 10228 Class.3, ASTM A388 FBH 5 (diam. 102-250), FBH 8 (diam. 250,01-400).
VISUAL INSPECTION OF SURFACE AND DIMENSIONAL CONTROL ACCORDING TO EN10221 CLASS C AND EN10060: SATISFACTORY.
ANTIMIX TEST BY PORTABLE SPECTROMETRE: SATISFACTORY.
NO WELDING REPAIR ON THE MATERIAL.
FREE FROM RADIOCTIVITY CONTAMINATION.
MARKING: SYMBOL OF THE MANUF. WORK, MATERIAL N. , CAST N., LOT N., RECEIVING AGENT STAMP
COUNTRY OF ORIGIN: ITALY, THE MATERIAL COMPLIES WITH FAR DFARS
252.225-7009 ALT 1.

DATE 04.02.2020 MORABITO ROSA CF(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE -Cogne

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PAVAVERA, 16
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CAP. SOC. 140.000.000 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320078 - R.E.A. n. AO-60474

Company with Management Systems certified according to ISO 9001, IATF 16949, EN 9100 and ISO 14001.



THE PRODUCT SATISFIES CE DIRECTIVES EU: 2015/863 (ROHS3) - 2011/65 (ROHS2) - 2000/53 - 2002/95(RoHS) - 2003/11 - 2005/618 AND PED 2014/68.
ALL THE NORMS MENTIONED ARE INTENDED IN THEIR LAST REVISION AT THE DATE OF ISSUE OF THIS DOCUMENT.
QUALITY SYSTEM CERTIFIED BY I.G.Q ACCORDING TO UNI EN ISO 9001:2015 -IATF 16949:2016 (THE LAST ONE ONLY FOR WIRE ROD AND HOT ROLLED-PEELED-GROUND STAINLESS STEEL BARS).
INSPECTOR'S STAMP LF
THE MATERIAL IS FREE OF ANY MERCURY, MERCURY COMPOUNDS AND OR RADIUM CONTAMINATION AT TIME OF SHIPMENT AND WAS PRODUCED WITHOUT USING OZONE DEPLETING SUBSTANCES OF CLASS I AND II.
RADIOACTIVITY CONTROL PERFORMED WITH A GAMMA SPECTROMETER: ASTM E181.
GAMMA ACTIVITY ON THE PRODUCTS BELOW 0.1 BQ/G ACCORDING TO EU RESOLUTION 2013/59/EURATOM , IAEA RS-G-1.7 AND IAEA SSG-17.

08 NOV. 2024
FRANCO CORBELLINI
QSQ
CROSSWIND

☒ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLAPINA DATE 08 NOV 2024

DATE 04.02.2020

MORABITO ROSA CF(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

-Cogne

1724000740-QC-DB-00016_01

Laboratorio T.O.S.I. s.r.l.
Tecnici Organizzati al Servizio delle Imprese
*Sede Legale e Unità Operativa:* 20025 Legnano (MI) - Via Pisacane, 46
Tel. 0331.549631 / 0331.456119 - Fax 0331.470141 / 0331.451616
Internet: www.laboratoriotosi.it - E-mail: info@labtosi.it - P.IVA e C.F. 12805730152

LAB N° 1504

| RAPPORTO DI PROVA / TEST REPORT | DATA / DATE |
|---|---|
| **20P0699** Rev. **0** | 30/03/20 |

| | | | |
|---|---|---|---|
| CLIENTE / CUSTOMER | **A.S.T. S.p.A.** | | |
| | Via R. Merendi, 40 | 20010 Cornaredo (Mi) | Italy |

| | |
|---|---|
| DESCRIZIONE CAMPIONE / SAMPLE DESCRIPTION # | Round bar Ø 160 mm |
| RIFERIMENTI DEL CLIENTE / CUSTOMER REFERENCES # | Order AQ2000449<br>DDT 16/200 of the 02/03/20 |

| RICEVUTO IL / RECEIVED ON | CAMPIONAMENTO / SAMPLING | LUOGO ESECUZIONE PROVE / TESTING PLACE |
|---|---|---|
| 02/03/20 | By customer | Laboratorio T.O.S.I. |

| MATERIALE / MATERIAL # | COLATA / HEAT # |
|---|---|
| ASTM A479 Tp.316/316L | 000082 |

| ID. CLIENTE / CUSTOMER ID # | ID. LABORATORIO / LABORATORY ID. |
|---|---|
| - | **S0650** |

I risultati di prova si riferiscono solo ai campioni sottoposti a prova, come ricevuti. / Test report results relate to the tested specimens only, as received.

Il presente rapporto di prova non può essere riprodotto parzialmente. / The present test report cannot been partially reproduced.

I testimoni di prova sono conservati per 3 mesi, salvo diversa richiesta scritta del cliente. / Copons after test shall be kept for 3 months, unless otherwise written request of the customer.

Ove presente l'incertezza di misura viene espressa come incertezza estesa ottenuta moltiplicando l'incertezza tipo per il fattore di copertura k corrispondente ad un intervallo di fiducia di circa il 95%. Normalmente tale fattore k vale 2, tranne per analisi chimica (k=4,3) e per la determinazione di una seconda fase (k=2,05). / Where present the reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k = 2, which for a normal distribution provides a level of confidence of approximately 95%, except for chemical analysis (k=4,3) and for determination of a second phase (k=2,05).

# Informazioni fornite dal cliente, per le quali il laboratorio declina ogni reponsabilità. / Information provided by the customer, for which the laboratory refuses all responsibility.

| Redattore / Editor | | Responsabile laboratorio / Laboratory manager |
|---|---|---|
| *Lorenzo Rigamonti* | LABORATORIO T.O.S.I. S.R.L. | *Angelo Rossetti* |

| Ispettore esterno / External Inspector | Ispettore esterno / External Inspector | Ispettore esterno / External Inspector |
|---|---|---|
| | | ☑ REVIEW ☐ WITNESS<br>ON BEHALF OF RINA<br>A. DELLA PINA DATE 08 NOV 2024 |

08 NOV. 2024
FRANCO CORBELLINI
DNV
CROSSWIND

Laboratorio T.O.S.I. s.r.l.
Tecnici Organizzati al Servizio delle Imprese
*Sede Legale e Unità Operativa:* 20025 Legnano (MI) - Via Pisacane, 46
Tel. 0331.549631 / 0331.456119 - Fax 0331.470141 / 0331.451616
Internet: www.laboratoriotosi.it - E-mail: info@labtosi.it - P.IVA e C.F. 12805730152

LAB N° 1504

TEST REPORT: **20P0699** Rev. **0** LABORATORY ID. **S0650**

PROVA RICHIESTA / TEST REQUIRED:

Prova di trazione Temperatura amb. / tensile test at room temperature

| NORMA DI PROVA / TEST STANDARD | APPARECCHIATURE / APPARATOUS: |
|---|---|
| **ASTM E8/E8M-16a** | Machine **T095**<br>Extensometer **T098**<br>Caliper **T103** |
| DATA PROVA / TEST DATE: 26/03/2020 | |

| Prova n° test n° | Orientamento / orientation | Posizione / location | T °C | Dimensione dimension mm | $S_0$ mm² | $L_0$ mm | YS 0,2% MPa | TS MPa | E % | R.A. % |
|---|---|---|---|---|---|---|---|---|---|---|
| S0650 | Longitudinal | T/4 | r.t. | Ø 12,49 | 122,5 | 50 | 278 | 593 | 59 | 78 |

Snervamento determinato col metodo offset. Allungamento determinato dopo rottura. Metodo A / Yield strengh determined by the offset method. Elongation determined after fracture. Method:A.

08 NOV. 2024
FRANCO CORBELLINI
08
CROSSWIND

☑ REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLA PINA DATE 08 NOV 2024

Laboratorio T.O.S.I. s.r.l.
Tecnici Organizzati al Servizio delle Imprese
*Sede Legale e Unità Operativa:* 20025 Legnano (MI) - Via Pisacane, 46
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Internet: www.laboratoriotosi.it - E-mail: info@labtosi.it - P.IVA e C.F. 12805730152

LAB Nº 1504

TEST REPORT: **20P0699** Rev. **0** LABORATORY ID. **S0650**

| PROVA RICHIESTA / TEST REQUIRED: | |
|---|---|
| Test for detecting susceptibility to intergranular attack in austenitic stainless steel | |
| NORMA DI PROVA / TEST STANDARD<br>**ASTM A262-15 Pr.E** | APPARECCHIATURE / APPARATOUS:<br>Caliper **T100**<br>Machine **T096** |
| DATA PROVA / TEST DATE: 24/03/2020 | |

**DETTAGLI CAMPIONE / SPECIMEN DETAILS:**

| TRATTAMENTO TERMICO / HEAT TREATMENT | POSIZIONE / POSITION: | PREPARAZIONE / PREPARATION: | DIMENSIONI PROVINO / SPECIMEN DIMENSIONS: | | |
|---|---|---|---|---|---|
| Prove eseguite dopo TT di sensibilizzazione / test performed after sensitizing heat treatment (670°C/1h/air) | B.M. | Carte 220 umido / wetamery paper 220 | STANDARD<br>99,39 mm | 21,44 mm | 5,95 mm |

**PROVA IN SOLUZIONE / TEST IN SOLUTION**

| SOLUZIONE / SOLUTION | TEMPERATURA / TEMPERATURE: | TEMPO PROVA / TEST TIME | INIZIO PROVA / START TEST | FINE PROVA / END TEST |
|---|---|---|---|---|
| 6 % $CuSO_4$ + 16 % $H_2SO_4$ in $H_2O$ | Punto ebollizione / boiling point | 24 h | 24/03/20 | 25/03/20 |

**PROVA DI PIEGA / BEND TEST**

| ORIENTAMENTO / ORIENTATION | Ø | α | RISULTATO / RESULT | ESAME MACROGRAFICO / MACROGRAPHIC EX. | |
|---|---|---|---|---|---|
| - | 6 mm | 180 ° | Passing test specimen | (20x) | Satisfactory |

NOTE:

Fine rapporto di prova / End of test report

08 NOV. 2024
FRANCO CORBELLINI
083
CROSSWIND

☑ REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLAPINA DATE 08 NOV 2024

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 250.000.000 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.

INSPECTION CERTIFICATE 3.1 (EN 10204:2004)
DOCUMENT NUMBER 2022045248


| | | | |
|---|---|---|---|
| CUSTOMER: | A.S.T. SPA | | |
| CUSTOMER'S ORDER: | AQ2300423 | | |
| MANUFACTURER'S WORKS: | AOSTA, VIA PARAVERA 16 - ITALY | | |
| PRODUCER OF THE DOC: | QUALITY DEPARTMENT | | |
| MANUFACTURER'S WORKS ORDER NO: | 0001133685 / 000010 | | |
| MARK OF THE MANUFACTURER: | **COGNE** | | |
| DISPATCH NOTE: | 0081535289 / 000010 WEIGHT: 14 KG / 31 LB | | |
| INTERNAL SPEC: | STOCKBARREW2 | TECHNICAL RULE: | AD2000-W2 |
| PRODUCT: | TRA COLD DRAWN ROUND BARS | TOLERANCE: ISOH9 | |
| SURFACE FINISH: | 2H Cold Finished | | |
| PRODUCT DELIVERY CONDITION: | RP ANNEALED+COLD WORKED | | |
| PRODUCT DIMENSIONS (mm): | 14,000 ( 0,551 in) | LENGTH (mm) | 03050 03100 ( 00120 00122 in) |
| GRADE: | AISI 316/316L EN1.4401/4404 | INTERNAL GRADE: | 316LMQ IMCO |
| IDENTIFICATION HEAT NO: | 272928 | IDENTIFICATION LOT NO: | 160790 |
| MARKING OF THE PRODUCT: | 1.4404 | TEST PIECE N: | 079 |

THE PRODUCT IS CONFORMING TO THE CONTRACT AGREEMENT AND TO THE RULE AD2000-MERKBLATT W0/W2.
REFERENCE NORMS: EN 10088-3, EN 10272, ASTM A484, ASTM A276, ASME SA276, ASTM A479, ASME SA479, AMS 5648, AMS 5653, AMS-QQ-S-763.
STEELMAKING EAF + AOD + CONTINUOUS CASTING
SOLUTION TREATED AT 1050°C +-15°C / 1 min x mm / WATER.
RADIOACTIVITY CONTROL PERFORMED WITH A GAMMA SPECTROMETER: ASTM E181.
GAMMA ACTIVITY ON THE PRODUCTS BELOW 0.1 BQ/G ACCORDING TO EU RESOLUTION 2013/59/EURATOM , IAEA RS-G-1.7 AND IAEA SSG-17.
CORROSION TEST ACCORDING TO ASTM A262 PRACTICE E EN ISO 3651-2 PRACTICE A: SATISFACTORY.
HOT ROLLED
REDUCTION RATIO 144,9

CHEMICAL LADLE ANALYSIS ACCORDING TO ASTM A751 - EN ISO 14284
Control lot No. - Weight :020000920197 - 86.055 KG - 189.716 LB

| ELEMENTS | C | Si | Mn | P | S | N | Cr | Mo | Ni | Cu |
|---|---|---|---|---|---|---|---|---|---|---|
| MEASUREMENT UNIT | % | % | % | % | % | % | % | % | % | % |
| OBTAINED | 0,018 | 0,33 | 1,81 | 0,028 | 0,024 | 0,081 | 17,28 | 2,07 | 10,03 | 0,42 |
| ELEMENTS | Co | | | | | | | | | |
| MEASUREMENT UNIT | % | | | | | | | | | |
| OBTAINED | 0,18 | | | | | | | | | |

HARDNESS TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000920699 - 9.752 KG - 21.499 LB

| SPECIFICATION | | HARDNESS TEST | TESTING METHOD: |
|---|---|---|---|
| OBTAINED | 204 ENISO6506 | HB | 10/3000 |

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND

☑ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLAPINA DATE 08 NOV 2024

DATE 20.07.2022

BARBARA VIETTI MV(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

-Cogne

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 250.000.000 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.



TENSILE TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000920699 - 9.752 KG - 21.499 LB
SPECIFICATION EN-ISO6892-1 DIRECTION OF THE TEST PIECE: L

| MEASUREMENT UNIT | RM MPA | RP02 MPA | A5 % | Z % | RP1 MPA |
|---|---|---|---|---|---|
| OBTAINED | | | 5.0 D | | |
| | 692 | 455 | 43,7 | 79,2 | 607 |
| | 695 | 471 | 44,3 | 80,3 | 614 |
| | 692 | 455 | 43,4 | 77,1 | 608 |
| | 705 | 477 | 40,7 | 71,3 | 622 |

EDDY CURRENT INSPECTION OF SURFACE ACCORDING TO EN 10277 Class.3: SATISFACTORY.
DIMENSIONAL CONTROL ACCORDING TO EN 10278 AND ASTM A484: SATISFACTORY.
TENSILE TEST
Control lot No. - Weight :020000920699 - 9.752 KG - 21.499 LB
SPECIFICATION ASTMA370-E8-0.5"SPEC DIRECTION OF THE TEST PIECE: L

| MEASUREMENT UNIT | TS KSI | YS02 KSI | RA % | EL4 % |
|---|---|---|---|---|
| OBTAINED | | | | 4,0 D |
| | 101 | 68 | 75,9 | 45,7 |

08 NOV. 2024
FRANCO CORBELLINI
CB1
CROSSWIND

NO WELDING REPAIR ON THE MATERIAL.
THE MATERIAL IS FREE OF ANY MERCURY, MERCURY COMPOUNDS AND OR RADIUM CONTAMINATION AT TIME OF SHIPMENT AND WAS PRODUCED WITHOUT USING OZONE DEPLETING SUBSTANCES OF CLASS I AND II.
HEAT TREATMENT PERFORMED IN CALIBRATED FURNACES ACCORDING TO INTERNAL PROCEDURE PR-GDQ.ITT COMPLYING WITH API6A Annex M.
VISUAL INSPECTION OF SURFACE AND DIMENSIONAL CONTROL ACCORDING TO EN10221 CLASS C, EN 10060 AND ASTM A484: SATISFACTORY.
MARKING: PRODUCER LOGO, MATERIAL NO, HEAT NO, LOT NR.
ANTIMIX TEST: SATISFACTORY
DOCUMENT ISSUED IN AGREEMENT WITH TUEV BAYERN(11.1972) WAVING OF COUNTERSIGNING (SEE TUEV BAYERN LETTER DATED 17.01.80).
ALL THE NORMS MENTIONED ARE INTENDED IN THEIR LAST REVISION AT THE DATE OF ISSUE OF THIS DOCUMENT.
COUNTRY OF MELTING AND ORIGIN: ITALY, THE MATERIAL COMPLIES WITH FAR DFARS
252.225-7009 ALT 1.
THE ABOVE ARE TRUE AND CORRECT RESULTS OF TESTS ON SAMPLES OF THE MATERIAL. RESULTS ARE CONFORM TO THE SPECIFICATION(S) APPLICABLE AND ARE RECORDED.
THE RECORDING OF FALSE, FICTIOUS OR FRAUDULENT STATEMENTS OR ENTRIES ON THIS DOCUMENT MAY BE PUNISHABLE AS A FELONY UNDER U.S. FEDERAL STATUTES.
INSPECTOR'S STAMP LF
MATERIAL IN COMPLIANCE WITH THE NORSOK M-630 MDS S01
The products delivered are conforming to EN10088-5 and bear the CE marking on the basis of the test results here reported and the continuous surveillance, assessment and approval by MPA NRW
(certificate no. 0432-CPR-00166-01)
Material produced according to the system #Regulation 305/2011/EU of the European Parliament and of the Council of 9 March 2011#

CE 0432

☒ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLAPINA DATE 08 NOV 2024

DATE 20.07.2022

BARBARA VIETTI MV(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

-Cogne

**AST S.p.A.**
Via R. Merendi, 40
I-20007 Cornaredo MI

P +39 02 934848.1
F +39 02 9362248
W www.astspa.it

**MATERIAL CERTIFICATES INDEX**
**CERTIFICATO DEI MATERIALI**

**No.** 2400590

EN 10204 3.1

**Customer**
ROSETTI MARINO S.P.A.

**P.Order / Project**
1724000740 123A90A Rev. 1

**ITEM Number**
70-120

**Tag**
25-PV-037

**Quantity delivered**
1

**AST Job**
CV2400221

**AST Code**
CV2400221CV8407A001

**Serial Number**
2400590

**Valve Type**
Valvole Regolazione

**Size**
NPS 2" CLASS 300 RF

**Port Size**
1"

| Part Name | Material | Heat No. | Certificate No. | Supplier |
|---|---|---|---|---|
| BODY | ASTM A351 CF3M | G1014 | PKC-G1014-AT209B-1 | PEEKAY STEEL CASTING (P) LTD |
| SEAT RING | ASTM A479 316/316L | 380150 | 2023026120 | COGNE ACCIAI SPECIALI SPA |
| PLUG | F316 + PTFE | 293368 | MEST028009/2024/ | ACCIAIERIE VALBRUNA |
| BONNET | ASTM A479 316/316L | 000082 | 2020005555 | COGNE ACCIAI SPECIALI SPA |
| STEM | ASTM A479 316/316L | 272928 | 2022045248 | COGNE ACCIAI SPECIALI SPA |

08 NOV. 2024
FRANCO CORBELLINI
080
CROSSWIND

☐ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

**Remarks** :

**AST Q.C. Department**

**Customer's Inspector**

**Third Party Inspection**

**Date** : 05.11.2024 **Date** : _____ **Date** : _____

# PEEKAY STEEL CASTINGS (P) LTD

**4/242 Chinnamaddampalayam, Billichi Post, Coimbatore - 641 019**
**Email: info@pkcbe.co.in, Phone: 04254 - 271610**


## INSPECTION CERTIFICATE

EN 10204.3.1

| | | | | | |
|---|---|---|---|---|---|
| Customer: | AST SPA | | | | |
| Order No and Date | | PO Line No | Heat Code | TCNo | PKC/G1014/AT209B/1 |
| AQ2101495 / 30/07/2021 | | 1 | PYM05J30 | Date | 22-Nov-2021 |
| F.P. No | Part Name | | | Item Code / Part No | |
| AT209B | 2" CL150/300 FL GLV BODY | | | CABDWG0061 | |
| Casting Drawing No and Machining Drg.No | | Pattern No | | No.of pieces | |
| **M061 Rev 7** | | | | 4 | |
| Specification /Material | | | | | |
| **ASTM A351-2018/ASME SA351-2021 Gr.CF3M** | | | | Poured Date : 30/09/2021 | |

| Heat treatment | Melting Process | State of Delivery |
|---|---|---|
| Solution Annealing at 1100°c soaked for 10 hours then water cooled<br>HT Cycle No:E8069 Dt:06/10/2021 Sl.No:5,6,7,8 | INDUCTION | Unmachined |

08 NOV 2024 FRANCO CORBELLINI QBO CROSSWIND

### Chemical Composition (%)

| Element | C | Mn | Si | P | S | Cr | Ni | Mo | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Min. Specified | ... | ... | ... | ... | ... | **17.000** | **9.000** | **2.000** | ... | ... | ... | ... | ... | | | |
| Max. Specified | **0.030** | **1.500** | **1.500** | **0.040** | **0.040** | **21.000** | **13.000** | **3.000** | ... | ... | ... | ... | ... | | | |
| Heat No | | | | | | | | | | | | | | | | |
| G1014 | 0.015 | 1.164 | 0.888 | 0.032 | 0.001 | 18.560 | 9.520 | 2.170 | | | | | | | | |

Heat Slnos: 5,6,7,8

| Mechanical Properties | Yield Strength (0.2% Offset) | Tensile Strength | % of Elongation | | Reduction of Area | Hardness | Bend Test Angle at 0° | Impact value at -196°C in Joules (10mm x 10mm x 55mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | GL=50 mm | GL=62.5 mm | | | | Average 40 J | | | |
| Min | **205** | **485** | **30** | ... | ... | ... | D=0t | Single Value | | | |
| Max | ... | ... | ... | ... | ... | **237** | | | | | |
| Heat No | Mpa | Mpa | | | | HBW | | 1 | 2 | 3 | Avg |
| G1014 | 234 | 511 | 54.76 | - | - | 163.00 | .... | 90 | 106 | 86 | 94 |

Remarks/Observations

Material conform to :AST SPA Specifications FOR 001 Rev 15 & ASTM A351-2018/ASME SA351-2021 Gr.CF3M.NACE MR0175/ISO 15156-3.Castings are acid pickled and passivated.
Penetrant Test of inspection According to ASME B16.34 Appendix III
Visual inspection of casting :Satisfactory According to MSS-SP-55
Dimensional inspection:Satisfactory,According to Approved Drawing

Certified that the products supplied is free from Radioactive element or contamination

☒ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

Certified that the above mentioned material have been manufactured,tested and inspected in compliance with the requirements of Purchase order, conform in all respects to the relevant specification and drawings.

| Suppliers Logo | Prepared by | Stamp | Approved by | |
|---|---|---|---|---|
| PKC | Ramkumar D | | Vijaya Kumar K | PK 02 |

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 250.000.000 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.



| | | | |
|---|---|---|---|
| CUSTOMER: | A.S.T. SPA | | |
| CUSTOMER'S ORDER: | AQ2400201 | | |
| MANUFACTURER'S WORKS: | AOSTA, VIA PARAVERA 16 - ITALY | | |
| PRODUCER OF THE DOC: | QUALITY DEPARTMENT | | |
| MANUFACTURER'S WORKS ORDER NO: | 0001138630 / 000050 | | |
| MARK OF THE MANUFACTURER: | **COGNE** | | |
| DISPATCH NOTE: | 0081589667 / 000050 WEIGHT: 644 KG / 1420 LB | | |
| INTERNAL SPEC: | STOCKBARREW2 | TECHNICAL RULE: | AD2000 |
| PRODUCT: | PEL PEELED ROUND BARS TOLERANCE: ISOK11 | | |
| SURFACE FINISH: | 2B Cold Finished | | |
| PRODUCT DELIVERY CONDITION: | RS SOLUTION ANNEALED | | |
| PRODUCT DIMENSIONS (mm): | 75,000 ( 2,953 in) | LENGTH (mm) | 04000 06200 ( 00157 00244 in) |
| GRADE: | 316L-S31600/31603-1.4404/4401 | INTERNAL GRADE: | F316L IMCO |
| IDENTIFICATION HEAT NO: | 380150 | IDENTIFICATION LOT NO: | 725570 |
| MARKING OF THE PRODUCT: | 1.4404 | TEST PIECE N: | 557 |

REFERENCE NORMS: EN 10088-3 2014, EN 10272 2016, ASTM A276/A276M-17, ASTM A479/A479M-21, ASTM A193-20 B8MCLASSE 1D, ASME SA276/SA276M-17,ASME SA479/SA479M-21, AMS 5653J, AMS 5648N, ISO15156-3/NACE MR0175 2015, NACE MR0103/ISO 17945, NORSOK M630 MDSS01 REV5.
REFERENCE NORMS FOR CHEMICAL COMPOSITION AND MECHANICAL PROPERTIES: ASTM A182-22A, ASME SA182-22A.
REFERENCE NORMS ONLY FOR CHEMICAL COMPOSITION: EN 10222-5 2017,ASTM A403-22b, ASTM A484-22, ASTM A314-19, AMS-QQ-S-763D.
ASME SECT.II PART A EDITION 2015-2017-2019-2021
AISI 316/316L - UNS S31600/S31603 - 1.4404/1.4401
THE PRODUCT IS CONFORMING TO THE CONTRACT AGREEMENT AND TO THE RULE AD2000-MERKBLATT W0/W2.
STEELMAKING EAF + AOD + CONTINUOUS CASTING
ASTM A484 DOES NOT APPLY FOR SIZE AND LENGTH TOLERANCES.
REFERENCE FOR APPLICABLE ASME STANDARD: SECTION II PART A ED. 2015-2017-2019-2021
HOT ROLLED
REDUCTION RATIO 5,2

CHEMICAL LADLE ANALYSIS ACCORDING TO ASTM A751 - EN ISO 14284
Control lot No. - Weight :020000964940 - 82.913 KG - 182.789 LB

| ELEMENTS | C | Si | Mn | P | S | N | Cr | Mo | Ni | Cu |
|---|---|---|---|---|---|---|---|---|---|---|
| MEASUREMENT UNIT | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w |
| OBTAINED | 0,016 | 0,37 | 1,91 | 0,026 | 0,024 | 0,078 | 16,79 | 2,06 | 10,06 | 0,47 |

| ELEMENTS | Co |
|---|---|
| MEASUREMENT UNIT | % w/w |
| OBTAINED | 0,15 |

HARDNESS TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000967750 - 7.000 KG - 15.432 LB
SPECIFICATION ENISO6506 HARDNESS TEST HB TESTING METHOD: 10/3000
OBTAINED 160

08 NOV. 2024
FRANCO CORBELLINI

REVIEW WITNESS
ON BEHALF OF RTG
A. DELLARIVA 08 NOV 2024

DATE 25.05.2023 MORABITO ROSA CF(WORKS INSPECTOR) THIS IS AN ELECTRONICALLY GENERATED CERTIFICATE -Cogne

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 250.000.000 EUR INT. VERS.
C.F. 02167360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.





IMPACT TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000967750 - 7.000 KG - 15.432 LB
SPECIFICATION EN ISO 148-1-KV2 DIRECTION OF THE TEST PIECE: L
TYPE OF TEST PIECE KV
TEST TEMPERATURE °C 20
MEASUREMENT UNIT J

| OBTAINED | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 440 | 430 | 436 | 438 | 434 | 434 | 436 | 432 | 440 | 437 |
| 435 | 439 | | | | | | | | |

TENSILE TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000967750 - 7.000 KG - 15.432 LB
SPECIFICATION EN-ISO6892-1 DIRECTION OF THE TEST PIECE: L

| MEASUREMENT UNIT | RM MPA | RP02 MPA | A5 % | Z % | RP1 NMM |
|---|---|---|---|---|---|
| OBTAINED | | | 5.0 D | | |
| | 608 | 285 | 51,4 | 72,3 | 327 |
| | 606 | 277 | 51,6 | 72,9 | 320 |
| | 603 | 275 | 52,8 | 79,5 | 316 |
| | 604 | 264 | 54,2 | 75,4 | 312 |

GRAIN SIZE
Control lot No. - Weight :020000967750 - 7.000 KG - 15.432 LB
SPECIFICATION ASTME112 --
OBTAINED 5

MATERIAL IN COMPLIANCE WITH THE NORSOK M-630 MDS S01
IMPACT TEST
Control lot No. - Weight :020000967750 - 7.000 KG - 15.432 LB
SPECIFICATION EN ISO 148-1 DIRECTION OF THE TEST PIECE: L
TYPE OF TEST PIECE KV
TEST TEMPERATURE °C 196-
MEASUREMENT UNIT J

| OBTAINED | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 191 | 198 | 180 | 200 | 193 | 181 | 176 | 189 | 175 | 174 |
| 195 | 175 | | | | | | | | |

TENSILE TEST
Control lot No. - Weight :020000967750 - 7.000 KG - 15.432 LB
SPECIFICATION ASTMA370-E8-0.5"SPEC DIRECTION OF THE TEST PIECE: L

| MEASUREMENT UNIT | RMB KSI | RP02B KSI | ZB % | AL2B % |
|---|---|---|---|---|
| OBTAINED | | | | 4,0 D |
| | 87 | 40 | 72,8 | 60,2 |
| | 88 | 39 | 72,5 | 54,7 |
| | 88 | 38 | 78,5 | 54,6 |
| | 88 | 40 | 76,5 | 54,5 |

☑ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

08 NOV. 2024

DATE 25.05.2023

MORABITO ROSA CF(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

-Cogne

COGNE ACCIAI SPECIALI S.p.a.

ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL. +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 250.000.000 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, IATF 16949, EN 9100, ISO 14001 and ISO 45001.



COUNTRY OF MELTING AND ORIGIN: ITALY, THE MATERIAL COMPLIES WITH FAR DFARS 252.225-7009 ALT 1.
The products delivered are conforming to EN10088-5 and bear the CE marking on the basis of the test results here reported and the continuous surveillance, assessment and approval by MPA NRW (certificate no. 0432-CPR-00166-01)
Material produced according to the system #Regulation 305/2011/EU of the European Parliament and of the Council of 9 March 2011#
DOCUMENT ISSUED IN AGREEMENT WITH TUEV BAYERN(11.1972) WAVING OF COUNTERSIGNING (SEE TUEV BAYERN LETTER DATED 17.01.80).
MARKING: SYMBOL OF THE MANUF. WORK, MATERIAL N. , CAST N., LOT N., RECEIVING AGENT STAMP
CORROSION TEST ACCORDING TO ASTM A262 PRACTICE E EN ISO 3651-2 PRACTICE A: SATISFACTORY.
ANTIMIXING TEST BY PORTABLE SPECTROMETRE: CONFORMING
EDDY CURRENT INSPECTION OF SURFACE ACCORDING TO EN 10277 CLASS 4.
DIMENSIONAL CONTROL ACCORDING TO EN 10278: SATISFACTORY.
NO WELDING REPAIR ON THE MATERIAL.
ULTRASONIC TEST ACCORDING TO EN 10308 Class.3: SATISFACTORY
QUALITY SYSTEM CERTIFIED BY KIWA CERMET ACCORDING TO UNI EN ISO 9001:2015 -IATF 16949:2016 (THE LAST ONE ONLY FOR WIRE ROD AND HOT ROLLED-PEELED-GROUND STAINLESS STEEL BARS).
INSPECTOR'S STAMP LF
MATERIAL CONFORM TO: 2015/863/UE (RoHS3) - 2011/65/UE (RoHS2) - 2000/53/UE - 2002/95/UE (RoHS) - 2003/11/UE - 2005/618/UE - PED 2014/68/UE e PE(S)R 2016/1105
THE MATERIAL IS FREE OF ANY MERCURY, MERCURY COMPOUNDS AND OR RADIUM CONTAMINATION AT TIME OF SHIPMENT AND WAS PRODUCED WITHOUT USING OZONE DEPLETING SUBSTANCES OF CLASS I AND II.
RADIOACTIVITY CONTROL PERFORMED WITH A GAMMA SPECTROMETER: ASTM E181.
GAMMA ACTIVITY ON THE PRODUCTS BELOW 0.1 BQ/G ACCORDING TO EU RESOLUTION 2013/59/EURATOM , IAEA RS-G-1.7 AND IAEA SSG-17.

CE 0432

08 NOV. 2024
FRANCO CORBELLINI
QSO
CROSSWIND

☒ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

DATE 25.05.2023

MORABITO ROSA CF(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

-Cogne

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a : EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1
Nach/According to/Selon

Certificato nr. MEST028009 / 2024 /
Prüfung/Test/Essai

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura : Laminato - Solubilizzato FINITO A FREDDO
Lieferzustand / Delivery state / Etat de livraison

Produttore :
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Ordine nr: ORD N AQ2400369
Bestell / Your order / Commande

Tipo di Elaborazione: E+AOD
Erschmelzungsart / Melting process / Mode d'elaboration

Marchi di Fabbrica:
Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice
AV

Conferma ordine nr: MI24001817
Werks/Our Order/Ref nr.

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Punzone del Collaudatore:
Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur
MR

Avviso di Spedizione: A-MI24001447
Lieferanzeige/Packing list/B.L.

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung / Brand / Nuance

Punzonatura: 1.4401/1.4404
Kennzeichnung / Marking / Marquage

**SPECIFICHE :**
Anforderungen / Requirements / Exigences

VAL STOCK W2 A/1 1.4404/316L A,CF
AD 2000-M. W 2 2022 1.4401 A,CF (0)
AD 2000-M. W 2 2022 1.4404 A,CF (1)
AISI . 316/316L
AMS-QQ-S-763 D 316/316L A,CF
ASME SA182 2023 S31600/03 A (2)
ASME SA276 2023 S31600/03 A,CF (3)
ASME SA479 2023 S31600/03 A (4)
ASTM A182 2023 S31600/03 A (5)
ASTM A262 PR. E 2015 316/316L (6)
ASTM A276 2023 S31600/03 A,CF
ASTM A370 2022 .
ASTM A479 2023A S31600/03 A
ASTM E10 2023 .
ASTM E8 2022 .
EN 10088 PART 3 2014 1.4401 A,CF
EN 10088 PART 3 2014 1.4404 A,CF
EN 10272 2016. 1.4401 A,CF
EN 10272 2016. 1.4404 A,CF
ISO 148-1 2016 .
ISO 3651-2 98 METHOD A T1
ISO 6506-1 2014 .
ISO 6892-1 2019 .
NACE MR0103 2015 S31600/03 A (7)
NACE MR0175 4 S31600/03 A (8)
QQ-S-763 F 316/316L A,CF
ACH CO . .
KV L -196C . ISO 148-1

**Note:**
Anzeichnungen / Notes / Notes

(0)AD 2000-MERKBLATT W 2 edition 03.2022 AD 2000-MERKBLATT W 10 edition 06.2022
(1)AD 2000-MERKBLATT W 2 edition 03.2022 AD 2000-MERKBLATT W 10 edition 06.2022

(2)Section II Part A 2023 EDITION For products machined directly from bar refer to ASME SA479.
(3)Section II Part A 2023 EDITION
(4)Section II Part A 2023 EDITION
(5)For products machined directly from bar refer also to ASTM A479
(6)Reapproved 2021

08 NOV. 2024
FRANCO CORBELLINI
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CROSSWIND

(7)ANSI/NACE MR0103/ISO 17945 November 23, 2015
(8)ANSI/NACE MR0175/ISO 15156-3:2020 Fourth edition, approved 21 Sep 2022

| Pos. nr. | Oggetto | Tolleranza: k12<br>Toleranz/Allowance/Tolerance<br>Dimensioni - mm | Lunghezza - mm | Colata | Pezzi | Peso - KG | Lotto nr. |
|---|---|---|---|---|---|---|---|
| 0030 | Tondo | 30,000 | 6000/ 6060 | 293368 | | 68,0 | 310402650 |

☒REVIEW ☐WITNESS
ON BEHALF OF RVG
A. DELLAPINA DATE 08 NOV 2024

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| Vicenza, 05/03/2024<br>VCQ012 - MEST028009 | Direzione Qualità<br>Qualitätsmanagement/Quality Management/Gestion Qualité<br>R.BERTELLI | Direzione Prodotto<br>Produktmanagement/Product Management/Direction Produit<br>P.MESSORI | Pagina 1 di 4 |
|---|---|---|---|

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1
Nach/According to/Selon

Certificato nr. MEST028009 / 2024 /
Prüfung/Test/Essai

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura: Laminato - Solubilizzato FINITO A FREDDO
Lieferzustand / Delivery state / Etat de livraison

Produttore:
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Ordine nr: ORD N AQ2400369
Bestell / Your order / Commande

Tipo di Elaborazione: E+AOD
Erschmelzungsart / Melting process / Mode d'elaboration

Marchi di Fabbrica:
Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice
AV

Conferma ordine nr: MI24001817
Werks/Our Order/Ref nr.

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Punzone del Collaudatore:
Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur
MR

Avviso di Spedizione: A-MI24001447
Lieferanzeige/Packing list/B.L.

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung / Brand / Nuance

Punzonatura: 1.4401/1.4404
Kennzeichnung / Marking / Marquage

### TEST ALLO STATO DI FORNITURA

Test on delivery condition Prüefung auf lieferbereitem produkt test a l'etat de fourniture Prueba sobre el material asi come entregado

1) L=longitudinale/längs, T=trasversale/quer, O=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais. mm | °C | Posiz Saggio Probestage Location Emplacement | Snervamento Streckgrenze Yield Stress Limite elastique Rp 0,2% N/mm2 | Snervamento Streckgrenze Yield Stress Limite elastique Rp 1% N/mm2 | Resistenza Zugfestigkeit Tensile strength Resistance à traction Rm N/mm2 | Allungamento Bruchdehnung Elongation Allongement A5 % | | Strizione Einschnürung Reduction of area Striction Z % | | Resilienza Kerbschlagarbeit Impact Value Resilience | | | Durezza Haerte Hardness Durete HB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti Anforderungen/Required values Valeurs demandées | | min max | | 200 | 235 | 500 900 | 20 | - | - | - | - | | | - | | |
| A | 10 | 20 | L | 458 | 535 | 678 | 44 | | 67 | | | | | 315 | | |
| G | 10 | 20 | L | 457 | 532 | 682 | 45 | | 66 | | | | | 223 | | |
| | | | | | | | | | | | | | | 221 | | |

### TEST ALLO STATO DI FORNITURA

Test on delivery condition / Prüefung auf lieferbereitem produkt / Test a l'etat de fourniture / Prueba sobre el material asi come entregado

| TEST | | min | max | |
|---|---|---|---|---|
| A | Dimensioni grano x ASTM E112 | | | 4 |

### Charpy per ISO 148-1

1) L=longitudinale/längs, T=trasversale/quer, O=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais. mm | °C | Posiz Saggio Probestage Location Emplacement | Resilienza Kerbschlagarbeit Impact Value Resilience KV2 J | | | Espansione laterale Lateral Expansion Lateral ex mm | | | Shear Shear % Shear % | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti Anforderungen/Required values Valeurs demandées | | min max | | - | - | - | - | - | - | - | - | - |
| B | 10X10 | -196 | L | 158 | 152 | 151 | 1,700 | 1,852 | 1,705 | 59 | 61 | 57 |

### Test allo stato di fornitura per ASTM A370

1) L=longitudinale/längs, T=trasversale/quer, O=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais. mm | °C | Posiz Saggio Probestage Location Emplacement | Snervamento Streckgrenze Yield Stress Limite elastique Rp 0,2% N/mm2 | Snervamento Streckgrenze Yield Stress Limite elastique | Resistenza Zugfestigkeit Tensile strength Resistance à traction Rm N/mm2 | Allungamento Bruchdehnung Elongation Allongement E 4d % | | Strizione Einschnürung Reduction of area Striction RA % | | Resilienza Kerbschlagarbeit Impact Value Resilience | | | Durezza Haerte Hardness Durete HB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti Anforderungen/Required values Valeurs demandées | | min max | | 210 | - | 517 | - | 30 | - | 50 | - | | | - | | |
| C | 12.5 | 20 | L | 453 | | 671 | | 47 | | 68 | | | | 235 | | |
| | | | | | | | | | | | | | | 222 | | |

08 NOV. 2024
FRANCO CORBELLINI
QBO
CROSSWIND

☐ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| | | | |
|---|---|---|---|
| **Vicenza, 05/03/2024**<br>VCQ012 - MEST028009 | **Direzione Qualità**<br>Qualitätsmanagement/Quality Management/Gestion Qualité<br>**R.BERTELLI** | **Direzione Prodotto**<br>Produktmanagement/Product Management/Direction Produit<br>**P.MESSORI** | Pagina 2 di 4 |

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
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Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a / Nach/According to/Selon: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. / Prüfung/Test/Essai: MEST028009 / 2024 /

Cliente / Besteller/Purchaser/Client:
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Ordine nr. / Bestell / Your order / Commande: ORD N AQ2400369

Conferma ordine nr. / Werks/Our Order/Ref nr: MI24001817

Avviso di Spedizione / Lieferanzeige/Packing list/B.L.: A-MI24001447

Stato di fornitura / Lieferzustand / Delivery state / Etat de livraison: Laminato - Solubilizzato FINITO A FREDDO

Tipo di Elaborazione / Erschmelzungsart / Melting process / Mode d'elaboration: E+AOD

Qualità / Werkstoff/Grade/Nuance: 1.4401/1.4404/316/316L

Marca / Markenbezeichnung / Brand / Nuance: MVAPML ( MAXIVAL )

Produttore / Hersteller/Item/Usine productrice:
**ACCIAIERIE VALBRUNA S.P.A.**

Marchi di Fabbrica / Zeichen des Liefernwerkes / Trade marks / Sigles de l'usine productrice: AV

Punzone del Collaudatore / Stempel des Werkssachverständigen / Inspector s stamp/Poinçon de l'assayeur: MR

Punzonatura / Kennzeichnung / Marking / Marquage: 1.4401/1.4404

### Charpy per ISO 148-1

1) L=longitudinale/längs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais. mm | °C | Posiz Saggio Probenlage Location Emplacement | Resilienza Kerbschlagarbeit Impact Value Resilience $KV_2$ J | | | Espansione laterale Lateral Expansion | | | Shear Shear | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti Anforderungen/Required values Valeurs demandées | | min | | 100 | 100 | 100 | - | - | - | - | - | - |
| | | max | | | | | | | | | | |
| F | 10X10 | 20 | L | 199 | 194 | 193 | | | | | | |
| H | 10X10 | 20 | L | 210 | 196 | 198 | | | | | | |

Tensile testing according to ISO 6892-1
Impact testing according to ISO 148-1
Mechanical properties according to ASTM A370.
Brinnell hardness according to ASTM E10
Tensile testing according to ASTM E8
Brinnell hardness according to ISO 6506-1

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND R

☒ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLAPINA DATE 08 NOV 2024

### Analisi chimica

Chemische Zusammensetzung/Chemical Analysis/Analyse chimique

| Colata / Heat Schmelze/Coulée | | C % | Si % | Mn % | Cr % | Mo % | Cu % | Ni % | Co % | P % | S % | N % | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | min - | - | - | - | 16,50 | 2,00 | - | 10,00 | - | - | - | - | - | - | - | - |
| | max 0,030 | 1,00 | 2,00 | | 18,00 | 2,50 | 1,00 | 13,00 | - | 0,045 | 0,030 | 0,100 | - | - | - | - |
| 293368 | | 0,010 | 0,56 | 1,52 | 16,68 | 2,04 | 0,57 | 10,00 | 0,156 | 0,032 | 0,027 | 0,058 | | | | |

### Corrosion test in 16% sulfuric acid and copper sulfate solutions

Test standard: UNI EN ISO 3651-2 Method A

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitized T1 | 20 | boil | 90 | 5 | Absence of cracks | SATISFACTORY |

### Corrosion test in 16% sulfuric acid and copper sulfate solutions

Test standard: ASTM A262-Practice E

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitization | 15 | boil | 180 | 5 | Absence of cracks | SATISFACTORY |

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

Vicenza, 05/03/2024
VCQ012 - MEST028009

Direzione Qualità
Qualitätsmanagement/Quality Management/Gestion Qualité
R.BERTELLI

Direzione Prodotto
Produktmanagement/Product Management/Direction Produit
P.MESSORI

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497

## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a : EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1
Nach/According to/Selon

Certificato nr. MEST028009 / 2024 /
Prüfung/Test/Essai

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura : Laminato - Solubilizzato FINITO A FREDDO
Lieferzustand / Delivery state / Etat de livraison

Produttore :
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Tipo di Elaborazione: E+AOD
Erschmelzungsart / Melting process / Mode d'elaboration

Marchi di Fabbrica: AV
Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice

Ordine nr: ORD N AQ2400369
Bestell / Your order / Commande

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Punzone del Collaudatore: MR
Stempel des Werksachverständigen / Inspector's stamp/Poinçon de l'assayeur

Conferma ordine nr: MI24001817
Werks/Our Order/Ref nr

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung / Brand / Nuance

Punzonatura: 1.4401/1.4404
Kennzeichnung / Marking / Marquage

Avviso di Spedizione: A-MI24001447
Lieferanzeige/Packing list/B.L.

Reduction ratio = 42,9 : 1
Solution annealed 1040°C for 160'(total time)/water cooled.
SURFACE QUALITY COMPLIANT TO EN 10088-3 TAB.1 COND. 2H equivalent to EN 10277-1 Cl.3
"Issued in agreement with TÜV SÜD Industrie Service GMBH
(07/1972)"
"Qs approved according to PED, Annex I, Para. 4.3 by
Notified Body 0036"
"(Certification no. DGR-0036-QS-W 23/2002/MUC)"

Sono state soddisfatte tutte le condizioni richieste
Die gestellen Anforderungen sind it. Anlage erfüllt
The material has been furnished in accordance with the requirements
Le materiel à été trouvé conforme aux exigences

Controllo antimescolanza con tecnica XRF/OES portatile : OK
Verwechslungprüfung durch XRF/OES Gerat geführt : OK
Antimixing tasting performed with XRF/OES portable : OK
Contrôle antimélange avl technique XRF/OES portable : OK

Controllo visivo e dimensionale: soddisfa le esigenze
Besichtigung und Abmessung ohne Beanstandung
Visual inspection and dimensional checks satisfactory
Contrôle visuel et dimensions satisfaisant

Melted, poured and manufactured in Italy  No welding or weld repair  Material free from Mercury contamination

We declare that the finished product is checked for radioactive contamination by the portal system when it leaves the production plant.

The Quality Management System is also Certified according to Pressure Equipment Directive 2014/68/EU Annex 1,chapt.4.3 by TÜV and LLOYD'S
The Quality Management System is also Certified according to PER 2016/1105, Schedule 2, Part 4, Para 31 (8) by Competent Body TÜV SUD BABT Unlimited.
Any act of tampering, modification, alteration, counterfeiting and/or falsification and/or any other action which modifies the contents of this test certificate shall constitute a violation of applicable civil and criminal laws. Acciaierie Valbruna shall protect its rights and interests before any competent court, authority and jurisdiction.
Maxival and/or Valplus grades/products are manufactured with ladle techniques to control composition, distribution, size and shape of non-metallic inclusions for improved machinability.
The supplied product conforms to requirements expressly requested by the purchaser and conforms to requirements specified by certified norms and standards. Should the product be used for more severe, critical and/ or in any case different applications than those the material is generally intended for, any different and/or supplementary requirements shall be specifically demanded, at least, upon order of the Product by the Purchaser. Acciaierie Valbruna SpA shall not be responsible for any improper use of the Products.

08 NOV. 2024

☒ REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLA PINA DATE 08 NOV 2024

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL.+ 39.0165.3021 - FAX + 39.0165.302296
CAP. SOC. 140.000.000 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, IATF 16949, EN 9100 and ISO 14001.

INSPECTION CERTIFICATE 3.1 (EN 10204:2004)
DOCUMENT NUMBER 2020005555


| | | | |
|---|---|---|---|
| CUSTOMER: | A.S.T. SPA | | |
| CUSTOMER'S ORDER: | AQ2000377 | | |
| MANUFACTURER'S WORKS: | AOSTA, VIA PARAVERA 16 - ITALY | | |
| PRODUCER OF THE DOC: | QUALITY DEPARTMENT | | |
| MANUFACTURER'S WORKS ORDER NO: 1116455 /10 | MARK OF THE MANUFACTURER: COGNE | | |
| DISPATCH NOTE: | 81329230 /10 WEIGHT: 900 KG | | |
| THE CERTIFIED PRODUCTS ARE COMPLYING TO THE PURCHASE ORDER, EXCEPT FOR EXEMPTIONS AGREED WITH THE CUSTOMER, IF ANY. | | | |
| INTERNAL SPEC: | AD2000MERKBLATTW10 | TECHNICAL RULE: | AD2000 |
| PRODUCT: | 2290 SPE ROUGHPEELED | ROUND BARS TOLERANCE: | + 1,500 - 0,0000 |
| SURFACE FINISH: | 1X Hot Finished | | |
| PRODUCT DELIVERY CONDITION: | RS SOLUTION ANNEALED | | |
| PRODUCT DIMENSIONS (mm): | 160,000 | LENGTH (mm) | 04000 /06000 |
| GRADE: | AISI 316/316L EN1.4401/4404 | INTERNAL GRADE: | F316L5 IMCO |
| IDENTIFICATION HEAT NO: | 000082 | IDENTIFICATION LOT NO: | 828080 |
| MARKING OF THE PRODUCT: | 1.4404 | TEST PIECE N: | 808 |

THE MATERIAL IS PRODUCED ACCORDING TO SPECIFICATION AD2000-MERKBLATT W2/W10
DOCUMENT ISSUED IN AGREEMENT WITH TUEV BAYERN(11.1972) WAVING OF COUNTERSIGNING (SEE TUEV BAYERN LETTER DATED 17.01.80).
REFERENCE NORMS:EN 10088-3, EN 10272, ASTM A276/ASME
SA276, ASTM A479/ASME SA479, ASTMA193 B8M CLASSE 1D,
ISO15156-3/NACE MR0175, NACE MR0103.
REFERENCE NORMS FOR CHEMICAL COMPOSITION AND MECANICHAL PROPERTIES: ASTM A182/ASME SA182
REFERENCE NORMS FOR CHEMICAL COMPOSITION ONLY: EN 10222-5, ASTM A484, ASTM A403, ASTM A314.
HOT ROLLED
REDUCTION RATIO 4,2

CHEMICAL LADLE ANALYSIS ACCORDING TO ASTM A751 - EN ISO 14284
Control lot No. - Weight :020000822939 - 84.048 KG

| ELEMENTS | C | Si | Mn | P | S | N | Cr | Mo | Ni | Cu |
|---|---|---|---|---|---|---|---|---|---|---|
| OBTAINED | 0,021 | 0,39 | 1,31 | 0,026 | 0,030 | 0,087 | 16,76 | 2,05 | 10,18 | 0,40 |

| ELEMENTS | Co |
|---|---|
| OBTAINED | 0,14 |

HARDNESS TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000823509 - 23.563 KG
SPECIFICATION ENISO6506 HARDNESS TEST HB TESTING METHOD: 10/3000
OBTAINED 175

IMPACT TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000823509 - 23.563 KG
SPECIFICATION EN ISO 148-1-KV2 DIRECTION OF THE TEST PIECE: L
TYPE OF TEST PIECE KV
TEST TEMPERATURE °C 20
MEASUREMENT UNIT J

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| OBTAINED | 431 | 437 | 439 | 433 | 433 | 436 | 434 | 431 | 439 | 439 |
| | 430 | 433 | | | | | | | | |

DATE 04.02.2020

MORABITO ROSA CF(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE -Cogne

☑REVIEW ☐WITNESS
ON BEHALF OF RQC
A. DELLAPINA DATE 08 NOV 2024

08 NOV. 2024
FRANCO CORBELLINI
CROSSWIND

1724000740-QC-DB-00016_01

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
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C.F. 02187360967
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Company with Management Systems certified according to ISO 9001, IATF 16949, EN 9100 and ISO 14001.



1724000740-QC-DB-00016_01

TENSILE TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000823509 - 23.563 KG
SPECIFICATION EN-ISO6892-1 DIRECTION OF THE TEST PIECE: L

| MEASUREMENT UNIT | RM MPA | RP02 MPA | A5 % 5.0 D | Z % | RP1 MPA |
|---|---|---|---|---|---|
| OBTAINED | 598 | 262 | 55,5 | 78,2 | 307 |
| | 605 | 272 | 55,8 | 80,1 | 301 |
| | 597 | 266 | 54,8 | 80,6 | 304 |
| | 601 | 268 | 55,1 | 80,1 | 310 |

GRAIN SIZE
Control lot No. - Weight :020000823509 - 23.563 KG
SPECIFICATION ASTME112 --

| | | |
|---|---|---|
| OBTAINED | 3 | 5 |

CORROSION TEST ACCORDING TO ASTM A262 PRACTICE E EN ISO 3651-2 PRACTICE A: SATISFACTORY.
MATERIAL ACCORDING TO ASME SEC. II Ed. 2015
IMPACT TEST
Control lot No. - Weight :020000823509 - 23.563 KG
SPECIFICATION EN ISO 148-1 DIRECTION OF THE TEST PIECE: L
TYPE OF TEST PIECE KV
TEST TEMPERATURE °C 196-
MEASUREMENT UNIT J

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| OBTAINED | 203 | 214 | 195 | 194 | 192 | 214 | 220 | 208 | 197 | 198 |
| | 191 | 200 | | | | | | | | |

TENSILE TEST
Control lot No. - Weight :020000823509 - 23.563 KG
SPECIFICATION ASTMA370-E8-0.5"SPEC DIRECTION OF THE TEST PIECE: L

| MEASUREMENT UNIT | RMB KSI | RP02B KSI | RA % | EL4 % 4,0 D |
|---|---|---|---|---|
| OBTAINED | 86 | 39 | 77,5 | 57,5 |
| | 88 | 38 | 74,6 | 53,7 |
| | 84 | 37 | 78,8 | 61,8 |
| | 86 | 39 | 77,5 | 55,6 |

ULTRASONIC TEST ACCORDING TO EN 10308 Class.3, EN 10228 Class.3, ASTM A388 FBH 5 (diam. 102-250), FBH 8 (diam. 250,01-400).
VISUAL INSPECTION OF SURFACE AND DIMENSIONAL CONTROL ACCORDING TO EN10221 CLASS C AND EN10060: SATISFACTORY.
ANTIMIX TEST BY PORTABLE SPECTROMETRE: SATISFACTORY.
NO WELDING REPAIR ON THE MATERIAL.
FREE FROM RADIOCTIVITY CONTAMINATION.
MARKING: SYMBOL OF THE MANUF. WORK, MATERIAL N. , CAST N., LOT N., RECEIVING AGENT STAMP
COUNTRY OF ORIGIN: ITALY, THE MATERIAL COMPLIES WITH FAR DFARS
252.225-7009 ALT 1.

DATE 04.02.2020 MORABITO ROSA CF(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE -Cogne

☑ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA RINA 08 NOV 2024

08 NOV. 2024
FRANCO CORBELLINI
CROSSWIND

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL. + 39.0165.3021 - FAX + 39.0165.302298
CAP. SOC. 140.000.000 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320078 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, IATF 16949, EN 9100 and ISO 14001.



THE PRODUCT SATISFIES CE DIRECTIVES EU: 2015/863 (ROHS3) - 2011/65 (ROHS2) - 2000/53 - 2002/95(RoHS) - 2003/11 - 2005/618 AND PED 2014/68.
ALL THE NORMS MENTIONED ARE INTENDED IN THEIR LAST REVISION AT THE DATE OF ISSUE OF THIS DOCUMENT.
QUALITY SYSTEM CERTIFIED BY I.G.Q ACCORDING TO UNI EN ISO 9001:2015 -IATF 16949:2016 (THE LAST ONE ONLY FOR WIRE ROD AND HOT ROLLED-PEELED-GROUND STAINLESS STEEL BARS).
INSPECTOR'S STAMP LF
THE MATERIAL IS FREE OF ANY MERCURY, MERCURY COMPOUNDS AND OR RADIUM CONTAMINATION AT TIME OF SHIPMENT AND WAS PRODUCED WITHOUT USING OZONE DEPLETING SUBSTANCES OF CLASS I AND II.
RADIOACTIVITY CONTROL PERFORMED WITH A GAMMA SPECTROMETER: ASTM E181.
GAMMA ACTIVITY ON THE PRODUCTS BELOW 0.1 BQ/G ACCORDING TO EU RESOLUTION 2013/59/EURATOM , IAEA RS-G-1.7 AND IAEA SSG-17.

08 NOV. 2024
FRANCO CORBELLINI
QSO
CROSSWIND

☒ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

DATE 04.02.2020

MORABITO ROSA CF(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

-Cogne

1724000740-QC-DB-00016_01

Laboratorio T.O.S.I. s.r.l.
Tecnici Organizzati al Servizio delle Imprese
*Sede Legale e Unità Operativa:* 20025 Legnano (MI) - Via Pisacane, 46
Tel. 0331.549631 / 0331.456119 - Fax 0331.470141 / 0331.451616
Internet: www.laboratoriotosi.it - E-mail: info@labtosi.it - P.IVA e C.F. 12805730152

LAB N° 1504

| RAPPORTO DI PROVA / TEST REPORT | DATA / DATE |
|---|---|
| **20P0699** Rev. **0** | 30/03/20 |

| | | | |
|---|---|---|---|
| CLIENTE / CUSTOMER | **A.S.T. S.p.A.** | | |
| | Via R. Merendi, 40 | 20010 Cornaredo (MI) | Italy |

| | |
|---|---|
| DESCRIZIONE CAMPIONE / SAMPLE DESCRIPTION # | Round bar Ø 160 mm |
| RIFERIMENTI DEL CLIENTE / CUSTOMER REFERENCES # | Order AQ2000449<br>DDT 16/200 of the 02/03/20 |

| RICEVUTO IL / RECEIVED ON | CAMPIONAMENTO / SAMPLING | LUOGO ESECUZIONE PROVE / TESTING PLACE |
|---|---|---|
| 02/03/20 | By customer | Laboratorio T.O.S.I. |

| MATERIALE / MATERIAL # | COLATA / HEAT # |
|---|---|
| ASTM A479 Tp.316/316L | 000082 |

| ID. CLIENTE / CUSTOMER ID # | ID. LABORATORIO / LABORATORY ID. |
|---|---|
| - | **S0650** |

I risultati di prova si riferiscono solo ai campioni sottoposti a prova, come ricevuti. / Test report results relate to the tested specimens only, as received.
Il presente rapporto di prova non può essere riprodotto parzialmente. / The present test report cannot beeri partially reproduced.
I testimoni di prova sono conservati per 3 mesi, salvo diversa richiesta scritta del cliente. / Copons after test shall be kept for 3 months, unless otherwise written request of the customer.
Ove presente l'incertezza di misura viene espressa come incertezza estesa ottenuta moltiplicando l'incertezza tipo per il fattore di copertura k corrispondente ad un intervallo di fiducia di circa il 95%. Normalmente tale fattore k vale 2, tranne per analisi chimica (k=4,3) e per la determinazione di una seconda fase (k=2,05). / Where present the reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k = 2, which for a normal distribution provides a level of confidence of approximately 95%, except for chemical analysis (k=4,3) and for determination of a second phase (k=2,05).
# Informazioni fornite dal cliente, per le quali il laboratorio declina ogni reponsabilità. / Information provided by the customer, for which the laboratory refuses all responsibility.

| Redattore / Editor | Responsabile laboratorio / Laboratory manager |
|---|---|
| *Lorenzo Rigamonti* | *Andrea Rossetti* |

| Ispettore esterno / External inspector | Ispettore esterno / External inspector | Ispettore esterno / External inspector |
|---|---|---|
| | | |

0 8 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND

☑ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 0 8 NOV 2024

Laboratorio T.O.S.I. s.r.l.
Tecnici Organizzati al Servizio delle Imprese
*Sede Legale e Unità Operativa:* 20025 Legnano (MI) - Via Pisacane, 46
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Internet: www.laboratoriotosi.it - E-mail: info@labtosi.it - P.IVA e C.F. 12805730152

LAB N° 1504

TEST REPORT: **20P0699** Rev. **0** LABORATORY ID. **S0650**

PROVA RICHIESTA / TEST REQUIRED:

Prova di trazione Temperatura amb. / tensile test at room temperature

| NORMA DI PROVA / TEST STANDARD | APPARECCHIATURE / APPARATOUS: |
|---|---|
| **ASTM E8/E8M-16a** | Machine **T095**<br>Extensometer **T098**<br>Caliper **T103** |
| DATA PROVA / TEST DATE: 26/03/2020 | |

| Prova n° test n° | Orientamento / orientation | Posizione / location | T °C | Dimensione dimension mm | $S_0$ $mm^2$ | $L_0$ mm | YS 0,2% MPa | TS MPa | E % | R.A. % |
|---|---|---|---|---|---|---|---|---|---|---|
| S0650 | Longitudinal | T/4 | r.t. | Ø 12,49 | 122,5 | 50 | 278 | 593 | 59 | 78 |

Snervamento determinato col metodo offset. Allungamento determinato dopo rottura. Metodo A /
Yield strengh determined by the offset method. Elongation determined after fracture. Method A.

08 NOV. 2024
FRANCO CORBELLINI
CEO
CROSSWIND

☒ REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLA PINA DATE 08 NOV 2024

Laboratorio T.O.S.I. s.r.l.
Tecnici Organizzati al Servizio delle Imprese
*Sede Legale e Unità Operativa:* 20025 Legnano (MI) - Via Pisacane, 46
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Internet: www.laboratoriotosi.it - E-mail: info@labtosi.it - P.IVA e C.F. 12805730152

LAB N° 1504

TEST REPORT: **20P0699** Rev. **0** LABORATORY ID. **S0650**

| PROVA RICHIESTA / TEST REQUIRED: | |
|---|---|
| Test for detecting susceptibility to intergranular attack in austenitic stainless steel | |
| NORMA DI PROVA / TEST STANDARD<br>**ASTM A262-15 Pr.E** | APPARECCHIATURE / APPARATOUS:<br>Caliper **T100**<br>Machine **T096** |
| DATA PROVA / TEST DATE: 24/03/2020 | |

**DETTAGLI CAMPIONE / SPECIMEN DETAILS:**

| TRATTAMENTO TERMICO / HEAT TREATMENT | POSIZIONE / POSITION: | PREPARAZIONE / PREPARATION: | DIMENSIONI PROVINO / SPECIMEN DIMENSIONS: | | |
|---|---|---|---|---|---|
| Prove eseguite dopo TT di sensibilizzazione / test performed after sensitizing heat treatment (670°C/1h/air) | B.M. | Carte 220 umido / wetamery paper 220 | STANDARD<br>99,39 mm | 21,44 mm | 5,95 mm |

**PROVA IN SOLUZIONE / TEST IN SOLUTION**

| SOLUZIONE / SOLUTION | TEMPERATURA / TEMPERATURE: | TEMPO PROVA / TEST TIME | INIZIO PROVA / START TEST | FINE PROVA / END TEST |
|---|---|---|---|---|
| 6 % $CuSO_4$ + 16 % $H_2SO_4$ in $H_2O$ | Punto ebollizione / boiling point | 24 h | 24/03/20 | 25/03/20 |

**PROVA DI PIEGA / BEND TEST**

| ORIENTAMENTO / ORIENTATION | Ø | α | RISULTATO / RESULT | ESAME MACROGRAFICO / MACROGRAPHIC EX. | |
|---|---|---|---|---|---|
| - | 6 mm | 180 ° | Passing test specimen | (20x) | Satisfactory |

NOTE:

Fine rapporto di prova / End of test report

08 NOV. 2024
FRANCO CORBELLINI
CROSSWIND

☑ REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLA PINA DATE 08 NOV 2024

COGNE ACCIAI SPECIALI S.p.a.
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C.F. 02187360957
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.

# INSPECTION CERTIFICATE 3.1 (EN 10204:2004)

DOCUMENT NUMBER 2022045248



| | | | |
|---|---|---|---|
| CUSTOMER: | A.S.T. SPA | | |
| CUSTOMER'S ORDER: | AQ2300423 | | |
| MANUFACTURER'S WORKS: | AOSTA, VIA PARAVERA 16 - ITALY | | |
| PRODUCER OF THE DOC: | QUALITY DEPARTMENT | | |
| MANUFACTURER'S WORKS ORDER NO: | 0001133685 / 000010 | | |
| MARK OF THE MANUFACTURER: | **COGNE** | | |
| DISPATCH NOTE: | 0081535289 / 000010 WEIGHT: 14 KG / 31 LB | | |
| INTERNAL SPEC: | STOCKBARREW2 | TECHNICAL RULE: | AD2000-W2 |
| PRODUCT: | TRA COLD DRAWN ROUND BARS | TOLERANCE: ISOH9 | |
| SURFACE FINISH: | 2H Cold Finished | | |
| PRODUCT DELIVERY CONDITION: | RP ANNEALED+COLD WORKED | | |
| PRODUCT DIMENSIONS (mm): | 14,000 ( 0,551 in) | LENGTH (mm) | 03050 03100 ( 00120 00122 in) |
| GRADE: | AISI 316/316L EN1.4401/4404 | INTERNAL GRADE: | 316LMQ IMCO |
| IDENTIFICATION HEAT NO: | 272928 | IDENTIFICATION LOT NO: | 160790 |
| MARKING OF THE PRODUCT: | 1.4404 | TEST PIECE N: | 079 |

THE PRODUCT IS CONFORMING TO THE CONTRACT AGREEMENT AND TO THE RULE AD2000-MERKBLATT W0/W2.
REFERENCE NORMS: EN 10088-3, EN 10272, ASTM A484, ASTM A276, ASME SA276, ASTM A479, ASME SA479, AMS 5648, AMS 5653, AMS-QQ-S-763.
STEELMAKING EAF + AOD + CONTINUOUS CASTING
SOLUTION TREATED AT 1050°C +-15°C / 1 min x mm / WATER.
RADIOACTIVITY CONTROL PERFORMED WITH A GAMMA SPECTROMETER: ASTM E181.
GAMMA ACTIVITY ON THE PRODUCTS BELOW 0.1 BQ/G ACCORDING TO EU RESOLUTION 2013/59/EURATOM , IAEA RS-G-1.7 AND IAEA SSG-17.
CORROSION TEST ACCORDING TO ASTM A262 PRACTICE E EN ISO 3651-2 PRACTICE A: SATISFACTORY.
HOT ROLLED
REDUCTION RATIO 144,9

CHEMICAL LADLE ANALYSIS ACCORDING TO ASTM A751 - EN ISO 14284
Control lot No. - Weight :020000920197 - 86.055 KG - 189.716 LB

| ELEMENTS | C | Si | Mn | P | S | N | Cr | Mo | Ni | Cu |
|---|---|---|---|---|---|---|---|---|---|---|
| MEASUREMENT UNIT | % | % | % | % | % | % | % | % | % | % |
| OBTAINED | 0,018 | 0,33 | 1,81 | 0,028 | 0,024 | 0,081 | 17,28 | 2,07 | 10,03 | 0,42 |

| ELEMENTS | Co |
|---|---|
| MEASUREMENT UNIT | % |
| OBTAINED | 0,18 |

HARDNESS TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000920699 - 9.752 KG - 21.499 LB

| SPECIFICATION | ENISO6506 | HARDNESS TEST | HB | TESTING METHOD: 10/3000 |
|---|---|---|---|---|
| OBTAINED | 204 | | | |

☑ REVIEW ☐ WITNESS
ON BEHALF OF RSTG
A. DELLA PINA DATE 08 NOV 2024

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND

DATE 20.07.2022

BARBARA VIETTI MV(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

-Cogne

1724000740-QC-DB-00016_01

COGNE ACCIAI SPECIALI S.p.a.

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Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.



1724000740-QC-DB-00016_01

TENSILE TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000920699 - 9.752 KG - 21.499 LB
SPECIFICATION EN-ISO6892-1 DIRECTION OF THE TEST PIECE: L

| MEASUREMENT UNIT | RM MPA | RP02 MPA | A5 % | Z % | RP1 MPA |
|---|---|---|---|---|---|
| OBTAINED | | | 5.0 D | | |
| | 692 | 455 | 43,7 | 79,2 | 607 |
| | 695 | 471 | 44,3 | 80,3 | 614 |
| | 692 | 455 | 43,4 | 77,1 | 608 |
| | 705 | 477 | 40,7 | 71,3 | 622 |

08 NOV. 2024
FRANCO CORBELLINI
DBQ
CROSSWIND

EDDY CURRENT INSPECTION OF SURFACE ACCORDING TO EN 10277 Class.3: SATISFACTORY.
DIMENSIONAL CONTROL ACCORDING TO EN 10278 AND ASTM A484: SATISFACTORY.
TENSILE TEST
Control lot No. - Weight :020000920699 - 9.752 KG - 21.499 LB
SPECIFICATION ASTMA370-E8-0.5"SPEC DIRECTION OF THE TEST PIECE: L

| MEASUREMENT UNIT | TS KSI | YS02 KSI | RA % | EL4 % |
|---|---|---|---|---|
| OBTAINED | | | | 4,0 D |
| | 101 | 68 | 75,9 | 45,7 |

NO WELDING REPAIR ON THE MATERIAL.
THE MATERIAL IS FREE OF ANY MERCURY, MERCURY COMPOUNDS AND OR RADIUM CONTAMINATION AT TIME OF SHIPMENT AND WAS PRODUCED WITHOUT USING OZONE DEPLETING SUBSTANCES OF CLASS I AND II.
HEAT TREATMENT PERFORMED IN CALIBRATED FURNACES ACCORDING TO INTERNAL PROCEDURE PR-GDQ.ITT COMPLYING WITH API6A Annex M.
VISUAL INSPECTION OF SURFACE AND DIMENSIONAL CONTROL ACCORDING TO EN10221 CLASS C, EN 10060 AND ASTM A484: SATISFACTORY.
MARKING: PRODUCER LOGO, MATERIAL NO, HEAT NO, LOT NR.
ANTIMIX TEST: SATISFACTORY
DOCUMENT ISSUED IN AGREEMENT WITH TUEV BAYERN(11.1972) WAVING OF COUNTERSIGNING (SEE TUEV BAYERN LETTER DATED 17.01.80).
ALL THE NORMS MENTIONED ARE INTENDED IN THEIR LAST REVISION AT THE DATE OF ISSUE OF THIS DOCUMENT.
COUNTRY OF MELTING AND ORIGIN: ITALY, THE MATERIAL COMPLIES WITH FAR DFARS
252.225-7009 ALT 1.
THE ABOVE ARE TRUE AND CORRECT RESULTS OF TESTS ON SAMPLES OF THE MATERIAL. RESULTS ARE CONFORM TO THE SPECIFICATION(S) APPLICABLE AND ARE RECORDED.
THE RECORDING OF FALSE, FICTIOUS OR FRAUDULENT STATEMENTS OR ENTRIES ON THIS DOCUMENT MAY BE PUNISHABLE AS A FELONY UNDER U.S. FEDERAL STATUTES.
INSPECTOR'S STAMP LF
MATERIAL IN COMPLIANCE WITH THE NORSOK M-630 MDS S01
The products delivered are conforming to EN10088-5 and bear the CE marking on the basis of the test results here reported and the continuous surveillance, assessment and approval by MPA NRW
(certificate no. 0432-CPR-00166-01)
Material produced according to the system #Regulation 305/2011/EU of the European Parliament and of the Council of 9 March 2011#

CE 0432

☐REVIEW ☐WITNESS
ON BEHALF OF
A. DELLA PINA DATE 08 NOV 2024

DATE 20.07.2022

BARBARA VIETTI MV ~~(WORKS INSPECTOR)~~ - ~~ELECTRONICALLY~~ GENERATED CERTIFICATE

-Cogne

**AST S.p.A.**
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I-20007 Cornaredo MI

P +39 02 934848.1
F +39 02 9362248
W www.astspa.it

**MATERIAL CERTIFICATES INDEX**
**CERTIFICATO DEI MATERIALI**

**No.** 2400591

EN 10204 3.1

**Customer**
ROSETTI MARINO S.P.A.

**P.Order / Project**
1724000740 123A90A Rev. 1

**ITEM Number**
70-120

**Tag**
25-PV-040

**Quantity delivered**
1

**AST Job**
CV2400221

**AST Code**
CV2400221CV8407A001

**Serial Number**
2400591

**Valve Type**
Valvole Regolazione

**Size**
NPS 2" CLASS 300 RF

**Port Size**
1"

| Part Name | Material | Heat No. | Certificate No. | Supplier |
|---|---|---|---|---|
| BODY | ASTM A351 CF3M | G1014 | PKC-G1014-AT209B-1 | PEEKAY STEEL CASTING (P) LTD |
| SEAT RING | ASTM A479 316/316L | 380150 | 2023026120 | COGNE ACCIAI SPECIALI SPA |
| PLUG | F316 + PTFE | 293368 | MEST028009/2024/ | ACCIAIERIE VALBRUNA |
| BONNET | ASTM A479 316/316L | 000082 | 2020005555 | COGNE ACCIAI SPECIALI SPA |
| STEM | ASTM A479 316/316L | 272928 | 2022045248 | COGNE ACCIAI SPECIALI SPA |

08 NOV. 2024
FRANCO CORBELLINI
080
CROSSWIND

☒ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

**Remarks** :

**AST Q.C. Department**

**Customer's Inspector**

**Third Party Inspection**

**Date** : 05.11.2024 **Date** : _____ **Date** : _____

# PEEKAY STEEL CASTINGS (P) LTD

**4/242 Chinnamaddampalayam, Billichi Post, Coimbatore - 641 019**

**Email: info@pkcbe.co.in, Phone: 04254 - 271610**


## INSPECTION CERTIFICATE

EN 10204.3.1

| | | | | | |
|---|---|---|---|---|---|
| Customer: | AST SPA | | | | |
| Order No and Date | | PO Line No | Heat Code | TCNo | PKC/G1014/AT209B/1 |
| AQ2101495 / 30/07/2021 | | 1 | PYM05J30 | Date | 22-Nov-2021 |
| F.P. No | Part Name | | | Item Code / Part No | |
| AT209B | 2" CL150/300 FL GLV BODY | | | CABDWG0061 | |
| Casting Drawing No and Machining Drg.No | | Pattern No | | No.of pieces | |
| **M061 Rev 7** | | | | 4 | |
| Specification /Material | | | | | |
| **ASTM A351-2018/ASME SA351-2021 Gr.CF3M** | | | | Poured Date : 30/09/2021 | |

| Heat treatment | Melting Process | State of Delivery |
|---|---|---|
| Solution Anneling at 1100°c soaked for 10 hours then water cooled. HT Cycle No:E8069 Dt:06/10/2021 Sl.No:5,6,7,8 | INDUCTION | Unmachined |

Chemical Composition (%)

| Element | C | Mn | Si | P | S | Cr | Ni | Mo | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Min. Specified | ... | ... | ... | ... | ... | **17.000** | **9.000** | **2.000** | ... | ... | ... | ... | ... | | | |
| Max. Specified | **0.030** | **1.500** | **1.500** | **0.040** | **0.040** | **21.000** | **13.000** | **3.000** | ... | ... | ... | ... | ... | | | |
| Heat No | | | | | | | | | | | | | | | | |
| G1014 | 0.015 | 1.164 | 0.888 | 0.032 | 0.001 | 18.560 | 9.520 | 2.170 | | | | | | | | |

Heat Slnos: 5,6,7,8

| Mechanical Properties | Yield Strength (0.2% Offset) | Tensile Strength | % of Elongation | | Reduction of Area | Hardness | Bend Test Angle at 0° | Impact value at -196°C in Joules (10mm x 10mm x 55mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | GL=50 mm | GL=62.5 mm | | | | | | | |
| Min | **205** | **485** | **30** | ... | ... | ... | D=0t | Average 40 J | | | |
| Max | ... | ... | ... | ... | ... | **237** | | Single Value | | | |
| Heat No | Mpa | Mpa | | | | HBW | | 1 | 2 | 3 | Avg |
| G1014 | 234 | 511 | 54.76 | - | - | 163.00 | .... | 90 | 106 | 86 | 94 |

Remarks/Observations

Material conform to :AST SPA Specifications FOR 001 Rev 15 & ASTM A351-2018/ASME SA351-2021 Gr.CF3M.NACE MR0175/ISO 15156-3.Castings are acid pickled and passivated.
Penetrant Test of inspection According to ASME B16.34 Appendix III
Visual inspection of casting :Satisfactory According to MSS-SP-55
Dimensional inspection:Satisfactory,According to Approved Drawing

Certified that the products supplied is free from Radioactive element or contamination

☑ REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLAPINA DATE 08 NOV 2024

Certified that the above mentioned material have been manufactured,tested and inspected in compliance with the requirements of Purchase order, conform in all respects to the relevant specification and drawings.

| Suppliers Logo | Prepared by | Stamp | Approved by | |
|---|---|---|---|---|
| PKC | Ramkumar D | | Vijaya Kumar K | PK 02 |

**COGNE ACCIAI SPECIALI S.p.a.**

ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 250.000.000 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.

INSPECTION CERTIFICATE 3.1 (EN 10204:2004)
DOCUMENT NUMBER 2023026120


| | | | |
|---|---|---|---|
| CUSTOMER: | A.S.T. SPA | | |
| CUSTOMER'S ORDER: | AQ2400201 | | |
| MANUFACTURER'S WORKS: | AOSTA, VIA PARAVERA 16 - ITALY | | |
| PRODUCER OF THE DOC: | QUALITY DEPARTMENT | | |
| MANUFACTURER'S WORKS ORDER NO: | 0001138630 / 000050 | | |
| MARK OF THE MANUFACTURER: | **COGNE** | | |
| DISPATCH NOTE: | 0081589667 / 000050 WEIGHT: 644 KG / 1420 LB | | |
| INTERNAL SPEC: | STOCKBARREW2 | TECHNICAL RULE: | AD2000 |
| PRODUCT: | PEL PEELED ROUND BARS TOLERANCE: ISOK11 | | |
| SURFACE FINISH: | 2B Cold Finished | | |
| PRODUCT DELIVERY CONDITION: | RS SOLUTION ANNEALED | | |
| PRODUCT DIMENSIONS (mm): | 75,000 ( 2,953 in) | LENGTH (mm) | 04000 06200 ( 00157 00244 in) |
| GRADE: | 316L-S31600/31603-1.4404/4401 | INTERNAL GRADE: | F316L IMCO |
| IDENTIFICATION HEAT NO: | 380150 | IDENTIFICATION LOT NO: | 725570 |
| MARKING OF THE PRODUCT: | 1.4404 | TEST PIECE N: | 557 |

REFERENCE NORMS: EN 10088-3 2014, EN 10272 2016, ASTM A276/A276M-17, ASTM A479/A479M-21, ASTM A193-20 B8MCLASSE 1D, ASME SA276/SA276M-17,ASME SA479/SA479M-21, AMS 5653J, AMS 5648N, ISO15156-3/NACE MR0175 2015, NACE MR0103/ISO 17945, NORSOK M630 MDSS01 REV5.
REFERENCE NORMS FOR CHEMICAL COMPOSITION AND MECHANICAL PROPERTIES: ASTM A182-22A, ASME SA182-22A.
REFERENCE NORMS ONLY FOR CHEMICAL COMPOSITION: EN 10222-5 2017,ASTM A403-22b, ASTM A484-22, ASTM A314-19, AMS-QQ-S-763D.
ASME SECT.II PART A EDITION 2015-2017-2019-2021
AISI 316/316L - UNS S31600/S31603 - 1.4404/1.4401
THE PRODUCT IS CONFORMING TO THE CONTRACT AGREEMENT AND TO THE RULE AD2000-MERKBLATT W0/W2.
STEELMAKING EAF + AOD + CONTINUOUS CASTING
ASTM A484 DOES NOT APPLY FOR SIZE AND LENGTH TOLERANCES.
REFERENCE FOR APPLICABLE ASME STANDARD: SECTION II PART A ED. 2015-2017-2019-2021
HOT ROLLED
REDUCTION RATIO 5,2

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND

CHEMICAL LADLE ANALYSIS ACCORDING TO ASTM A751 - EN ISO 14284
Control lot No. - Weight :020000964940 - 82.913 KG - 182.789 LB

| ELEMENTS | C | Si | Mn | P | S | N | Cr | Mo | Ni | Cu |
|---|---|---|---|---|---|---|---|---|---|---|
| MEASUREMENT UNIT | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w |
| OBTAINED | 0,016 | 0,37 | 1,91 | 0,026 | 0,024 | 0,078 | 16,79 | 2,06 | 10,06 | 0,47 |

| ELEMENTS | Co |
|---|---|
| MEASUREMENT UNIT | % w/w |
| OBTAINED | 0,15 |

HARDNESS TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000967750 - 7.000 KG - 15.432 LB
SPECIFICATION ENISO6506 HARDNESS TEST HB TESTING METHOD: 10/3000
OBTAINED 160

☒ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

DATE 25.05.2023 MORABITO ROSA CF(WORKS ~~INSPECTOR~~) - ELECTRONICALLY GENERATED CERTIFICATE -Cogne

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 250.000.000 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.



IMPACT TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000967750 - 7.000 KG - 15.432 LB
SPECIFICATION EN ISO 148-1-KV2 DIRECTION OF THE TEST PIECE: L
TYPE OF TEST PIECE KV
TEST TEMPERATURE °C 20
MEASUREMENT UNIT J
OBTAINED 440 430 436 438 434 434 436 432 440 437
435 439

TENSILE TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000967750 - 7.000 KG - 15.432 LB
SPECIFICATION EN-ISO6892-1 DIRECTION OF THE TEST PIECE: L

| MEASUREMENT UNIT | RM MPA | RP02 MPA | A5 % | Z % | RP1 NMM |
|---|---|---|---|---|---|
| | | | 5.0 D | | |
| OBTAINED | 608 | 285 | 51,4 | 72,3 | 327 |
| | 606 | 277 | 51,6 | 72,9 | 320 |
| | 603 | 275 | 52,8 | 79,5 | 316 |
| | 604 | 264 | 54,2 | 75,4 | 312 |

08 NOV. 2024 FRANCO CORBELLINI QSQ CROSSWIND

GRAIN SIZE
Control lot No. - Weight :020000967750 - 7.000 KG - 15.432 LB
SPECIFICATION ASTME112 --
OBTAINED 5

MATERIAL IN COMPLIANCE WITH THE NORSOK M-630 MDS S01
IMPACT TEST
Control lot No. - Weight :020000967750 - 7.000 KG - 15.432 LB
SPECIFICATION EN ISO 148-1 DIRECTION OF THE TEST PIECE: L
TYPE OF TEST PIECE KV
TEST TEMPERATURE °C 196-
MEASUREMENT UNIT J
OBTAINED 191 198 180 200 193 181 176 189 175 174
195 175

TENSILE TEST
Control lot No. - Weight :020000967750 - 7.000 KG - 15.432 LB
SPECIFICATION ASTMA370-E8-0.5"SPEC DIRECTION OF THE TEST PIECE: L

| MEASUREMENT UNIT | RMB KSI | RP02B KSI | ZB % | AL2B % |
|---|---|---|---|---|
| | | | | 4,0 D |
| OBTAINED | 87 | 40 | 72,8 | 60,2 |
| | 88 | 39 | 72,5 | 54,7 |
| | 88 | 38 | 78,5 | 54,6 |
| | 88 | 40 | 76,5 | 54,5 |

☐ REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLA PINA DATE 08 NOV 2024

DATE 25.05.2023 MORABITO ROSA CF(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE -Cogne

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
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C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.



1724000740-QC-DB-00016_01

COUNTRY OF MELTING AND ORIGIN: ITALY, THE MATERIAL COMPLIES WITH FAR DFARS
252.225-7009 ALT 1.
The products delivered are conforming to EN10088-5 and bear the CE marking on the basis of the test results here reported and the continuous surveillance, assessment and approval by MPA NRW
(certificate no. 0432-CPR-00166-01)
Material produced according to the system #Regulation 305/2011/EU of the European Parliament and of the Council of 9 March 2011#
DOCUMENT ISSUED IN AGREEMENT WITH TUEV BAYERN(11.1972) WAVING OF COUNTERSIGNING (SEE TUEV BAYERN LETTER DATED 17.01.80).
MARKING: SYMBOL OF THE MANUF. WORK, MATERIAL N. , CAST N., LOT N., RECEIVING AGENT STAMP
CORROSION TEST ACCORDING TO ASTM A262 PRACTICE E EN ISO 3651-2 PRACTICE A: SATISFACTORY.
ANTIMIXING TEST BY PORTABLE SPECTROMETRE: CONFORMING
EDDY CURRENT INSPECTION OF SURFACE ACCORDING TO EN 10277 CLASS 4.
DIMENSIONAL CONTROL ACCORDING TO EN 10278: SATISFACTORY.
NO WELDING REPAIR ON THE MATERIAL.
ULTRASONIC TEST ACCORDING TO EN 10308 Class.3: SATISFACTORY
QUALITY SYSTEM CERTIFIED BY KIWA CERMET ACCORDING TO UNI EN ISO 9001:2015 -IATF 16949:2016 (THE LAST ONE ONLY FOR WIRE ROD AND HOT ROLLED-PEELED-GROUND STAINLESS STEEL BARS).
INSPECTOR'S STAMP LF
MATERIAL CONFORM TO: 2015/863/UE (RoHS3) - 2011/65/UE (RoHS2) - 2000/53/UE - 2002/95/UE (RoHS) - 2003/11/UE - 2005/618/UE - PED 2014/68/UE e PE(S)R 2016/1105
THE MATERIAL IS FREE OF ANY MERCURY, MERCURY COMPOUNDS AND OR RADIUM CONTAMINATION AT TIME OF SHIPMENT AND WAS PRODUCED WITHOUT USING OZONE DEPLETING SUBSTANCES OF CLASS I AND II.
RADIOACTIVITY CONTROL PERFORMED WITH A GAMMA SPECTROMETER: ASTM E181.
GAMMA ACTIVITY ON THE PRODUCTS BELOW 0.1 BQ/G ACCORDING TO EU RESOLUTION 2013/59/EURATOM , IAEA RS-G-1.7 AND IAEA SSG-17.

CE 0432

08 NOV. 2024
FRANCO CORBELLINI
080
CROSSWIND

☒ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

DATE 25.05.2023

MORABITO ROSA CF(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

-Cogne

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a : Nach/According to/Selon — EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. Prüfung/Test/Essai — MEST028009 / 2024 /

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Ordine nr: ORD N AQ2400369
Bestell / Your order / Commande

Conferma ordine nr: MI24001817
Werks/Our Order/Ref nr.

Avviso di Spedizione: A-MI24001447
Lieferanzeige/Packing list/B.L.

Stato di fornitura : Lieferzustand / Delivery state / Etat de livraison — Laminato - Solubilizzato FINITO A FREDDO

Tipo di Elaborazione: Erschmelzungsart / Melting process / Mode d'elaboration — E+AOD

Qualità: Werkstoff/Grade/Nuance — 1.4401/1.4404/316/316L

Marca: Markenbezeichnung / Brand / Nuance — MVAPML ( MAXIVAL )

Produttore : Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Marchi di Fabbrica: Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice — AV

Punzone del Collaudatore: Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur — MR

Punzonatura: 1.4401/1.4404 Kennzeichnung / Marking / Marquage

**SPECIFICHE :** Anforderungen / Requirements / Exigences

VAL STOCK W2 A/1 1.4404/316L A,CF
AD 2000-M. W 2 2022 1.4401 A,CF (0)
AD 2000-M. W 2 2022 1.4404 A,CF (1)
AISI . 316/316L
AMS-QQ-S-763 D 316/316L A,CF
ASME SA182 2023 S31600/03 A (2)
ASME SA276 2023 S31600/03 A,CF (3)
ASME SA479 2023 S31600/03 A (4)
ASTM A182 2023 S31600/03 A (5)
ASTM A262 PR. E 2015 316/316L (6)
ASTM A276 2023 S31600/03 A,CF
ASTM A370 2022 .
ASTM A479 2023A S31600/03 A
ASTM E10 2023 .
ASTM E8 2022 .
EN 10088 PART 3 2014 1.4401 A,CF
EN 10088 PART 3 2014 1.4404 A,CF
EN 10272 2016. 1.4401 A,CF
EN 10272 2016. 1.4404 A,CF
ISO 148-1 2016 .
ISO 3651-2 98 METHOD A T1
ISO 6506-1 2014 .
ISO 6892-1 2019 .
NACE MR0103 2015 S31600/03 A (7)
NACE MR0175 4 S31600/03 A (8)
QQ-S-763 F 316/316L A,CF
ACH CO . .
KV L -196C . ISO 148-1

Note: Anmerkungen / Notes / Notes

(0)AD 2000-MERKBLATT W 2 edition 03.2022 AD 2000-MERKBLATT W 10 edition 06.2022
(1)AD 2000-MERKBLATT W 2 edition 03.2022 AD 2000-MERKBLATT W 10 edition 06.2022

(2)Section II Part A 2023 EDITION For products machined directly from bar refer to ASME SA479.
(3)Section II Part A 2023 EDITION
(4)Section II Part A 2023 EDITION
(5)For products machined directly from bar refer also to ASTM A479.
(6)Reapproved 2021

0 8 NOV. 2024
FRANCO CORBELLINI
QBQ
GROSSWIND R

(7)ANSI/NACE MR0103/ISO 17945 November 23, 2015
(8)ANSI/NACE MR0175/ISO 15156-3:2020 Fourth edition, approved 21 Sep 2022.

| Pos. nr. Pos. nr. / Item nr. / Nr. de poste | Oggetto Oggetto/Item description / Designation de l'article | Tolleranza: k12 Toleranz/Allowance/Tolerance — Dimensioni - mm Abmessungen / Dimension / Dimension | Lunghezza - mm Lange / Length / Longueur | Colata Schmelze / Heat / Coulée | Pezzi Stückzahl / Pieces / Pieces | Peso - KG Gewicht / Weight / Poids | Lotto nr. Los nr. / Lot nr. / Lot nr. |
|---|---|---|---|---|---|---|---|
| 0030 | Tondo | 30,000 | 6000/ 6060 | 293368 | | 68,0 | 310402650 |

☒ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 0 8 NOV 2024

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| Vicenza, 05/03/2024 | Direzione Qualità Qualitätsmanagement/Quality Management/Gestion Qualité | Direzione Prodotto Produktmanagement/Product Management/Direction Produit | Pagina |
|---|---|---|---|
| VCQ012 - MEST028009 | R.BERTELLI | P.MESSORI | 1 di 4 |

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1
Nach/According to/Selon

Certificato nr. MEST028009 / 2024 /
Prüfung/Test/Essai

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura: Laminato - Solubilizzato FINITO A FREDDO
Lieferzustand / Delivery state / Etat de livraison

Produttore:
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Ordine nr: ORD N AQ2400369
Bestell / Your order / Commande

Tipo di Elaborazione: E+AOD
Erschmelzungsart / Melting process / Mode d'elaboration

Marchi di Fabbrica: AV
Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice

Conferma ordine nr: MI24001817
Werks/Our Order/Ref nr.

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Punzone del Collaudatore: MR
Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur

Avviso di Spedizione: A-MI24001447
Lieferanzeige/Packing list/B.L.

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung / Brand / Nuance

Punzonatura: 1.4401/1.4404
Kennzeichnung / Marking / Marquage

### TEST ALLO STATO DI FORNITURA
Test on delivery condition Prüefung auf lieferbereitem produkt test a l'etat de fourniture Prueba sobre el material asi come entregado

1) L=longitudinale/längs, T=trasversale/quer, D=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | Posiz. Saggio Probestage Location Emplacement 1) | Snervamento Streckgrenze Yield Stress Limite elastique Rp 0,2% N/mm2 | Snervamento Streckgrenze Yield Stress Limite elastique Rp 1% N/mm2 | Resistenza Zugfestigkeit Tensile strength Resistance à traction Rm N/mm2 | Allungamento Bruchdehnung Elongation Allongement A5 % | | Strizione Einschnürung Reduction of area Striction Z % | | Resilienza Kerbschlagarbeit Impact Value Resilience | | | Durezza Harte Hardness Durete HB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti Anforderungen/Required values Valeurs demandées | | min max | | 200 | 235 | 500 900 | 20 | - | - | - | - | | | - | 315 | |
| A | 10 | 20 | L | 458 | 535 | 678 | 44 | | 67 | | | | | 223 | | |
| G | 10 | 20 | L | 457 | 532 | 682 | 45 | | 66 | | | | | 221 | | |

### TEST ALLO STATO DI FORNITURA
Test on delivery condition / Prüefung auf lieferbereitem produkt / Test a l'etat de fourniture / Prueba sobre el material asi come entregado

| TEST | | min | max | |
|---|---|---|---|---|
| A | Dimensioni grano x ASTM E112 | | | 4 |

### Charpy per ISO 148-1

1) L=longitudinale/längs, T=trasversale/quer, D=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | Posiz. Saggio Probestage Location Emplacement 1) | Resilienza Kerbschlagarbeit Impact Value Resilience KV2 J | | | Espansione laterale Lateral Expansion Lateral ex mm | | | Shear Shear % Shear % | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti Anforderungen/Required values Valeurs demandées | | min max | | - | - | - | - | - | - | - | - | - |
| B | 10X10 | -196 | L | 158 | 152 | 151 | 1,700 | 1,852 | 1,705 | 59 | 61 | 57 |

### Test allo stato di fornitura per ASTM A370

1) L=longitudinale/längs, T=trasversale/quer, D=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | Posiz. Saggio Probestage Location Emplacement 1) | Snervamento Streckgrenze Yield Stress Limite elastique Rp 0,2% N/mm2 | Snervamento Streckgrenze Yield Stress Limite elastique | Resistenza Zugfestigkeit Tensile strength Resistance à traction Rm N/mm2 | Allungamento Bruchdehnung Elongation Allongement E 4d % | | Strizione Einschnürung Reduction of area Striction RA % | | Resilienza Kerbschlagarbeit Impact Value Resilience | | | Durezza Harte Hardness Durete HB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti Anforderungen/Required values Valeurs demandées | | min max | | 210 | - | 517 | - | 30 | - | 50 | - | | | - 235 | | |
| C | 12,5 | 20 | L | 453 | | 671 | | 47 | | 68 | | | | 222 | | |

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND R

REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLA PINA DATE 08 NOV 2024

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| Vicenza, 05/03/2024 | Direzione Qualità<br>Qualitätsmanagement/Quality Management/Gestion Qualité | Direzione Prodotto<br>Produktmanagement/Product Management/Direction Produit | Pagina |
|---|---|---|---|
| VCQ012 - MEST028009 | R.BERTELLI | P.MESSORI | 2 di 4 |

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a : EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1
Nach/According to/Selon

Certificato nr. MEST028009 / 2024 /
Prüfung/Test/Essai

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura : Laminato - Solubilizzato FINITO A FREDDO
Lieferzustand / Delivery state / Etat de livraison

Produttore :
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Ordine nr: ORD N AQ2400369
Bestell / Your order / Commande

Tipo di Elaborazione: E+AOD
Erschmelzungsart / Melting process / Mode d'elaboration

Marchi di Fabbrica:
Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice
AV

Conferma ordine nr: MI24001817
Werks/Our Order/Ref nr

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Punzone del Collaudatore:
Stempel des Werkssachverständigen / Inspector s stamp/Poinçon de l'assayeur
MR

Avviso di Spedizione: A-MI24001447
Lieferanzeige/Packing list/B.L.

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung / Brand / Nuance

Punzonatura: 1.4401/1.4404
Kennzeichnung / Marking / Marquage

### Charpy per ISO 148-1

1) L=longitudinale/lengs, T=trasversale/quer, O=Tangenziale/tangential

| TEST | Provetta/ Probelab Specimen/Eprouvette Lang diam Spess Breite Diam. Dicke Width Diam. Thickness Larg. diam. spais mm | °C | Posiz Saggio Probenlage Location Emplacement | Resilienza Kerbschlagarbeit Impact Value Resilience $KV_2$ J | | | Espansione laterale Lateral Expansion | | | Shear Shear | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti Anforderungen/Required values Valeurs demandées | | min max | | 100 | 100 | 100 | - | - | - | - | - | - |
| F | 10X10 | 20 | L | 199 | 194 | 193 | | | | | | |
| H | 10X10 | 20 | L | 210 | 196 | 198 | | | | | | |

Tensile testing according to ISO 6892-1
Impact testing according to ISO 148-1
Mechanical properties according to ASTM A370.
Brinnell hardness according to ASTM E10
Tensile testing according to ASTM E8
Brinnell hardness according to ISO 6506-1

08 NOV. 2024
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CROSSWIND

☐ REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLA PINA DATE 08 NOV 2024

### Analisi chimica
Chemische Zusammensetzung/Chemical Analysis/Analyse chimique

| Colata /Heat Schmelze/Coulée | C % min - max 0,030 | Si % - 1,00 | Mn % - 2,00 | Cr % 16,50 16,68 | Mo % 2,00 2,04 | Cu % - 1,00 | Ni % 10,00 13,00 | Co % - - | P % - 0,045 | S % - 0,030 | N % - 0,100 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | C % | Si % | Mn % | Cr % | Mo % | Cu % | Ni % | Co % | P % | S % | N % | | | | |
| 293368 | 0,010 | 0,56 | 1,52 | 16,68 | 2,04 | 0,57 | 10,00 | 0,156 | 0,032 | 0,027 | 0,058 | | | | |

**Corrosion test in 16% sulfuric acid and copper sulfate solutions**
**Test standard:** UNI EN ISO 3651-2 Method A

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitized T1 | 20 | boil | 90 | 5 | Absence of cracks | **SATISFACTORY** |

**Corrosion test in 16% sulfuric acid and copper sulfate solutions**
**Test standard:** ASTM A262-Practice E

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitization | 15 | boil | 180 | 5 | Absence of cracks | **SATISFACTORY** |

# Acciaierie Valbruna S.p.A.

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Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a : Nach/According to/Selon: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. Prüfung/Test/Essai: MEST028009 / 2024 /

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Ordine nr: ORD N AQ2400369
Bestell / Your order / Commande

Conferma ordine nr: MI24001817
Werks/Our Order/Ref nr.

Avviso di Spedizione: A-MI24001447
Lieferanzeige/Packing list/B L.

Stato di fornitura : Lieferzustand / Delivery state / Etat de livraison: Laminato - Solubilizzato FINITO A FREDDO

Tipo di Elaborazione: Erschmelzungsart / Melting process / Mode d'elaboration: E+AOD

Qualità: Werkstoff/Grade/Nuance: 1.4401/1.4404/316/316L

Marca: Markenbezeichnung / Brand / Nuance: MVAPML ( MAXIVAL )

Produttore : Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Marchi di Fabbrica: Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice: AV

Punzone del Collaudatore: Stempel des Werksachverständigen / Inspector's stamp/Poinçon de l'assayeur: MR

Punzonatura: 1.4401/1.4404
Kennzeichnung / Marking / Marquage

Reduction ratio = 42,9 : 1
Solution annealed 1040°C for 160'(total time)/water cooled.
SURFACE QUALITY COMPLIANT TO EN 10088-3 TAB.1 COND. 2H equivalent to EN 10277-1 Cl.3
"Issued in agreement with TÜV SÜD Industrie Service GMBH
(07/1972)"
"Qs approved according to PED, Annex I, Para. 4.3 by
Notified Body 0036"
"(Certification no. DGR-0036-QS-W 23/2002/MUC)"

Sono state soddisfatte tutte le condizioni richieste
Die gestellten Anforderungen sind it. Anlage erfüllt
The material has been furnished in accordance with the requirements
Le materiel à été trouvé conforme aux exigences

Controllo antimescolanza con tecnica XRF/OES portatile : OK
Verwechslungprüfung: durch XRF/OES Gerat geprüft : OK
Antimixing tasting performed with XRF/OES portable : OK
Contrôle antimélange evt technique XRF/OES portable : OK

Controllo visivo e dimensionale: soddisfa le esigenze
Besichtigung und Ausmessung ohne Beanstandung
Visual inspection and dimensional checks satisfactory
Controle visuel et dimensions: satisfaisant

Melted, poured and manufactured in Italy  No welding or weld repair  Material free from Mercury contamination

We declare that the finished product is checked for radioactive contamination by the portal system when it leaves the production plant.

The Quality Management System is also Certified according to Pressure Equipment Directive 2014/68/EU Annex 1,chapt.4.3 by TÜV and LLOYD'S
The Quality Management System is also Certified according to PER 2016/1105, Schedule 2, Part 4, Para 31 (8) by Competent Body TÜV SUD BABT Unlimited.
Any act of tampering, modification, alteration, counterfeiting and/or falsification and/or any other action which modifies the contents of this test certificate shall constitute a violation of applicable civil and criminal laws. Acciaierie Valbruna shall protect its rights and interests before any competent court, authority and jurisdiction.
Maxival and/or Valplus grades/products are manufactured with ladle techniques to control composition, distribution, size and shape of non-metallic inclusions for improved machinability.
The supplied product conforms to requirements expressly requested by the purchaser and conforms to requirements specified by certified norms and standards. Should the product be used for more severe, critical and/ or in any case different applications than those the material is generally intended for, any different and/or supplementary requirements shall be specifically demanded, at least, upon order of the Product by the Purchaser. Acciaierie Valbruna SpA shall not be responsible for any improper use of the Products.

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND

☒ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| | | | |
|---|---|---|---|
| **Vicenza, 05/03/2024**<br>VCQ012 - MEST028009 | **Direzione Qualità**<br>Qualitätsmanagement/Quality Management/Gestion Qualité<br>**R.BERTELLI** | **Direzione Prodotto**<br>Produktmanagement/Product Management/Direction Produit<br>**P.MESSORI** | Pagina 4 di 4 |

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL.+ 39.0165.3021 - FAX + 39.0165.302286
CAP. SOC. 140.000.000 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, IATF 16949, EN 9100 and ISO 14001.

# INSPECTION CERTIFICATE 3.1 (EN 10204:2004)

DOCUMENT NUMBER 2020005555



| | | | |
|---|---|---|---|
| CUSTOMER: | A.S.T. SPA | | |
| CUSTOMER'S ORDER: | AQ2000377 | | |
| MANUFACTURER'S WORKS: | AOSTA, VIA PARAVERA 16 - ITALY | | |
| PRODUCER OF THE DOC: | QUALITY DEPARTMENT | | |
| MANUFACTURER'S WORKS ORDER NO: 1116455 /10 | MARK OF THE MANUFACTURER: COGNE | | |
| DISPATCH NOTE: | 81329230 /10 WEIGHT: 900 KG | | |
| THE CERTIFIED PRODUCTS ARE COMPLYING TO THE PURCHASE ORDER, EXCEPT FOR EXEMPTIONS AGREED WITH THE CUSTOMER, IF ANY. | | | |
| INTERNAL SPEC: | AD2000MERKBLATTW10 | TECHNICAL RULE: | AD2000 |
| PRODUCT: | 2290 SPE ROUGHPEELED | ROUND BARS TOLERANCE: | + 1,500 - 0,0000 |
| SURFACE FINISH: | 1X Hot Finished | | |
| PRODUCT DELIVERY CONDITION: | RS SOLUTION ANNEALED | | |
| PRODUCT DIMENSIONS (mm): | 160,000 | LENGTH (mm) | 04000 /06000 |
| GRADE: | AISI 316/316L EN1.4401/4404 | INTERNAL GRADE: | F316L5 IMCO |
| IDENTIFICATION HEAT NO: | 000082 | IDENTIFICATION LOT NO: | 828080 |
| MARKING OF THE PRODUCT: | 1.4404 | TEST PIECE N: | 808 |

THE MATERIAL IS PRODUCED ACCORDING TO SPECIFICATION AD2000-MERKBLATT W2/W10
DOCUMENT ISSUED IN AGREEMENT WITH TUEV BAYERN(11.1972) WAVING OF COUNTERSIGNING (SEE TUEV BAYERN LETTER DATED 17.01.80).
REFERENCE NORMS:EN 10088-3, EN 10272, ASTM A276/ASME
SA276, ASTM A479/ASME SA479, ASTMA193 B8M CLASSE 1D,
ISO15156-3/NACE MR0175, NACE MR0103.
REFERENCE NORMS FOR CHEMICAL COMPOSITION AND MECANICHAL PROPERTIES: ASTM A182/ASME SA182
REFERENCE NORMS FOR CHEMICAL COMPOSITION ONLY: EN 10222-5, ASTM A484, ASTM A403, ASTM A314.
HOT ROLLED
REDUCTION RATIO 4,2

08 NOV. 2024
FRANCO [illegible]
Q80
CROSSWIND
R

CHEMICAL LADLE ANALYSIS ACCORDING TO ASTM A751 - EN ISO 14284
Control lot No. - Weight :020000822939 - 84.048 KG

| ELEMENTS | C | Si | Mn | P | S | N | Cr | Mo | Ni | Cu |
|---|---|---|---|---|---|---|---|---|---|---|
| OBTAINED | 0,021 | 0,39 | 1,31 | 0,026 | 0,030 | 0,087 | 16,76 | 2,05 | 10,18 | 0,40 |
| ELEMENTS | Co | | | | | | | | | |
| OBTAINED | 0,14 | | | | | | | | | |

HARDNESS TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000823509 - 23.563 KG
SPECIFICATION ENISO6506 HARDNESS TEST HB TESTING METHOD: 10/3000
OBTAINED 175

IMPACT TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000823509 - 23.563 KG
SPECIFICATION EN ISO 148-1-KV2 DIRECTION OF THE TEST PIECE: L

| TYPE OF TEST PIECE | KV | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| TEST TEMPERATURE °C | 20 | | | | | | | | | |
| MEASUREMENT UNIT | J | | | | | | | | | |
| OBTAINED | 431 | 437 | 439 | 433 | 433 | 436 | 434 | 431 | 439 | 439 |
| | 430 | 433 | | | | | | | | |

DATE 04.02.2020

MORABITO ROSA CF(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE -Cogne

☐REVIEW ☐WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

1724000740-QC-DB-00016_01

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
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08 NOV. 2024
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CROSSWIND

TENSILE TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000823509 - 23.563 KG
SPECIFICATION EN-ISO6892-1 DIRECTION OF THE TEST PIECE: L

| MEASUREMENT UNIT | RM MPA | RP02 MPA | A5 % 5.0 D | Z % | RP1 MPA |
|---|---|---|---|---|---|
| OBTAINED | 598 | 262 | 55,5 | 78,2 | 307 |
| | 605 | 272 | 55,8 | 80,1 | 301 |
| | 597 | 266 | 54,8 | 80,6 | 304 |
| | 601 | 268 | 55,1 | 80,1 | 310 |

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GRAIN SIZE
Control lot No. - Weight :020000823509 - 23.563 KG
SPECIFICATION ASTME112 --
OBTAINED 3 5

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CORROSION TEST ACCORDING TO ASTM A262 PRACTICE E EN ISO 3651-2 PRACTICE A: SATISFACTORY.
MATERIAL ACCORDING TO ASME SEC. II Ed. 2015
IMPACT TEST
Control lot No. - Weight :020000823509 - 23.563 KG
SPECIFICATION EN ISO 148-1 DIRECTION OF THE TEST PIECE: L
TYPE OF TEST PIECE KV
TEST TEMPERATURE °C 196-
MEASUREMENT UNIT J

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| OBTAINED | 203 | 214 | 195 | 194 | 192 | 214 | 220 | 208 | 197 | 198 |
| | 191 | 200 | | | | | | | | |

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TENSILE TEST
Control lot No. - Weight :020000823509 - 23.563 KG
SPECIFICATION ASTMA370-E8-0.5"SPEC DIRECTION OF THE TEST PIECE: L

| MEASUREMENT UNIT | RMB KSI | RP02B KSI | RA % | EL4 % 4,0 D |
|---|---|---|---|---|
| OBTAINED | 86 | 39 | 77,5 | 57,5 |
| | 88 | 38 | 74,6 | 53,7 |
| | 84 | 37 | 78,8 | 61,8 |
| | 86 | 39 | 77,5 | 55,6 |

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ULTRASONIC TEST ACCORDING TO EN 10308 Class.3, EN 10228 Class.3, ASTM A388 FBH 5 (diam. 102-250), FBH 8 (diam. 250,01-400).
VISUAL INSPECTION OF SURFACE AND DIMENSIONAL CONTROL ACCORDING TO EN10221 CLASS C AND EN10060: SATISFACTORY.
ANTIMIX TEST BY PORTABLE SPECTROMETRE: SATISFACTORY.
NO WELDING REPAIR ON THE MATERIAL.
FREE FROM RADIOCTIVITY CONTAMINATION.
MARKING: SYMBOL OF THE MANUF. WORK, MATERIAL N. , CAST N., LOT N., RECEIVING AGENT STAMP
COUNTRY OF ORIGIN: ITALY, THE MATERIAL COMPLIES WITH FAR DFARS
252.225-7009 ALT 1.

DATE 04.02.2020 MORABITO ROSA CF(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE -Cogne

WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

1724000740-QC-DB-00016_01

COGNE ACCIAI SPECIALI S.p.a.
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C.F. 02187360967
VAT: IT00571320078 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, IATF 16949, EN 9100 and ISO 14001.



THE PRODUCT SATISFIES CE DIRECTIVES EU: 2015/863 (ROHS3) - 2011/65 (ROHS2) - 2000/53 - 2002/95(RoHS) - 2003/11 - 2005/618 AND PED 2014/68.
ALL THE NORMS MENTIONED ARE INTENDED IN THEIR LAST REVISION AT THE DATE OF ISSUE OF THIS DOCUMENT.
QUALITY SYSTEM CERTIFIED BY I.G.Q ACCORDING TO UNI EN ISO 9001:2015 -IATF 16949:2016 (THE LAST ONE ONLY FOR WIRE ROD AND HOT ROLLED-PEELED-GROUND STAINLESS STEEL BARS).
INSPECTOR'S STAMP LF
THE MATERIAL IS FREE OF ANY MERCURY, MERCURY COMPOUNDS AND OR RADIUM CONTAMINATION AT TIME OF SHIPMENT AND WAS PRODUCED WITHOUT USING OZONE DEPLETING SUBSTANCES OF CLASS I AND II.
RADIOACTIVITY CONTROL PERFORMED WITH A GAMMA SPECTROMETER: ASTM E181.
GAMMA ACTIVITY ON THE PRODUCTS BELOW 0.1 BQ/G ACCORDING TO EU RESOLUTION 2013/59/EURATOM , IAEA RS-G-1.7 AND IAEA SSG-17.

08 NOV. 2024
FRANCO CORBELLINI
080
CROSSWIND

☒ REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLAPINA DATE 08 NOV 2024

DATE 04.02.2020

MORABITO ROSA CF(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

-Cogne

Laboratorio T.O.S.I. s.r.l.
Tecnici Organizzati al Servizio delle Imprese
*Sede Legale e Unità Operativa:* 20025 Legnano (MI) - Via Pisacane, 46
Tel. 0331.549631 / 0331.456119 - Fax 0331.470141 / 0331.451616
Internet: www.laboratoriotosi.it - E-mail: info@labtosi.it - P.IVA e C.F. 12805730152

LAB N° 1504

| RAPPORTO DI PROVA / TEST REPORT | DATA / DATE |
|---|---|
| **20P0699** Rev. **0** | 30/03/20 |

| | | | |
|---|---|---|---|
| CLIENTE / CUSTOMER | **A.S.T. S.p.A.** Via R. Merendi, 40 | 20010 Cornaredo (Mi) | Italy |
| DESCRIZIONE CAMPIONE / SAMPLE DESCRIPTION # | Round bar Ø 160 mm | | |
| RIFERIMENTI DEL CLIENTE / CUSTOMER REFERENCES # | Order AQ2000449<br>DDT 16/200 of the 02/03/20 | | |

| RICEVUTO IL / RECEIVED ON | CAMPIONAMENTO / SAMPLING | LUOGO ESECUZIONE PROVE / TESTING PLACE |
|---|---|---|
| 02/03/20 | By customer | Laboratorio T.O.S.I. |

| MATERIALE / MATERIAL # | COLATA / HEAT # |
|---|---|
| ASTM A479 Tp.316/316L | 000082 |

| ID. CLIENTE / CUSTOMER ID # | ID. LABORATORIO / LABORATORY ID. |
|---|---|
| - | **S0650** |

I risultati di prova si riferiscono solo ai campioni sottoposti a prova, come ricevuti. / Test report results relate to the tested specimens only, as received.

Il presente rapporto di prova non può essere riprodotto parzialmente. / The present test report cannot been partially reproduced.

I testimoni di prova sono conservati per 3 mesi, salvo diversa richiesta scritta del cliente. / Copons after test shall be kept for 3 months, unless otherwise written request of the customer.

Ove presente l'incertezza di misura viene espressa come incertezza estesa ottenuta moltiplicando l'incertezza tipo per il fattore di copertura k corrispondente ad un intervallo di fiducia di circa il 95%. Normalmente tale fattore k vale 2, tranne per analisi chimica (k=4,3) e per la determinazione di una seconda fase (k=2,05). / Where present the reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k = 2, which for a normal distribution provides a level of confidence of approximately 95%, except for chemical analysis (k=4,3) and for determination of a second phase (k=2,05).

# Informazioni fornite dal cliente, per le quali il laboratorio declina ogni reponsabilità. / Information provided by the customer, for which the laboratory refuses all responsibility.

| Redattore / Editor | | Responsabile laboratorio / Laboratory manager |
|---|---|---|
| *Lorenzo Rigamonti* | | *Angelo Rossetti* |
| Ispettore esterno / External inspector | Ispettore esterno / External inspector | Ispettore esterno / External inspector |

08 NOV. 2024
FRANCO GARBELLINI
081
CROSSWIND

☐ REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLA PINA DATE 08 NOV 2024

Laboratorio T.O.S.I. s.r.l.
Tecnici Organizzati al Servizio delle Imprese
*Sede Legale e Unità Operativa:* 20025 Legnano (MI) - Via Pisacane, 46
Tel. 0331.549631 / 0331.456119 - Fax 0331.470141 / 0331.451616
Internet: www.laboratoriotosi.it - E-mail: info@laboratosi.it - P.IVA e C.F. 12805730152

LAB N° 1504

TEST REPORT: **20P0699** Rev. **0** LABORATORY ID. **S0650**

PROVA RICHIESTA / TEST REQUIRED:

Prova di trazione Temperatura amb. / tensile test at room temperature

| NORMA DI PROVA / TEST STANDARD | APPARECCHIATURE / APPARATOUS: |
|---|---|
| **ASTM E8/E8M-16a** | Machine **T095**<br>Extensometer **T098**<br>Caliper **T103** |
| DATA PROVA / TEST DATE: 26/03/2020 | |

| Prova n° test n° | Orientamento / orientation | Posizione / location | T °C | Dimensione dimension mm | $S_0$ mm² | $L_0$ mm | YS 0,2% MPa | TS MPa | E % | R.A. % |
|---|---|---|---|---|---|---|---|---|---|---|
| S0650 | Longitudinal | T/4 | r.t. | Ø 12,49 | 122,5 | 50 | 278 | 593 | 59 | 78 |

Snervamento determinato col metodo offset. Allungamento determinato dopo rottura. Metodo A /
Yield strengh determined by the offset method. Elongation determined after fracture. Method.A.

08 NOV. 2024
FRANCO CORBELLINI
UBI
CROSSWIND

☑ REVIEW ☐ WITNESS
ON BEHALF OF RSE
A. DELLA PINA DATE 08 NOV 2024

Laboratorio T.O.S.I. s.r.l.
Tecnici Organizzati al Servizio delle Imprese
*Sede Legale e Unità Operativa:* 20025 Legnano (MI) - Via Pisacane, 46
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Internet: www.laboratoriotosi.it - E-mail: info@labtosi.it - P.IVA e C.F. 12805730152

LAB Nº 1504

TEST REPORT: **20P0699** Rev. **0** LABORATORY ID. **S0650**

| PROVA RICHIESTA / TEST REQUIRED: | | | | |
|---|---|---|---|---|
| Test for detecting susceptibility to intergranular attack in austenitic stainless steel | | | | |
| NORMA DI PROVA / TEST STANDARD: **ASTM A262-15 Pr.E** | | | APPARECCHIATURE / APPARATOUS: | Caliper **T100** Machine **T096** |
| DATA PROVA / TEST DATE: 24/03/2020 | | | | |

| DETTAGLI CAMPIONE / SPECIMEN DETAILS: | | | | | |
|---|---|---|---|---|---|
| TRATTAMENTO TERMICO / HEAT TREATMENT | POSIZIONE / POSITION: | PREPARAZIONE / PREPARATION: | DIMENSIONI PROVINO / SPECIMEN DIMENSIONS: | | |
| Prove eseguite dopo TT di sensibilizzazione / test performed after sensitizing heat treatment (670°C/1h/air) | B.M. | Carte 220 umido / wetamery paper 220 | STANDARD | | |
| | | | 99,39 mm | 21,44 mm | 5,95 mm |

| PROVA IN SOLUZIONE / TEST IN SOLUTION | | | | |
|---|---|---|---|---|
| SOLUZIONE / SOLUTION | TEMPERATURA / TEMPERATURE: | TEMPO PROVA / TEST TIME | INIZIO PROVA / START TEST | FINE PROVA / END TEST |
| 6 % $CuSO_4$ + 16 % $H_2SO_4$ in $H_2O$ | Punto ebollizione / boiling point | 24 h | 24/03/20 | 25/03/20 |

| PROVA DI PIEGA / BEND TEST | | | | | |
|---|---|---|---|---|---|
| ORIENTAMENTO / ORIENTATION | Ø | α | RISULTATO / RESULT | ESAME MACROGRAFICO / MACROGRAPHIC EX. | |
| - | 6 mm | 180 ° | Passing test specimen | (20x) | Satisfactory |

NOTE:

Fine rapporto di prova / End of test report

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND

☑ REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLA PINA DATE 08 NOV 2024

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 250.000.000 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.

# INSPECTION CERTIFICATE 3.1 (EN 10204:2004)

DOCUMENT NUMBER 2022045248



08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND

| | | | |
|---|---|---|---|
| CUSTOMER: | A.S.T. SPA | | |
| CUSTOMER'S ORDER: | AQ2300423 | | |
| MANUFACTURER'S WORKS: | AOSTA, VIA PARAVERA 16 - ITALY | | |
| PRODUCER OF THE DOC: | QUALITY DEPARTMENT | | |
| MANUFACTURER'S WORKS ORDER NO: | 0001133685 / 000010 | | |
| MARK OF THE MANUFACTURER: | **COGNE** | | |
| DISPATCH NOTE: | 0081535289 / 000010 WEIGHT: 14 KG / 31 LB | | |
| INTERNAL SPEC: | STOCKBARREW2 | TECHNICAL RULE: | AD2000-W2 |
| PRODUCT: | TRA COLD DRAWN ROUND BARS | TOLERANCE: ISOH9 | |
| SURFACE FINISH: | 2H Cold Finished | | |
| PRODUCT DELIVERY CONDITION: | RP ANNEALED+COLD WORKED | | |
| PRODUCT DIMENSIONS (mm): | 14,000 ( 0,551 in) | LENGTH (mm) | 03050 03100 ( 00120 00122 in) |
| GRADE: | AISI 316/316L EN1.4401/4404 | INTERNAL GRADE: | 316LMQ IMCO |
| IDENTIFICATION HEAT NO: | 272928 | IDENTIFICATION LOT NO: | 160790 |
| MARKING OF THE PRODUCT: | 1.4404 | TEST PIECE N: | 079 |

THE PRODUCT IS CONFORMING TO THE CONTRACT AGREEMENT AND TO THE RULE AD2000-MERKBLATT W0/W2.
REFERENCE NORMS: EN 10088-3, EN 10272, ASTM A484, ASTM A276, ASME SA276, ASTM A479, ASME SA479, AMS 5648, AMS 5653, AMS-QQ-S-763.
STEELMAKING EAF + AOD + CONTINUOUS CASTING
SOLUTION TREATED AT 1050°C +-15°C / 1 min x mm / WATER.
RADIOACTIVITY CONTROL PERFORMED WITH A GAMMA SPECTROMETER: ASTM E181.
GAMMA ACTIVITY ON THE PRODUCTS BELOW 0.1 BQ/G ACCORDING TO EU RESOLUTION 2013/59/EURATOM , IAEA RS-G-1.7 AND IAEA SSG-17.
CORROSION TEST ACCORDING TO ASTM A262 PRACTICE E EN ISO 3651-2 PRACTICE A: SATISFACTORY.
HOT ROLLED
REDUCTION RATIO 144,9

CHEMICAL LADLE ANALYSIS ACCORDING TO ASTM A751 - EN ISO 14284
Control lot No. - Weight :020000920197 - 86.055 KG - 189.716 LB

| ELEMENTS | C | Si | Mn | P | S | N | Cr | Mo | Ni | Cu |
|---|---|---|---|---|---|---|---|---|---|---|
| MEASUREMENT UNIT | % | % | % | % | % | % | % | % | % | % |
| OBTAINED | 0,018 | 0,33 | 1,81 | 0,028 | 0,024 | 0,081 | 17,28 | 2,07 | 10,03 | 0,42 |

| ELEMENTS | Co |
|---|---|
| MEASUREMENT UNIT | % |
| OBTAINED | 0,18 |

HARDNESS TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000920699 - 9.752 KG - 21.499 LB
SPECIFICATION ENISO6506 HARDNESS TEST HB TESTING METHOD: 10/3000
OBTAINED 204

☒ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

DATE 20.07.2022

BARBARA VIETTI MV(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

-Cogne

1724000740-QC-DB-00016_01

COGNE ACCIAI SPECIALI S.p.a.

ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL +39.0165.3021 - FAX +39.0165.302296
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C.F. 02187360957
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Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.



1724000740-QC-DB-00016_01

TENSILE TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000920699 - 9.752 KG - 21.499 LB
SPECIFICATION EN-ISO6892-1 DIRECTION OF THE TEST PIECE: L

| | RM | RP02 | A5 | Z | RP1 |
|---|---|---|---|---|---|
| MEASUREMENT UNIT | MPA | MPA | % 5.0 D | % | MPA |
| OBTAINED | 692 | 455 | 43,7 | 79,2 | 607 |
| | 695 | 471 | 44,3 | 80,3 | 614 |
| | 692 | 455 | 43,4 | 77,1 | 608 |
| | 705 | 477 | 40,7 | 71,3 | 622 |

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND

EDDY CURRENT INSPECTION OF SURFACE ACCORDING TO EN 10277 Class.3: SATISFACTORY.
DIMENSIONAL CONTROL ACCORDING TO EN 10278 AND ASTM A484: SATISFACTORY.
TENSILE TEST
Control lot No. - Weight :020000920699 - 9.752 KG - 21.499 LB
SPECIFICATION ASTMA370-E8-0.5"SPEC DIRECTION OF THE TEST PIECE: L

| | TS | YS02 | RA | EL4 |
|---|---|---|---|---|
| MEASUREMENT UNIT | KSI | KSI | % | % 4,0 D |
| OBTAINED | 101 | 68 | 75,9 | 45,7 |

NO WELDING REPAIR ON THE MATERIAL.
THE MATERIAL IS FREE OF ANY MERCURY, MERCURY COMPOUNDS AND OR RADIUM CONTAMINATION AT TIME OF SHIPMENT AND WAS PRODUCED WITHOUT USING OZONE DEPLETING SUBSTANCES OF CLASS I AND II.
HEAT TREATMENT PERFORMED IN CALIBRATED FURNACES ACCORDING TO INTERNAL PROCEDURE PR-GDQ.ITT COMPLYING WITH API6A Annex M.
VISUAL INSPECTION OF SURFACE AND DIMENSIONAL CONTROL ACCORDING TO EN10221 CLASS C, EN 10060 AND ASTM A484: SATISFACTORY.
MARKING: PRODUCER LOGO, MATERIAL NO, HEAT NO, LOT NR.
ANTIMIX TEST: SATISFACTORY
DOCUMENT ISSUED IN AGREEMENT WITH TUEV BAYERN(11.1972) WAVING OF COUNTERSIGNING (SEE TUEV BAYERN LETTER DATED 17.01.80).
ALL THE NORMS MENTIONED ARE INTENDED IN THEIR LAST REVISION AT THE DATE OF ISSUE OF THIS DOCUMENT.
COUNTRY OF MELTING AND ORIGIN: ITALY, THE MATERIAL COMPLIES WITH FAR DFARS
252.225-7009 ALT 1.
THE ABOVE ARE TRUE AND CORRECT RESULTS OF TESTS ON SAMPLES OF THE MATERIAL. RESULTS ARE CONFORM TO THE SPECIFICATION(S) APPLICABLE AND ARE RECORDED.
THE RECORDING OF FALSE, FICTIOUS OR FRAUDULENT STATEMENTS OR ENTRIES ON THIS DOCUMENT MAY BE PUNISHABLE AS A FELONY UNDER U.S. FEDERAL STATUTES.
INSPECTOR'S STAMP LF
MATERIAL IN COMPLIANCE WITH THE NORSOK M-630 MDS S01
The products delivered are conforming to EN10088-5 and bear the CE marking on the basis of the test results here reported and the continuous surveillance, assessment and approval by MPA NRW
(certificate no. 0432-CPR-00166-01)
Material produced according to the system #Regulation 305/2011/EU of the European Parliament and of the Council of 9 March 2011#

CE 0432

☒ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLAPINA DATE 08 NOV 2024

DATE 20.07.2022

BARBARA VIETTI MV (~~WORKS INSPECTOR~~) - ELECTRONICALLY GENERATED CERTIFICATE

-Cogne

**AST S.p.A.**
Via R. Merendi, 40
I-20007 Cornaredo MI

P +39 02 934848.1
F +39 02 9362248
W www.astspa.it

**MATERIAL CERTIFICATES INDEX**
**CERTIFICATO DEI MATERIALI** **No.** 2400592

EN 10204 3.1

**Customer**
ROSETTI MARINO S.P.A.

**P.Order / Project**
1724000740 123A90A Rev. 1

**ITEM Number**
70-120

**Tag**
25-PV-043

**Quantity delivered**
1

**AST Job**
CV2400221

**AST Code**
CV2400221CV8407A001

**Serial Number**
2400592

**Valve Type**
Valvole Regolazione

**Size**
NPS 2" CLASS 300 RF

**Port Size**
1"

| Part Name | Material | Heat No. | Certificate No. | Supplier |
|---|---|---|---|---|
| BODY | ASTM A351 CF3M | H1412 | 2378-21-22 | AMEX ALLOYS PVT. LTD. |
| SEAT RING | ASTM A479 316/316L | 380150 | 2023026120 | COGNE ACCIAI SPECIALI SPA |
| PLUG | F316 + PTFE | 293368 | MEST028009/2024/ | ACCIAIERIE VALBRUNA |
| BONNET | ASTM A479 316/316L | 000082 | 2020005555 | COGNE ACCIAI SPECIALI SPA |
| STEM | ASTM A479 316/316L | 272928 | 2022045248 | COGNE ACCIAI SPECIALI SPA |

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND

☒ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

**Remarks** :

**AST Q.C. Department** **Customer's Inspector** **Third Party Inspection**

**Date** : 05.11.2024 **Date** : _____ **Date** : _____

# AMEX ALLOYS PRIVATE LIMITED

SF NO.289/2,KUNNATHUR PUDUR (PO),SATHY ROAD,COIMBATORE - 641 107. INDIA.
Phone : +91-422-2654162 | Fax : +91-422-2653121 | E-Mail : sales@amexalloys.com


ISO 9001:2015 CERTIFIED BY: TÜV NORD, GERMANY., CERT.NO.:04 100 047163

## INSPECTION CERTIFICATE EN 10204 - ' Type 3.1 '

| | | | |
|---|---|---|---|
| Customer | : AST APPARECCHI DI SICUR.E TEN | TC No. | : 2378 / 21-22 |
| P.O.Reference | : AQ2101490 REV.01 Dt. 09/08/2021, AQ2101581 REV.02 Dt. 23/09/2021 | TC Date | : 22/10/2021 |
| Specification | : ASTM A351 Gr.CF3M - 18 / ASME II SA351 Gr. CF3M - 21 | Heat No. | : H1412 |
| | | Pouring Date | : 15/09/2021 |
| Casting Processed by | : Induction Melting | Foundry Identification | AX |

## CHEMICAL COMPOSITION

ASTM A751

| Elements | Heat No. | C | Si | Mn | S | P | Cr | Ni | Mo | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Required (%) | Min | -- | -- | -- | -- | -- | 17.000 | 9.000 | 2.000 | | | | | |
| | Max | 0.030 | 1.500 | 1.500 | 0.030 | 0.040 | 21.000 | 13.000 | 3.000 | | | | | |
| Actuals (%) | H1412 | 0.029 | 0.789 | 1.109 | 0.008 | 0.037 | 17.962 | 9.586 | 2.112 | | | | | |

## HEAT TREATMENT

| Type of Heat Treatment | Temperature | Soaking Time | Cooling Medium |
|---|---|---|---|
| SOLUTION ANNEALING | 1090°C | 6 Hrs | WATER |

## MECHANICAL PROPERTIES

(TESTED WITH SEPERATELY CASTED ROUND TEST COUPONS)

| | | ASTM A370 & ISO 6892 - 1 | | | | | | | ISO 148 - 1 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Properties | | Rp 0.2% Y.S Mpa | UTS Mpa | %EL GL 4d | %EL GL 5d | % Reduction Area | Hardness BHN | Bend Test | Impact Test in (Joules) (10mm X 10mm X 55mm) CVN 2mm 45 ° | | | |
| Required | Min | 205 | 485 | 30 | -- | -- | -- | | @ -196°C Min Avg: 40 J | | | |
| | Max | -- | -- | -- | -- | -- | 237 | | 1 | 2 | 3 | Avg. |
| Actual | | 246 | 505 | 61.24 | -- | -- | 154 | | 68 | 94 | 88 | 83.33 |

## ITEM DESCRIPTION

| Sl. No. | Heat No. | PO Pos. No. | Description | Drawing No. / Article No. | Model No. | Quantity (Nos.) | Raw Casting Weight/Pc (Kgs.) |
|---|---|---|---|---|---|---|---|
| 1 | H1412 | 15 | CORPO CV 8400 1.1/2 CL 300 RTJ/600 | M139 R.02 | -- | 1 | 21.600 |
| 2 | H1412 | 1 | CORPO 8400 2 CL 300 RF | 84.50.121 R.2 / M218 R.0 | -- | 2 | 28.900 |

Remarks:
Castings are dimensionally acceptable.
Castings are Pickled and Passivated.
Visual inspection carried out as per MSS SP 55.
Casting Meets the Requirements of NACE MR 0175/ISO 15156/MR 0103.
LPI Conforms to ASME B16.34 APP - III.
Castings Meets the Requirements of customer TDC:FOR001 Rev 15.
Comply with the requirement of Pressure Equipment Directive (2014/68/EU)Annex . I, Section 4.3 (PED).
Radioactivity level measured, delivered materials are free of radioactive contamination.

08 NOV. 2024
FRANCO CORBELLINI
080
CROSSWIND

☑ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

We here by certify that the items mentioned above have been tested, inspected and found to be in accordance with customer's drawing, specification, purchase order and satisfy the requirements of **ASTM A351 Gr.CF3M - 18 / ASME II SA351 Gr. CF3M - 21.**

**For AMEX ALLOYS PRIVATE LIMITED**

M.JANAKARAYTHINAM
Asst.MANAGER - QA

K.BOMMAYAN
Work Expert

# AMEX ALLOYS PRIVATE LIMITED

SF NO.289/2,KUNNATHUR PUDUR (PO),SATHY ROAD,COIMBATORE - 641 107. INDIA.

Phone : +91-422-2654162 | Fax : +91-422-2653121 | E-Mail : sales@amexalloys.com


## LIQUID PENETRANT INSPECTION REPORT

**Customer: AST APPARECCHI DI SICUR.E TEN**

| | | | |
|---|---|---|---|
| Report No. | : 980 / 21-22 | Date | : 19/11/2021 |
| Procedure Ref. | : ASTM E165 | Written Procedure Ref. | : TM-04 Rev.7 |
| Acceptance Standard Ref. | : ASME B16.34 APPENDIX-III | Stage of Test | : AFTER HEAT TREATMENT |
| Cleaner Batch No. | : 2002 SEP -19-MR CHEMIE-MR-85 | Surface Condition | : MACHINED & UNMACHINED |
| Penetrant Batch No. | : 67/2006 AUG-21-MR CHEMIE-MR-67 | Test Method | : VISIBLE |
| Developer Batch No. | : 2004 JULY-21-MR CHEMIE-MR-70 | Type of Cleaner | : SOLVENT |
| Test Temperature | : 30°C | Type of Penetrant | : WATER WASHABLE |
| Light Intensity | : 1200 Lux | Type of Developer | : WET NON - AQUEOUS |
| Operator Name(ID) | : K.RAJASEKAR(AX 8)SNT TC -1A,PT Level-1 | Dwell Time | : 10 Minutes |

| Sl. No. | PO Number & Date | Description | Drawing No. / Part No. | Grade | Heat No. | Quantity | DPT No. |
|---|---|---|---|---|---|---|---|
| 23 | AQ2101568 Dt. 06/08/2021 | PORTAOTTURATORE "T" SML | 76DHT055 R.0 / M772 R.0 | CF8M | 36489 | 1 | PT11 |
| 24 | AQ2101581 REV.02 Dt. 23/09/2021 | CORPO 8400 2 CL 300 RF | 84.50.121 R.2 / M218 R.0 | CF3M | H1412 | 1 | PT2 |
| 25 | AQ2101581 REV.02 Dt. 23/09/2021 | CORPO 8400 2 CL 300 RF | 84.50.121 R.2 / M218 R.0 | CF3M | H1412 | 1 | PT3 |
| 26 | AQ2101581 REV.02 Dt. 23/09/2021 | BOCCAGLO SMU 6 CL 150/600 RF AGROSSEATO SEMPLICE | 70R008 R.0 / M542 R.1 | CF8M | H1455 | 1 | PT4 |
| 27 | AQ2101581 REV.02 Dt. 23/09/2021 | BOCCAGLO SMU 6 CL 150/600 RF AGROSSEATO SEMPLICE | 70R008 R.0 / M542 R.1 | CF8M | H1455 | 1 | PT5 |
| 28 | AQ2101581 REV.02 Dt. 23/09/2021 | BOCCAGLO SMU 6 CL 150/600 RF AGROSSEATO SEMPLICE | 70R008 R.0 / M542 R.1 | CF8M | H1455 | 1 | PT6 |
| 29 | AQ2101581 REV.02 Dt. 23/09/2021 | BOCCAGLIO SMU 8 CL 150/300 RF SGROS.SEMPLIC.(STAMICARBON) | 70T008 R.0 / M544 R.2 | CF8M | 36501 | 1 | PT1 |
| 30 | AQ2101581 REV.02 Dt. 23/09/2021 | BOCCAGLIO SMU 8 CL 150/300 RF SGROS.SEMPLIC.(STAMICARBON) | 70T008 R.0 / M544 R.2 | CF8M | H1455 | 1 | PT1 |
| 31 | AQ2101581 REV.02 Dt. 23/09/2021 | BOCCAGLIO SMU 8 CL 150/300 RF SGROS.SEMPLIC.(STAMICARBON) | 70T008 R.0 / M544 R.2 | CF8M | H1455 | 1 | PT2 |
| 32 | AQ2101581 REV.02 Dt. 23/09/2021 | BOCCAGLIO SMU 8 CL 150/300 RF SGROS.SEMPLIC.(STAMICARBON) | 70T008 R.0 / M544 R.2 | CF8M | H1455 | 1 | PT3 |

☑ REVIEW ☐ WITNESS

ON BEHALF OF BDZ

A. DELLA PINA DATE 08 NOV 2021

AREA COVERAGE : 100% SURFACE

OBSERVATION : CONFORMS TO ASME B16.34 APPENDIX-III

RESULT : ACCEPTABLE

**REVIEWED & APPROVED BY**

**R.S.MUTHIYAALU SAMY (AX-1)**
**EN ISO 9712 / ASNT, Level -2**

08 NOV. 2021

FRANCO CORBELLINI

QBQ

CROSSWIND

**CUSTOMER / EXTERNAL INSPECTION AGENCY**

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
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VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.

# INSPECTION CERTIFICATE 3.1 (EN 10204:2004)



| | | | |
|---|---|---|---|
| CUSTOMER: | A.S.T. SPA | | |
| CUSTOMER'S ORDER: | AQ2400201 | | |
| MANUFACTURER'S WORKS: | AOSTA, VIA PARAVERA 16 - ITALY | | |
| PRODUCER OF THE DOC: | QUALITY DEPARTMENT | | |
| MANUFACTURER'S WORKS ORDER NO: | 0001138630 / 000050 | | |
| MARK OF THE MANUFACTURER: | **COGNE** | | |
| DISPATCH NOTE: | 0081589667 / 000050 WEIGHT: 644 KG / 1420 LB | | |
| INTERNAL SPEC: | STOCKBARREW2 | TECHNICAL RULE: | AD2000 |
| PRODUCT: | PEL PEELED ROUND BARS TOLERANCE: ISOK11 | | |
| SURFACE FINISH: | 2B Cold Finished | | |
| PRODUCT DELIVERY CONDITION: | RS SOLUTION ANNEALED | | |
| PRODUCT DIMENSIONS (mm): | 75,000 ( 2,953 in) | LENGTH (mm) | 04000 06200 ( 00157 00244 in) |
| GRADE: | 316L-S31600/31603-1.4404/4401 | INTERNAL GRADE: | F316L IMCO |
| IDENTIFICATION HEAT NO: | 380150 | IDENTIFICATION LOT NO: | 725570 |
| MARKING OF THE PRODUCT: | 1.4404 | TEST PIECE N: | 557 |

REFERENCE NORMS: EN 10088-3 2014, EN 10272 2016, ASTM A276/A276M-17, ASTM A479/A479M-21, ASTM A193-20 B8MCLASSE 1D, ASME SA276/SA276M-17,ASME SA479/SA479M-21, AMS 5653J, AMS 5648N, ISO15156-3/NACE MR0175 2015, NACE MR0103/ISO 17945, NORSOK M630 MDSS01 REV5.
REFERENCE NORMS FOR CHEMICAL COMPOSITION AND MECHANICAL PROPERTIES: ASTM A182-22A, ASME SA182-22A.
REFERENCE NORMS ONLY FOR CHEMICAL COMPOSITION: EN 10222-5 2017,ASTM A403-22b, ASTM A484-22, ASTM A314-19, AMS-QQ-S-763D.
ASME SECT.II PART A EDITION 2015-2017-2019-2021
AISI 316/316L - UNS S31600/S31603 - 1.4404/1.4401
THE PRODUCT IS CONFORMING TO THE CONTRACT AGREEMENT AND TO THE RULE AD2000-MERKBLATT W0/W2.
STEELMAKING EAF + AOD + CONTINUOUS CASTING
ASTM A484 DOES NOT APPLY FOR SIZE AND LENGTH TOLERANCES.
REFERENCE FOR APPLICABLE ASME STANDARD: SECTION II PART A ED. 2015-2017-2019-2021
HOT ROLLED
REDUCTION RATIO 5,2

0 8 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND
R

CHEMICAL LADLE ANALYSIS ACCORDING TO ASTM A751 - EN ISO 14284
Control lot No. - Weight :020000964940 - 82.913 KG - 182.789 LB

| ELEMENTS | C | Si | Mn | P | S | N | Cr | Mo | Ni | Cu |
|---|---|---|---|---|---|---|---|---|---|---|
| MEASUREMENT UNIT | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w |
| OBTAINED | 0,016 | 0,37 | 1,91 | 0,026 | 0,024 | 0,078 | 16,79 | 2,06 | 10,06 | 0,47 |

| ELEMENTS | Co |
|---|---|
| MEASUREMENT UNIT | % w/w |
| OBTAINED | 0,15 |

HARDNESS TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000967750 - 7.000 KG - 15.432 LB
SPECIFICATION ENISO6506 HARDNESS TEST HB TESTING METHOD: 10/3000
OBTAINED 160

☑ REVIEW ☐ WITNESS
ON BEHALF OF RR a
A. DELLA PINA DATE 0 8 NOV 2024

DATE 25.05.2023

MORABITO ROSA CF(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

-Cogne

1724000740-QC-DB-00016_01

COGNE ACCIAI SPECIALI S.p.a.
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1724000740-QC-DB-00016_01

IMPACT TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000967750 - 7.000 KG - 15.432 LB
SPECIFICATION EN ISO 148-1-KV2 DIRECTION OF THE TEST PIECE: L
TYPE OF TEST PIECE KV
TEST TEMPERATURE °C 20
MEASUREMENT UNIT J
OBTAINED 440 430 436 438 434 434 436 432 440 437
435 439

TENSILE TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000967750 - 7.000 KG - 15.432 LB
SPECIFICATION EN-ISO6892-1 DIRECTION OF THE TEST PIECE: L

| MEASUREMENT UNIT | RM MPA | RP02 MPA | A5 % | Z % | RP1 NMM |
|---|---|---|---|---|---|
| OBTAINED | | | 5.0 D | | |
| | 608 | 285 | 51,4 | 72,3 | 327 |
| | 606 | 277 | 51,6 | 72,9 | 320 |
| | 603 | 275 | 52,8 | 79,5 | 316 |
| | 604 | 264 | 54,2 | 75,4 | 312 |

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND R

GRAIN SIZE
Control lot No. - Weight :020000967750 - 7.000 KG - 15.432 LB
SPECIFICATION ASTME112 --
OBTAINED 5

MATERIAL IN COMPLIANCE WITH THE NORSOK M-630 MDS S01
IMPACT TEST
Control lot No. - Weight :020000967750 - 7.000 KG - 15.432 LB
SPECIFICATION EN ISO 148-1 DIRECTION OF THE TEST PIECE: L
TYPE OF TEST PIECE KV
TEST TEMPERATURE °C 196-
MEASUREMENT UNIT J
OBTAINED 191 198 180 200 193 181 176 189 175 174
195 175

TENSILE TEST
Control lot No. - Weight :020000967750 - 7.000 KG - 15.432 LB
SPECIFICATION ASTMA370-E8-0.5"SPEC DIRECTION OF THE TEST PIECE: L

| MEASUREMENT UNIT | RMB KSI | RP02B KSI | ZB % | AL2B % |
|---|---|---|---|---|
| OBTAINED | | | | 4,0 D |
| | 87 | 40 | 72,8 | 60,2 |
| | 88 | 39 | 72,5 | 54,7 |
| | 88 | 38 | 78,5 | 54,6 |
| | 88 | 40 | 76,5 | 54,5 |

☒REVIEW ☐WITNESS
ON BEHALF OF
A. DELLA PINA DATE 08 NOV 2024

DATE 25.05.2023

MORABITO ROSA CF(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

-Cogne

COGNE ACCIAI SPECIALI S.p.a.

ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 250.000.000 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.



1724000740-QC-DB-00016_01

COUNTRY OF MELTING AND ORIGIN: ITALY, THE MATERIAL COMPLIES WITH FAR DFARS 252.225-7009 ALT 1.
The products delivered are conforming to EN10088-5 and bear the CE marking on the basis of the test results here reported and the continuous surveillance, assessment and approval by MPA NRW (certificate no. 0432-CPR-00166-01)
Material produced according to the system #Regulation 305/2011/EU of the European Parliament and of the Council of 9 March 2011#
DOCUMENT ISSUED IN AGREEMENT WITH TUEV BAYERN(11.1972) WAVING OF COUNTERSIGNING (SEE TUEV BAYERN LETTER DATED 17.01.80).
MARKING: SYMBOL OF THE MANUF. WORK, MATERIAL N. , CAST N., LOT N., RECEIVING AGENT STAMP
CORROSION TEST ACCORDING TO ASTM A262 PRACTICE E EN ISO 3651-2 PRACTICE A: SATISFACTORY.
ANTIMIXING TEST BY PORTABLE SPECTROMETRE: CONFORMING
EDDY CURRENT INSPECTION OF SURFACE ACCORDING TO EN 10277 CLASS 4.
DIMENSIONAL CONTROL ACCORDING TO EN 10278: SATISFACTORY.
NO WELDING REPAIR ON THE MATERIAL.
ULTRASONIC TEST ACCORDING TO EN 10308 Class.3: SATISFACTORY
QUALITY SYSTEM CERTIFIED BY KIWA CERMET ACCORDING TO UNI EN ISO 9001:2015 -IATF 16949:2016 (THE LAST ONE ONLY FOR WIRE ROD AND HOT ROLLED-PEELED-GROUND STAINLESS STEEL BARS).
INSPECTOR'S STAMP LF
MATERIAL CONFORM TO: 2015/863/UE (RoHS3) - 2011/65/UE (RoHS2) - 2000/53/UE - 2002/95/UE (RoHS) - 2003/11/UE - 2005/618/UE - PED 2014/68/UE e PE(S)R 2016/1105
THE MATERIAL IS FREE OF ANY MERCURY, MERCURY COMPOUNDS AND OR RADIUM CONTAMINATION AT TIME OF SHIPMENT AND WAS PRODUCED WITHOUT USING OZONE DEPLETING SUBSTANCES OF CLASS I AND II.
RADIOACTIVITY CONTROL PERFORMED WITH A GAMMA SPECTROMETER: ASTM E181.
GAMMA ACTIVITY ON THE PRODUCTS BELOW 0.1 BQ/G ACCORDING TO EU RESOLUTION 2013/59/EURATOM , IAEA RS-G-1.7 AND IAEA SSG-17.

CE 0432

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND

REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

DATE 25.05.2023

MORABITO ROSA CF(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a : EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1
Nach/According to/Selon

Certificato nr. MEST028009 / 2024 /
Prüfung/Test/Essai

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura : Laminato - Solubilizzato FINITO A FREDDO
Lieferzustand / Delivery state / Etat de livraison

Produttore :
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Ordine nr: ORD N AQ2400369
Bestell / Your order / Commande

Tipo di Elaborazione: E+AOD
Erschmelzungsart / Melting process / Mode d'elaboration

Marchi di Fabbrica:
Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice
AV

Conferma ordine nr: MI24001817
Werks/Our Order/Ref nr.

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Punzone del Collaudatore:
Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur
MR

Avviso di Spedizione: A-MI24001447
Lieferanzeige/Packing list/B.L.

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung / Brand / Nuance

Punzonatura: 1.4401/1.4404
Kennzeichnung / Marking / Marquage

**SPECIFICHE :**
Anforderungen / Requirements / Exigences

VAL STOCK W2 A/1 1.4404/316L A,CF
AD 2000-M. W 2 2022 1.4401 A,CF (0)
AD 2000-M. W 2 2022 1.4404 A,CF (1)
AISI . 316/316L
AMS-QQ-S-763 D 316/316L A,CF
ASME SA182 2023 S31600/03 A (2)
ASME SA276 2023 S31600/03 A,CF (3)
ASME SA479 2023 S31600/03 A (4)
ASTM A182 2023 S31600/03 A (5)
ASTM A262 PR. E 2015 316/316L (6)
ASTM A276 2023 S31600/03 A,CF
ASTM A370 2022 .
ASTM A479 2023A S31600/03 A
ASTM E10 2023 .
ASTM E8 2022 .
EN 10088 PART 3 2014 1.4401 A,CF
EN 10088 PART 3 2014 1.4404 A,CF
EN 10272 2016. 1.4401 A,CF
EN 10272 2016. 1.4404 A,CF
ISO 148-1 2016 .
ISO 3651-2 98 METHOD A T1
ISO 6506-1 2014 .
ISO 6892-1 2019 .
NACE MR0103 2015 S31600/03 A (7)
NACE MR0175 4 S31600/03 A (8)
QQ-S-763 F 316/316L A,CF
ACH CO . .
KV L -196C . ISO 148-1

**Note:**
Anzeichnungen / Notes / Notes

(0)AD 2000-MERKBLATT W 2 edition 03.2022 AD 2000-MERKBLATT W 10 edition 06.2022
(1)AD 2000-MERKBLATT W 2 edition 03.2022 AD 2000-MERKBLATT W 10 edition 06.2022

(2)Section II Part A 2023 EDITION For products machined directly from bar refer to ASME SA479.
(3)Section II Part A 2023 EDITION
(4)Section II Part A 2023 EDITION
(5)For products machined directly from bar refer also to ASTM A479
(6)Reapproved 2021

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND R

(7)ANSI/NACE MR0103/ISO 17945 November 23, 2015
(8)ANSI/NACE MR0175/ISO 15156-3:2020 Fourth edition, approved 21 Sep 2022.

| Pos. nr. Pos. nr. Item nr. Nr. de poste | Oggetto Gegenstand Product description Descript. du produit | Tolleranza: k12 Toleranz/Allowance/Tolerance Dimensioni - mm Abmessungen Dimension Dimension | Lunghezza - mm Länge Length Longueur | Colata Schmelze Heat Coulée | Pezzi Stückzahl Pieces Pieces | Peso - KG Gewicht Weight Poids | Lotto nr. Losnr. Lot nr. Lot nr. |
|---|---|---|---|---|---|---|---|
| 0030 | Tondo | 30,000 | 6000/ 6060 | 293368 | | 68,0 | 310402650 |

☒ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO ~~9001 : 2015, IATF 16949~~ : 2016, AS ~~9100D~~

| Vicenza, 05/03/2024<br>VCQ012 - MEST028009 | Direzione Qualità<br>Qualitätsmanagement/Quality Management/Gestion Qualité<br>R.BERTELLI | Direzione Prodotto<br>Produktmanagement/Product Management/Direction Produit<br>P.MESSORI | Pagina 1 di 4 |
|---|---|---|---|

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a : EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1
Nach/According to/Selon

Certificato nr. MEST028009 / 2024 /
Prüfung/Test/Essai

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura : Laminato - Solubilizzato FINITO A FREDDO
Lieferzustand / Delivery state / Etat de livraison

Produttore :
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Tipo di Elaborazione: E+AOD
Erschmelzungsart / Melting process / Mode d'elaboration

Ordine nr: ORD N AQ2400369
Bestell / Your order / Commande

Marchi di Fabbrica: AV
Zeichen des Liefernwerkes / Trade marks / Sigles de l'usine productrice

Conferma ordine nr: MI24001817
Werks/Our Order/Ref nr.

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Punzone del Collaudatore: MR
Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur

Avviso di Spedizione: A-MI24001447
Lieferanzeige/Packing list/B.L.

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung / Brand / Nuance

Punzonatura: 1.4401/1.4404
Kennzeichnung / Marking / Marquage

### TEST ALLO STATO DI FORNITURA

Test on delivery condition Prüefung auf lieferbereitem produkt test a l'etat de fourniture Prueba sobre el material asi come entregado

1) L=longitudinale/längs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | Posiz Saggio Probenlage Location Emplacement | Snervamento Streckgrenze Yield Stress Limite elastique Rp 0,2% N/mm2 | Snervamento Streckgrenze Yield Stress Limite elastique Rp 1% N/mm2 | Resistenza Zugfestigkeit Tensile strength Resistance à traction Rm N/mm2 | Allungamento Bruchdehnung Elongation Allongement A5 % | | Strizione Einschnürung Reduction of area Striction Z % | | Resilienza Kerbschlagarbeit Impact Value Resilience | | | Durezza Haerte Hardness Durete HB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti Anforderungen/Required values Valeurs demandées | | min max | | 200 | 235 | 500 900 | 20 | - | - | - | - | | | - | 315 | |
| A | 10 | 20 | L | 458 | 535 | 678 | 44 | | 67 | | | | | 223 | | |
| G | 10 | 20 | L | 457 | 532 | 682 | 45 | | 66 | | | | | 221 | | |

### TEST ALLO STATO DI FORNITURA

Test on delivery condition / Prüefung auf lieferbereitem produkt / Test a l'etat de fourniture / Prueba sobre el material asi come entregado

| TEST | | min | max | |
|---|---|---|---|---|
| A | Dimensioni grano x ASTM E112 | | | 4 |

### Charpy per ISO 148-1

1) L=longitudinale/längs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | Posiz Saggio Probenlage Location Emplacement | Resilienza Kerbschlagarbeit Impact Value Resilience KV2 J | | | Espansione laterale Lateral Expansion Lateral ex mm | | | Shear Shear % Shear % | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti Anforderungen/Required values Valeurs demandées | | min max | | - | - | - | - | - | - | - | - | - |
| B | 10X10 | -196 | L | 158 | 152 | 151 | 1,700 | 1,852 | 1,705 | 59 | 61 | 57 |

### Test allo stato di fornitura per ASTM A370

1) L=longitudinale/längs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | Posiz Saggio Probenlage Location Emplacement | Snervamento Streckgrenze Yield Stress Limite elastique Rp 0,2% N/mm2 | Snervamento Streckgrenze Yield Stress Limite elastique | Resistenza Zugfestigkeit Tensile strength Resistance à traction Rm N/mm2 | Allungamento Bruchdehnung Elongation Allongement E 4d % | | Strizione Einschnürung Reduction of area Striction RA % | | Resilienza Kerbschlagarbeit Impact Value Resilience | | | Durezza Haerte Hardness Durete HB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti Anforderungen/Required values Valeurs demandées | | min max | | 210 | - | 517 | - | 30 | - | 50 | - | | | - | 235 | |
| C | 12,5 | 20 | L | 453 | | 671 | | 47 | | 68 | | | | 222 | | |

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND R

REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLA PINA DATE 08 NOV 2024

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a: Nach/According to/Selon: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. Prüfung/Test/Essai: MEST028009 / 2024 /

Cliente / Besteller/Purchaser/Client:
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura: Lieferzustand / Delivery state / Etat de livraison: Laminato - Solubilizzato FINITO A FREDDO

Produttore: Hersteller/Item/Usine productrice:
ACCIAIERIE VALBRUNA S.P.A.

Ordine nr: ORD N AQ2400369
Bestell / Your order / Commande

Tipo di Elaborazione: Erschmelzungsart / Melting process / Mode d'elaboration: E+AOD

Marchi di Fabbrica: Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice: AV

Conferma ordine nr: MI24001817
Werks/Our Order/Ref nr

Qualità: Werkstoff/Grade/Nuance: 1.4401/1.4404/316/316L

Punzone del Collaudatore: Stempel des Werksachverständiges / Inspector s stamp/Poinçon de l'assayeur: MR

Avviso di Spedizione: Lieferanzeige/Packing list/B.L.: A-MI24001447

Marca: Markenbezeichnung / Brand / Nuance: MVAPML ( MAXIVAL )

Punzonatura: Kennzeichnung / Marking / Marquage: 1.4401/1.4404

### Charpy per ISO 148-1

1) L=longitudinale/längs, T=trasversale/quer, O=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais. mm | °C | Posiz Saggio Probelage Location Emplacement | Resilienza Kerbschlagarbeit Impact Value Resilience KV2 J | | | Espansione laterale Lateral Expansion | | | Shear Shear | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti Anforderungen/Required values Valeurs demandées | | min max | | 100 | 100 | 100 | - | - | - | - | - | - |
| F | 10X10 | 20 | L | 199 | 194 | 193 | | | | | | |
| H | 10X10 | 20 | L | 210 | 196 | 198 | | | | | | |

Tensile testing according to ISO 6892-1
Impact testing according to ISO 148-1
Mechanical properties according to ASTM A370.
Brinnell hardness according to ASTM E10
Tensile testing according to ASTM E8
Brinnell hardness according to ISO 6506-1

06 NOV. 2024
FRANCO CORBELLINI
080
CROSSWIND R

☐ REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLA PINA DATE 08 NOV 2024

### Analisi chimica

Chemische Zusammensetzung/Chemical Analysis/Analyse chimique

| Colata / Heat Schmelze/Coulée | | C % | Si % | Mn % | Cr % | Mo % | Cu % | Ni % | Co % | P % | S % | N % | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | min - max | - 0,030 | 1,00 | 2,00 | 16,50 18,00 | 2,00 2,50 | - 1,00 | 10,00 13,00 | - - | - 0,045 | - 0,030 | - 0,100 | - | - | - | - |
| 293368 | | 0,010 | 0,56 | 1,52 | 16,68 | 2,04 | 0,57 | 10,00 | 0,156 | 0,032 | 0,027 | 0,058 | | | | |

### Corrosion test in 16% sulfuric acid and copper sulfate solutions

Test standard: UNI EN ISO 3651-2 Method A

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitized T1 | 20 | boil | 90 | 5 | Absence of cracks | SATISFACTORY |

### Corrosion test in 16% sulfuric acid and copper sulfate solutions

Test standard: ASTM A262-Practice E

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitization | 15 | boil | 180 | 5 | Absence of cracks | SATISFACTORY |

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| Vicenza, 05/03/2024 | Direzione Qualità Qualitätsmanagement/Quality Management/Gestion Qualité | Direzione Prodotto Produktmanagement/Product Management/Direction Produit | Pagina 3 di 4 |
|---|---|---|---|
| VCQ012 - MEST028009 | R.BERTELLI | P.MESSORI | |

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a : Nach/According to/Selon: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. Prüfung/Test/Essai: MEST028009 / 2024 /

Cliente / Besteller/Purchaser/Client:
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura : Lieferzustand / Delivery state / Etat de livraison: Laminato - Solubilizzato FINITO A FREDDO

Produttore : Hersteller/Item/Usine productrice:
ACCIAIERIE VALBRUNA S.P.A.

Ordine nr: ORD N AQ2400369
Bestell / Your order / Commande

Tipo di Elaborazione: Erschmelzungsart / Melting process / Mode d'elaboration: E+AOD

Marchi di Fabbrica: Zeichen des Lieferwerkes / Trade marke / Sigles de l'usine productrice: AV

Conferma ordine nr: MI24001817
Werks/Our Order/Ref nr.

Qualità: Werkstoff/Grade/Nuance: 1.4401/1.4404/316/316L

Punzone del Collaudatore: Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur: MR

Avviso di Spedizione: A-MI24001447
Lieferanzeige/Packing list/B.L.

Marca: Markenbezeichnung / Brand / Nuance: MVAPML ( MAXIVAL )

Punzonatura: 1.4401/1.4404
Kennzeichnung / Marking / Marquage

Reduction ratio = 42,9 : 1
Solution annealed 1040°C for 160'(total time)/water cooled.
SURFACE QUALITY COMPLIANT TO EN 10088-3 TAB.1 COND. 2H equivalent to EN 10277-1 Cl.3
"Issued in agreement with TÜV SÜD Industrie Service GMBH
(07/1972)"
"Qs approved according to PED, Annex I, Para. 4.3 by
Notified Body 0036"
"(Certification no. DGR-0036-QS-W 23/2002/MUC)"

Sono state soddisfatte tutte le condizioni richieste
Die gestellen Anforderungen sind it. Anlage erfüllt
The material has been furnished in accordance with the requirements
Le matériel à été trouvé conforme aux exigences

Controllo antimescolanza con tecnica XRF/OES portatile : OK
Verwechslungprüfung durch XRF/OES Gerät geführt : OK
Antimixing testing performed with XRF/OES portable : OK
Contrôle antimélange evt technique XRF/OES portable : OK

Controllo visivo e dimensionale: soddisfa le esigenze
Besichtigung und Ausmessung ohne Beanstandung
Visual inspection and dimensional checks satisfactory
Contrôle visuel et dimensions: satisfaisant

Melted, poured and manufactured in Italy  No welding or weld repair  Material free from Mercury contamination

We declare that the finished product is checked for radioactive contamination by the portal system when it leaves the production plant.

The Quality Management System is also Certified according to Pressure Equipment Directive 2014/68/EU Annex 1,chapt.4.3 by TÜV and LLOYD'S
The Quality Management System is also Certified according to PER 2016/1105, Schedule 2, Part 4, Para 31 (8) by Competent Body TÜV SUD BABT Unlimited.
Any act of tampering, modification, alteration, counterfeiting and/or falsification and/or any other action which modifies the contents of this test certificate shall constitute a violation of applicable civil and criminal laws. Acciaierie Valbruna shall protect its rights and interests before any competent court, authority and jurisdiction.
Maxival and/or Valplus grades/products are manufactured with ladle techniques to control composition, distribution, size and shape of non-metallic inclusions for improved machinability.
The supplied product conforms to requirements expressly requested by the purchaser and conforms to requirements specified by certified norms and standards. Should the product be used for more severe, critical and/ or in any case different applications than those the material is generally intended for, any different and/or supplementary requirements shall be specifically demanded, at least, upon order of the Product by the Purchaser. Acciaierie Valbruna SpA shall not be responsible for any improper use of the Products.

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND

☒ REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLA PINA DATE 08 NOV 2024

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL.+ 39.0165.3021 - FAX + 39.0165.302296
CAP. SOC. 140.000.000 EUR INT. VERS.
C.F. 02187360867
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, IATF 16949, EN 9100 and ISO 14001.

INSPECTION CERTIFICATE 3.1 (EN 10204:2004)
DOCUMENT NUMBER 2020005555


WITNESS ☐ REVIEW ☒ ON BEHALF OF A. DELLA PINA DATE 08 NOV 2024

| | | | |
|---|---|---|---|
| CUSTOMER: | A.S.T. SPA | | |
| CUSTOMER'S ORDER: | AQ2000377 | | |
| MANUFACTURER'S WORKS: | AOSTA, VIA PARAVERA 16 - ITALY | | |
| PRODUCER OF THE DOC: | QUALITY DEPARTMENT | | |
| MANUFACTURER'S WORKS ORDER NO: 1116455 /10 | MARK OF THE MANUFACTURER: COGNE | | |
| DISPATCH NOTE: | 81329230 /10 WEIGHT: 900 KG | | |
| THE CERTIFIED PRODUCTS ARE COMPLYING TO THE PURCHASE ORDER, EXCEPT FOR EXEMPTIONS AGREED WITH THE CUSTOMER, IF ANY. | | | |
| INTERNAL SPEC: | AD2000MERKBLATTW10 | TECHNICAL RULE: | AD2000 |
| PRODUCT: | 2290 SPE ROUGHPEELED | ROUND BARS TOLERANCE: | + 1,500 - 0,0000 |
| SURFACE FINISH: | 1X Hot Finished | | |
| PRODUCT DELIVERY CONDITION: | RS SOLUTION ANNEALED | | |
| PRODUCT DIMENSIONS (mm): | 160,000 | LENGTH (mm) | 04000 /06000 |
| GRADE: | AISI 316/316L EN1.4401/4404 | INTERNAL GRADE: | F316L5 IMCO |
| IDENTIFICATION HEAT NO: | 000082 | IDENTIFICATION LOT NO: | 828080 |
| MARKING OF THE PRODUCT: | 1.4404 | TEST PIECE N: | 808 |

THE MATERIAL IS PRODUCED ACCORDING TO SPECIFICATION AD2000-MERKBLATT W2/W10
DOCUMENT ISSUED IN AGREEMENT WITH TUEV BAYERN(11.1972) WAVING OF COUNTERSIGNING (SEE TUEV BAYERN LETTER DATED 17.01.80).
REFERENCE NORMS:EN 10088-3, EN 10272, ASTM A276/ASME
SA276, ASTM A479/ASME SA479, ASTMA193 B8M CLASSE 1D,
ISO15156-3/NACE MR0175, NACE MR0103.
REFERENCE NORMS FOR CHEMICAL COMPOSITION AND MECANICHAL PROPERTIES: ASTM A182/ASME SA182
REFERENCE NORMS FOR CHEMICAL COMPOSITION ONLY: EN 10222-5, ASTM A484, ASTM A403, ASTM A314.
HOT ROLLED
REDUCTION RATIO 4,2

CHEMICAL LADLE ANALYSIS ACCORDING TO ASTM A751 - EN ISO 14284
Control lot No. - Weight :020000822939 - 84.048 KG

| ELEMENTS | C | Si | Mn | P | S | N | Cr | Mo | Ni | Cu |
|---|---|---|---|---|---|---|---|---|---|---|
| OBTAINED | 0,021 | 0,39 | 1,31 | 0,026 | 0,030 | 0,087 | 16,76 | 2,05 | 10,18 | 0,40 |
| ELEMENTS | Co | | | | | | | | | |
| OBTAINED | 0,14 | | | | | | | | | |

HARDNESS TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000823509 - 23.563 KG
SPECIFICATION ENISO6506 HARDNESS TEST HB TESTING METHOD: 10/3000
OBTAINED 175

IMPACT TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000823509 - 23.563 KG
SPECIFICATION EN ISO 148-1-KV2 DIRECTION OF THE TEST PIECE: L
TYPE OF TEST PIECE KV
TEST TEMPERATURE °C 20
MEASUREMENT UNIT J

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| OBTAINED | 431 | 437 | 439 | 433 | 433 | 436 | 434 | 431 | 439 | 439 |
| | 430 | 433 | | | | | | | | |

08 NOV. 2024 FRANCO CORBELLINI QBC CROSSWIND

DATE 04.02.2020 MORABITO ROSA CF(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE -Cogne

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL.+ 39.0165.3021 - FAX + 39.0165.302286
CAP. SOC. 140.000.000 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, IATF 16949, EN 9100 and ISO 14001.

INSPECTION CERTIFICATE 3.1 (EN 10204:2004)
DOCUMENT NUMBER 2020005555




TENSILE TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000823509 - 23.563 KG
SPECIFICATION EN-ISO6892-1 DIRECTION OF THE TEST PIECE: L

| MEASUREMENT UNIT | RM MPA | RP02 MPA | A5 % 5.0 D | Z % | RP1 MPA |
|---|---|---|---|---|---|
| OBTAINED | 598 | 262 | 55,5 | 78,2 | 307 |
| | 605 | 272 | 55,8 | 80,1 | 301 |
| | 597 | 266 | 54,8 | 80,6 | 304 |
| | 601 | 268 | 55,1 | 80,1 | 310 |

GRAIN SIZE
Control lot No. - Weight :020000823509 - 23.563 KG
SPECIFICATION ASTME112 --
OBTAINED 3 5

CORROSION TEST ACCORDING TO ASTM A262 PRACTICE E EN ISO 3651-2 PRACTICE A: SATISFACTORY.
MATERIAL ACCORDING TO ASME SEC. II Ed. 2015
IMPACT TEST
Control lot No. - Weight :020000823509 - 23.563 KG
SPECIFICATION EN ISO 148-1 DIRECTION OF THE TEST PIECE: L
TYPE OF TEST PIECE KV
TEST TEMPERATURE °C 196-
MEASUREMENT UNIT J

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| OBTAINED | 203 | 214 | 195 | 194 | 192 | 214 | 220 | 208 | 197 | 198 |
| | 191 | 200 | | | | | | | | |

TENSILE TEST
Control lot No. - Weight :020000823509 - 23.563 KG
SPECIFICATION ASTMA370-E8-0.5"SPEC DIRECTION OF THE TEST PIECE: L

| MEASUREMENT UNIT | RMB KSI | RP02B KSI | RA % | EL4 % 4,0 D |
|---|---|---|---|---|
| OBTAINED | 86 | 39 | 77,5 | 57,5 |
| | 88 | 38 | 74,6 | 53,7 |
| | 84 | 37 | 78,8 | 61,8 |
| | 86 | 39 | 77,5 | 55,6 |

ULTRASONIC TEST ACCORDING TO EN 10308 Class.3, EN 10228 Class.3, ASTM A388 FBH 5 (diam. 102-250), FBH 8 (diam. 250,01-400).
VISUAL INSPECTION OF SURFACE AND DIMENSIONAL CONTROL ACCORDING TO EN10221 CLASS C AND EN10060: SATISFACTORY.
ANTIMIX TEST BY PORTABLE SPECTROMETRE: SATISFACTORY.
NO WELDING REPAIR ON THE MATERIAL.
FREE FROM RADIOCTIVITY CONTAMINATION.
MARKING: SYMBOL OF THE MANUF. WORK, MATERIAL N. , CAST N., LOT N., RECEIVING AGENT STAMP
COUNTRY OF ORIGIN: ITALY, THE MATERIAL COMPLIES WITH FAR DFARS
252.225-7009 ALT 1.

DATE 04.02.2020 MORABITO ROSA CF(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE -Cogne

REVIEW ☒ WITNESS ☐ ON BEHALF OF A. DELLA PINA DATE 08 NOV 2024

08 NOV. 2024
FRANCO CORBELLINI
QB2
CROSSWIND

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL.+ 39.0165.3021 - FAX + 39.0165.302288
CAP. SOC. 140.000.000 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320078 - R.E.A. n. AO-60474

Company with Management Systems certified according to ISO 9001, IATF 16949, EN 9100 and ISO 14001.





THE PRODUCT SATISFIES CE DIRECTIVES EU: 2015/863 (ROHS3) - 2011/65 (ROHS2) - 2000/53 - 2002/95(RoHS) - 2003/11 - 2005/618 AND PED 2014/68.
ALL THE NORMS MENTIONED ARE INTENDED IN THEIR LAST REVISION AT THE DATE OF ISSUE OF THIS DOCUMENT.
QUALITY SYSTEM CERTIFIED BY I.G.Q ACCORDING TO UNI EN ISO 9001:2015 -IATF 16949:2016 (THE LAST ONE ONLY FOR WIRE ROD AND HOT ROLLED-PEELED-GROUND STAINLESS STEEL BARS).
INSPECTOR'S STAMP LF
THE MATERIAL IS FREE OF ANY MERCURY, MERCURY COMPOUNDS AND OR RADIUM CONTAMINATION AT TIME OF SHIPMENT AND WAS PRODUCED WITHOUT USING OZONE DEPLETING SUBSTANCES OF CLASS I AND II.
RADIOACTIVITY CONTROL PERFORMED WITH A GAMMA SPECTROMETER: ASTM E181.
GAMMA ACTIVITY ON THE PRODUCTS BELOW 0.1 BQ/G ACCORDING TO EU RESOLUTION 2013/59/EURATOM , IAEA RS-G-1.7 AND IAEA SSG-17.

☑ REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLA FINA DATE 08 NOV 2024

08 NOV. 2024
FRANCO CORBELLINI
QSQ
CROSSWIND

DATE 04.02.2020

MORABITO ROSA CF(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

-Cogne

Laboratorio T.O.S.I. s.r.l.
Tecnici Organizzati al Servizio delle Imprese
*Sede Legale e Unità Operativa:* 20025 Legnano (MI) - Via Pisacane, 46
Tel. 0331.549631 / 0331.456119 - Fax 0331.470141 / 0331.451616
Internet: www.laboratoriotosi.it - E-mail: info@labtosi.it - P.IVA e C.F. 12805730152

LAB N° 1504

| RAPPORTO DI PROVA / TEST REPORT | DATA / DATE |
|---|---|
| **20P0699** Rev. **0** | 30/03/20 |

| | | | |
|---|---|---|---|
| CLIENTE / CUSTOMER | **A.S.T. S.p.A.** | | |
| | Via R. Merendi, 40 | 20010 Cornaredo (MI) | Italy |

| | |
|---|---|
| DESCRIZIONE CAMPIONE / SAMPLE DESCRIPTION # | Round bar Ø 160 mm |
| RIFERIMENTI DEL CLIENTE / CUSTOMER REFERENCES # | Order AQ2000449<br>DDT 16/200 of the 02/03/20 |

| RICEVUTO IL / RECEIVED ON | CAMPIONAMENTO / SAMPLING | LUOGO ESECUZIONE PROVE / TESTING PLACE |
|---|---|---|
| 02/03/20 | By customer | Laboratorio T.O.S.I. |

| MATERIALE / MATERIAL # | COLATA / HEAT # |
|---|---|
| ASTM A479 Tp.316/316L | 000082 |

| ID. CLIENTE / CUSTOMER ID # | ID. LABORATORIO / LABORATORY ID. |
|---|---|
| - | **S0650** |

I risultati di prova si riferiscono solo ai campioni sottoposti a prova, come ricevuti. / Test report results relate to the tested specimens only, as received.

Il presente rapporto di prova non può essere riprodotto parzialmente. / The present test report cannot been partially reproduced.

I testimoni di prova sono conservati per 3 mesi, salvo diversa richiesta scritta del cliente. / Copons after test shall be kept for 3 months, unless otherwise written request of the customer.

Ove presente l'incertezza di misura viene espressa come incertezza estesa ottenuta moltiplicando l'incertezza tipo per il fattore di copertura k corrispondente ad un intervallo di fiducia di circa il 95%. Normalmente tale fattore k vale 2, tranne per analisi chimica (k=4,3) e per la determinazione di una seconda fase (k=2,05). / Where present the reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k = 2, which for a normal distribution provides a level of confidence of approximately 95%, except for chemical analysis (k=4,3) and for determination of a second phase (k=2,05).

# Informazioni fornite dal cliente, per le quali il laboratorio declina ogni reponsabilità. / Information provided by the customer, for which the laboratory refuses all responsibility.

| Redattore / Editor | | Responsabile laboratorio / Laboratory manager |
|---|---|---|
| *Lorenzo Rigamonti* | LABORATORIO T.O.S.I. S.R.L. | *Andrea Rossetti* |

| Ispettore esterno / External Inspector | Ispettore esterno / External Inspector | Ispettore esterno / External Inspector |
|---|---|---|
| | | |

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND

☒ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

Laboratorio T.O.S.I. s.r.l.
Tecnici Organizzati al Servizio delle Imprese
*Sede Legale e Unità Operativa:* 20025 Legnano (MI) - Via Pisacane, 46
Tel. 0331.549631 / 0331.456119 - Fax 0331.470141 / 0331.451616
Internet: www.laboratoriotosi.it - E-mail: info@labtosi.it - P.IVA e C.F. 12805730152

LAB N° 1504

TEST REPORT: **20P0699** Rev. **0** LABORATORY ID. **S0650**

PROVA RICHIESTA / TEST REQUIRED:

Prova di trazione Temperatura amb. / tensile test at room temperature

| NORMA DI PROVA / TEST STANDARD | APPARECCHIATURE / APPARATOUS: |
|---|---|
| **ASTM E8/E8M-16a** | Machine **T095**<br>Extensometer **T098**<br>Caliper **T103** |
| DATA PROVA / TEST DATE: 26/03/2020 | |

| Prova n° test n° | Orientamento / orientation | Posizione / location | T °C | Dimensione dimension mm | $S_0$ $mm^2$ | $L_0$ mm | YS 0,2% MPa | TS MPa | E % | R.A. % |
|---|---|---|---|---|---|---|---|---|---|---|
| S0650 | Longitudinal | T/4 | r.t. | Ø 12,49 | 122,5 | 50 | 278 | 593 | 59 | 78 |

Snervamento determinato col metodo offset. Allungamento determinato dopo rottura. Metodo A /
Yield strengh determined by the offset method. Elongation determined after fracture. Method:A.

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND

☒ REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLAPINA DATE 08 NOV 2024

Laboratorio T.O.S.I. s.r.l.
Tecnici Organizzati al Servizio delle Imprese
*Sede Legale e Unità Operativa:* 20025 Legnano (MI) - Via Pisacane, 46
Tel. 0331.549631 / 0331.456119 - Fax 0331.470141 / 0331.451616
Internet: www.laboratoriotosi.it - E-mail: info@labtosi.it - P.IVA e C.F. 12805730152

LAB Nº 1504

**TEST REPORT: 20P0699** Rev. **0** **LABORATORY ID. S0650**

**PROVA RICHIESTA / TEST REQUIRED:**

**Test for detecting susceptibility to intergranular attack in austenitic stainless steel**

| NORMA DI PROVA / TEST STANDARD | APPARECCHIATURE / APPARATOUS: |
|---|---|
| **ASTM A262-15 Pr.E** | Caliper **T100**<br>Machine **T096** |
| DATA PROVA / TEST DATE: 24/03/2020 | |

**DETTAGLI CAMPIONE / SPECIMEN DETAILS:**

| TRATTAMENTO TERMICO / HEAT TREATMENT | POSIZIONE / POSITION: | PREPARAZIONE / PREPARATION: | DIMENSIONI PROVINO / SPECIMEN DIMENSIONS: |
|---|---|---|---|
| Prove eseguite dopo TT di sensibilizzazione / test performed after sensitizing heat treatment (670°C/1h/air) | B.M. | Carte 220 umido / wetamery paper 220 | STANDARD<br>99,39 mm 21,44 mm 5,95 mm |

**PROVA IN SOLUZIONE / TEST IN SOLUTION**

| SOLUZIONE / SOLUTION | TEMPERATURA / TEMPERATURE: | TEMPO PROVA / TEST TIME | INIZIO PROVA / START TEST | FINE PROVA / END TEST |
|---|---|---|---|---|
| 6 % $CuSO_4$ + 16 % $H_2SO_4$ in $H_2O$ | Punto ebollizione / boiling point | 24 h | 24/03/20 | 25/03/20 |

**PROVA DI PIEGA / BEND TEST**

| ORIENTAMENTO / ORIENTATION | Ø | α | RISULTATO / RESULT | ESAME MACROGRAFICO / MACROGRAPHIC EX. |
|---|---|---|---|---|
| - | 6 mm | 180 ° | Passing test specimen | (20x) Satisfactory |

NOTE:

Fine rapporto di prova / End of test report

0 8 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND

☑ REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLA PINA DATE 0 8 NOV 2024

COGNE ACCIAI SPECIALI S.p.a.
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TEL +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 250.000.000 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems
certified according to ISO 9001, ITAF 16949,
EN 9100, ISO 14001 and ISO 45001.

# INSPECTION CERTIFICATE 3.1 (EN 10204:2004)

DOCUMENT NUMBER 2022045248


| | |
|---|---|
| CUSTOMER: | A.S.T. SPA |
| CUSTOMER'S ORDER: | AQ2300423 |
| MANUFACTURER'S WORKS: | AOSTA, VIA PARAVERA 16 - ITALY |
| PRODUCER OF THE DOC: | QUALITY DEPARTMENT |
| MANUFACTURER'S WORKS ORDER NO: | 0001133685 / 000010 |
| MARK OF THE MANUFACTURER: | COGNE |
| DISPATCH NOTE: | 0081535289 / 000010 WEIGHT: 14 KG / 31 LB |
| INTERNAL SPEC: | STOCKBARREW2 TECHNICAL RULE: AD2000-W2 |
| PRODUCT: | TRA COLD DRAWN ROUND BARS TOLERANCE: ISOH9 |
| SURFACE FINISH: | 2H Cold Finished |
| PRODUCT DELIVERY CONDITION: | RP ANNEALED+COLD WORKED |
| PRODUCT DIMENSIONS (mm): | 14,000 ( 0,551 in) LENGTH (mm) 03050 03100 ( 00120 00122 in) |
| GRADE: | AISI 316/316L EN1.4401/4404 INTERNAL GRADE: 316LMQ IMCO |
| IDENTIFICATION HEAT NO: | 272928 IDENTIFICATION LOT NO: 160790 |
| MARKING OF THE PRODUCT: | 1.4404 TEST PIECE N: 079 |

THE PRODUCT IS CONFORMING TO THE CONTRACT AGREEMENT AND TO THE RULE AD2000-MERKBLATT W0/W2.
REFERENCE NORMS: EN 10088-3, EN 10272, ASTM A484, ASTM A276, ASME SA276, ASTM A479, ASME SA479, AMS 5648, AMS 5653, AMS-QQ-S-763.
STEELMAKING EAF + AOD + CONTINUOUS CASTING
SOLUTION TREATED AT 1050°C +-15°C / 1 min x mm / WATER.
RADIOACTIVITY CONTROL PERFORMED WITH A GAMMA SPECTROMETER: ASTM E181.
GAMMA ACTIVITY ON THE PRODUCTS BELOW 0.1 BQ/G ACCORDING TO EU RESOLUTION 2013/59/EURATOM , IAEA RS-G-1.7 AND IAEA SSG-17.
CORROSION TEST ACCORDING TO ASTM A262 PRACTICE E EN ISO 3651-2 PRACTICE A: SATISFACTORY.
HOT ROLLED
REDUCTION RATIO 144,9

CHEMICAL LADLE ANALYSIS ACCORDING TO ASTM A751 - EN ISO 14284
Control lot No. - Weight :020000920197 - 86.055 KG - 189.716 LB

| ELEMENTS | C | Si | Mn | P | S | N | Cr | Mo | Ni | Cu |
|---|---|---|---|---|---|---|---|---|---|---|
| MEASUREMENT UNIT | % | % | % | % | % | % | % | % | % | % |
| OBTAINED | 0,018 | 0,33 | 1,81 | 0,028 | 0,024 | 0,081 | 17,28 | 2,07 | 10,03 | 0,42 |

| ELEMENTS | Co |
|---|---|
| MEASUREMENT UNIT | % |
| OBTAINED | 0,18 |

HARDNESS TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000920699 - 9.752 KG - 21.499 LB
SPECIFICATION ENISO6506 HARDNESS TEST HB TESTING METHOD: 10/3000
OBTAINED 204

A. DELLA PINA DATE 08 NOV 2024 ON BEHALF OF REVIEW WITNESS

DATE 20.07.2022

BARBARA VIETTI MV(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

-Cogne

08 NOV. 2024 FRANCO CORBELLINI CROSSWIND

1724000740-QC-DB-00016_01

COGNE ACCIAI SPECIALI S.p.a.

ITALY - 11100 AOSTA - VIA PARAVERA, 16
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C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.



TENSILE TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000920699 - 9.752 KG - 21.499 LB
SPECIFICATION EN-ISO6892-1 DIRECTION OF THE TEST PIECE: L

| MEASUREMENT UNIT | RM MPA | RP02 MPA | A5 % 5.0 D | Z % | RP1 MPA |
|---|---|---|---|---|---|
| OBTAINED | 692 | 455 | 43,7 | 79,2 | 607 |
| | 695 | 471 | 44,3 | 80,3 | 614 |
| | 692 | 455 | 43,4 | 77,1 | 608 |
| | 705 | 477 | 40,7 | 71,3 | 622 |

EDDY CURRENT INSPECTION OF SURFACE ACCORDING TO EN 10277 Class.3: SATISFACTORY.
DIMENSIONAL CONTROL ACCORDING TO EN 10278 AND ASTM A484: SATISFACTORY.
TENSILE TEST
Control lot No. - Weight :020000920699 - 9.752 KG - 21.499 LB
SPECIFICATION ASTMA370-E8-0.5"SPEC DIRECTION OF THE TEST PIECE: L

| MEASUREMENT UNIT | TS KSI | YS02 KSI | RA % | EL4 % |
|---|---|---|---|---|
| OBTAINED | 101 | 68 | 75,9 | 4,0 D 45,7 |

NO WELDING REPAIR ON THE MATERIAL.
THE MATERIAL IS FREE OF ANY MERCURY, MERCURY COMPOUNDS AND OR RADIUM CONTAMINATION AT TIME OF SHIPMENT AND WAS PRODUCED WITHOUT USING OZONE DEPLETING SUBSTANCES OF CLASS I AND II.
HEAT TREATMENT PERFORMED IN CALIBRATED FURNACES ACCORDING TO INTERNAL PROCEDURE PR-GDQ.ITT COMPLYING WITH API6A Annex M.
VISUAL INSPECTION OF SURFACE AND DIMENSIONAL CONTROL ACCORDING TO EN10221 CLASS C, EN 10060 AND ASTM A484: SATISFACTORY.
MARKING: PRODUCER LOGO, MATERIAL NO, HEAT NO, LOT NR.
ANTIMIX TEST: SATISFACTORY
DOCUMENT ISSUED IN AGREEMENT WITH TUEV BAYERN(11.1972) WAVING OF COUNTERSIGNING (SEE TUEV BAYERN LETTER DATED 17.01.80).
ALL THE NORMS MENTIONED ARE INTENDED IN THEIR LAST REVISION AT THE DATE OF ISSUE OF THIS DOCUMENT.
COUNTRY OF MELTING AND ORIGIN: ITALY, THE MATERIAL COMPLIES WITH FAR DFARS
252.225-7009 ALT 1.
THE ABOVE ARE TRUE AND CORRECT RESULTS OF TESTS ON SAMPLES OF THE MATERIAL. RESULTS ARE CONFORM TO THE SPECIFICATION(S) APPLICABLE AND ARE RECORDED.
THE RECORDING OF FALSE, FICTIOUS OR FRAUDULENT STATEMENTS OR ENTRIES ON THIS DOCUMENT MAY BE PUNISHABLE AS A FELONY UNDER U.S. FEDERAL STATUTES.
INSPECTOR'S STAMP LF
MATERIAL IN COMPLIANCE WITH THE NORSOK M-630 MDS S01
The products delivered are conforming to EN10088-5 and bear the CE marking on the basis of the test results here reported and the continuous surveillance, assessment and approval by MPA NRW
(certificate no. 0432-CPR-00166-04)
Material produced according to the system #Regulation 305/2011/EU of the European Parliament and of the Council of 9 March 2011#

CE 0432

DATE 20.07.2022

BARBARA VIETTI MV(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

-Cogne

LF OF WITNESS
LA PINA DATE 08 NOV 2024

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND

1724000740-QC-DB-00016_01

**AST S.p.A.**
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F +39 02 9362248
W www.astspa.it

**MATERIAL CERTIFICATES INDEX**
**CERTIFICATO DEI MATERIALI**

**No.** 2400593

EN 10204 3.1

**Customer**
ROSETTI MARINO S.P.A.

**P.Order / Project**
1724000740 123A90A Rev. 1

**ITEM Number**
70-120

**Tag**
25-PV-046

**Quantity delivered**
1

**AST Job**
CV2400221

**AST Code**
CV2400221CV8407A001

**Serial Number**
2400593

**Valve Type**
Valvole Regolazione

**Size**
NPS 2" CLASS 300 RF

**Port Size**
1"

| Part Name | Material | Heat No. | Certificate No. | Supplier |
|---|---|---|---|---|
| BODY | ASTM A351 CF3M | H1412 | 2378-21-22 | AMEX ALLOYS PVT. LTD. |
| SEAT RING | ASTM A479 316/316L | 380150 | 2023026120 | COGNE ACCIAI SPECIALI SPA |
| PLUG | F316 + PTFE | 293368 | MEST028009/2024/ | ACCIAIERIE VALBRUNA |
| BONNET | ASTM A479 316/316L | 000082 | 2020005555 | COGNE ACCIAI SPECIALI SPA |
| STEM | ASTM A479 316/316L | 272928 | 2022045248 | COGNE ACCIAI SPECIALI SPA |

08 NOV. 2024
FRANCO CORBELLINI
QBG
CROSSWIND

☑ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

**Remarks** :

**AST Q.C. Department**

**Customer's Inspector**

**Third Party Inspection**

**Date** : 06.11.2024 **Date** : _____ **Date** : _____

# AMEX ALLOYS PRIVATE LIMITED

SF NO.289/2,KUNNATHUR PUDUR (PO),SATHY ROAD,COIMBATORE - 641 107. INDIA.
Phone : +91-422-2654162 | Fax : +91-422-2653121 | E-Mail : sales@amexalloys.com


ISO 9001:2015 CERTIFIED BY: TÜV NORD, GERMANY., CERT.NO.:04 100 047163

## INSPECTION CERTIFICATE EN 10204 - ' Type 3.1 '

| | | | |
|---|---|---|---|
| Customer | : AST APPARECCHI DI SICUR.E TEN | TC No. | : 2378 / 21-22 |
| P.O.Reference | : AQ2101490 REV.01 Dt. 09/08/2021, AQ2101581 REV.02 Dt. 23/09/2021 | TC Date | : 22/10/2021 |
| Specification | : ASTM A351 Gr.CF3M - 18 / ASME II SA351 Gr. CF3M - 21 | Heat No. | : H1412 |
| | | Pouring Date | : 15/09/2021 |
| Casting Processed by | : Induction Melting | Foundry Identification | AX |

## CHEMICAL COMPOSITION

ASTM A751

| Elements | Heat No. | C | Si | Mn | S | P | Cr | Ni | Mo | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Required (%) | Min | -- | -- | -- | -- | -- | 17.000 | 9.000 | 2.000 | | | | | |
| | Max | 0.030 | 1.500 | 1.500 | 0.030 | 0.040 | 21.000 | 13.000 | 3.000 | | | | | |
| Actuals (%) | H1412 | 0.029 | 0.789 | 1.109 | 0.008 | 0.037 | 17.962 | 9.586 | 2.112 | | | | | |

## HEAT TREATMENT

| Type of Heat Treatment | Temperature | Soaking Time | Cooling Medium |
|---|---|---|---|
| SOLUTION ANNEALING | 1090°C | 6 Hrs | WATER |

## MECHANICAL PROPERTIES

(TESTED WITH SEPERATELY CASTED ROUND TEST COUPONS)

| | | ASTM A370 & ISO 6892 - 1 | | | | | | | ISO 148 - 1 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Properties | | Rp 0.2% Y.S Mpa | UTS Mpa | %EL GL 4d | %EL GL 5d | % Reduction Area | Hardness BHN | Bend Test | Impact Test in (Joules) (10mm X 10mm X 55mm) CVN 2mm 45 ° | | | |
| Required | Min | 205 | 485 | 30 | -- | -- | -- | | @ -196°C Min Avg: 40 J | | | |
| | Max | -- | -- | -- | -- | -- | 237 | | 1 | 2 | 3 | Avg. |
| Actual | | 246 | 505 | 61.24 | -- | -- | 154 | | 68 | 94 | 88 | 83.33 |

## ITEM DESCRIPTION

| Sl. No. | Heat No. | PO Pos. No. | Description | Drawing No. / Article No. | Model No. | Quantity (Nos.) | Raw Casting Weight/Pc (Kgs.) |
|---|---|---|---|---|---|---|---|
| 1 | H1412 | 15 | CORPO CV 8400 1.1/2 CL 300 RTJ/600 | M139 R.02 | -- | 1 | 21.600 |
| 2 | H1412 | 1 | CORPO 8400 2 CL 300 RF | 84.50.121 R.2 / M218 R.0 | -- | 2 | 28.900 |

Remarks:
Castings are dimensionally acceptable.
Castings are Pickled and Passivated.
Visual inspection carried out as per MSS SP 55.
Casting Meets the Requirements of NACE MR 0175/ISO 15156/MR 0103.
LPI Conforms to ASME B16.34 APP - III.
Castings Meets the Requirements of customer TDC:FOR001 Rev 15.
Comply with the requirement of Pressure Equipment Directive (2014/68/EU)Annex . I, Section 4.3 (PED).
Radioactivity level measured, delivered materials are free of radioactive contamination.

08 NOV. 2024 FRANCO CORBELLINI QBD

☒ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

We here by certify that the items mentioned above have been tested, inspected and found to be in accordance with customer's drawing, specification, purchase order and satisfy the requirements of **ASTM A351 Gr.CF3M - 18 / ASME II SA351 Gr. CF3M - 21.**

**For AMEX ALLOYS PRIVATE LIMITED**

M.JANAKARAYHINAM
Asst.MANAGER - QA

AX 01

K.BOMMAYAN
Work Expert

# AMEX ALLOYS PRIVATE LIMITED

SF NO.289/2,KUNNATHUR PUDUR (PO),SATHY ROAD,COIMBATORE - 641 107. INDIA.

Phone : +91-422-2654162 | Fax : +91-422-2653121 | E-Mail : sales@amexalloys.com


## LIQUID PENETRANT INSPECTION REPORT

**Customer: AST APPARECCHI DI SICUR.E TEN**

| | | | |
|---|---|---|---|
| Report No. | : 980 / 21-22 | Date | : 19/11/2021 |
| Procedure Ref. | : ASTM E165 | Written Procedure Ref. | : TM-04 Rev.7 |
| Acceptance Standard Ref. | : ASME B16.34 APPENDIX-III | Stage of Test | : AFTER HEAT TREATMENT |
| Cleaner Batch No. | : 2002 SEP -19-MR CHEMIE-MR-85 | Surface Condition | : MACHINED & UNMACHINED |
| Penetrant Batch No. | : 67/2006 AUG-21-MR CHEMIE-MR-67 | Test Method | : VISIBLE |
| Developer Batch No. | : 2004 JULY-21-MR CHEMIE-MR-70 | Type of Cleaner | : SOLVENT |
| Test Temperature | : 30°C | Type of Penetrant | : WATER WASHABLE |
| Light Intensity | : 1200 Lux | Type of Developer | : WET NON - AQUEOUS |
| Operator Name(ID) | : K.RAJASEKAR(AX 8)SNT TC -1A,PT Level-1 | Dwell Time | : 10 Minutes |

| Sl. No. | PO Number & Date | Description | Drawing No. / Part No. | Grade | Heat No. | Quantity | DPT No. |
|---|---|---|---|---|---|---|---|
| 23 | AQ2101568 Dt. 06/08/2021 | PORTAOTTURATORE "T" SML | 76DHT055 R.0 / M772 R.0 | CF8M | 36489 | 1 | PT11 |
| 24 | AQ2101581 REV.02 Dt. 23/09/2021 | CORPO 8400 2 CL 300 RF | 84.50.121 R.2 / M218 R.0 | CF3M | H1412 | 1 | PT2 |
| 25 | AQ2101581 REV.02 Dt. 23/09/2021 | CORPO 8400 2 CL 300 RF | 84.50.121 R.2 / M218 R.0 | CF3M | H1412 | 1 | PT3 |
| 26 | AQ2101581 REV.02 Dt. 23/09/2021 | BOCCAGLO SMU 6 CL 150/600 RF AGROSSEATO SEMPLICE | 70R008 R.0 / M542 R.1 | CF8M | H1455 | 1 | PT4 |
| 27 | AQ2101581 REV.02 Dt. 23/09/2021 | BOCCAGLO SMU 6 CL 150/600 RF AGROSSEATO SEMPLICE | 70R008 R.0 / M542 R.1 | CF8M | H1455 | 1 | PT5 |
| 28 | AQ2101581 REV.02 Dt. 23/09/2021 | BOCCAGLO SMU 6 CL 150/600 RF AGROSSEATO SEMPLICE | 70R008 R.0 / M542 R.1 | CF8M | H1455 | 1 | PT6 |
| 29 | AQ2101581 REV.02 Dt. 23/09/2021 | BOCCAGLIO SMU 8 CL 150/300 RF SGROS.SEMPLIC.(STAMICARBON) | 70T008 R.0 / M544 R.2 | CF8M | 36501 | 1 | PT1 |
| 30 | AQ2101581 REV.02 Dt. 23/09/2021 | BOCCAGLIO SMU 8 CL 150/300 RF SGROS.SEMPLIC.(STAMICARBON) | 70T008 R.0 / M544 R.2 | CF8M | H1455 | 1 | PT1 |
| 31 | AQ2101581 REV.02 Dt. 23/09/2021 | BOCCAGLIO SMU 8 CL 150/300 RF SGROS.SEMPLIC.(STAMICARBON) | 70T008 R.0 / M544 R.2 | CF8M | H1455 | 1 | PT2 |
| 32 | AQ2101581 REV.02 Dt. 23/09/2021 | BOCCAGLIO SMU 8 CL 150/300 RF SGROS.SEMPLIC.(STAMICARBON) | 70T008 R.0 / M544 R.2 | CF8M | H1455 | 1 | PT3 |

☒ REVIEW ☐ WITNESS

ON BEHALF OF RINA

A. DELLA PINA DATE 08 NOV 2024

AREA COVERAGE : 100% SURFACE

OBSERVATION : CONFORMS TO ASME B16.34 APPENDIX-III

RESULT : ACCEPTABLE

**REVIEWED & APPROVED BY**

**R.S.MUTHIYAALU SAMY (AX 1)**
**EN ISO 9712 / ASNT Level - 2**

**CUSTOMER / EXTERNAL INSPECTION AGENCY**

FRANCO CORBELLINI
08 NOV. 2024
CROSSWIND

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL. +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 250.000.000 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.

# INSPECTION CERTIFICATE 3.1 (EN 10204:2004)

DOCUMENT NUMBER 2023026120



| | | | |
|---|---|---|---|
| CUSTOMER: | A.S.T. SPA | | |
| CUSTOMER'S ORDER: | AQ2400201 | | |
| MANUFACTURER'S WORKS: | AOSTA, VIA PARAVERA 16 - ITALY | | |
| PRODUCER OF THE DOC: | QUALITY DEPARTMENT | | |
| MANUFACTURER'S WORKS ORDER NO: | 0001138630 / 000050 | | |
| MARK OF THE MANUFACTURER: | **COGNE** | | |
| DISPATCH NOTE: | 0081589667 / 000050 WEIGHT: 644 KG / 1420 LB | | |
| INTERNAL SPEC: | STOCKBARREW2 | TECHNICAL RULE: | AD2000 |
| PRODUCT: | PEL PEELED ROUND BARS TOLERANCE: ISOK11 | | |
| SURFACE FINISH: | 2B Cold Finished | | |
| PRODUCT DELIVERY CONDITION: | RS SOLUTION ANNEALED | | |
| PRODUCT DIMENSIONS (mm): | 75,000 ( 2,953 in) | LENGTH (mm) | 04000 06200 ( 00157 00244 in) |
| GRADE: | 316L-S31600/31603-1.4404/4401 | INTERNAL GRADE: | F316L IMCO |
| IDENTIFICATION HEAT NO: | 380150 | IDENTIFICATION LOT NO: | 725570 |
| MARKING OF THE PRODUCT: | 1.4404 | TEST PIECE N: | 557 |

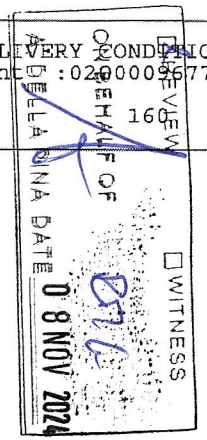
REFERENCE NORMS: EN 10088-3 2014, EN 10272 2016, ASTM A276/A276M-17, ASTM A479/A479M-21, ASTM A193-20 B8MCLASSE 1D, ASME SA276/SA276M-17,ASME SA479/SA479M-21, AMS 5653J, AMS 5648N, ISO15156-3/NACE MR0175 2015, NACE MR0103/ISO 17945, NORSOK M630 MDSS01 REV5.
REFERENCE NORMS FOR CHEMICAL COMPOSITION AND MECHANICAL PROPERTIES: ASTM A182-22A, ASME SA182-22A.
REFERENCE NORMS ONLY FOR CHEMICAL COMPOSITION: EN 10222-5 2017,ASTM A403-22b, ASTM A484-22, ASTM A314-19, AMS-QQ-S-763D.
ASME SECT.II PART A EDITION 2015-2017-2019-2021
AISI 316/316L - UNS S31600/S31603 - 1.4404/1.4401
THE PRODUCT IS CONFORMING TO THE CONTRACT AGREEMENT AND TO THE RULE AD2000-MERKBLATT W0/W2.
STEELMAKING EAF + AOD + CONTINUOUS CASTING
ASTM A484 DOES NOT APPLY FOR SIZE AND LENGTH TOLERANCES.
REFERENCE FOR APPLICABLE ASME STANDARD: SECTION II PART A ED. 2015-2017-2019-2021
HOT ROLLED
REDUCTION RATIO 5,2

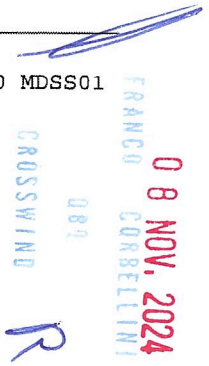
CHEMICAL LADLE ANALYSIS ACCORDING TO ASTM A751 - EN ISO 14284
Control lot No. - Weight :020000964940 - 82.913 KG - 182.789 LB

| ELEMENTS | C | Si | Mn | P | S | N | Cr | Mo | Ni | Cu |
|---|---|---|---|---|---|---|---|---|---|---|
| MEASUREMENT UNIT | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w |
| OBTAINED | 0,016 | 0,37 | 1,91 | 0,026 | 0,024 | 0,078 | 16,79 | 2,06 | 10,06 | 0,47 |

| ELEMENTS | Co |
|---|---|
| MEASUREMENT UNIT | % w/w |
| OBTAINED | 0,15 |

HARDNESS TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000967750 - 7.000 KG - 15.432 LB
SPECIFICATION ENISO6506 HARDNESS TEST HB TESTING METHOD: 10/3000
OBTAINED 160




DATE 25.05.2023

MORABITO ROSA CF(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE -Cogne

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 250.000.000 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.



IMPACT TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000967750 - 7.000 KG - 15.432 LB
SPECIFICATION EN ISO 148-1-KV2
TYPE OF TEST PIECE KV DIRECTION OF THE TEST PIECE: L
TEST TEMPERATURE °C 20
MEASUREMENT UNIT J

| OBTAINED | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 440 | 430 | 436 | 438 | 434 | 434 | 436 | 432 | 440 | 437 |
| | 435 | 439 | | | | | | | | |

TENSILE TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000967750 - 7.000 KG - 15.432 LB
SPECIFICATION EN-ISO6892-1 DIRECTION OF THE TEST PIECE: L

| MEASUREMENT UNIT | RM MPA | RP02 MPA | A5 % | Z % | RP1 NMM |
|---|---|---|---|---|---|
| OBTAINED | | | 5.0 D | | |
| | 608 | 285 | 51,4 | 72,3 | 327 |
| | 606 | 277 | 51,6 | 72,9 | 320 |
| | 603 | 275 | 52,8 | 79,5 | 316 |
| | 604 | 264 | 54,2 | 75,4 | 312 |

GRAIN SIZE
Control lot No. - Weight :020000967750 - 7.000 KG - 15.432 LB
SPECIFICATION ASTME112 --
OBTAINED 5

MATERIAL IN COMPLIANCE WITH THE NORSOK M-630 MDS S01
IMPACT TEST
Control lot No. - Weight :020000967750 - 7.000 KG - 15.432 LB
SPECIFICATION EN ISO 148-1
TYPE OF TEST PIECE KV DIRECTION OF THE TEST PIECE: L
TEST TEMPERATURE °C 196-
MEASUREMENT UNIT J

| OBTAINED | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 191 | 198 | 180 | 200 | 193 | 181 | 176 | 189 | 175 | 174 |
| | 195 | 175 | | | | | | | | |

TENSILE TEST
Control lot No. - Weight :020000967750 - 7.000 KG - 15.432 LB
SPECIFICATION ASTMA370-E8-0.5"SPEC DIRECTION OF THE TEST PIECE: L

| MEASUREMENT UNIT | RMB KSI | RP02B KSI | ZB % | AL2B % |
|---|---|---|---|---|
| OBTAINED | | | | 4,0 D |
| | 87 | 40 | 72,8 | 60,2 |
| | 88 | 39 | 72,5 | 54,7 |
| | 88 | 38 | 78,5 | 54,6 |
| | 88 | 40 | 76,5 | 54,5 |

DATE 25.05.2023 MORABITO ROSA CF(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE -Cogne

REVIEW ☐ WITNESS
ON BEHALF OF A. DELLA PINA DATED 08 NOV 2024

08 NOV. 2024
FRANCO CORRELLINI
CROSSWIND

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 250.000.000 EUR INT. VERS.
C.F. 02187360067
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.



COUNTRY OF MELTING AND ORIGIN: ITALY, THE MATERIAL COMPLIES WITH FAR DFARS 252.225-7009 ALT 1.
The products delivered are conforming to EN10088-5 and bear the CE marking on the basis of the test results here reported and the continuous surveillance, assessment and approval by MPA NRW (certificate no. 0432-CPR-00166-01)
Material produced according to the system #Regulation 305/2011/EU of the European Parliament and of the Council of 9 March 2011#
DOCUMENT ISSUED IN AGREEMENT WITH TUEV BAYERN(11.1972) WAVING OF COUNTERSIGNING (SEE TUEV BAYERN LETTER DATED 17.01.80).
MARKING: SYMBOL OF THE MANUF. WORK, MATERIAL N. , CAST N., LOT N., RECEIVING AGENT STAMP
CORROSION TEST ACCORDING TO ASTM A262 PRACTICE E EN ISO 3651-2 PRACTICE A: SATISFACTORY.
ANTIMIXING TEST BY PORTABLE SPECTROMETRE: CONFORMING
EDDY CURRENT INSPECTION OF SURFACE ACCORDING TO EN 10277 CLASS 4.
DIMENSIONAL CONTROL ACCORDING TO EN 10278: SATISFACTORY.
NO WELDING REPAIR ON THE MATERIAL.
ULTRASONIC TEST ACCORDING TO EN 10308 Class.3: SATISFACTORY
QUALITY SYSTEM CERTIFIED BY KIWA CERMET ACCORDING TO UNI EN ISO 9001:2015 -IATF 16949:2016 (THE LAST ONE ONLY FOR WIRE ROD AND HOT ROLLED-PEELED-GROUND STAINLESS STEEL BARS).
INSPECTOR'S STAMP LF
MATERIAL CONFORM TO: 2015/863/UE (RoHS3) - 2011/65/UE (RoHS2) - 2000/53/UE - 2002/95/UE (RoHS) - 2003/11/UE - 2005/618/UE - PED 2014/68/UE e PE(S)R 2016/1105
THE MATERIAL IS FREE OF ANY MERCURY, MERCURY COMPOUNDS AND OR RADIUM CONTAMINATION AT TIME OF SHIPMENT AND WAS PRODUCED WITHOUT USING OZONE DEPLETING SUBSTANCES OF CLASS I AND II.
RADIOACTIVITY CONTROL PERFORMED WITH A GAMMA SPECTROMETER: ASTM E181.
GAMMA ACTIVITY ON THE PRODUCTS BELOW 0.1 BQ/G ACCORDING TO EU RESOLUTION 2013/59/EURATOM , IAEA RS-G-1.7 AND IAEA SSG-17.

CE 0432

REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLA RINA DATE 08 NOV 2023

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND

DATE 25.05.2023

MORABITO ROSA CF(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

-Cogne

1724000740-QC-DB-00016_01

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a : EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1
Nach/According to/Selon

Certificato nr. MEST028009 / 2024 /
Prüfung/Test/Essai

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura : Laminato - Solubilizzato FINITO A FREDDO
Lieferzustand / Delivery state / Etat de livraison

Produttore :
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Ordine nr: ORD N AQ2400369
Bestell / Your order / Commande

Tipo di Elaborazione: E+AOD
Erschmelzungsart / Melting process / Mode d'elaboration

Marchi di Fabbrica:
Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice
AV

Conferma ordine nr: MI24001817
Werks/Our Order/Ref nr.

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Punzone del Collaudatore:
Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur
MR

Avviso di Spedizione: A-MI24001447
Lieferanzeige/Packing list/B.L.

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung / Brand / Nuance

Punzonatura: 1.4401/1.4404
Kennzeichnung / Marking / Marquage

**SPECIFICHE :**
Anforderungen / Requirements / Exigences

VAL STOCK W2 A/1 1.4404/316L A,CF
AD 2000-M. W 2 2022 1.4401 A,CF (0)
AD 2000-M. W 2 2022 1.4404 A,CF (1)
AISI . 316/316L
AMS-QQ-S-763 D 316/316L A,CF
ASME SA182 2023 S31600/03 A (2)
ASME SA276 2023 S31600/03 A,CF (3)
ASME SA479 2023 S31600/03 A (4)
ASTM A182 2023 S31600/03 A (5)
ASTM A262 PR. E 2015 316/316L (6)
ASTM A276 2023 S31600/03 A,CF
ASTM A370 2022 .
ASTM A479 2023A S31600/03 A
ASTM E10 2023 .
ASTM E8 2022 .
EN 10088 PART 3 2014 1.4401 A,CF
EN 10088 PART 3 2014 1.4404 A,CF
EN 10272 2016. 1.4401 A,CF
EN 10272 2016. 1.4404 A,CF
ISO 148-1 2016 .
ISO 3651-2 98 METHOD A T1
ISO 6506-1 2014 .
ISO 6892-1 2019 .
NACE MR0103 2015 S31600/03 A (7)
NACE MR0175 4 S31600/03 A (8)
QQ-S-763 F 316/316L A,CF
ACH CO . .
KV L -196C . ISO 148-1

Note:
Anmerkungen / Notes / Notes

(0)AD 2000-MERKBLATT W 2 edition 03.2022 AD 2000-MERKBLATT W 10 edition 06.2022
(1)AD 2000-MERKBLATT W 2 edition 03.2022 AD 2000-MERKBLATT W 10 edition 06.2022

(2)Section II Part A 2023 EDITION For products machined directly from bar refer to ASME SA479.
(3)Section II Part A 2023 EDITION
(4)Section II Part A 2023 EDITION
(5)For products machined directly from bar refer also to ASTM A479.
(6)Reapproved 2021

08 NOV. 2024
FRANCO CORBELLINI
CROSSWIND

(7)ANSI/NACE MR0103/ISO 17945 November 23, 2015
(8)ANSI/NACE MR0175/ISO 15156-3:2020 Fourth edition, approved 21 Sep 2022.

| Pos. nr. Pos. nr. Item nr. Nr. de poste | Oggetto Gegenstand Product description Designation du produit | Tolleranza: k12 Toleranz/Allowance/Tolerance Dimensioni - mm Abmessungen Dimension Dimension | Lunghezza - mm Länge Length Longueur | Colata Schmelze Heat Coulée | Pezzi Stückzahl Pieces Pieces | Peso - KG Gewicht Weight Poids | Lotto nr. Los nr Lot nr Lot nr. |
|---|---|---|---|---|---|---|---|
| 0030 | Tondo | 30,000 | 6000/ 6060 | 293368 | | 68,0 | 310402650 |

☒ REVIEW ☐ WITNESS
ON BEHALF OF RTC
A. DELLA DINA DATE 08 NOV 2024

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| Vicenza, 05/03/2024 | Direzione Qualità | Direzione Prodotto | Pagina |
|---|---|---|---|
| VCQ012 - MEST028009 | Qualitätsmanagement/Quality Management/Gestion Qualité | Produktmanagement/Product Management/Direction Produit | 1 di 4 |
| | R.BERTELLI | P.MESSORI | |

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a / Nach/According to/Selon: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. / Prüfung/Test/Essai: MEST028009 / 2024 /

Cliente / Besteller/Purchaser/Client:
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Ordine nr. / Bestell / Your order / Commande: ORD N AQ2400369

Conferma ordine nr. / Werks/Our Order/Ref nr.: MI24001817

Avviso di Spedizione / Lieferanzeige/Packing list/B.L.: A-MI24001447

Stato di fornitura / Lieferzustand / Delivery state / Etat de livraison: Laminato - Solubilizzato FINITO A FREDDO

Tipo di Elaborazione / Erschmelzungsart / Melting process / Mode d'elaboration: E+AOD

Qualità / Werkstoff/Grade/Nuance: 1.4401/1.4404/316/316L

Marca / Markenbezeichnung / Brand / Nuance: MVAPML ( MAXIVAL )

Produttore / Hersteller/Item/Usine productrice:
**ACCIAIERIE VALBRUNA S.P.A.**

Marchi di Fabbrica / Zeichen des Lieferwerkes / Trade marks / Siglee de l'usine productrice: AV

Punzone del Collaudatore / Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur: MR

Punzonatura / Kennzeichnung / Marking / Marquage: 1.4401/1.4404

### TEST ALLO STATO DI FORNITURA

Test on delivery condition / Prüefung auf lieferbereitem produkt / test a l'etat de fourniture / Prueba sobre el material asi come entregado

1) L=longitudinale/längs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais. mm | °C | | Posiz Saggio Probenlage Location Emplacement % | Snervamento Streckgrenze Yield Stress Limite elastique Rp 0,2% N/mm2 | Snervamento Streckgrenze Yield Stress Limite elastique Rp 1% N/mm2 | Resistenza Zugfestigkeit Tensile strength Resistance à traction Rm N/mm2 | Allungamento Bruchdehnung Elongation Allongement A5 % | | Strizione Einschnürung Reduction of area Striction Z % | | Resilienza Kerbschlagarbeit Impact Value Resilience | | | Durezza Härte Hardness Durete HB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti / Anforderungen/Required values / Valeurs demandées | | min / max | | | 200 | 235 | 500 / 900 | 20 | - | - | - | - | | | - | | 315 |
| A | 10 | 20 | L | | 458 | 535 | 678 | 44 | | 67 | | | | | 223 | | |
| G | 10 | 20 | L | | 457 | 532 | 682 | 45 | | 66 | | | | | 221 | | |

### TEST ALLO STATO DI FORNITURA

Test on delivery condition / Prüefung auf lieferbereitem produkt / Test a l'etat de fourniture / Prueba sobre el material asi come entregado

| TEST | | min | max | |
|---|---|---|---|---|
| A | Dimensioni grano x ASTM E112 | | | 4 |

### Charpy per ISO 148-1

1) L=longitudinale/längs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais. mm | °C | | Posiz Saggio Probenlage Location Emplacement | Resilienza Kerbschlagarbeit Impact Value Resilience KV2 J | | | Espansione laterale Lateral Expansion Lateral ex mm | | | Shear Shear % Shear % | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti / Anforderungen/Required values / Valeurs demandées | | min / max | | | - | - | - | - | - | - | - | - | - |
| B | 10X10 | -196 | L | | 158 | 152 | 151 | 1,700 | 1,852 | 1,705 | 59 | 61 | 57 |

### Test allo stato di fornitura per ASTM A370

1) L=longitudinale/längs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais. mm | °C | | Posiz Saggio Probenlage Location Emplacement % | Snervamento Streckgrenze Yield Stress Limite elastique Rp 0,2% N/mm2 | Snervamento Streckgrenze Yield Stress Limite elastique | Resistenza Zugfestigkeit Tensile strength Resistance à traction Rm N/mm2 | Allungamento Bruchdehnung Elongation Allongement E 4d % | | Strizione Einschnürung Reduction of area Striction RA % | | Resilienza Kerbschlagarbeit Impact Value Resilience | | | Durezza Härte Hardness Durete HB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti / Anforderungen/Required values / Valeurs demandées | | min / max | | | 210 | - | 517 | - | 30 | - | 50 | - | | | - | | 235 |
| C | 12,5 | 20 | L | | 453 | | 671 | | 47 | | 68 | | | | 222 | | |

0 8 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND

REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLA PINA DATE 0 8 NOV 2024

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| Vicenza, 05/03/2024<br>VCQ012 - MEST028009 | Direzione Qualità<br>Qualitätsmanagement/Quality Management/Gestion Qualité<br>R.BERTELLI | Direzione Prodotto<br>Produktmanagement/Product Management/Direction Produit<br>P.MESSORI | Pagina 2 di 4 |
|---|---|---|---|

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1
Nach/According to/Selon

Certificato nr. MEST028009 / 2024 /
Prüfung/Test/Essai

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura: Laminato - Solubilizzato FINITO A FREDDO
Lieferzustand / Delivery state / Etat de livraison

Produttore:
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Tipo di Elaborazione: E+AOD
Erschmelzungsart / Melting process / Mode d'elaboration

Marchi di Fabbrica:
Zeichen des Liefernwerkes / Trade marks / Sigles de l'usine productrice

Ordine nr: ORD N AQ2400369
Bestell / Your order / Commande

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Punzone del Collaudatore:
Stempel des Werksachverständiges / Inspector s stamp/Poinçon de l'assayeur

Conferma ordine nr: MI24001817
Werks/Our Order/Ref nr

Avviso di Spedizione: A-MI24001447
Lieferanzeige/Packing list/B.L.

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung / Brand / Nuance

Punzonatura: 1.4401/1.4404
Kennzeichnung / Marking / Marquage

### Charpy per ISO 148-1

1) L=longitudinale/lengs, T=trasversale/quer, O=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg diam Spess / Breite Diam Dicke / Width Diam Thickness / Larg diam spais mm | °C | Posiz Saggio Probenlage Location Emplacement | Resilienza Kerbschlagarbeit Impact Value Resilience KV2 | | | Espansione laterale Lateral Expansion | | | Shear Shear | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti Anforderungen/Required values / Valeurs demandées | | min max | | 100 | 100 | 100 | - | - | - | - | - | - |
| F | 10X10 | 20 | L | 199 | 194 | 193 | | | | | | |
| H | 10X10 | 20 | L | 210 | 196 | 198 | | | | | | |

Tensile testing according to ISO 6892-1
Impact testing according to ISO 148-1
Mechanical properties according to ASTM A370.
Brinnell hardness according to ASTM E10
Tensile testing according to ASTM E8
Brinnell hardness according to ISO 6506-1

08 NOV. 2024
FRANCO CORBELLINI
080
CROSSWIND

☐ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

### Analisi chimica

Chemische Zusammensetzung/Chemical Analysis/Analyse chimique

| Colata /Heat Schmelze/Coulée | C % | Si % | Mn % | Cr % | Mo % | Cu % | Ni % | Co % | P % | S % | N % | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | min - | - | - | 16,50 | 2,00 | - | 10,00 | - | - | - | - | - | - | - | - |
| | max 0,030 | 1,00 | 2,00 | 18,00 | 2,50 | 1,00 | 13,00 | - | 0,045 | 0,030 | 0,100 | - | - | - | - |
| 293368 | 0,010 | 0,56 | 1,52 | 16,68 | 2,04 | 0,57 | 10,00 | 0,156 | 0,032 | 0,027 | 0,058 | | | | |

### Corrosion test in 16% sulfuric acid and copper sulfate solutions

Test standard: UNI EN ISO 3651-2 Method A

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitized T1 | 20 | boil | 90 | 5 | Absence of cracks | SATISFACTORY |

### Corrosion test in 16% sulfuric acid and copper sulfate solutions

Test standard: ASTM A262-Practice E

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitization | 15 | boil | 180 | 5 | Absence of cracks | SATISFACTORY |

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a / Nach/According to/Selon: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. / Prüfung/Test/Essai: MEST028009 / 2024 /

Cliente / Besteller/Purchaser/Client:
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Ordine nr: ORD N AQ2400369
Bestell / Your order / Commande

Conferma ordine nr: MI24001817
Werks/Our Order/Ref nr

Avviso di Spedizione: A-MI24001447
Lieferanzeige/Packing list/B L

Stato di fornitura: Laminato - Solubilizzato FINITO A FREDDO
Lieferzustand / Delivery state / Etat de livraison

Tipo di Elaborazione: E+AOD
Erschmelzungsart / Melting process / Mode d'elaboration

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung / Brand / Nuance

Produttore:
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Marchi di Fabbrica: AV
Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice

Punzone del Collaudatore: MR
Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur

Punzonatura: 1.4401/1.4404
Kennzeichnung / Marking / Marquage

Reduction ratio = 42,9 : 1
Solution annealed 1040°C for 160'(total time)/water cooled.
SURFACE QUALITY COMPLIANT TO EN 10088-3 TAB.1 COND. 2H equivalent to EN 10277-1 Cl.3
"Issued in agreement with TÜV SÜD Industrie Service GMBH
(07/1972)"
"Qs approved according to PED, Annex I, Para. 4.3 by
Notified Body 0036"
"(Certification no. DGR-0036-QS-W 23/2002/MUC)"

Sono state soddisfatte tutte le condizioni richieste / Die gestellen Anforderungen sind it. Anlage erfüllt / The material has been furnished in accordance with the requirements / Le material à été trouvé conforme aux exigences

Controllo antimescolanza con tecnica XRF/OES portatile : OK / Verwechslungprüfung durch XRF/OES Gerat geführt : OK / Antimixing testing performed with XRF/OES portable : OK / Contrôle antimélange avt technique XRF/OES portable : OK

Controllo visivo e dimensionale: soddisfa le esigenze / Besichtigung und Abmessung ohne Beanstandung / Visual inspection and dimensional checks satisfactory / Contrôle visuel et dimensions satisfaisant

Melted, poured and manufactured in Italy  No welding or weld repair  Material free from Mercury contamination

We declare that the finished product is checked for radioactive contamination by the portal system when it leaves the production plant.

The Quality Management System is also Certified according to Pressure Equipment Directive 2014/68/EU Annex 1,chapt.4.3 by TÜV and LLOYD'S
The Quality Management System is also Certified according to PER 2016/1105, Schedule 2, Part 4, Para 31 (8) by Competent Body TÜV SUD BABT Unlimited.
Any act of tampering, modification, alteration, counterfeiting and/or falsification and/or any other action which modifies the contents of this test certificate shall constitute a violation of applicable civil and criminal laws. Acciaierie Valbruna shall protect its rights and interests before any competent court, authority and jurisdiction.
Maxival and/or Valplus grades/products are manufactured with ladle techniques to control composition, distribution, size and shape of non-metallic inclusions for improved machinability.
The supplied product conforms to requirements expressly requested by the purchaser and conforms to requirements specified by certified norms and standards. Should the product be used for more severe, critical and/ or in any case different applications than those the material is generally intended for, any different and/or supplementary requirements shall be specifically demanded, at least, upon order of the Product by the Purchaser. Acciaierie Valbruna SpA shall not be responsible for any improper use of the Products.

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND

☑ REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLA PINA DATE 08 NOV 2024

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| | | | |
|---|---|---|---|
| **Vicenza, 05/03/2024**<br>VCQ012 - MEST028009 | **Direzione Qualità**<br>Qualitätsmanagement/Quality Management/Gestion Qualité<br>**R.BERTELLI** | **Direzione Prodotto**<br>Produktmanagement/Product Management/Direction Produit<br>**P.MESSORI** | Pagina 4 di 4 |

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL. + 39.0165.3021 - FAX + 39.0165.302296
CAP. SOC. 140.000.000 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, IATF 16949, EN 9100 and ISO 14001.

# INSPECTION CERTIFICATE 3.1 (EN 10204:2004)

DOCUMENT NUMBER 2020005555



| | | | |
|---|---|---|---|
| CUSTOMER: | A.S.T. SPA | | |
| CUSTOMER'S ORDER: | AQ2000377 | | |
| MANUFACTURER'S WORKS: | AOSTA, VIA PARAVERA 16 - ITALY | | |
| PRODUCER OF THE DOC: | QUALITY DEPARTMENT | | |
| MANUFACTURER'S WORKS ORDER NO: 1116455 /10 | MARK OF THE MANUFACTURER: COGNE | | |
| DISPATCH NOTE: | 81329230 /10 WEIGHT: 900 KG | | |
| THE CERTIFIED PRODUCTS ARE COMPLYING TO THE PURCHASE ORDER, EXCEPT FOR EXEMPTIONS AGREED WITH THE CUSTOMER, IF ANY. | | | |
| INTERNAL SPEC: | AD2000MERKBLATTW10 | TECHNICAL RULE: | AD2000 |
| PRODUCT: | 2290 SPE ROUGHPEELED | ROUND BARS TOLERANCE: | + 1,500 - 0,0000 |
| SURFACE FINISH: | 1X Hot Finished | | |
| PRODUCT DELIVERY CONDITION: | RS SOLUTION ANNEALED | | |
| PRODUCT DIMENSIONS (mm): | 160,000 | LENGTH (mm) | 04000 /06000 |
| GRADE: | AISI 316/316L EN1.4401/4404 | INTERNAL GRADE: | F316L5 IMCO |
| IDENTIFICATION HEAT NO: | 000082 | IDENTIFICATION LOT NO: | 828080 |
| MARKING OF THE PRODUCT: | 1.4404 | TEST PIECE N: | 808 |

THE MATERIAL IS PRODUCED ACCORDING TO SPECIFICATION AD2000-MERKBLATT W2/W10
DOCUMENT ISSUED IN AGREEMENT WITH TUEV BAYERN(11.1972) WAVING OF COUNTERSIGNING (SEE TUEV BAYERN LETTER DATED 17.01.80).
REFERENCE NORMS:EN 10088-3, EN 10272, ASTM A276/ASME
SA276, ASTM A479/ASME SA479, ASTMA193 B8M CLASSE 1D,
ISO15156-3/NACE MR0175, NACE MR0103.
REFERENCE NORMS FOR CHEMICAL COMPOSITION AND MECANICHAL PROPERTIES: ASTM A182/ASME SA182
REFERENCE NORMS FOR CHEMICAL COMPOSITION ONLY: EN 10222-5, ASTM A484, ASTM A403, ASTM A314.
HOT ROLLED
REDUCTION RATIO 4,2

CHEMICAL LADLE ANALYSIS ACCORDING TO ASTM A751 - EN ISO 14284
Control lot No. - Weight :020000822939 - 84.048 KG

| ELEMENTS | C | Si | Mn | P | S | N | Cr | Mo | Ni | Cu |
|---|---|---|---|---|---|---|---|---|---|---|
| OBTAINED | 0,021 | 0,39 | 1,31 | 0,026 | 0,030 | 0,087 | 16,76 | 2,05 | 10,18 | 0,40 |
| ELEMENTS | Co | | | | | | | | | |
| OBTAINED | 0,14 | | | | | | | | | |

HARDNESS TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000823509 - 23.563 KG
SPECIFICATION ENISO6506 HARDNESS TEST HB TESTING METHOD: 10/3000
OBTAINED 175

IMPACT TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000823509 - 23.563 KG
SPECIFICATION EN ISO 148-1-KV2 DIRECTION OF THE TEST PIECE: L
TYPE OF TEST PIECE KV
TEST TEMPERATURE °C 20
MEASUREMENT UNIT J

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| OBTAINED | 431 | 437 | 439 | 433 | 433 | 436 | 434 | 431 | 439 | 439 |
| | 430 | 433 | | | | | | | | |

DATE 04.02.2020 MORABITO ROSA CF(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE -Cogne

1724000740-QC-DB-00016_01

WITNESS
REVIEW
ON BEHALF OF
A. DELLA PINA DATE 08 NOV 2024
08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL.+ 39.0165.3021 - FAX + 39.0165.302296
CAP. SOC. 140.000.000 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320078 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, IATF 16949, EN 9100 and ISO 14001.

INSPECTION CERTIFICATE 3.1 (EN 10204:2004)
DOCUMENT NUMBER 2020005555


WITNESS
REVIEW
ON BEHALF OF
A. BELLAPINA DATE 08 NOV. 2024



TENSILE TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000823509 - 23.563 KG
SPECIFICATION EN-ISO6892-1 DIRECTION OF THE TEST PIECE: L

| | RM | RP02 | A5 | Z | RP1 |
|---|---|---|---|---|---|
| MEASUREMENT UNIT | MPA | MPA | % 5.0 D | % | MPA |
| OBTAINED | 598 | 262 | 55,5 | 78,2 | 307 |
| | 605 | 272 | 55,8 | 80,1 | 301 |
| | 597 | 266 | 54,8 | 80,6 | 304 |
| | 601 | 268 | 55,1 | 80,1 | 310 |

GRAIN SIZE
Control lot No. - Weight :020000823509 - 23.563 KG
SPECIFICATION ASTME112 --
OBTAINED 3 5

CORROSION TEST ACCORDING TO ASTM A262 PRACTICE E EN ISO 3651-2 PRACTICE A: SATISFACTORY.
MATERIAL ACCORDING TO ASME SEC. II Ed. 2015
IMPACT TEST
Control lot No. - Weight :020000823509 - 23.563 KG
SPECIFICATION EN ISO 148-1 DIRECTION OF THE TEST PIECE: L
TYPE OF TEST PIECE KV
TEST TEMPERATURE °C 196-
MEASUREMENT UNIT J
OBTAINED 203 214 195 194 192 214 220 208 197 198
191 200

TENSILE TEST
Control lot No. - Weight :020000823509 - 23.563 KG
SPECIFICATION ASTMA370-E8-0.5"SPEC DIRECTION OF THE TEST PIECE: L

| | RMB | RP02B | RA | EL4 |
|---|---|---|---|---|
| MEASUREMENT UNIT | KSI | KSI | % | % 4,0 D |
| OBTAINED | 86 | 39 | 77,5 | 57,5 |
| | 88 | 38 | 74,6 | 53,7 |
| | 84 | 37 | 78,8 | 61,8 |
| | 86 | 39 | 77,5 | 55,6 |

08 NOV. 2024
FRANCO CORBELLINI
QBO
CROSSWIND

ULTRASONIC TEST ACCORDING TO EN 10308 Class.3, EN 10228 Class.3, ASTM A388 FBH 5 (diam. 102-250), FBH 8 (diam. 250,01-400).
VISUAL INSPECTION OF SURFACE AND DIMENSIONAL CONTROL ACCORDING TO EN10221 CLASS C AND EN10060: SATISFACTORY.
ANTIMIX TEST BY PORTABLE SPECTROMETRE: SATISFACTORY.
NO WELDING REPAIR ON THE MATERIAL.
FREE FROM RADIOCTIVITY CONTAMINATION.
MARKING: SYMBOL OF THE MANUF. WORK, MATERIAL N. , CAST N., LOT N., RECEIVING AGENT STAMP
COUNTRY OF ORIGIN: ITALY, THE MATERIAL COMPLIES WITH FAR DFARS
252.225-7009 ALT 1.

DATE 04.02.2020 MORABITO ROSA CF(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE -Cogne

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL + 39.0165.3021 - FAX + 39.0165.302298
CAP. SOC. 140.000.000 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320078 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, IATF 16949, EN 9100 and ISO 14001.



THE PRODUCT SATISFIES CE DIRECTIVES EU: 2015/863 (ROHS3) - 2011/65 (ROHS2) - 2000/53 - 2002/95(RoHS) - 2003/11 - 2005/618 AND PED 2014/68.
ALL THE NORMS MENTIONED ARE INTENDED IN THEIR LAST REVISION AT THE DATE OF ISSUE OF THIS DOCUMENT.
QUALITY SYSTEM CERTIFIED BY I.G.Q ACCORDING TO UNI EN ISO 9001:2015 -IATF 16949:2016 (THE LAST ONE ONLY FOR WIRE ROD AND HOT ROLLED-PEELED-GROUND STAINLESS STEEL BARS).
INSPECTOR'S STAMP LF
THE MATERIAL IS FREE OF ANY MERCURY, MERCURY COMPOUNDS AND OR RADIUM CONTAMINATION AT TIME OF SHIPMENT AND WAS PRODUCED WITHOUT USING OZONE DEPLETING SUBSTANCES OF CLASS I AND II.
RADIOACTIVITY CONTROL PERFORMED WITH A GAMMA SPECTROMETER: ASTM E181.
GAMMA ACTIVITY ON THE PRODUCTS BELOW 0.1 BQ/G ACCORDING TO EU RESOLUTION 2013/59/EURATOM , IAEA RS-G-1.7 AND IAEA SSG-17.

☐ WITNESS
☒ REVIEW
ON BEHALF OF
A. DELLAPINA DATE 08 NOV 2024

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND

DATE 04.02.2020

MORABITO ROSA CF(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

-Cogne

Laboratorio T.O.S.I. s.r.l.
Tecnici Organizzati al Servizio delle Imprese
*Sede Legale e Unità Operativa:* 20025 Legnano (MI) - Via Pisacane, 46
Tel. 0331.549631 / 0331.456119 - Fax 0331.470141 / 0331.451616
Internet: www.laboratoriotosi.it - E-mail: info@labtosi.it - P.IVA e C.F. 12805730152

LAB N° 1504

| RAPPORTO DI PROVA / TEST REPORT | DATA / DATE |
|---|---|
| **20P0699 Rev. 0** | 30/03/20 |

| | | | |
|---|---|---|---|
| CLIENTE / CUSTOMER | **A.S.T. S.p.A.** | | |
| | Via R. Merendi, 40 | 20010 Cornaredo (MI) | Italy |
| DESCRIZIONE CAMPIONE / SAMPLE DESCRIPTION # | Round bar Ø 160 mm | | |
| RIFERIMENTI DEL CLIENTE / CUSTOMER REFERENCES # | Order AQ2000449<br>DDT 16/200 of the 02/03/20 | | |

| RICEVUTO IL / RECEIVED ON | CAMPIONAMENTO / SAMPLING | LUOGO ESECUZIONE PROVE / TESTING PLACE |
|---|---|---|
| 02/03/20 | By customer | Laboratorio T.O.S.I. |

| MATERIALE / MATERIAL # | COLATA / HEAT # |
|---|---|
| ASTM A479 Tp.316/316L | 000082 |

| ID. CLIENTE / CUSTOMER ID # | ID. LABORATORIO / LABORATORY ID. |
|---|---|
| - | **S0650** |

I risultati di prova si riferiscono solo ai campioni sottoposti a prova, come ricevuti. / Test report results relate to the tested specimens only, as received.
Il presente rapporto di prova non può essere riprodotto parzialmente. / The present test report cannot been partially reproduced.
I testimoni di prova sono conservati per 3 mesi, salvo diversa richiesta scritta del cliente. / Copons after test shall be kept for 3 months, unless otherwise written request of the customer.
Ove presente l'incertezza di misura viene espressa come incertezza estesa ottenuta moltiplicando l'incertezza tipo per il fattore di copertura k corrispondente ad un intervallo di fiducia di circa il 95%. Normalmente tale fattore k vale 2, tranne per analisi chimica (k=4,3) e per la determinazione di una seconda fase (k=2,05). / Where present the reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k = 2, which for a normal distribution provides a level of confidence of approximately 95%, except for chemical analysis (k=4,3) and for determination of a second phase (k=2,05).
# Informazioni fornite dal cliente, per le quali il laboratorio declina ogni reponsabilità. / Information provided by the customer, for which the laboratory refuses all responsibility.

| Redattore / Editor | | Responsabile laboratorio / Laboratory manager |
|---|---|---|
| *Lorenzo Rigamonti* | LABORATORIO T.O.S.I. S.R.L. | *Angelo Rossetti* |

| Ispettore esterno / External Inspector | Ispettore esterno / External Inspector | Ispettore esterno / External Inspector |
|---|---|---|
| | | |

08 NOV. 2024
FRANCO CORBELLINI
QB9
CROSSWIND

☒ REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLA PINA DATE 08 NOV 2024

Laboratorio T.O.S.I. s.r.l.
Tecnici Organizzati al Servizio delle Imprese
*Sede Legale e Unità Operativa:* 20025 Legnano (MI) - Via Pisacane, 46
Tel. 0331.549631 / 0331.456119 - Fax 0331.470141 / 0331.451616
Internet: www.laboratoriotosi.it - E-mail: info@labtosi.it - P.IVA e C.F. 12805730152

LAB N° 1504

TEST REPORT: **20P0699** Rev. **0** LABORATORY ID. **S0650**

PROVA RICHIESTA / TEST REQUIRED:

Prova di trazione Temperatura amb. / tensile test at room temperature

| NORMA DI PROVA / TEST STANDARD | APPARECCHIATURE / APPARATOUS: |
|---|---|
| **ASTM E8/E8M-16a** | Machine **T095**<br>Extensometer **T098**<br>Caliper **T103** |
| DATA PROVA / TEST DATE: 26/03/2020 | |

| Prova n° test n° | Orientamento / orientation | Posizione / location | T °C | Dimensione dimension mm | $S_0$ $mm^2$ | $L_0$ mm | YS 0,2% MPa | TS MPa | E % | R.A. % |
|---|---|---|---|---|---|---|---|---|---|---|
| S0650 | Longitudinal | T/4 | r.t. | Ø 12,49 | 122,5 | 50 | 278 | 593 | 59 | 78 |

Snervamento determinato col metodo offset. Allungamento determinato dopo rottura. Metodo A /
Yield strengh determined by the offset method. Elongation determined after fracture. Method A.

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND

☒ REVIEW ☐ WITNESS
ON BEHALF OF RTC
A. DELLA PINA DATE 08 NOV 2024

Laboratorio T.O.S.I. s.r.l.
Tecnici Organizzati al Servizio delle Imprese
*Sede Legale e Unità Operativa:* 20025 Legnano (MI) - Via Pisacane, 46
Tel. 0331.549631 / 0331.456119 - Fax 0331.470141 / 0331.451616
Internet: www.laboratoriotosi.it - E-mail: info@labtosi.it - P.IVA e C.F. 12805730152

LAB Nº 1504

**TEST REPORT: 20P0699** Rev. **0** **LABORATORY ID. S0650**

| PROVA RICHIESTA / TEST REQUIRED: | |
|---|---|
| Test for detecting susceptibility to intergranular attack in austenitic stainless steel | |
| NORMA DI PROVA / TEST STANDARD<br>**ASTM A262-15 Pr.E** | APPARECCHIATURE / APPARATOUS:<br>Caliper **T100**<br>Machine **T096** |
| DATA PROVA / TEST DATE: 24/03/2020 | |

**DETTAGLI CAMPIONE / SPECIMEN DETAILS:**

| TRATTAMENTO TERMICO / HEAT TREATMENT | POSIZIONE / POSITION: | PREPARAZIONE / PREPARATION: | DIMENSIONI PROVINO / SPECIMEN DIMENSIONS: |
|---|---|---|---|
| Prove eseguite dopo TT di sensibilizzazione / test performed after sensitizing heat treatment (670°C/1h/air) | B.M. | Carte 220 umido / wetamery paper 220 | STANDARD<br>99,39 mm 21,44 mm 5,95 mm |

**PROVA IN SOLUZIONE / TEST IN SOLUTION**

| SOLUZIONE / SOLUTION | TEMPERATURA / TEMPERATURE: | TEMPO PROVA / TEST TIME | INIZIO PROVA / START TEST | FINE PROVA / END TEST |
|---|---|---|---|---|
| 6 % $CuSO_4$ + 16 % $H_2SO_4$ in $H_2O$ | Punto ebollizione / boiling point | 24 h | 24/03/20 | 25/03/20 |

**PROVA DI PIEGA / BEND TEST**

| ORIENTAMENTO / ORIENTATION | Ø | α | RISULTATO / RESULT | ESAME MACROGRAFICO / MACROGRAPHIC EX. | |
|---|---|---|---|---|---|
| - | 6 mm | 180 ° | Passing test specimen | (20x) | Satisfactory |

NOTE:

Fine rapporto di prova / End of test report

0 8 NOV. 2024
FRANCO CORBELLINI
DBJ
CROSSWIND

☑ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 0 8 NOV 2024

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 250.000.000 EUR INT. VERS.
C.F. 02187360957
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.

INSPECTION CERTIFICATE 3.1 (EN 10204:2004)
DOCUMENT NUMBER 2022045248


| | | | |
|---|---|---|---|
| CUSTOMER: | A.S.T. SPA | | |
| CUSTOMER'S ORDER: | AQ2300423 | | |
| MANUFACTURER'S WORKS: | AOSTA, VIA PARAVERA 16 - ITALY | | |
| PRODUCER OF THE DOC: | QUALITY DEPARTMENT | | |
| MANUFACTURER'S WORKS ORDER NO: | 0001133685 / 000010 | | |
| MARK OF THE MANUFACTURER: | COGNE | | |
| DISPATCH NOTE: | 0081535289 / 000010 WEIGHT: 14 KG / 31 LB | | |
| INTERNAL SPEC: | STOCKBARREW2 | TECHNICAL RULE: | AD2000-W2 |
| PRODUCT: | TRA COLD DRAWN ROUND BARS | TOLERANCE: ISOH9 | |
| SURFACE FINISH: | 2H Cold Finished | | |
| PRODUCT DELIVERY CONDITION: | RP ANNEALED+COLD WORKED | | |
| PRODUCT DIMENSIONS (mm): | 14,000 ( 0,551 in) | LENGTH (mm) | 03050 03100 ( 00120 00122 in) |
| GRADE: | AISI 316/316L EN1.4401/4404 | INTERNAL GRADE: | 316LMQ IMCO |
| IDENTIFICATION HEAT NO: | 272928 | IDENTIFICATION LOT NO: | 160790 |
| MARKING OF THE PRODUCT: | 1.4404 | TEST PIECE N: | 079 |

THE PRODUCT IS CONFORMING TO THE CONTRACT AGREEMENT AND TO THE RULE AD2000-MERKBLATT W0/W2.
REFERENCE NORMS: EN 10088-3, EN 10272, ASTM A484, ASTM A276, ASME SA276, ASTM A479, ASME SA479, AMS 5648, AMS 5653, AMS-QQ-S-763.
STEELMAKING EAF + AOD + CONTINUOUS CASTING
SOLUTION TREATED AT 1050°C +-15°C / 1 min x mm / WATER.
RADIOACTIVITY CONTROL PERFORMED WITH A GAMMA SPECTROMETER: ASTM E181.
GAMMA ACTIVITY ON THE PRODUCTS BELOW 0.1 BQ/G ACCORDING TO EU RESOLUTION 2013/59/EURATOM , IAEA RS-G-1.7 AND IAEA SSG-17.
CORROSION TEST ACCORDING TO ASTM A262 PRACTICE E EN ISO 3651-2 PRACTICE A: SATISFACTORY.
HOT ROLLED
REDUCTION RATIO 144,9

CHEMICAL LADLE ANALYSIS ACCORDING TO ASTM A751 - EN ISO 14284
Control lot No. - Weight :020000920197 - 86.055 KG - 189.716 LB

| ELEMENTS | C | Si | Mn | P | S | N | Cr | Mo | Ni | Cu |
|---|---|---|---|---|---|---|---|---|---|---|
| MEASUREMENT UNIT | % | % | % | % | % | % | % | % | % | % |
| OBTAINED | 0,018 | 0,33 | 1,81 | 0,028 | 0,024 | 0,081 | 17,28 | 2,07 | 10,03 | 0,42 |

| ELEMENTS | Co |
|---|---|
| MEASUREMENT UNIT | % |
| OBTAINED | 0,18 |

HARDNESS TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000920699 - 9.752 KG - 21.499 LB
SPECIFICATION ENISO6506 HARDNESS TEST HB TESTING METHOD: 10/3000
OBTAINED 204

REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLAPINA DATE 08 NOV 2024

DATE 20.07.2022

BARBARA VIETTI MV(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

-Cogne

FRANCO CORBELLINI
CROSSWIND
08 NOV. 2024

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
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CAP. SOC. 250.000.000 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.



TENSILE TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000920699 - 9.752 KG - 21.499 LB
SPECIFICATION EN-ISO6892-1 DIRECTION OF THE TEST PIECE: L

| MEASUREMENT UNIT | RM MPA | RP02 MPA | A5 % | Z % | RP1 MPA |
|---|---|---|---|---|---|
| OBTAINED | | | 5.0 D | | |
| | 692 | 455 | 43,7 | 79,2 | 607 |
| | 695 | 471 | 44,3 | 80,3 | 614 |
| | 692 | 455 | 43,4 | 77,1 | 608 |
| | 705 | 477 | 40,7 | 71,3 | 622 |

EDDY CURRENT INSPECTION OF SURFACE ACCORDING TO EN 10277 Class.3: SATISFACTORY.
DIMENSIONAL CONTROL ACCORDING TO EN 10278 AND ASTM A484: SATISFACTORY.
TENSILE TEST
Control lot No. - Weight :020000920699 - 9.752 KG - 21.499 LB
SPECIFICATION ASTMA370-E8-0.5"SPEC DIRECTION OF THE TEST PIECE: L

| MEASUREMENT UNIT | TS KSI | YS02 KSI | RA % | EL4 % |
|---|---|---|---|---|
| OBTAINED | | | | 4,0 D |
| | 101 | 68 | 75,9 | 45,7 |

NO WELDING REPAIR ON THE MATERIAL.
THE MATERIAL IS FREE OF ANY MERCURY, MERCURY COMPOUNDS AND OR RADIUM CONTAMINATION AT TIME OF SHIPMENT AND WAS PRODUCED WITHOUT USING OZONE DEPLETING SUBSTANCES OF CLASS I AND II.
HEAT TREATMENT PERFORMED IN CALIBRATED FURNACES ACCORDING TO INTERNAL PROCEDURE PR-GDQ.ITT COMPLYING WITH API6A Annex M.
VISUAL INSPECTION OF SURFACE AND DIMENSIONAL CONTROL ACCORDING TO EN10221 CLASS C, EN 10060 AND ASTM A484: SATISFACTORY.
MARKING: PRODUCER LOGO, MATERIAL NO, HEAT NO, LOT NR.
ANTIMIX TEST: SATISFACTORY
DOCUMENT ISSUED IN AGREEMENT WITH TUEV BAYERN(11.1972) WAVING OF COUNTERSIGNING (SEE TUEV BAYERN LETTER DATED 17.01.80).
ALL THE NORMS MENTIONED ARE INTENDED IN THEIR LAST REVISION AT THE DATE OF ISSUE OF THIS DOCUMENT.
COUNTRY OF MELTING AND ORIGIN: ITALY, THE MATERIAL COMPLIES WITH FAR DFARS
252.225-7009 ALT 1.
THE ABOVE ARE TRUE AND CORRECT RESULTS OF TESTS ON SAMPLES OF THE MATERIAL. RESULTS ARE CONFORM TO THE SPECIFICATION(S) APPLICABLE AND ARE RECORDED.
THE RECORDING OF FALSE, FICTIOUS OR FRAUDULENT STATEMENTS OR ENTRIES ON THIS DOCUMENT MAY BE PUNISHABLE AS A FELONY UNDER U.S. FEDERAL STATUTES.
INSPECTOR'S STAMP LF
MATERIAL IN COMPLIANCE WITH THE NORSOK M-630 MDS S01
The products delivered are conforming to EN10088-5 and bear the CE marking on the basis of the test results here reported and the continuous surveillance, assessment and approval by MPA NRW
(certificate no. 0432-CPR-00166-01)
Material produced according to the system #Regulation 305/2011/EU of the European Parliament and of the Council of 9 March 2011#

CE 0432

DATE 20.07.2022

BARBARA VIETTI MV(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

-Cogne

08 NOV. 2024 FRANCO CORBELLINI DBI CROSSWIND

08 NOV 2024 WITNESS

**AST S.p.A.**
Via R. Merendi, 40
I-20007 Cornaredo MI

P +39 02 934848.1
F +39 02 9362248
W www.astspa.it

**MATERIAL CERTIFICATES INDEX**
**CERTIFICATO DEI MATERIALI**

**No.** 2400594

EN 10204 3.1

**Customer**
ROSETTI MARINO S.P.A.

**P.Order / Project**
1724000740 123A90A Rev. 1

**ITEM Number**
70-120

**Tag**
25-PV-049

**Quantity delivered**
1

**AST Job**
CV2400221

**AST Code**
CV2400221CV8407A001

**Serial Number**
2400594

**Valve Type**
Valvole Regolazione

**Size**
NPS 2" CLASS 300 RF

**Port Size**
1"

| Part Name | Material | Heat No. | Certificate No. | Supplier |
|---|---|---|---|---|
| BODY | ASTM A351 CF3M | G1014 | PKC-G1014-AT209B-1 | PEEKAY STEEL CASTING (P) LTD |
| SEAT RING | ASTM A479 316/316L | 380150 | 2023026120 | COGNE ACCIAI SPECIALI SPA |
| PLUG | F316 + PTFE | 293368 | MEST028009/2024/ | ACCIAIERIE VALBRUNA |
| BONNET | ASTM A479 316/316L | 000082 | 2020005555 | COGNE ACCIAI SPECIALI SPA |
| STEM | ASTM A479 316/316L | 272928 | 2022045248 | COGNE ACCIAI SPECIALI SPA |

08 NOV. 2024
FRANCO CORBELLINI
080
CROSSWIND

☒ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

**Remarks** :

**AST Q.C. Department**

**Customer's Inspector**

**Third Party Inspection**

**Date** : 06.11.2024 **Date** : _____ **Date** : _____

# PEEKAY STEEL CASTINGS (P) LTD

**4/242 Chinnamaddampalayam, Billichi Post, Coimbatore - 641 019**
**Email: info@pkcbe.co.in, Phone: 04254 - 271610**


## INSPECTION CERTIFICATE

EN 10204.3.1

| | | | | | |
|---|---|---|---|---|---|
| Customer: | AST SPA | | | | |
| Order No and Date | | PO Line No | Heat Code | TCNo | PKC/G1014/AT209B/1 |
| AQ2101495 / 30/07/2021 | | 1 | PYM05J30 | Date | 22-Nov-2021 |
| F.P. No | Part Name | | | Item Code / Part No | |
| AT209B | 2" CL150/300 FL GLV BODY | | | CABDWG0061 | |
| Casting Drawing No and Machining Drg.No | | Pattern No | | No.of pieces | |
| **M061 Rev 7** | | | | 4 | |
| Specification /Material | | | | | |
| **ASTM A351-2018/ASME SA351-2021 Gr.CF3M** | | | | Poured Date : 30/09/2021 | |

| Heat treatment | Melting Process | State of Delivery |
|---|---|---|
| Solution Anneling at 1100°c soaked for 10 hours then water cooled.<br>HT Cycle No:E8069 Dt:06/10/2021 Sl.No:5,6,7,8 | INDUCTION | Unmachined |

08 NOV. 2021

Chemical Composition (%)

| Element | C | Mn | Si | P | S | Cr | Ni | Mo | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Min. Specified | ... | ... | ... | ... | ... | **17.000** | **9.000** | **2.000** | ... | ... | ... | ... | ... | | | |
| Max. Specified | **0.030** | **1.500** | **1.500** | **0.040** | **0.040** | **21.000** | **13.000** | **3.000** | ... | ... | ... | ... | ... | | | |
| Heat No | | | | | | | | | | | | | | | | |
| G1014 | 0.015 | 1.164 | 0.888 | 0.032 | 0.001 | 18.560 | 9.520 | 2.170 | | | | | | | | |

Heat Slnos: 5,6,7,8

| Mechanical Properties | Yield Strength (0.2% Offset) | Tensile Strength | % of Elongation | | Reduction of Area | Hardness | Bend Test Angle at 0° | Impact value at -196°C in Joules (10mm x 10mm x 55mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | GL=50 mm | GL=62.5 mm | | | | Average 40 J | | | |
| Min | **205** | **485** | **30** | ... | ... | ... | D=0t | Single Value | | | |
| Max | ... | ... | ... | ... | ... | **237** | | | | | |
| Heat No | Mpa | Mpa | | | | HBW | | 1 | 2 | 3 | Avg |
| G1014 | 234 | 511 | 54.76 | - | - | 163.00 | .... | 90 | 106 | 86 | 94 |

Remarks/Observations

Material conform to :AST SPA Specifications FOR 001 Rev 15 & ASTM A351-2018/ASME SA351-2021 Gr.CF3M.NACE MR0175/ISO 15156-3.Castings are acid pickled and passivated.
Penetrant Test of inspection According to ASME B16.34 Appendix III
Visual inspection of casting :Satisfactory According to MSS-SP-55
Dimensional inspection:Satisfactory,According to Approved Drawing

Certified that the products supplied is free from Radioactive element or contamination

☑ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA RINA DATE 08 NOV 2021

Certified that the above mentioned material have been manufactured,tested and inspected in compliance with the requirements of Purchase order, conform in all respects to the relevant specification and drawings.

| Suppliers Logo | Prepared by | Stamp | Approved by | |
|---|---|---|---|---|
| **PKC** | Ramkumar D | | Vijaya Kumar K | PK 02 |

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL. +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 250.000.000 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.

# INSPECTION CERTIFICATE 3.1 (EN 10204:2004)



| | | | |
|---|---|---|---|
| CUSTOMER: | A.S.T. SPA | | |
| CUSTOMER'S ORDER: | AQ2400201 | | |
| MANUFACTURER'S WORKS: | AOSTA, VIA PARAVERA 16 - ITALY | | |
| PRODUCER OF THE DOC: | QUALITY DEPARTMENT | | |
| MANUFACTURER'S WORKS ORDER NO: | 0001138630 / 000050 | | |
| MARK OF THE MANUFACTURER: | **COGNE** | | |
| DISPATCH NOTE: | 0081589667 / 000050 WEIGHT: 644 KG / 1420 LB | | |
| INTERNAL SPEC: | STOCKBARREW2 | TECHNICAL RULE: | AD2000 |
| PRODUCT: | PEL PEELED ROUND BARS TOLERANCE: ISOK11 | | |
| SURFACE FINISH: | 2B Cold Finished | | |
| PRODUCT DELIVERY CONDITION: | RS SOLUTION ANNEALED | | |
| PRODUCT DIMENSIONS (mm): | 75,000 ( 2,953 in) | LENGTH (mm) | 04000 06200 ( 00157 00244 in) |
| GRADE: | 316L-S31600/31603-1.4404/4401 | INTERNAL GRADE: | F316L IMCO |
| IDENTIFICATION HEAT NO: | 380150 | IDENTIFICATION LOT NO: | 725570 |
| MARKING OF THE PRODUCT: | 1.4404 | TEST PIECE N: | 557 |

REFERENCE NORMS: EN 10088-3 2014, EN 10272 2016, ASTM A276/A276M-17, ASTM A479/A479M-21, ASTM A193-20 B8MCLASSE 1D, ASME SA276/SA276M-17,ASME SA479/SA479M-21, AMS 5653J, AMS 5648N, ISO15156-3/NACE MR0175 2015, NACE MR0103/ISO 17945, NORSOK M630 MDSS01 REV5.
REFERENCE NORMS FOR CHEMICAL COMPOSITION AND MECHANICAL PROPERTIES: ASTM A182-22A, ASME SA182-22A.
REFERENCE NORMS ONLY FOR CHEMICAL COMPOSITION: EN 10222-5 2017,ASTM A403-22b, ASTM A484-22, ASTM A314-19, AMS-QQ-S-763D.
ASME SECT.II PART A EDITION 2015-2017-2019-2021
AISI 316/316L - UNS S31600/S31603 - 1.4404/1.4401
THE PRODUCT IS CONFORMING TO THE CONTRACT AGREEMENT AND TO THE RULE AD2000-MERKBLATT W0/W2.
STEELMAKING EAF + AOD + CONTINUOUS CASTING
ASTM A484 DOES NOT APPLY FOR SIZE AND LENGTH TOLERANCES.
REFERENCE FOR APPLICABLE ASME STANDARD: SECTION II PART A ED. 2015-2017-2019-2021
HOT ROLLED
REDUCTION RATIO 5,2

CHEMICAL LADLE ANALYSIS ACCORDING TO ASTM A751 - EN ISO 14284
Control lot No. - Weight :020000964940 - 82.913 KG - 182.789 LB

| ELEMENTS | C | Si | Mn | P | S | N | Cr | Mo | Ni | Cu |
|---|---|---|---|---|---|---|---|---|---|---|
| MEASUREMENT UNIT | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w |
| OBTAINED | 0,016 | 0,37 | 1,91 | 0,026 | 0,024 | 0,078 | 16,79 | 2,06 | 10,06 | 0,47 |

| ELEMENTS | Co |
|---|---|
| MEASUREMENT UNIT | % w/w |
| OBTAINED | 0,15 |

HARDNESS TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000967750 - 7.000 KG - 15.432 LB
SPECIFICATION ENISO6506 HARDNESS TEST HB TESTING METHOD: 10/3000
OBTAINED 160

REVIEW ☐ WITNESS
ON BEHALF OF
A. BOCCA PINA
DATE 08 NOV 2024

FRANCO CORBELLINI
CROSSWIND
08 NOV. 2024

DATE 25.05.2023

MORABITO ROSA CF(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE -Cogne

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
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C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.



IMPACT TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000967750 - 7.000 KG - 15.432 LB
SPECIFICATION EN ISO 148-1-KV2
TYPE OF TEST PIECE KV
TEST TEMPERATURE °C 20
MEASUREMENT UNIT J
OBTAINED

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 440 | 430 | 436 | 438 | 434 | 434 | 436 | 432 | 440 | 437 |
| 435 | 439 | | | | | | | | |

TENSILE TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000967750 - 7.000 KG - 15.432 LB
SPECIFICATION EN-ISO6892-1 DIRECTION OF THE TEST PIECE: L

| MEASUREMENT UNIT | RM MPA | RP02 MPA | A5 % | Z % | RP1 NMM |
|---|---|---|---|---|---|
| OBTAINED | | | 5.0 D | | |
| | 608 | 285 | 51,4 | 72,3 | 327 |
| | 606 | 277 | 51,6 | 72,9 | 320 |
| | 603 | 275 | 52,8 | 79,5 | 316 |
| | 604 | 264 | 54,2 | 75,4 | 312 |

GRAIN SIZE
Control lot No. - Weight :020000967750 - 7.000 KG - 15.432 LB
SPECIFICATION ASTME112 --
OBTAINED 5

MATERIAL IN COMPLIANCE WITH THE NORSOK M-630 MDS S01
IMPACT TEST
Control lot No. - Weight :020000967750 - 7.000 KG - 15.432 LB
SPECIFICATION EN ISO 148-1
TYPE OF TEST PIECE KV
TEST TEMPERATURE °C 196-
MEASUREMENT UNIT J
OBTAINED DIRECTION OF THE TEST PIECE: L

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 191 | 198 | 180 | 200 | 193 | 181 | 176 | 189 | 175 | 174 |
| 195 | 175 | | | | | | | | |

TENSILE TEST
Control lot No. - Weight :020000967750 - 7.000 KG - 15.432 LB
SPECIFICATION ASTMA370-E8-0.5"SPEC DIRECTION OF THE TEST PIECE: L

| MEASUREMENT UNIT | RMB KSI | RP02B KSI | ZB % | AL2B % |
|---|---|---|---|---|
| OBTAINED | | | | 4,0 D |
| | 87 | 40 | 72,8 | 60,2 |
| | 88 | 39 | 72,5 | 54,7 |
| | 88 | 38 | 78,5 | 54,6 |
| | 88 | 40 | 76,5 | 54,5 |

A. DELLA PINA DATE 08 NOV 2024 ON BEHALF OF REVIEW WITNESS

08 NOV 2024 FRANCO CORBELLINI CROSSWIND R

DATE 25.05.2023 MORABITO ROSA CF(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE -Cogne

COGNE ACCIAI SPECIALI S.p.a.

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Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.



COUNTRY OF MELTING AND ORIGIN: ITALY, THE MATERIAL COMPLIES WITH FAR DFARS 252.225-7009 ALT 1.
The products delivered are conforming to EN10088-5 and bear the CE marking on the basis of the test results here reported and the continuous surveillance, assessment and approval by MPA NRW (certificate no. 0432-CPR-00166-01)
Material produced according to the system #Regulation 305/2011/EU of the European Parliament and of the Council of 9 March 2011#
DOCUMENT ISSUED IN AGREEMENT WITH TUEV BAYERN(11.1972) WAVING OF COUNTERSIGNING (SEE TUEV BAYERN LETTER DATED 17.01.80).
MARKING: SYMBOL OF THE MANUF. WORK, MATERIAL N. , CAST N., LOT N., RECEIVING AGENT STAMP
CORROSION TEST ACCORDING TO ASTM A262 PRACTICE E EN ISO 3651-2 PRACTICE A: SATISFACTORY.
ANTIMIXING TEST BY PORTABLE SPECTROMETRE: CONFORMING
EDDY CURRENT INSPECTION OF SURFACE ACCORDING TO EN 10277 CLASS 4.
DIMENSIONAL CONTROL ACCORDING TO EN 10278: SATISFACTORY.
NO WELDING REPAIR ON THE MATERIAL.
ULTRASONIC TEST ACCORDING TO EN 10308 Class.3: SATISFACTORY
QUALITY SYSTEM CERTIFIED BY KIWA CERMET ACCORDING TO UNI EN ISO 9001:2015 -IATF 16949:2016 (THE LAST ONE ONLY FOR WIRE ROD AND HOT ROLLED-PEELED-GROUND STAINLESS STEEL BARS).
INSPECTOR'S STAMP LF
MATERIAL CONFORM TO: 2015/863/UE (RoHS3) - 2011/65/UE (RoHS2) - 2000/53/UE - 2002/95/UE (RoHS) - 2003/11/UE - 2005/618/UE - PED 2014/68/UE e PE(S)R 2016/1105
THE MATERIAL IS FREE OF ANY MERCURY, MERCURY COMPOUNDS AND OR RADIUM CONTAMINATION AT TIME OF SHIPMENT AND WAS PRODUCED WITHOUT USING OZONE DEPLETING SUBSTANCES OF CLASS I AND II.
RADIOACTIVITY CONTROL PERFORMED WITH A GAMMA SPECTROMETER: ASTM E181.
GAMMA ACTIVITY ON THE PRODUCTS BELOW 0.1 BQ/G ACCORDING TO EU RESOLUTION 2013/59/EURATOM , IAEA RS-G-1.7 AND IAEA SSG-17.

CE 0432

REVIEW ☐ WITNESS ☐
ON BEHALF OF
A. BELLAPINA DATE 08 NOV 2024

08 NOV. 2024
FRANCO CORBELLINI
QBO
CROSSWIND

DATE 25.05.2023

MORABITO ROSA CF(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

-Cogne

1724000740-QC-DB-00016_01

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1
Nach/According to/Selon

Certificato nr. MEST028009 / 2024 /
Prüfung/Test/Essai

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Ordine nr: ORD N AQ2400369
Bestell
Your order
Commande

Conferma ordine nr: MI24001817
Werks/Our Order/Ref nr.

Avviso di Spedizione: A-MI24001447
Lieferanzeige/Packing list/B.L.

Stato di fornitura: Laminato - Solubilizzato FINITO A FREDDO
Lieferzustand
Delivery state
Etat de livraison

Tipo di Elaborazione: E+AOD
Erschmelzungsart
Melting process
Mode d'elaboration

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung
Brand / Nuance

Produttore:
Hersteller/Item/Usine productrice

**ACCIAIERIE VALBRUNA S.P.A.**

Marchi di Fabbrica: AV
Zeichen des Lieferwerkes
Trade marks
Sigles de l'usine productrice

Punzone del Collaudatore: MR
Stempel des Werkssachverständigen
Inspector's stamp/Poinçon de l'assayeur

Punzonatura: 1.4401/1.4404
Kennzeichnung
Marking
Marquage

**SPECIFICHE:**
Anforderungen / Requirements / Exigences

VAL STOCK W2 A/1 1.4404/316L A,CF
AD 2000-M. W 2 2022 1.4401 A,CF (0)
AD 2000-M. W 2 2022 1.4404 A,CF (1)
AISI . 316/316L
AMS-QQ-S-763 D 316/316L A,CF
ASME SA182 2023 S31600/03 A (2)
ASME SA276 2023 S31600/03 A,CF (3)
ASME SA479 2023 S31600/03 A (4)
ASTM A182 2023 S31600/03 A (5)
ASTM A262 PR. E 2015 316/316L (6)
ASTM A276 2023 S31600/03 A,CF
ASTM A370 2022 .
ASTM A479 2023A S31600/03 A
ASTM E10 2023 .
ASTM E8 2022 .
EN 10088 PART 3 2014 1.4401 A,CF
EN 10088 PART 3 2014 1.4404 A,CF
EN 10272 2016. 1.4401 A,CF
EN 10272 2016. 1.4404 A,CF
ISO 148-1 2016 .
ISO 3651-2 98 METHOD A T1
ISO 6506-1 2014 .
ISO 6892-1 2019 .
NACE MR0103 2015 S31600/03 A (7)
NACE MR0175 4 S31600/03 A (8)
QQ-S-763 F 316/316L A,CF
ACH CO . .
KV L -196C . ISO 148-1

Note:
Aufzeichnungen / Notes / Notes

(0)AD 2000-MERKBLATT W 2 edition 03.2022 AD 2000-MERKBLATT W 10 edition 06.2022
(1)AD 2000-MERKBLATT W 2 edition 03.2022 AD 2000-MERKBLATT W 10 edition 06.2022

(2)Section II Part A 2023 EDITION For products machined directly from bar refer to ASME SA479.
(3)Section II Part A 2023 EDITION
(4)Section II Part A 2023 EDITION
(5)For products machined directly from bar refer also to ASTM A479.
(6)Reapproved 2021

08 NOV. 2024
FRANCO CORBELLINI
QSQ
CROSSWIND

(7)ANSI/NACE MR0103/ISO 17945 November 23, 2015
(8)ANSI/NACE MR0175/ISO 15156-3:2020 Fourth edition, approved 21 Sep 2022.

| Pos. nr. Pos. nr. Item nr. Nr. de poste | Oggetto Gegenstand Product description Libellé du produit | Tolleranza: k12 Toleranz/Allowance/Tolerance Dimensioni - mm Abmessungen Dimension Dimension | Lunghezza - mm Lange Length Longueur | Colata Schmelze Heat Coulée | Pezzi Stückzahl Pieces Pieces | Peso - KG Gewicht Weight Poids | Lotto nr. Losnr Lot nr Lot nr. |
|---|---|---|---|---|---|---|---|
| 0030 | Tondo | 30,000 | 6000/ 6060 | 293368 | | 68,0 | 310402650 |

☑ REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLA PINA DATE 08 NOV 2024

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| Vicenza, 05/03/2024 | Direzione Qualità | Direzione Prodotto | Pagina |
|---|---|---|---|
| VCQ012 - MEST028009 | Qualitätsmanagement/Quality Management/Gestion Qualité | Produktmanagement/Product Management/Direction Produit | 1 di 4 |
| | R.BERTELLI | P.MESSORI | |

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1
Nach/According to/Selon

Certificato nr. MEST028009 / 2024 /
Prüfung/Test/Essai

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura: Laminato - Solubilizzato FINITO A FREDDO
Lieferzustand / Delivery state / Etat de livraison

Produttore:
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Tipo di Elaborazione: E+AOD
Erschmelzungsart / Melting process / Mode d'elaboration

Marchi di Fabbrica:
Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice

Ordine nr: ORD N AQ2400369
Bestell / Your order / Commande

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Punzone del Collaudatore:
Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur
MR

Conferma ordine nr: MI24001817
Werks/Our Order/Ref nr.

Avviso di Spedizione: A-MI24001447
Lieferanzeige/Packing list/B.L.

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung / Brand / Nuance

Punzonatura: 1.4401/1.4404
Kennzeichnung / Marking / Marquage

### TEST ALLO STATO DI FORNITURA

Test on delivery condition Prüefung auf lieferbereitem produkt test a l'etat de fourniture Prueba sobre el material asi come entregado

1) L=longitudinale/längs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | Posiz Saggio Probestage Location Emplacement | Snervamento Streckgrenze Yield Stress Limite elastique Rp 0,2% N/mm2 | Snervamento Streckgrenze Yield Stress Limite elastique Rp 1% N/mm2 | Resistenza Zugfestigkeit Tensile strength Resistance à traction Rm N/mm2 | Allungamento Bruchdehnung Elongation Allongement A5 % | | Strizione Einschnürung Reduction of area Striction Z % | | Resilienza Kerbschlagarbeit Impact Value Resilience | | | Durezza Haerte Hardness Durete HB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti Anforderungen/Required values Valeurs demandées | | min max | | 200 | 235 | 500 900 | 20 | - | - | - | - | | | - | | |
| A | 10 | 20 | L | 458 | 535 | 678 | 44 | | 67 | | | | | 315 | | |
| G | 10 | 20 | L | 457 | 532 | 682 | 45 | | 66 | | | | | 223 | | |
| | | | | | | | | | | | | | | 221 | | |

### TEST ALLO STATO DI FORNITURA

Test on delivery conditon / Prüefung auf lieferbereitem produkt / Test a l'etat de fourniture / Prueba sobre el material asi come entregado

| TEST | | min | max | |
|---|---|---|---|---|
| A | Dimensioni grano x ASTM E112 | | | 4 |

### Charpy per ISO 148-1

1) L=longitudinale/längs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | Posiz Saggio Probestage Location Emplacement | Resilienza Kerbschlagarbeit Impact Value Resilience KV2 J | | | Espansione laterale Lateral Expansion Lateral ex mm | | | Shear Shear % Shear % | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti Anforderungen/Required values Valeurs demandées | | min max | | - | - | - | - | - | - | - | - | - |
| B | 10X10 | -196 | L | 158 | 152 | 151 | 1,700 | 1,852 | 1,705 | 59 | 61 | 57 |

### Test allo stato di fornitura per ASTM A370

1) L=longitudinale/längs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | Posiz Saggio Probestage Location Emplacement | Snervamento Streckgrenze Yield Stress Limite elastique Rp 0,2% N/mm2 | Snervamento Streckgrenze Yield Stress Limite elastique | Resistenza Zugfestigkeit Tensile strength Resistance à traction Rm N/mm2 | Allungamento Bruchdehnung Elongation Allongement E 4d % | | Strizione Einschnürung Reduction of area Striction RA % | | Resilienza Kerbschlagarbeit Impact Value Resilience | | | Durezza Haerte Hardness Durete HB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti Anforderungen/Required values Valeurs demandées | | min max | | 210 | - | 517 | - | 30 | - | 50 | - | | | - | | |
| C | 12,5 | 20 | L | 453 | | 671 | | 47 | | 68 | | | | 235 | | |
| | | | | | | | | | | | | | | 222 | | |

08 NOV. 2024

FRANCO CORBELLINI
QBQ
CROSSWIND

☑ REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLA PINA DATE 08 NOV 2024

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

**Vicenza, 05/03/2024**
VCQ012 - MEST028009

**Direzione Qualità**
Qualitätsmanagement/Quality Management/Gestion Qualité
**R.BERTELLI**

**Direzione Prodotto**
Produktmanagement/Product Management/Direction Produit
**P.MESSORI**

# Acciaierie Valbruna S.p.A.

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Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1
Nach/According to/Selon

Certificato nr. MEST028009 / 2024 /
Prüfung/Test/Essai

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura: Laminato - Solubilizzato FINITO A FREDDO
Lieferzustand / Delivery state / Etat de livraison

Produttore:
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Ordine nr: ORD N AQ2400369
Bestell / Your order / Commande

Tipo di Elaborazione: E+AOD
Erschmelzungsart / Melting process / Mode d'elaboration

Marchi di Fabbrica:
Zeichen des Liefernwerkes / Trade marks / Sigles de l'usine productrice
AV

Conferma ordine nr: MI24001817
Werks/Our Order/Ref nr

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Punzone del Collaudatore:
Stempel des Werksachverstandiges / Inspector s stamp/Poinçon de l'assayeur
MR

Avviso di Spedizione: A-MI24001447
Lieferanzeige/Packing list/B.L.

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung / Brand / Nuance

Punzonatura: 1.4401/1.4404
Kennzeichnung / Marking / Marquage

### Charpy per ISO 148-1

1) L=longitudinale/langs. T=trasversale/quer. C=Tangenziale/tangential

| TEST | Provetta/ Probelab Specimen/Eprouvette Lang diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais. mm | °C | Posiz. Saggio Probenlage Location Emplacement | Resilienza Kerbschlagarbeit Impact Value Resilience KV2 J | | | Espansione laterale Lateral Expansion | | | Shear Shear | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti Anforderungen/Required values Valeurs demandées | | min max | | 100 | 100 | 100 | - | - | - | - | - | - |
| F | 10X10 | 20 | L | 199 | 194 | 193 | | | | | | |
| H | 10X10 | 20 | L | 210 | 196 | 198 | | | | | | |

Tensile testing according to ISO 6892-1
Impact testing according to ISO 148-1
Mechanical properties according to ASTM A370.
Brinnell hardness according to ASTM E10
Tensile testing according to ASTM E8
Brinnell hardness according to ISO 6506-1

08 NOV. 2024
FRANCO CORBELLINI
080
CROSSWIND R

☑ REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLA PINA DATE 08 NOV 2024

### Analisi chimica

Chemische Zusammensetzung/Chemical Analysis/Analyse chimique

| Colata / Heat Schmelze/Coulée | | C % | Si % | Mn % | Cr % | Mo % | Cu % | Ni % | Co % | P % | S % | N % | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | min | - | - | - | 16,50 | 2,00 | - | 10,00 | - | - | - | - | - | - | - | - |
| | max | 0,030 | 1,00 | 2,00 | 18,00 | 2,50 | 1,00 | 13,00 | - | 0,045 | 0,030 | 0,100 | - | - | - | - |
| 293368 | | 0,010 | 0,56 | 1,52 | 16,68 | 2,04 | 0,57 | 10,00 | 0,156 | 0,032 | 0,027 | 0,058 | | | | |

### Corrosion test in 16% sulfuric acid and copper sulfate solutions

**Test standard:** UNI EN ISO 3651-2 Method A

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitized T1 | 20 | boil | 90 | 5 | Absence of cracks | **SATISFACTORY** |

### Corrosion test in 16% sulfuric acid and copper sulfate solutions

**Test standard:** ASTM A262-Practice E

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitization | 15 | boil | 180 | 5 | Absence of cracks | **SATISFACTORY** |

**QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D**

**Vicenza, 05/03/2024**
VCQ012 - MEST028009

**Direzione Qualità**
Qualitätsmanagement/Quality Management/Gestion Qualité
**R.BERTELLI**

**Direzione Prodotto**
Produktmanagement/Product Management/Direction Produit
**P.MESSORI**

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a / Nach/According to/Selon: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. / Prüfung/Test/Essai: MEST028009 / 2024 /

Cliente / Besteller/Purchaser/Client:
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura / Lieferzustand / Delivery state / Etat de livraison: Laminato - Solubilizzato FINITO A FREDDO

Produttore / Hersteller/Item/Usine productrice:
ACCIAIERIE VALBRUNA S.P.A.

Ordine nr. / Bestell / Your order / Commande: ORD N AQ2400369

Tipo di Elaborazione / Erschmelzungsart / Melting process / Mode d'elaboration: E+AOD

Marchi di Fabbrica / Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice: AV

Conferma ordine nr. / Werks/Our Order/Ref nr: MI24001817

Qualità / Werkstoff/Grade/Nuance: 1.4401/1.4404/316/316L

Punzone del Collaudatore / Stempel des Werksprüfsachverständigen / Inspector's stamp/Poinçon de l'assayeur: MR

Avviso di Spedizione / Lieferanzeige/Packing list/B.L.: A-MI24001447

Marca / Markenbezeichnung / Brand / Nuance: MVAPML ( MAXIVAL )

Punzonatura / Kennzeichnung / Marking / Marquage: 1.4401/1.4404

Reduction ratio = 42,9 : 1
Solution annealed 1040°C for 160'(total time)/water cooled.
SURFACE QUALITY COMPLIANT TO EN 10088-3 TAB.1 COND. 2H equivalent to EN 10277-1 Cl.3
"Issued in agreement with TÜV SÜD Industrie Service GMBH
(07/1972)"
"Qs approved according to PED, Annex I, Para. 4.3 by
Notified Body 0036"
"(Certification no. DGR-0036-QS-W 23/2002/MUC)"

Sono state soddisfatte tutte le condizioni richieste / Die gestellten Anforderungen sind it. Anlage erfüllt / The material has been furnished in accordance with the requirements / Le materiel à été trouvé conforme aux exigences

Controllo antimescolanza con tecnica XRF/OES portatile : OK / Verwechslungprüfung durch XRF/OES Gerät geführt : OK / Antimixing testing performed with XRF/OES portable : OK / Contrôle antimélange avt technique XRF/OES portable : OK

Controllo visivo e dimensionale: soddisfa le esigenze / Besichtigung und Ausmessung ohne Beanstandung / Visual inspection and dimensional checks satisfactory / Contrôle visuel et dimensions satisfaisant

Melted, poured and manufactured in Italy — No welding or weld repair — Material free from Mercury contamination

We declare that the finished product is checked for radioactive contamination by the portal system when it leaves the production plant.

The Quality Management System is also Certified according to Pressure Equipment Directive 2014/68/EU Annex 1,chapt.4.3 by TÜV and LLOYD'S
The Quality Management System is also Certified according to PER 2016/1105, Schedule 2, Part 4, Para 31 (8) by Competent Body TÜV SUD BABT Unlimited.
Any act of tampering, modification, alteration, counterfeiting and/or falsification and/or any other action which modifies the contents of this test certificate shall constitute a violation of applicable civil and criminal laws. Acciaierie Valbruna shall protect its rights and interests before any competent court, authority and jurisdiction.
Maxival and/or Valplus grades/products are manufactured with ladle techniques to control composition, distribution, size and shape of non-metallic inclusions for improved machinability.
The supplied product conforms to requirements expressly requested by the purchaser and conforms to requirements specified by certified norms and standards. Should the product be used for more severe, critical and/ or in any case different applications than those the material is generally intended for, any different and/or supplementary requirements shall be specifically demanded, at least, upon order of the Product by the Purchaser. Acciaierie Valbruna SpA shall not be responsible for any improper use of the Products.

08 NOV. 2024
FRANCO CORBELLINI
QBO
CROSSWIND R

☒ REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLAPINA DATE 08 NOV 2024

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| | | | |
|---|---|---|---|
| **Vicenza, 05/03/2024**<br>VCQ012 - MEST028009 | **Direzione Qualità**<br>Qualitätsmanagement/Quality Management/Gestion Qualité<br>**R.BERTELLI** | **Direzione Prodotto**<br>Produktmanagement/Product Management/Direction Produit<br>**P.MESSORI** | Pagina 4 di 4 |

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL. + 39.0165.3021 - FAX + 39.0165.302286
CAP. SOC. 140.000.000 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, IATF 16949, EN 9100 and ISO 14001.

# INSPECTION CERTIFICATE 3.1 (EN 10204:2004)

DOCUMENT NUMBER 2020005555



WITNESS
REVIEW
ON BEHALF OF
A. DELLAPINA DATE 08 NOV 2024



| | | | |
|---|---|---|---|
| CUSTOMER: | A.S.T. SPA | | |
| CUSTOMER'S ORDER: | AQ2000377 | | |
| MANUFACTURER'S WORKS: | AOSTA, VIA PARAVERA 16 - ITALY | | |
| PRODUCER OF THE DOC: | QUALITY DEPARTMENT | | |
| MANUFACTURER'S WORKS ORDER NO: | 1116455 /10 | MARK OF THE MANUFACTURER: | COGNE |
| DISPATCH NOTE: | 81329230 /10 | WEIGHT: | 900 KG |
| THE CERTIFIED PRODUCTS ARE COMPLYING TO THE PURCHASE ORDER, EXCEPT FOR EXEMPTIONS AGREED WITH THE CUSTOMER, IF ANY. | | | |
| INTERNAL SPEC: | AD2000MERKBLATTW10 | TECHNICAL RULE: | AD2000 |
| PRODUCT: | 2290 SPE ROUGHPEELED | ROUND BARS TOLERANCE: | + 1,500 - 0,0000 |
| SURFACE FINISH: | 1X Hot Finished | | |
| PRODUCT DELIVERY CONDITION: | RS SOLUTION ANNEALED | | |
| PRODUCT DIMENSIONS (mm): | 160,000 | LENGTH (mm) | 04000 /06000 |
| GRADE: | AISI 316/316L EN1.4401/4404 | INTERNAL GRADE: | F316L5 IMCO |
| IDENTIFICATION HEAT NO: | 000082 | IDENTIFICATION LOT NO: | 828080 |
| MARKING OF THE PRODUCT: | 1.4404 | TEST PIECE N: | 808 |

THE MATERIAL IS PRODUCED ACCORDING TO SPECIFICATION AD2000-MERKBLATT W2/W10
DOCUMENT ISSUED IN AGREEMENT WITH TUEV BAYERN(11.1972) WAVING OF COUNTERSIGNING (SEE TUEV BAYERN LETTER DATED 17.01.80).
REFERENCE NORMS:EN 10088-3, EN 10272, ASTM A276/ASME
SA276, ASTM A479/ASME SA479, ASTMA193 B8M CLASSE 1D,
ISO15156-3/NACE MR0175, NACE MR0103.
REFERENCE NORMS FOR CHEMICAL COMPOSITION AND MECANICHAL PROPERTIES: ASTM A182/ASME SA182
REFERENCE NORMS FOR CHEMICAL COMPOSITION ONLY: EN 10222-5, ASTM A484, ASTM A403, ASTM A314.
HOT ROLLED
REDUCTION RATIO 4,2

CHEMICAL LADLE ANALYSIS ACCORDING TO ASTM A751 - EN ISO 14284
Control lot No. - Weight :020000822939 - 84.048 KG

| ELEMENTS | C | Si | Mn | P | S | N | Cr | Mo | Ni | Cu |
|---|---|---|---|---|---|---|---|---|---|---|
| OBTAINED | 0,021 | 0,39 | 1,31 | 0,026 | 0,030 | 0,087 | 16,76 | 2,05 | 10,18 | 0,40 |
| ELEMENTS | Co | | | | | | | | | |
| OBTAINED | 0,14 | | | | | | | | | |

HARDNESS TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000823509 - 23.563 KG
SPECIFICATION ENISO6506 HARDNESS TEST HB TESTING METHOD: 10/3000
OBTAINED 175

IMPACT TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000823509 - 23.563 KG
SPECIFICATION EN ISO 148-1-KV2 DIRECTION OF THE TEST PIECE: L
TYPE OF TEST PIECE KV
TEST TEMPERATURE °C 20
MEASUREMENT UNIT J

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| OBTAINED | 431 | 437 | 439 | 433 | 433 | 436 | 434 | 431 | 439 | 439 |
| | 430 | 433 | | | | | | | | |

08 NOV. 2024
FRANCO CORBELLINI
QSQ
CROSSWIND

DATE 04.02.2020 MORABITO ROSA CF(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE -Cogne

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL. + 39.0165.3021 - FAX + 39.0165.302296
CAP. SOC. 140.000.000 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320078 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, IATF 16949, EN 9100 and ISO 14001.



☐REVIEW ☐WITNESS
ON BEHALF OF
A. DELLA PINA DAT
08 NOV 2024
Page 122 of 600

TENSILE TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000823509 - 23.563 KG
SPECIFICATION EN-ISO6892-1 DIRECTION OF THE TEST PIECE: L

| | RM | RP02 | A5 | Z | RP1 |
|---|---|---|---|---|---|
| MEASUREMENT UNIT | MPA | MPA | % 5.0 D | % | MPA |
| OBTAINED | 598 | 262 | 55,5 | 78,2 | 307 |
| | 605 | 272 | 55,8 | 80,1 | 301 |
| | 597 | 266 | 54,8 | 80,6 | 304 |
| | 601 | 268 | 55,1 | 80,1 | 310 |

---

GRAIN SIZE
Control lot No. - Weight :020000823509 - 23.563 KG
SPECIFICATION ASTME112 --
OBTAINED 3 5

---

CORROSION TEST ACCORDING TO ASTM A262 PRACTICE E EN ISO 3651-2 PRACTICE A: SATISFACTORY.
MATERIAL ACCORDING TO ASME SEC. II Ed. 2015
IMPACT TEST
Control lot No. - Weight :020000823509 - 23.563 KG
SPECIFICATION EN ISO 148-1 DIRECTION OF THE TEST PIECE: L
TYPE OF TEST PIECE KV
TEST TEMPERATURE °C 196-
MEASUREMENT UNIT J
OBTAINED 203 214 195 194 192 214 220 208 197 198
191 200

---

TENSILE TEST
Control lot No. - Weight :020000823509 - 23.563 KG
SPECIFICATION ASTMA370-E8-0.5"SPEC DIRECTION OF THE TEST PIECE: L

| | RMB | RP02B | RA | EL4 |
|---|---|---|---|---|
| MEASUREMENT UNIT | KSI | KSI | % | % 4,0 D |
| OBTAINED | 86 | 39 | 77,5 | 57,5 |
| | 88 | 38 | 74,6 | 53,7 |
| | 84 | 37 | 78,8 | 61,8 |
| | 86 | 39 | 77,5 | 55,6 |

---

ULTRASONIC TEST ACCORDING TO EN 10308 Class.3, EN 10228 Class.3, ASTM A388 FBH 5 (diam. 102-250), FBH 8 (diam. 250,01-400).
VISUAL INSPECTION OF SURFACE AND DIMENSIONAL CONTROL ACCORDING TO EN10221 CLASS C AND EN10060: SATISFACTORY.
ANTIMIX TEST BY PORTABLE SPECTROMETRE: SATISFACTORY.
NO WELDING REPAIR ON THE MATERIAL.
FREE FROM RADIOCTIVITY CONTAMINATION.
MARKING: SYMBOL OF THE MANUF. WORK, MATERIAL N. , CAST N., LOT N., RECEIVING AGENT STAMP
COUNTRY OF ORIGIN: ITALY, THE MATERIAL COMPLIES WITH FAR DFARS
252.225-7009 ALT 1.

DATE 04.02.2020 MORABITO ROSA CF(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE -Cogne

08 NOV. 2024
FRANCO CORBELLINI
QRO
CROSSWIND

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL + 39.0165.3021 - FAX + 39.0165.302288
CAP. SOC. 140.000.000 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320078 - R.E.A. n. AO-60474

Company with Management Systems certified according to ISO 9001, IATF 16949, EN 9100 and ISO 14001.



THE PRODUCT SATISFIES CE DIRECTIVES EU: 2015/863 (ROHS3) - 2011/65 (ROHS2) - 2000/53 - 2002/95(RoHS) - 2003/11 - 2005/618 AND PED 2014/68.
ALL THE NORMS MENTIONED ARE INTENDED IN THEIR LAST REVISION AT THE DATE OF ISSUE OF THIS DOCUMENT.
QUALITY SYSTEM CERTIFIED BY I.G.Q ACCORDING TO UNI EN ISO 9001:2015 -IATF 16949:2016 (THE LAST ONE ONLY FOR WIRE ROD AND HOT ROLLED-PEELED-GROUND STAINLESS STEEL BARS).
INSPECTOR'S STAMP LF
THE MATERIAL IS FREE OF ANY MERCURY, MERCURY COMPOUNDS AND OR RADIUM CONTAMINATION AT TIME OF SHIPMENT AND WAS PRODUCED WITHOUT USING OZONE DEPLETING SUBSTANCES OF CLASS I AND II.
RADIOACTIVITY CONTROL PERFORMED WITH A GAMMA SPECTROMETER: ASTM E181.
GAMMA ACTIVITY ON THE PRODUCTS BELOW 0.1 BQ/G ACCORDING TO EU RESOLUTION 2013/59/EURATOM , IAEA RS-G-1.7 AND IAEA SSG-17.

REVIEW ☐ WITNESS
ON BEHALF OF
A. BELLINA DATE 08 NOV 2024

08 NOV. 2024
FRANCO CORBELLINI
080
CROSSWIND

DATE 04.02.2020

MORABITO ROSA CF(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

-Cogne

Laboratorio T.O.S.I. s.r.l.
Tecnici Organizzati al Servizio delle Imprese
*Sede Legale e Unità Operativa:* 20025 Legnano (MI) - Via Pisacane, 46
Tel. 0331.549631 / 0331.456119 - Fax 0331.470141 / 0331.451616
Internet: www.laboratoriotosi.it - E-mail: info@labtosi.it - P.IVA e C.F. 12805730152

LAB N° 1504

| RAPPORTO DI PROVA / TEST REPORT | DATA / DATE |
|---|---|
| **20P0699** Rev. **0** | 30/03/20 |

| | | | |
|---|---|---|---|
| CLIENTE / CUSTOMER | **A.S.T. S.p.A.** | | |
| | Via R. Merendi, 40 | 20010 Cornaredo (MI) | Italy |

| | |
|---|---|
| DESCRIZIONE CAMPIONE / SAMPLE DESCRIPTION # | Round bar Ø 160 mm |
| RIFERIMENTI DEL CLIENTE / CUSTOMER REFERENCES # | Order AQ2000449<br>DDT 16/200 of the 02/03/20 |

| RICEVUTO IL / RECEIVED ON | CAMPIONAMENTO / SAMPLING | LUOGO ESECUZIONE PROVE / TESTING PLACE |
|---|---|---|
| 02/03/20 | By customer | Laboratorio T.O.S.I. |

| MATERIALE / MATERIAL # | COLATA / HEAT # |
|---|---|
| ASTM A479 Tp.316/316L | 000082 |

| ID. CLIENTE / CUSTOMER ID # | ID. LABORATORIO / LABORATORY ID. |
|---|---|
| - | **S0650** |

I risultati di prova si riferiscono solo ai campioni sottoposti a prova, come ricevuti. / Test report results relate to the tested specimens only, as received.

Il presente rapporto di prova non può essere riprodotto parzialmente. / The present test report cannot been partially reproduced.

I testimoni di prova sono conservati per 3 mesi, salvo diversa richiesta scritta del cliente. / Copons after test shall be kept for 3 months, unless otherwise written request of the customer.

Ove presente l'incertezza di misura viene espressa come incertezza estesa ottenuta moltiplicando l'incertezza tipo per il fattore di copertura k corrispondente ad un intervallo di fiducia di circa il 95%. Normalmente tale fattore k vale 2, tranne per analisi chimica (k=4,3) e per la determinazione di una seconda fase (k=2,05). / Where present the reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k = 2, which for a normal distribution provides a level of confidence of approximately 95%, except for chemical analysis (k=4,3) and for determination of a second phase (k=2,05).

# Informazioni fornite dal cliente, per le quali il laboratorio declina ogni reponsabilità. / Information provided by the customer, for which the laboratory refuses all responsibility.

| Redattore / Editor | | Responsabile laboratorio / Laboratory manager |
|---|---|---|
| *Lorenzo Rigamonti* | LABORATORIO T.O.S.I. S.R.L. | *Angelo Rossetti* |

| Ispettore esterno / External inspector | Ispettore esterno / External inspector | Ispettore esterno / External inspector |
|---|---|---|
| | | |

08 NOV. 2024
FRANCO CORBELLINI
QBA
CROSSWIND

☒ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

Laboratorio T.O.S.I. s.r.l.
Tecnici Organizzati al Servizio delle Imprese
*Sede Legale e Unità Operativa:* 20025 Legnano (MI) - Via Pisacane, 46
Tel. 0331.549631 / 0331.456119 - Fax 0331.470141 / 0331.451616
Internet: www.laboratoriotosi.it - E-mail: info@labtosi.it - P.IVA e C.F. 12805730152

LAB N° 1504

TEST REPORT: **20P0699** Rev. **0** LABORATORY ID. **S0650**

PROVA RICHIESTA / TEST REQUIRED:

Prova di trazione Temperatura amb. / tensile test at room temperature

| NORMA DI PROVA / TEST STANDARD | APPARECCHIATURE / APPARATOUS: |
|---|---|
| **ASTM E8/E8M-16a** | Machine **T095**<br>Extensometer **T098**<br>Caliper **T103** |
| DATA PROVA / TEST DATE: 26/03/2020 | |

| Prova n° test n° | Orientamento / orientation | Posizione / location | T °C | Dimensione dimension mm | $S_0$ $mm^2$ | $L_0$ mm | YS 0,2% MPa | TS MPa | E % | R.A. % |
|---|---|---|---|---|---|---|---|---|---|---|
| S0650 | Longitudinal | T/4 | r.t. | Ø 12,49 | 122,5 | 50 | 278 | 593 | 59 | 78 |

Snervamento determinato col metodo offset. Allungamento determinato dopo rottura. Metodo A /
Yield strengh determined by the offset method. Elongation determined after fracture. Method.A.

0 8 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND

☒ REVIEW ☐ WITNESS
ON BEHALF OF RCT
A. DELLA PINA DATE 0 8 NOV 2024

Laboratorio T.O.S.I. s.r.l.
Tecnici Organizzati al Servizio delle Imprese
*Sede Legale e Unità Operativa:* 20025 Legnano (MI) - Via Pisacane, 46
Tel. 0331.549631 / 0331.456119 - Fax 0331.470141 / 0331.451616
Internet: www.laboratoriotosi.it - E-mail: info@labtosi.it - P.IVA e C.F. 12805730152

LAB N° 1504

TEST REPORT: **20P0699** Rev. **0** LABORATORY ID. **S0650**

| PROVA RICHIESTA / TEST REQUIRED: | |
|---|---|
| Test for detecting susceptibility to intergranular attack in austenitic stainless steel | |
| NORMA DI PROVA / TEST STANDARD: **ASTM A262-15 Pr.E** | APPARECCHIATURE / APPARATOUS: Caliper **T100** Machine **T096** |
| DATA PROVA / TEST DATE: 24/03/2020 | |

**DETTAGLI CAMPIONE / SPECIMEN DETAILS:**

| TRATTAMENTO TERMICO / HEAT TREATMENT | POSIZIONE / POSITION: | PREPARAZIONE / PREPARATION: | DIMENSIONI PROVINO / SPECIMEN DIMENSIONS: STANDARD | | |
|---|---|---|---|---|---|
| Prove eseguite dopo TT di sensibilizzazione / test performed after sensitizing heat treatment (670°C/1h/air) | B.M. | Carte 220 umido / wetamery paper 220 | 99,39 mm | 21,44 mm | 5,95 mm |

**PROVA IN SOLUZIONE / TEST IN SOLUTION**

| SOLUZIONE / SOLUTION | TEMPERATURA / TEMPERATURE: | TEMPO PROVA / TEST TIME | INIZIO PROVA / START TEST | FINE PROVA / END TEST |
|---|---|---|---|---|
| 6 % $CuSO_4$ + 16 % $H_2SO_4$ in $H_2O$ | Punto ebollizione / boiling point | 24 h | 24/03/20 | 25/03/20 |

**PROVA DI PIEGA / BEND TEST**

| ORIENTAMENTO / ORIENTATION | Ø | α | RISULTATO / RESULT | ESAME MACROGRAFICO / MACROGRAPHIC EX. | |
|---|---|---|---|---|---|
| - | 6 mm | 180 ° | Passing test specimen | (20x) | Satisfactory |

NOTE:

Fine rapporto di prova / End of test report

0 8 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND

☑ REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLA PINA DATE 0 8 NOV 2024

COGNE ACCIAI SPECIALI S.p.a.
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C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.

# INSPECTION CERTIFICATE 3.1 (EN 10204:2004)

DOCUMENT NUMBER 2022045248



| | |
|---|---|
| CUSTOMER: | A.S.T. SPA |
| CUSTOMER'S ORDER: | AQ2300423 |
| MANUFACTURER'S WORKS: | AOSTA, VIA PARAVERA 16 - ITALY |
| PRODUCER OF THE DOC: | QUALITY DEPARTMENT |
| MANUFACTURER'S WORKS ORDER NO: | 0001133685 / 000010 |
| MARK OF THE MANUFACTURER: | COGNE |
| DISPATCH NOTE: | 0081535289 / 000010 WEIGHT: 14 KG / 31 LB |
| INTERNAL SPEC: | STOCKBARREW2 TECHNICAL RULE: AD2000-W2 |
| PRODUCT: | TRA COLD DRAWN ROUND BARS TOLERANCE: ISOH9 |
| SURFACE FINISH: | 2H Cold Finished |
| PRODUCT DELIVERY CONDITION: | RP ANNEALED+COLD WORKED |
| PRODUCT DIMENSIONS (mm): | 14,000 ( 0,551 in) LENGTH (mm) 03050 03100 ( 00120 00122 in) |
| GRADE: | AISI 316/316L EN1.4401/4404 INTERNAL GRADE: 316LMQ IMCO |
| IDENTIFICATION HEAT NO: | 272928 IDENTIFICATION LOT NO: 160790 |
| MARKING OF THE PRODUCT: | 1.4404 TEST PIECE N: 079 |

THE PRODUCT IS CONFORMING TO THE CONTRACT AGREEMENT AND TO THE RULE AD2000-MERKBLATT W0/W2.
REFERENCE NORMS: EN 10088-3, EN 10272, ASTM A484, ASTM A276, ASME SA276, ASTM A479, ASME SA479, AMS 5648, AMS 5653, AMS-QQ-S-763.
STEELMAKING EAF + AOD + CONTINUOUS CASTING
SOLUTION TREATED AT 1050°C +-15°C / 1 min x mm / WATER.
RADIOACTIVITY CONTROL PERFORMED WITH A GAMMA SPECTROMETER: ASTM E181.
GAMMA ACTIVITY ON THE PRODUCTS BELOW 0.1 BQ/G ACCORDING TO EU RESOLUTION 2013/59/EURATOM , IAEA RS-G-1.7 AND IAEA SSG-17.
CORROSION TEST ACCORDING TO ASTM A262 PRACTICE E EN ISO 3651-2 PRACTICE A: SATISFACTORY.
HOT ROLLED
REDUCTION RATIO 144,9

CHEMICAL LADLE ANALYSIS ACCORDING TO ASTM A751 - EN ISO 14284
Control lot No. - Weight :020000920197 - 86.055 KG - 189.716 LB

| ELEMENTS | C | Si | Mn | P | S | N | Cr | Mo | Ni | Cu |
|---|---|---|---|---|---|---|---|---|---|---|
| MEASUREMENT UNIT | % | % | % | % | % | % | % | % | % | % |
| OBTAINED | 0,018 | 0,33 | 1,81 | 0,028 | 0,024 | 0,081 | 17,28 | 2,07 | 10,03 | 0,42 |

| ELEMENTS | Co |
|---|---|
| MEASUREMENT UNIT | % |
| OBTAINED | 0,18 |

HARDNESS TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000920699 - 9.752 KG - 21.499 LB
SPECIFICATION ENISO6506 HARDNESS TEST HB TESTING METHOD: 10/3000
OBTAINED 207

A. DELLA FINA DATE 08 NOV 2022 ON BEHALF OF REVIEW WITNESS

DATE 20.07.2022

BARBARA VIETTI MV(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE -Cogne

08 NOV. 2024 FRANCO CORBELLINI CROSSWIND OBO

COGNE ACCIAI SPECIALI S.p.a.

ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL +39.0165.3021 - FAX +39.0165.302296
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C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.



TENSILE TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000920699 - 9.752 KG - 21.499 LB
SPECIFICATION EN-ISO6892-1 DIRECTION OF THE TEST PIECE: L

| MEASUREMENT UNIT | RM MPA | RP02 MPA | A5 % | Z % | RP1 MPA |
|---|---|---|---|---|---|
| OBTAINED | | | 5.0 D | | |
| | 692 | 455 | 43,7 | 79,2 | 607 |
| | 695 | 471 | 44,3 | 80,3 | 614 |
| | 692 | 455 | 43,4 | 77,1 | 608 |
| | 705 | 477 | 40,7 | 71,3 | 622 |

EDDY CURRENT INSPECTION OF SURFACE ACCORDING TO EN 10277 Class.3: SATISFACTORY.
DIMENSIONAL CONTROL ACCORDING TO EN 10278 AND ASTM A484: SATISFACTORY.
TENSILE TEST
Control lot No. - Weight :020000920699 - 9.752 KG - 21.499 LB
SPECIFICATION ASTMA370-E8-0.5"SPEC DIRECTION OF THE TEST PIECE: L

| MEASUREMENT UNIT | TS KSI | YS02 KSI | RA % | EL4 % |
|---|---|---|---|---|
| OBTAINED | | | | 4,0 D |
| | 101 | 68 | 75,9 | 45,7 |

NO WELDING REPAIR ON THE MATERIAL.
THE MATERIAL IS FREE OF ANY MERCURY, MERCURY COMPOUNDS AND OR RADIUM CONTAMINATION AT TIME OF SHIPMENT AND WAS PRODUCED WITHOUT USING OZONE DEPLETING SUBSTANCES OF CLASS I AND II.
HEAT TREATMENT PERFORMED IN CALIBRATED FURNACES ACCORDING TO INTERNAL PROCEDURE PR-GDQ.ITT COMPLYING WITH API6A Annex M.
VISUAL INSPECTION OF SURFACE AND DIMENSIONAL CONTROL ACCORDING TO EN10221 CLASS C, EN 10060 AND ASTM A484: SATISFACTORY.
MARKING: PRODUCER LOGO, MATERIAL NO, HEAT NO, LOT NR.
ANTIMIX TEST: SATISFACTORY
DOCUMENT ISSUED IN AGREEMENT WITH TUEV BAYERN(11.1972) WAVING OF COUNTERSIGNING (SEE TUEV BAYERN LETTER DATED 17.01.80).
ALL THE NORMS MENTIONED ARE INTENDED IN THEIR LAST REVISION AT THE DATE OF ISSUE OF THIS DOCUMENT.
COUNTRY OF MELTING AND ORIGIN: ITALY, THE MATERIAL COMPLIES WITH FAR DFARS
252.225-7009 ALT 1.
THE ABOVE ARE TRUE AND CORRECT RESULTS OF TESTS ON SAMPLES OF THE MATERIAL. RESULTS ARE CONFORM TO THE SPECIFICATION(S) APPLICABLE AND ARE RECORDED.
THE RECORDING OF FALSE, FICTIOUS OR FRAUDULENT STATEMENTS OR ENTRIES ON THIS DOCUMENT MAY BE PUNISHABLE AS A FELONY UNDER U.S. FEDERAL STATUTES.
INSPECTOR'S STAMP LF
MATERIAL IN COMPLIANCE WITH THE NORSOK M-630 MDS S01
The products delivered are conforming to EN10088-5 and bear the CE marking on the basis of the test results here reported and the continuous surveillance, assessment and approval by MPA NRW
(certificate no. 0432-CPR-00166-01)
Material produced according to the system #Regulation 305/2011/EU of the European Parliament and of the Council of 9 March 2011#

CE 0432

DATE 20.07.2022

BARBARA VIETTI MV(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE -Cogne

1724000740-QC-DB-00016_01

Page 428 of 600

0 8 NOV. 2024
FRANCO CORBELLINI
CROSSWIND

**AST S.p.A.**
Via R. Merendi, 40
I-20007 Cornaredo MI

P +39 02 934848.1
F +39 02 9362248
W www.astspa.it

**MATERIAL CERTIFICATES INDEX**
**CERTIFICATO DEI MATERIALI**

**No.** 2400595

EN 10204 3.1

**Customer**
ROSETTI MARINO S.P.A.

**P.Order / Project**
1724000740 123A90A Rev. 1

**ITEM Number**
130

**Tag**
25-PV-055A

**Quantity delivered**
1

**AST Job**
CV2400221

**AST Code**
CV2400221CV8407A002

**Serial Number**
2400595

**Valve Type**
Valvole Regolazione

**Size**
NPS 1-1/2" CLASS 300 RF

**Port Size**
1"

| Part Name | Material | Heat No. | Certificate No. | Supplier |
|---|---|---|---|---|
| BODY | ASTM A351 CF3M | G1181 | PKC-G1181-AT223-1 | PEEKAY STEEL CASTING (P) LTD |
| SEAT RING | ASTM A479 316/316L | 291581 | MEST135479/2023/ | ACCIAIERIE VALBRUNA |
| PLUG | F316 + PTFE | 293368 | MEST028009/2024/ | ACCIAIERIE VALBRUNA |
| BONNET | ASTM A479 316/316L | 293820 | MEST053921/2024/ | ACCIAIERIE VALBRUNA |
| STEM | ASTM A479 316/316L | 276383 | MEST112865-2022 | ACCIAIERIE VALBRUNA |

08 NOV. 2024
FRANCO CORBELLINI
QSQ
CROSSWIND R

☒ REVIEW ☐ WITNESS
ON BEHALF OF RMC
A. DELLA PINA DATE 08 NOV 2024

**Remarks** :

**AST Q.C. Department**

**Customer's Inspector**

**Third Party Inspection**

**Date** : 06.11.2024 **Date** : _____ **Date** : _____

# PEEKAY STEEL CASTINGS (P) LTD

**4/242 Chinnamaddampalayam, Billichi Post, Coimbatore - 641 019**

**Email: info@pkcbe.co.in, Phone: 04254 - 271610**


## INSPECTION CERTIFICATE

EN 10204.3.1

| | | | | | |
|---|---|---|---|---|---|
| Customer: | AST SPA | | | | |
| Order No and Date | | PO Line No | Heat Code | TCNo | PKC/G1181/AT223/1 |
| AQ2101495 / 30/07/2021 | | 15 | PYM01K09 | Date | 22-Nov-2021 |
| F.P. No | Part Name | | | Item Code / Part No | |
| AT223 | 1.5" ANSI RF RTJ 300RF | | | CABDWG0060 | |
| Casting Drawing No and Machining Drg.No | | | Pattern No | No.of pieces | |
| **M060 REV 0** | | | | 4 | |
| Specification /Material | | | | | |
| **ASTM A351-2018/ASME SA351-2021 Gr.CF3M** | | | | Poured Date : 09/10/2021 | |

| Heat treatment | Melting Process | State of Delivery |
|---|---|---|
| Solution Anneling at 1100°c soaked for 5 hours then water cooled.<br>HT Cycle No:E8080 Dt:16/10/2021 Sl.No:1,2,4,6 | INDUCTION<br>08 NOV. 2024 | Unmachined |

### Chemical Composition (%)

| Element | C | Mn | Si | P | S | Cr | Ni | Mo | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Min. Specified | ... | ... | ... | ... | ... | **17.000** | **9.000** | **2.000** | ... | ... | ... | ... | ... | | | |
| Max. Specified | **0.030** | **1.500** | **1.500** | **0.040** | **0.040** | **21.000** | **13.000** | **3.000** | ... | ... | ... | ... | ... | | | |
| Heat No | | | | | | | | | | | | | | | | |
| G1181 | 0.015 | 1.100 | 1.040 | 0.028 | 0.003 | 18.770 | 9.950 | 2.120 | | | | | | | | |

Heat Slnos: 1,2,4,6

| Mechanical Properties | Yield Strength (0.2% Offset) | Tensile Strength | % of Elongation | | Reduction of Area | Hardness | Bend Test Angle at 0° | Impact value at -196°C in Joules (10mm x 10mm x 55mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | GL=50 mm | GL=62.5 mm | | | | | | | |
| Min | **205** | **485** | **30** | ... | ... | ... | D=0t | Average 40 J | | | |
| Max | ... | ... | ... | ... | ... | **237** | | Single Value | | | |
| Heat No | Mpa | Mpa | | | | HBW | | 1 | 2 | 3 | Avg |
| G1181 | 294 | 551 | 56.08 | - | - | 163.00 | .... | 98 | 112 | 110 | 106.667 |

Remarks/Observations

Material conform to :AST SPA Specifications FOR 001 Rev 15 & ASTM A351-2018/ASME SA351-2021 Gr.CF3M.NACE MR0175/ISO 15156-3.Castings are acid pickled and passivated.
Penetrant Test of inspection According to ASME B16.34 Appendix III
Visual inspection of casting :Satisfactory According to MSS-SP-55
Dimensional inspection:Satisfactory,According to Approved Drawing

Certified that the products supplied is free from Radioactive element or contamination

☑ REVIEW ☐ WITNESS
ON BEHALF OF RTL
A. DELLAPINA DATE 08 NOV 2024

Certified that the above mentioned material have been manufactured,tested and inspected in compliance with the requirements of Purchase order, conform in all respects to the relevant specification and drawings.

| Suppliers Logo | Prepared by | Stamp | Approved by | |
|---|---|---|---|---|
| PKC | Ramkumar D | | Vijaya Kumar K | PK 02 |

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a : Nach/According to/Selon: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. Prufung/Test/Essai: MEST135479 / 2023 /

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Ordine nr: ORD N AQ2302275
Bestell / Your order / Commande

Conferma ordine nr: MI23008231
Werks/Our Order/Ref nr.

Avviso di Spedizione: A-MI23006313
Lieferanzeige/Packing list/B.L.

Stato di fornitura : Laminato - Solubilizzato Pelato
Lieferzustand / Delivery state / Etat de livraison

Tipo di Elaborazione: E+AOD
Erschmelzungsart / Melting process / Mode d'elaboration

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung / Brand / Nuance

Produttore :
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Marchi di Fabbrica: AV
Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice

Punzone del Collaudatore: MR
Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur

Punzonatura: 1.4401/1.4404
Kennzeichnung / Marking / Marquage

**SPECIFICHE :**
Anforderungen / Requirements / Exigences

Note:
Aufzeichnungen / Notes / Notes

VAL STOCK W2 A/1 1.4404/316L A
MDS S01 5 316 A (0)
MDS S17 1 316 A (1)
AD 2000-M. W 2 01/20 1.4401 A (2)
AD 2000-M. W 2 01/20 1.4404 A (3)
AISI . 316/316L
ASME SA182 2021 S31600/03 A (4)
ASME SA193 2021 B8M CLASS 1D (5)
ASME SA276 2021 S31600/03 A (6)
ASME SA320 2021 B8M CLASS 1 (7)
ASME SA479 2021 S31600/03 A (8)
ASTM A182 2022A S31600/03 A (9)
ASTM A193 2023 B8M CLASS 1D
ASTM A262 PR. E 2015 316/316L (A)
ASTM A276 2017 S31600/03 A
ASTM A320 2022 B8M CLASS 1 CLASS1
ASTM A370 2022 .
ASTM A479 2021 S31600/03 A
ASTM E10 2018 .
ASTM E8 2022 .
EN 10088 PART 3 2014 1.4401 A
EN 10088 PART 3 2014 1.4404 A
EN 10272 2016. 1.4401 A
EN 10272 2016. 1.4404 A
ISO 148-1 2016 .
ISO 3651-2 98 METHOD A T1
ISO 6506-1 2014 .
ISO 6892-1 2019 .
NACE MR0103 2015 S31600/03 A (B)
NACE MR0175 2015 S31600/03 A (C)
ACH CO . .
KV L -196C . ISO 148-1

(0)Norsok-standard M-630 Edition 6, October 2013
(1)Norsok-standard M-630: 2020 (2020-09-30)
(2)AD 2000-MERKBLATT W 2 edition 01.2020 AD 2000-MERKBLATT W 10 edition 01.2020
(3)AD 2000-MERKBLATT W 2 edition 01.2020 AD 2000-MERKBLATT W 10 edition 01.2020
(4)Section II Part A 2021 EDITION For products machined directly from bar refer to ASME SA479.
(5)Section II Part A 2021 EDITION
(6)Section II Part A 2021 EDITION
(7)Section II Part A 2021 EDITION
(8)Section II Part A 2021 EDITION
(9)For products machined directly from bar refer also to ASTM A479.

0 8 NOV. 2024
FRANCO CORBELLINI
QBO
CROSSWIND R

(A)Reapproved 2021

☒ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 0 8 NOV 2024

(B)ANSI/NACE MR0103/ISO 17945 November 23, 2015
(C)ANSI/NACE MR0175/ISO 15156-3, third edition November 23,2015

| Pos. nr. | Oggetto | Tolleranza: k12 Dimensioni - mm | Lunghezza - mm | Colata | Pezzi | Peso - KG | Lotto nr. |
|---|---|---|---|---|---|---|---|
| Pos. nr. / Item nr. / Nr. de poste | Gegenstand / Product description / Descrip. du produit | Abmessungen / Dimension / Dimension | Länge / Length / Longueur | Schmelze / Heat / Coulée | Stückzahl / Pieces / Pièces | Gewicht / Weight / Poids | Lose nr. / Lot nr. / Lot nr. |
| 0020 | Tondo | 60,000 | 6165/ 6194 | 291581 | | 141,0 | 305210011 |

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| Vicenza, 08/11/2023 | Direzione Qualità | Direzione Prodotto | Pagina |
|---|---|---|---|
| VCQ012 - MEST135479 | Qualitätsmanagement/Quality Management/Gestion Qualité<br>R.BERTELLI | Produktmanagement/Product Management/Direction Produit<br>P.MESSORI | 1 di 4 |

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a / Nach/According to/Selon: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. / Prüfung/Test/Essai: MEST135479 / 2023 /

Cliente / Besteller/Purchaser/Client:
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura / Lieferzustand / Delivery state / Etat de livraison: Laminato - Solubilizzato Pelato

Produttore / Hersteller/Item/Usina productrice:
**ACCIAIERIE VALBRUNA S.P.A.**

Tipo di Elaborazione / Erschmelzungsart / Melting process / Mode d'elaboration: E+AOD

Marchi di Fabbrica / Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice: AV

Ordine nr / Bestell / Your order / Commande: ORD N AQ2302275

Qualità / Werkstoff/Grade/Nuance: 1.4401/1.4404/316/316L

Punzone del Collaudatore / Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur: MR

Conferma ordine nr / Werke/Our Order/Ref nr.: MI23008231

Avviso di Spedizione / Lieferanzeige/Packing list/B L: A-MI23006313

Marca / Markenbezeichnung / Brand / Nuance: MVAPML ( MAXIVAL )

Punzonatura / Kennzeichnung / Marking / Marquage: 1.4401/1.4404

### TEST ALLO STATO DI FORNITURA

Test on delivery condition / Prüefung auf lieferbereitem produkt / test a l'etat de fourniture / Prueba sobre el material asi come entregado

1) L=longitudinale/langs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg.diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | | Posiz. Saggio Probentage Location Emplacement 1) | Snervamento Streckgrenze Yield Stress Limite elastique Rp 0,2% N/mm2 | Snervamento Streckgrenze Yield Stress Limite elastique Rp 1% N/mm2 | Resistenza Zugfestigkeit Tensile strength Resistance à traction Rm N/mm2 | Allungamento Bruchdehnung Elongation Allongement A5 % | | Strizione Einschnürung Reduction of area Striction Z % | | Resilienza Kerbschlagarbeit Impact Value Resilience | | | Durezza Haerte Hardness Durete HB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti Anforderungen/Required values Valeurs demandées | | min / max | | | 200 | 235 | 500 / 700 | 40 | - | - | - | - | | | - / 215 | | |
| A | 10 | 20 | L | | 294 | 338 | 599 | 51 | | 68 | | | | | 182 | | |
| I | 10 | 20 | L | | 297 | 341 | 602 | 50 | | 68 | | | | | 184 | | |

### TEST ALLO STATO DI FORNITURA

Test on delivery condition / Prüefung auf lieferbereitem produkt / Test a l'etat de fourniture / Prueba sobre el material asi come entregado

| TEST | | min | max | |
|---|---|---|---|---|
| A | Dimensioni grano x ASTM E112 | | | 5 |

### Charpy per ISO 148-1

1) L=longitudinale/langs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg.diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | | Posiz. Saggio Probentage Location Emplacement 1) | Resilienza Kerbschlagarbeit Impact Value Resilience KV2 J | | | Espansione laterale Lateral Expansion Lateral ex mm | | | Shear Shear % Shear % | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti Anforderungen/Required values Valeurs demandées | | min / max | | | - | - | - | - | - | - | - | - | - |
| D | 10X10 | -196 | L | | 180 | 194 | 192 | 1,858 | 1,748 | 1,852 | 67 | 65 | 70 |

### Test allo stato di fornitura per ASTM A370

1) L=longitudinale/langs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg.diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | | Posiz. Saggio Probentage Location Emplacement % | Snervamento Streckgrenze Yield Stress Limite elastique Rp 0,2% N/mm2 | Snervamento Streckgrenze Yield Stress Limite elastique | Resistenza Zugfestigkeit Tensile strength Resistance à traction Rm N/mm2 | Allungamento Bruchdehnung Elongation Allongement E 4d % | | Strizione Einschnürung Reduction of area Striction RA % | | Resilienza Kerbschlagarbeit Impact Value Resilience | | | Durezza Haerte Hardness Durete HB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti Anforderungen/Required values Valeurs demandées | | min / max | | | 205 | - | 515 | - | 40 | - | 50 | - | | | - / 223 | | |
| E | 12,5 | 20 | L | | 289 | | 593 | | 53 | | 69 | | | | 179 | | |

08 NOV. 2024
FRANCO CORBELLINI
QSO
CROSSWIND

☑ REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLA PINA DATE 08 NOV 2024

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| Vicenza, 08/11/2023 | Direzione Qualità / Qualitätsmanagement/Quality Management/Gestion Qualité | Direzione Prodotto / Produktmanagement/Product Management/Direction Produit | Pagina |
|---|---|---|---|
| VCQ012 - MEST135479 | R.BERTELLI | P.MESSORI | 2 di 4 |

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1
Nach/According to/Selon

Certificato nr. MEST135479 / 2023 /
Prüfung/Test/Essai

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Ordine nr: ORD N AQ2302275
Bestell
Your order
Commande

Conferma ordine nr: MI23008231
Werks/Our Order/Ref nr.

Avviso di Spedizione: A-MI23006313
Lieferanzeige/Packing list/B.L

Stato di fornitura: Laminato - Solubilizzato Pelato
Lieferzustand
Delivery state
Etat de livraison

Tipo di Elaborazione: E+AOD
Erschmelzungsart
Melting process
Mode d'elaboration

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung
Brand / Nuance

Produttore:
Hersteller/Item/Usine productrice

**ACCIAIERIE VALBRUNA S.P.A.**

Marchi di Fabbrica: AV
Zeichen des Lieferwerkes
Trade marks
Sigles de l'usine productrice

Punzone del Collaudatore: MR
Stempel des Werkssachverständigen
Inspector's stamp/Poinçon de l'assayeur

Punzonatura: 1.4401/1.4404
Kennzeichnung
Marking
Marquage

### Charpy per ISO 148-1

1) L=longitudinale/langs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg diam Spess. Breite Diam Dicke Width Diam, Thickness Larg diam epais mm | °C | Posiz. Saggio Probenlage Location Emplacement 1) | Resilienza Kerbschlagarbeit Impact Value Resilience KV2 J | | | Espansione laterale Lateral Expansion | | | Shear Shear | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti Anforderungen/Required values Valeurs demandées | | min max | | 100 | 100 | 100 | - | - | - | - | - | - |
| H | 10X10 | 20 | L | 252 | 248 | 241 | | | | | | |
| L | 10X10 | 20 | L | 244 | 251 | 248 | | | | | | |

Tensile testing according to ISO 6892-1
Impact testing according to ISO 148-1
Mechanical properties according to ASTM A370.
Brinnell hardness according to ASTM E10
Tensile testing according to ASTM E8
Brinnell hardness according to ISO 6506-1

0 8 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND R

☒ REVIEW ☐ WITNESS
ON BEHALF OF RTG
A. DELLA PINA DATE 0-8 NOV 2024

### Analisi chimica
Chemische Zusammensetzung/Chemical Analysis/Analyse chimique

| Colata /Heat Schmelze/Coulée | | C % | Si % | Mn % | Cr % | Mo % | Ni % | Co % | P % | S % | N % | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | min - | - | - | - | 16,50 | 2,00 | 10,00 | - | - | - | - | - | - | - | - | - |
| | max 0,030 | 1,00 | 2,00 | - | 18,00 | 2,50 | 13,00 | - | 0,045 | 0,030 | 0,100 | - | - | - | - | - |
| 291581 | | 0,014 | 0,61 | 1,41 | 16,66 | 2,07 | 10,04 | 0,163 | 0,029 | 0,025 | 0,070 | | | | | |

**Corrosion test in 16% sulfuric acid and copper sulfate solutions**

**Test standard:** UNI EN ISO 3651-2 Method A

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitized T1 | 20 | boil | 90 | 5 | Absence of cracks | **SATISFACTORY** |

**Corrosion test in 16% sulfuric acid and copper sulfate solutions**

**Test standard:** ASTM A262-Practice E

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitization | 15 | boil | 180 | 5 | Absence of cracks | **SATISFACTORY** |

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a / Nach/According to/Selon: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. / Prüfung/Test/Essai: MEST135479 / 2023 /

Cliente / Besteller/Purchaser/Client:
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Ordine nr: ORD N AQ2302275
Bestell / Your order / Commande

Conferma ordine nr: MI23008231
Werks/Our Order/Ref nr.

Avviso di Spedizione: A-MI23006313
Lieferanzeige/Packing list/B.L.

Stato di fornitura: Laminato - Solubilizzato Pelato
Lieferzustand / Delivery state / Etat de livraison

Tipo di Elaborazione: E+AOD
Erschmelzungsart / Melting process / Mode d'elaboration

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung / Brand / Nuance

Produttore:
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Marchi di Fabbrica: AV
Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice

Punzone del Collaudatore: MR
Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur

Punzonatura: 1.4401/1.4404
Kennzeichnung / Marking / Marquage

Solution annealing by process annealing 1040°C min /
/ cooling rapidly
Controlled rolled
Reduction ratio = 10,7 : 1
SURFACE QUALITY COMPLIANT TO EN 10088-3 TAB.1 COND. 1X
"Issued in agreement with TÜV SÜD Industrie Service GMBH
(07/1972)"
"Qs approved according to PED, Annex I, Para. 4.3 by
Notified Body 0036"
"(Certification no. DGR-0036-QS-W 23/2002/MUC)"

Sono state soddisfatte tutte le condizioni richieste
Die gestellen Anforderungen sind it. Anlage erfüllt
The material has been furnished in accordance with the requirements
Le materiel à été trouvé conforme aux exigences

Controllo antimescolanza con tecnica XRF/OES portatile : OK
Vetwechslungprüfung: durch XRF/OES Gerät geführt : OK
Antimixing testing performed with XRF/OES portable : OK
Contrôle antimélange evt technique XRF/OES portable : OK

Controllo visivo e dimensionale: soddisfa le esigenze
Besichtigung und Ausmessung ohne Beanstandung
Visual inspection and dimensional checks satisfactory
Contrôle visuel et dimensions satisfaisant

Melted, poured and manufactured in Italy  No welding or weld repair  Material free from Mercury contamination

We declare that the finished product is checked for radioactive contamination by the portal system when it leaves the production plant.

The Quality Management System is also Certified according to Pressure Equipment Directive 2014/68/EU Annex 1,chapt.4.3 by TÜV and LLOYD'S
The Quality Management System is also Certified according to PER 2016/1105. Schedule 2, Part 4, Para 31 (8) by Competent Body TÜV SUD BABT Unlimited.
Any act of tampering, modification, alteration, counterfeiting and/or falsification and/or any other action which modifies the contents of this test certificate shall constitute a violation of applicable civil and criminal laws. Acciaierie Valbruna shall protect its rights and interests before any competent court, authority and jurisdiction.
Maxival and/or Valplus grades/products are manufactured with ladle techniques to control composition, distribution, size and shape of non-metallic inclusions for improved machinability.
The supplied product conforms to requirements expressly requested by the purchaser and conforms to requirements specified by certified norms and standards. Should the product be used for more severe, critical and/ or in any case different applications than those the material is generally intended for, any different and/or supplementary requirements shall be specifically demanded, at least, upon order of the Product by the Purchaser. Acciaierie Valbruna SpA shall not be responsible for any improper use of the Products.

08 NOV. 2024
FRANCO CORBELLINI
QBB
CROSSWIND R

☒ REVIEW ☐ WITNESS
ON BEHALF OF A. DELLA VALBRUNA
DATE 08 NOV 2024

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| | | | |
|---|---|---|---|
| Vicenza, 08/11/2023<br>VCQ012 - MEST135479 | Direzione Qualità<br>Qualitätsmanagement/Quality Management/Gestion Qualité<br>R.BERTELLI | Direzione Prodotto<br>Produktmanagement/Product Management/Direction Produit<br>P.MESSORI | Pagina 4 di 4 |

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a : EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1
Nach/According to/Selon

Certificato nr. MEST028009 / 2024 /
Prüfung/Test/Essai

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Ordine nr: ORD N AQ2400369
Bestell
Your order
Commande

Conferma ordine nr: MI24001817
Werks/Our Order/Ref nr.

Avviso di Spedizione: A-MI24001447
Lieferanzeige/Packing list/B.L.

Stato di fornitura : Laminato - Solubilizzato FINITO A FREDDO
Lieferzustand
Delivery state
Etat de livraison

Tipo di Elaborazione: E+AOD
Erschmelzungsart
Melting process
Mode d'elaboration

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung
Brand / Nuance

Produttore :
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Marchi di Fabbrica: AV
Zeichen des Lieferwerkes
Trade marks
Sigles de l'usine productrice

Punzone del Collaudatore: MR
Stempel des Werkssachverständigen
Inspector's stamp/Poinçon de l'assayeur

Punzonatura: 1.4401/1.4404
Kennzeichnung
Marking
Marquage

**SPECIFICHE :**
Anforderungen / Requirements / Exigences

VAL STOCK W2 A/1 1.4404/316L A,CF
AD 2000-M. W 2 2022 1.4401 A,CF (0)
AD 2000-M. W 2 2022 1.4404 A,CF (1)
AISI . 316/316L
AMS-QQ-S-763 D 316/316L A,CF
ASME SA182 2023 S31600/03 A (2)
ASME SA276 2023 S31600/03 A,CF (3)
ASME SA479 2023 S31600/03 A (4)
ASTM A182 2023 S31600/03 A (5)
ASTM A262 PR. E 2015 316/316L (6)
ASTM A276 2023 S31600/03 A,CF
ASTM A370 2022 .
ASTM A479 2023A S31600/03 A
ASTM E10 2023 .
ASTM E8 2022 .
EN 10088 PART 3 2014 1.4401 A,CF
EN 10088 PART 3 2014 1.4404 A,CF
EN 10272 2016. 1.4401 A,CF
EN 10272 2016. 1.4404 A,CF
ISO 148-1 2016 .
ISO 3651-2 98 METHOD A T1
ISO 6506-1 2014 .
ISO 6892-1 2019 .
NACE MR0103 2015 S31600/03 A (7)
NACE MR0175 4 S31600/03 A (8)
QQ-S-763 F 316/316L A,CF
ACH CO . .
KV L -196C . ISO 148-1

Note:
Anzeichnungen / Notes / Notes

(0)AD 2000-MERKBLATT W 2 edition 03.2022 AD 2000-MERKBLATT W 10 edition 06.2022
(1)AD 2000-MERKBLATT W 2 edition 03.2022 AD 2000-MERKBLATT W 10 edition 06.2022

(2)Section II Part A 2023 EDITION For products machined directly from bar refer to ASME SA479.
(3)Section II Part A 2023 EDITION
(4)Section II Part A 2023 EDITION
(5)For products machined directly from bar refer also to ASTM A479.
(6)Reapproved 2021

0 8 NOV. 2024
FRANCO CORBELLINI
QBO
CROSSWIND R

☒ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 0 8 NOV 2024

(7)ANSI/NACE MR0103/ISO 17945 November 23, 2015
(8)ANSI/NACE MR0175/ISO 15156-3.2020 Fourth edition, approved 21 Sep 2022.

| Pos. nr. Pos. nr. Item nr. Nr. de poste | Oggetto Gegenstand Product description Désignat. du produit | Tolleranza: k12 Toleranz/Allowance/Tolerance Dimensioni - mm Abmessungen Dimension Dimension | Lunghezza - mm Länge Length Longueur | Colata Schmelze Heat Coulée | Pezzi Stückzahl Pieces Pieces | Peso - KG Gewicht Weight Poids | Lotto nr. Los nr Lot nr. Lot nr. |
|---|---|---|---|---|---|---|---|
| 0030 | Tondo | 30,000 | 6000/ 6060 | 293368 | | 68,0 | 310402650 |

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a : EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1
Nach/According to/Selon

Certificato nr. MEST028009 / 2024 /
Prüfung/Test/Essai

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura : Laminato - Solubilizzato FINITO A FREDDO
Lieferzustand / Delivery state / Etat de livraison

Produttore :
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Ordine nr: ORD N AQ2400369
Bestell / Your order / Commande

Tipo di Elaborazione: E+AOD
Erschmelzungsart / Melting process / Mode d'elaboration

Marchi di Fabbrica:
Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice
AV

Conferma ordine nr: MI24001817
Werks/Our Order/Ref nr.

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Punzone del Collaudatore:
Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur
MR

Avviso di Spedizione: A-MI24001447
Lieferanzeige/Packing list/B.L.

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung / Brand / Nuance

Punzonatura: 1.4401/1.4404
Kennzeichnung / Marking / Marquage

### TEST ALLO STATO DI FORNITURA
Test on delivery condition Prüefung auf lieferbereitem produkt test a l'etat de fourniture Prueba sobre el material asi come entregado

1) L=longitudinale/längs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais. mm | °C | Posiz. Saggio Prelevage Location Emplacement ° | Snervamento Streckgrenze Yield Stress Limite elastique Rp 0,2% N/mm2 | Snervamento Streckgrenze Yield Stress Limite elastique Rp 1% N/mm2 | Resistenza Zugfestigkeit Tensile strength Resistance à traction Rm N/mm2 | Allungamento Bruchdehnung Elongation Allongement A5 % | | Strizione Einschnürung Reduction of area Striction Z % | | Resilienza Kerbschlagarbeit Impact Value Resilience | | | Durezza Härte Hardness Durete HB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti Anforderungen/Required values Valeurs demandées | | min / max | | 200 | 235 | 500 / 900 | 20 | - | - | - | - | | | - | 315 | |
| A | 10 | 20 | L | 458 | 535 | 678 | 44 | | 67 | | | | | 223 | | |
| G | 10 | 20 | L | 457 | 532 | 682 | 45 | | 66 | | | | | 221 | | |

### TEST ALLO STATO DI FORNITURA
Test on delivery condition / Prüefung auf lieferbereitem produkt / Test a l'etat de fourniture / Prueba sobre el material asi come entregado

| TEST | | min | max | |
|---|---|---|---|---|
| A | Dimensioni grano x ASTM E112 | | | 4 |

### Charpy per ISO 148-1

1) L=longitudinale/längs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais. mm | °C | Posiz. Saggio Prelevage Location Emplacement ° | Resilienza Kerbschlagarbeit Impact Value Resilience KV2 J | | | Espansione laterale Lateral Expansion Lateral ex mm | | | Shear Shear % Shear % | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti Anforderungen/Required values Valeurs demandées | | min / max | | - | - | - | - | - | - | - | - | - |
| B | 10X10 | -196 | L | 158 | 152 | 151 | 1,700 | 1,852 | 1,705 | 59 | 61 | 57 |

### Test allo stato di fornitura per ASTM A370

1) L=longitudinale/längs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais. mm | °C | Posiz. Saggio Prelevage Location Emplacement ° | Snervamento Streckgrenze Yield Stress Limite elastique Rp 0,2% N/mm2 | Snervamento Streckgrenze Yield Stress Limite elastique | Resistenza Zugfestigkeit Tensile strength Resistance à traction Rm N/mm2 | Allungamento Bruchdehnung Elongation Allongement E 4d % | | Strizione Einschnürung Reduction of area Striction RA % | | Resilienza Kerbschlagarbeit Impact Value Resilience | | | Durezza Härte Hardness Durete HB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti Anforderungen/Required values Valeurs demandées | | min / max | | 210 | - | 517 | - | 30 | - | 50 | - | | | - | 235 | |
| C | 12,5 | 20 | L | 453 | | 671 | | 47 | | 68 | | | | 222 | | |

0 8 NOV. 2024
FRANCO CORBELLINI
QSQ
CROSSWIND R

☒ REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLA PINA DATE 0 8 NOV 2024

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| Vicenza, 05/03/2024 | Direzione Qualità | Direzione Prodotto | Pagina |
|---|---|---|---|
| VCQ012 - MEST028009 | Qualitätsmanagement/Quality Management/Gestion Qualité | Produktmanagement/Product Management/Direction Produit | 2 di 4 |
| | R.BERTELLI | P.MESSORI | |

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1
Nach/According to/Selon

Certificato nr. MEST028009 / 2024 /
Prüfung/Test/Essai

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura: Laminato - Solubilizzato FINITO A FREDDO
Lieferzustand / Delivery state / Etat de livraison

Produttore:
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Ordine nr: ORD N AQ2400369
Bestell / Your order / Commande

Tipo di Elaborazione: E+AOD
Erschmelzungsart / Melting process / Mode d'elaboration

Marchi di Fabbrica: AV
Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice

Conferma ordine nr: MI24001817
Werks/Our Order/Ref nr

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Punzone del Collaudatore: MR
Stempel des Werkssachverständigen / Inspector s stamp/Poinçon de l'assayeur

Avviso di Spedizione: A-MI24001447
Lieferanzeige/Packing list/B.L.

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung / Brand / Nuance

Punzonatura: 1.4401/1.4404
Kennzeichnung / Marking / Marquage

### Charpy per ISO 148-1

1) L=longitudinale/längs, T=trasversale/quer, O=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais. mm | °C | Posiz. Saggio Probenlage Location Emplacement | Resilienza Kerbschlagarbeit Impact Value Resilience $KV_2$ J | | | Espansione laterale Lateral Expansion | | | Shear Shear | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti Anforderungen/Required values Valeurs demandées | | min max | | 100 | 100 | 100 | - | - | - | - | - | - |
| F | 10X10 | 20 | L | 199 | 194 | 193 | | | | | | |
| H | 10X10 | 20 | L | 210 | 196 | 198 | | | | | | |

Tensile testing according to ISO 6892-1
Impact testing according to ISO 148-1
Mechanical properties according to ASTM A370
Brinnell hardness according to ASTM E10
Tensile testing according to ASTM E8
Brinnell hardness according to ISO 6506-1

08 NOV. 2024
FRANCO CORBELLINI
QBO
CROSSWIND R

☒ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

### Analisi chimica
Chemische Zusammensetzung/Chemical Analysis/Analyse chimique

| Colata / Heat Schmelze/Coulée | C % | Si % | Mn % | Cr % | Mo % | Cu % | Ni % | Co % | P % | S % | N % |
|---|---|---|---|---|---|---|---|---|---|---|---|
| min - max | - 0,030 | - 1,00 | - 2,00 | 16,50 16,00 | 2,00 2,50 | - 1,00 | 10,00 13,00 | - | - 0,045 | - 0,030 | - 0,100 | - | - | - | - |
| 293368 | 0,010 | 0,56 | 1,52 | 16,68 | 2,04 | 0,57 | 10,00 | 0,156 | 0,032 | 0,027 | 0,058 | | | | |

### Corrosion test in 16% sulfuric acid and copper sulfate solutions

**Test standard:** UNI EN ISO 3651-2 Method A

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitized T1 | 20 | boil | 90 | 5 | Absence of cracks | **SATISFACTORY** |

### Corrosion test in 16% sulfuric acid and copper sulfate solutions

**Test standard:** ASTM A262-Practice E

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitization | 15 | boil | 180 | 5 | Absence of cracks | **SATISFACTORY** |

# Acciaierie Valbruna S.p.A.

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Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a : EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1
Nach/According to/Selon

Certificato nr. MEST028009 / 2024 /
Prüfung/Test/Essai

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Ordine nr: ORD N AQ2400369
Bestell
Your order
Commande

Conferma ordine nr: MI24001817
Werks/Our Order/Ref nr

Avviso di Spedizione: A-MI24001447
Lieferanzeige/Packing list/B L

Stato di fornitura : Laminato - Solubilizzato FINITO A FREDDO
Lieferzustand
Delivery state
Etat de livraison

Tipo di Elaborazione: E+AOD
Erschmelzungsart
Melting process
Mode d'elaboration

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung
Brand / Nuance

Produttore :
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Marchi di Fabbrica: AV
Zeichen des Lieferwerkes
Trade marks
Sigles de l'usine productrice

Punzone del Collaudatore: MR
Stempel des Werksachverständigen
Inspector's stamp/Poinçon de l'assayeur

Punzonatura: 1.4401/1.4404
Kennzeichnung
Marking
Marquage

Reduction ratio = 42,9 : 1
Solution annealed 1040°C for 160'(total time)/water cooled.
SURFACE QUALITY COMPLIANT TO EN 10088-3 TAB.1 COND. 2H equivalent to EN 10277-1 Cl.3
"Issued in agreement with TÜV SÜD Industrie Service GMBH
(07/1972)"
"Qs approved according to PED, Annex I, Para. 4.3 by
Notified Body 0036"
"(Certification no. DGR-0036-QS-W 23/2002/MUC)"

Sono state soddisfatte tutte le condizioni richieste
Die gestellten Anforderungen sind it. Anlage erfüllt
The material has been furnished in accordance with the requirements
Le matériel à été trouvé conforme aux exigences

Controllo antimescolanza con tecnica XRF/OES portatile : OK
Verwechslungsprüfung durch XRF/OES Gerät geführt : OK
Antimixing testing performed with XRF/OES portable : OK
Contrôle antimélange evt technique XRF/OES portable : OK

Controllo visivo e dimensionale: soddisfa le esigenze
Sichtprüfung und Ausmessung ohne Beanstandung
Visual inspection and dimensional checks satisfactory
Contrôle visuel et dimensions: satisfaisant

Melted, poured and manufactured in Italy  No welding or weld repair  Material free from Mercury contamination

We declare that the finished product is checked for radioactive contamination by the portal system when it leaves the production plant.

The Quality Management System is also Certified according to Pressure Equipment Directive 2014/68/EU Annex 1,chapt.4.3 by TÜV and LLOYD'S
The Quality Management System is also Certified according to PER 2016/1105, Schedule 2, Part 4, Para 31 (8) by Competent Body TÜV SUD BABT Unlimited.
Any act of tampering, modification, alteration, counterfeiting and/or falsification and/or any other action which modifies the contents of this test certificate shall constitute a violation of applicable civil and criminal laws. Acciaierie Valbruna shall protect its rights and interests before any competent court, authority and jurisdiction.
Maxival and/or Valplus grades/products are manufactured with ladle techniques to control composition, distribution, size and shape of non-metallic inclusions for improved machinability.
The supplied product conforms to requirements expressly requested by the purchaser and conforms to requirements specified by certified norms and standards. Should the product be used for more severe, critical and/ or in any case different applications than those the material is generally intended for, any different and/or supplementary requirements shall be specifically demanded, at least, upon order of the Product by the Purchaser. Acciaierie Valbruna SpA shall not be responsible for any improper use of the Products.

08 NOV. 2024
FRANCO CORBELLINI
QSQ
CROSSWIND

☒ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

**Acciaierie Valbruna** S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497

# CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a: Nach/According to/Selon — EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. Prüfung/Test/Essai — MEST053921 / 2024 /

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Ordine nr: ORD N AQ2400724
Bestell / Your order / Commande

Conferma ordine nr: MI24003416
Werks/Our Order/Ref nr

Avviso di Spedizione: A-MI24002488
Lieferanzeige/Packing list/B.L.

Stato di fornitura: Laminato - Solubilizzato Pelato
Lieferzustand / Delivery state / Etat de livraison

Tipo di Elaborazione: E+AOD
Erschmelzungsart / Melting process / Mode d'elaboration

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung / Brand / Nuance

Produttore:
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Marchi di Fabbrica: AV
Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice

Punzone del Collaudatore: MR
Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur

Punzonatura: 1.4401/1.4404
Kennzeichnung / Marking / Marquage

| **SPECIFICHE :** Anforderungen / Requirements / Exigences | Note: Aufzeichnungen / Notes / Notes |
|---|---|
| VAL STOCK W2 A/1 1.4404/316L A | |
| IS107 01 316 A | |
| MDS S01 5 316 A (0) | (0)Norsok-standard M-630 Edition 6, October 2013 |
| MDS S17 1 316 A (1) | (1)Norsok-standard M-630: 2020 (2020-09-30) |
| AD 2000-M. W 2 2022 1.4401 A (2) | (2)AD 2000-MERKBLATT W 2 edition 03.2022 AD 2000-MERKBLATT W 10 edition 06.2022 |
| AD 2000-M. W 2 2022 1.4404 A (3) | (3)AD 2000-MERKBLATT W 2 edition 03.2022 AD 2000-MERKBLATT W 10 edition 06.2022 |
| AISI . 316/316L | |
| AMS-QQ-S-763 D 316/316L A | |
| ASME SA182 2023 S31600/03 A (4) | (4)Section II Part A 2023 EDITION For products machined directly from bar refer to ASME SA479. |
| ASME SA193 2023 B8M CLASS 1 (5) | (5)Section II Part A 2023 EDITION |
| ASME SA276 2023 S31600/03 A (6) | (6)Section II Part A 2023 EDITION |
| ASME SA320 2021 B8M CLASS 1 (7) | (7)Section II Part A 2021 EDITION |
| ASME SA479 2023 S31600/03 A (8) | (8)Section II Part A 2023 EDITION |
| ASTM A182 2024 S31600/03 A (9) | (9)For products machined directly from bar refer also to ASTM A479. |
| ASTM A193 2023 B8M CLASS 1 | |
| ASTM A262 PR. E 2015 316/316L (A) | (A)Reapproved 2021 |
| ASTM A276 2024A S31600/03 A | |
| ASTM A320 2022 B8M CLASS 1 CLASS1 | |
| ASTM A370 2022 . | |
| ASTM A479 2023A S31600/03 A | |
| ASTM E10 2023 . | |
| ASTM E8 2024 . | |
| EN 10088 PART 3 2014 1.4401 A | |
| EN 10088 PART 3 2014 1.4404 A | |
| EN 10272 2016. 1.4401 A | |
| EN 10272 2016. 1.4404 A | |
| ISO 148-1 2016 . | |
| ISO 3651-2 98 METHOD A T1 | |
| ISO 6506-1 2014 . | |
| ISO 6892-1 2019 . | |
| NACE MR0103 2015 S31600/03 A (B) | (B)ANSI/NACE MR0103/ISO 17945 November 23, 2015 |
| NACE MR0175 4 S31600/03 A (C) | (C)ANSI/NACE MR0175/ISO 15156-3:2020 Fourth edition, approved 21 Sep 2022. |
| QQ-S-763 F 316/316L A | |
| ACH CO . . | |
| KV L -196C . ISO 148-1 | |
| KV T -196C . ISO 148-1 | |
| PREN . . | |

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND

☑ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLAPINA DATE 08 NOV 2024

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a / Nach/According to/Selon: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. / Prüfung/Test/Essai: MEST053921 / 2024 /

Cliente / Besteller/Purchaser/Client:
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Ordine nr: ORD N AQ2400724
Bestell / Your order / Commande

Conferma ordine nr: MI24003416
Werks/Our Order/Ref nr

Avviso di Spedizione: A-MI24002488
Lieferanzeige/Packing list/B.L.

Stato di fornitura: Laminato - Solubilizzato Pelato
Lieferzustand / Delivery state / Etat de livraison

Tipo di Elaborazione: E+AOD
Erschmelzungsart / Melting process / Mode d'elaboration

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung / Brand / Nuance

Produttore:
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Marchi di Fabbrica: AV
Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice

Punzone del Collaudatore: MR
Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur

Punzonatura: 1.4401/1.4404
Kennzeichnung / Marking / Marquage

Tolleranza: k12
Toleranz/Allowance/Tolerance

| Pos. nr. | Oggetto | Dimensioni - mm | Lunghezza - mm | Colata | Pezzi | Peso - KG | Lotto nr. |
|---|---|---|---|---|---|---|---|
| Pos. nr. / Item nr. / Rif. de poste | Gegenstand / Product description / Nature du produit | Abmessungen / Dimensions / Dimension | Länge / Length / Longueur | Schmelze / Heat / Coulée | Stückzahl / Pieces / Pièces | Gewicht / Weight / Poids | Losnr. / Lot nr. / Lot nr. |
| 0030 | Tondo | 140,000 | 4443/ 4757 | 293820 | 1 | 544,0 | 332700542 |

### TEST ALLO STATO DI FORNITURA

Test on delivery condition / Prüefung auf lieferbereitem produkt / test a l'etat de fourniture / Prueba sobre el material así come entregado

1) L=longitudinale/lange, T=trasversale/quer, G=Tangenziale/tangential

| TEST | Provetta/ Probestab: Specimen/Eprouvette Larg diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | Posiz. Saggio: Probenlage / Location / Emplacement 1) | Snervamento: Streckgrenze / Yield Stress / Limite elastique Rp 0,2% N/mm2 | Snervamento: Streckgrenze / Yield Stress / Limite elastique Rp 1% N/mm2 | Resistenza: Zugfestigkeit / Tensile strength / Resistance à traction Rm N/mm2 | Allungamento: Bruchdehnung / Elongation / Allongement A5 % | | Strizione: Einschnürung / Reduction of area / Striction Z % | | Resilienza: Kerbschlagarbeit / Impact Value / Resilience | | | Durezza: Haerte / Hardness / Durete HB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti / Anforderungen/Required values / Valeurs demandées | | min / max | | 200 | 235 | 500<br>700 | 40 | - | - | - | - | | | - <br> 215 | | |
| A | 10 | 20 | L | 260 | 305 | 562 | 61 | | 71 | | | | | 168 | | |
| I | 10 | 20 | L | 264 | 308 | 566 | 60 | | 71 | | | | | 172 | | |

### TEST ALLO STATO DI FORNITURA

Test on delivery condition / Prüefung auf lieferbereitem produkt / Test a l'etat de fourniture / Prueba sobre el material así come entregado

| TEST | | min | max | |
|---|---|---|---|---|
| A | Dimensioni grano x ASTM E112 | | | 4 |

### Charpy per ISO 148-1

1) L=longitudinale/lange, T=trasversale/quer, G=Tangenziale/tangential

| TEST | Provetta/ Probestab: Specimen/Eprouvette Larg diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | Posiz. Saggio: Probenlage / Location / Emplacement 1) | Resilienza: Kerbschlagarbeit / Impact Value / Resilience KV2 J | | | Espansione laterale: Lateral Expansion Lateral ex mm | | | Shear: Shear % Shear % | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti / Anforderungen/Required values / Valeurs demandées | | min / max | | - | - | - | - | - | - | - | - | - |
| B | 10X10 | -196 | L | 211 | 215 | 219 | 1,758 | 1,800 | 1,792 | 73 | 73 | 68 |

0 8 NOV. 2024
FRANCO CORBELLINI
QBO
CROSSWIND R

REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 0 8 NOV 2024

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| Vicenza, 16/04/2024 | Direzione Qualità | Direzione Prodotto | Pagina |
|---|---|---|---|
| VCQ052 - MEST053921 | Qualitätsmanagement/Quality Management/Gestion Qualité<br>R.BERTELLI | Produktmanagement/Product Management/Direction Produit<br>P.MESSORI | 2 di 5 |

FRANCO CORBELLINI
QBD 0 8 NOV. 2024
CROSSWIND R


# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a: Nach/According to/Selon: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. Prüfung/Test/Essai: MEST053921 / 2024 /

Cliente / Besteller/Purchaser/Client:
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Ordine nr: ORD N AQ2400724
Bestell/Your order/Commande

Conferma ordine nr: MI24003416
Werks/Our Order/Ref nr.

Avviso di Spedizione: A-MI24002488
Lieferanzeige/Packing list/B.L.

Stato di fornitura: Laminato - Solubilizzato Pelato
Lieferzustand/Delivery state/Etat de livraison

Tipo di Elaborazione: E+AOD
Erschmelzungsart/Melting process/Mode d'elaboration

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung/Brand / Nuance

Produttore: Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Marchi di Fabbrica: Zeichen des Lieferwerkes/Trade marks/Sigles de l'usine productrice: AV

Punzone del Collaudatore: Stempel des Werkssachverständigen/Inspector's stamp/Poinçon de l'assayeur: MR

Punzonatura: 1.4401/1.4404
Kennzeichnung/Marking/Marquage

### Test allo stato di fornitura per ASTM A370

1) L=longitudinale/längs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg.diam.Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | Posiz. Saggio Probenlage Location Emplacement 1) | Snervamento Streckgrenze Yield Stress Limite elastique Rp 0,2% N/mm2 | Snervamento Streckgrenze Yield Stress Limite elastique | Resistenza Zugfestigkeit Tensile strength Resistance à traction Rm N/mm2 | Allungamento Bruchdehnung Elongation Allongement E 4d % | | Strizione Einschnürung Reduction of area Striction RA % | | Resilienza Kerbschlagarbeit Impact Value Resilience | | | Durezza Haerte Hardness Durete HB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti Anforderungen/Required values Valeurs demandées | | min | | 210 | - | 520 | - | 40 | - | 50 | - | | | - | | |
| | | max | | | | 790 | | | | | | | | 223 | | |
| C | 12,5 | 20 | L | 257 | | 557 | | 62 | | 72 | | | | 156 | | |

### Test allo stato di fornitura per ASTM A370

1) L=longitudinale/längs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg.diam.Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | Posiz. Saggio Probenlage Location Emplacement 1) | Snervamento Streckgrenze Yield Stress Limite elastique Rp 0,2% N/mm2 | Snervamento Streckgrenze Yield Stress Limite elastique | Resistenza Zugfestigkeit Tensile strength Resistance à traction Rm N/mm2 | Allungamento Bruchdehnung Elongation Allongement E 4d % | | Strizione Einschnürung Reduction of area Striction RA % | | Resilienza Kerbschlagarbeit Impact Value Resilience | | | Durezza Haerte Hardness Durete | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti Anforderungen/Required values Valeurs demandées | | min | | 205 | - | 515 | - | 40 | - | 50 | - | | | - | | |
| | | max | | | | | | | | | | | | | | |
| D | 6.25 | 20 | T | 252 | | 550 | | 55 | | 65 | | | | | | |

### Charpy per ISO 148-1

1) L=longitudinale/längs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg.diam.Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | Posiz. Saggio Probenlage Location Emplacement 1) | Resilienza Kerbschlagarbeit Impact Value Resilience KV2 J | | | Espansione laterale Lateral Expansion Lateral ex mm | | | Shear Shear % Shear % | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti Anforderungen/Required values Valeurs demandées | | min | | - | - | - | - | - | - | - | - | - |
| | | max | | | | | | | | | | |
| E | 10X10 | -196 | T | 94 | 88 | 85 | 0,748 | 0,710 | 0,677 | 25 | 25 | 20 |

### Charpy per ISO 148-1

1) L=longitudinale/längs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg.diam.Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | Posiz. Saggio Probenlage Location Emplacement 1) | Resilienza Kerbschlagarbeit Impact Value Resilience KV2 J | | | Espansione laterale Lateral Expansion | | Shear Shear % Shear |
|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti Anforderungen/Required values Valeurs demandées | | min | | 100 | 100 | 100 | - | - | - |
| | | max | | | | | | | |
| H | 10X10 | 20 | L | 277 | 278 | 271 | | | |
| J | 10X10 | 20 | L | 270 | 279 | 265 | | | |

REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLAPINA DATE 0 8 NOV 2024

Tensile testing according to ISO 6892-1

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a : EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1
Nach/According to/Selon

Certificato nr. MEST053921 / 2024 /
Prüfung/Test/Essai

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Ordine nr: ORD N AQ2400724
Bestell
Your order
Commande

Conferma ordine nr: MI24003416
Werks/Our Order/Ref nr

Avviso di Spedizione: A-MI24002488
Lieferanzeige/Packing list/B.L.

Stato di fornitura : Laminato - Solubilizzato Pelato
Lieferzustand
Delivery state
Etat de livraison

Tipo di Elaborazione: E+AOD
Erschmelzungsart
Melting process
Mode d'elaboration

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung
Brand / Nuance

Produttore :
Hersteller/Item/Usine productrice

**ACCIAIERIE VALBRUNA S.P.A.**

Marchi di Fabbrica:
Zeichen des Lieferwerkes
Trade marks
Sigles de l'usine productrice

Punzone del Collaudatore:
Stempel des Werksachverständigen
Inspector's stamp/Poinçon de l'essayeur

Punzonatura: 1.4401/1.4404
Kennzeichnung
Marking
Marquage

0 8 NOV. 2024
FRANCO CORBELLINI

Impact testing according to ISO 148-1
Mechanical properties according to ASTM A370.
Brinnell hardness according to ASTM E10
Tensile testing according to ASTM E8
Brinnell hardness according to ISO 6506-1

## Analisi chimica
Chemische Zusammensetzung/Chemical Analysis/Analyse chimique

| Colata /Heat / Schmelze/Coulée | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | min | 23,0 | - | - | - | 16,50 | 2,00 | - | 10,00 | - | - | - | - | - | - | - |
| | max | 28,0 | 0,030 | 1,00 | 2,00 | 18,00 | 2,50 | 1,00 | 13,00 | - | 0,045 | 0,030 | 0,100 | - | - | - |
| | PRE | | C % | Si % | Mn % | Cr % | Mo % | Cu % | Ni % | Co % | P % | S % | N % | | | |
| 293820 | 24,7 | | 0,019 | 0,44 | 1,71 | 16,77 | 2,01 | 0,59 | 10,13 | 0,137 | 0,031 | 0,025 | 0,083 | | | |

**Corrosion test in 16% sulfuric acid and copper sulfate solutions**

**Test standard:** UNI EN ISO 3651-2 Method A

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitized T1 | 20 | boil | 90 | 5 | Absence of cracks | **SATISFACTORY** |

**Corrosion test in 16% sulfuric acid and copper sulfate solutions**

**Test standard:** ASTM A262-Practice E

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitization | 15 | boil | 180 | 5 | Absence of cracks | **SATISFACTORY** |

Reduction ratio = 19,6 : 1
Furnace calibrated according to API 6A REV 21th ED ANNEX M.
Furnace calibrated according to API 6D REV 25th ED ANNEX H.
Solution annealed 1080°C for 3 h /water cooled.
SURFACE QUALITY GUARANTEE BY ET INSPECTION (max defect depth 1% DIAMETER)
UT ACC. TO ASTM A388
"Issued in agreement with TÜV SÜD Industrie Service GMBH (07/1972)"
"Qs approved according to PED, Annex I, Para. 4.3 by Notified Body 0036"
"(Certification no. DGR-0036-QS-W 23/2002/MUC)"

☒ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA DINA DATE 0 8 NOV 2024

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
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Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a / Nach/According to/Selon: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. / Prüfung/Test/Essai: MEST053921 / 2024 /

Cliente / Besteller/Purchaser/Client:
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Ordine nr: ORD N AQ2400724
Bestell / Your order / Commande

Conferma ordine nr: MI24003416
Werks/Our Order/Ref nr

Avviso di Spedizione: A-MI24002488
Lieferanzeige/Packing list/B.L.

Stato di fornitura: Laminato - Solubilizzato Pelato
Lieferzustand / Delivery state / Etat de livraison

Tipo di Elaborazione: E+AOD
Erschmelzungsart / Melting process / Mode d'elaboration

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung / Brand / Nuance

Produttore:
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Marchi di Fabbrica: AV
Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice

Punzone del Collaudatore: MR
Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur

Punzonatura: 1.4401/1.4404
Kennzeichnung / Marking / Marquage

Sono state soddisfatte tutte le condizioni richieste
Die gestellen Anforderungen sind it. Anlage erfüllt
The material has been furnished in accordance with the requirements
Le materiel a été trouvé conforme aux exigences

Controllo antimescolanza con tecnica XRF/OES portatile : OK
Verwechslungprüfung: durch XRF/OES Gerät geführt : OK
Antimixing testing performed with XRF/OES portable : OK
Contrôle antimélange evt technique XRF/OES portable : OK

Controllo visivo e dimensionale: soddisfa le esigenze
Besichtigung und Ausmessung: ohne Beanstandung
Visual inspection and dimensional checks satisfactory
Contrôle visuel et dimensions: satisfaisant

Melted, poured and manufactured in Italy  No welding or weld repair  Material free from Mercury contamination

We declare that the finished product is checked for radioactive contamination by the portal system when it leaves the production plant.

The Quality Management System is also Certified according to Pressure Equipment Directive 2014/68/EU Annex 1,chapt.4.3 by TÜV and LLOYD'S
The Quality Management System is also Certified according to PER 2016/1105, Schedule 2, Part 4, Para 31 (8) by Competent Body TÜV SUD BABT Unlimited.
Any act of tampering, modification, alteration, counterfeiting and/or falsification and/or any other action which modifies the contents of this test certificate shall constitute a violation of applicable civil and criminal laws. Acciaierie Valbruna shall protect its rights and interests before any competent court, authority and jurisdiction.
Maxival and/or Valplus grades/products are manufactured with ladle techniques to control composition, distribution, size and shape of non-metallic inclusions for improved machinability.
The supplied product conforms to requirements expressly requested by the purchaser and conforms to requirements specified by certified norms and standards. Should the product be used for more severe, critical and/ or in any case different applications than those the material is generally intended for, any different and/or supplementary requirements shall be specifically demanded, at least, upon order of the Product by the Purchaser. Acciaierie Valbruna SpA shall not be responsible for any improper use of the Products.

08 NOV. 2024
FRANCO CORBELLINI
DBQ
CROSSWIND

☒ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| | | | |
|---|---|---|---|
| Vicenza, 16/04/2024<br>VCQ052 - MEST053921 | Direzione Qualità<br>Qualitätsmanagement/Quality Management/Gestion Qualité<br>R.BERTELLI | Direzione Prodotto<br>Produktmanagement/Product Management/Direction Produit<br>P.MESSORI | Pagina 5 di 5 |

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497

## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a / Nach/According to/Selon: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. / Prüfung/Test/Essai: MEST112865 / 2022 /

Cliente / Besteller/Purchaser/Client:
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura / Lieferzustand / Delivery state / Etat de livraison: Laminato - Solubilizzato Rettificato

Produttore / Hersteller/Item/Usine productrice:
ACCIAIERIE VALBRUNA S.P.A.

Tipo di Elaborazione / Erschmelzungsart / Melting process / Mode d'elaboration: E+AOD

Marchi di Fabbrica / Zeichen des Herstellerwerkes / Trade marks / Sigles de l'usine productrice: AV

Ordine nr. / Bestell / Your order / Commande: ORD.N.AQ2202071

Qualità / Werkstoff/Grade/Nuance: 1.4401/1.4404/316/316L

Punzone del Collaudatore / Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur: MR

Conferma ordine nr. / Werks/Our Order/Ref nr.: MI22008136

Avviso di Spedizione / Lieferanzeige/Packing list/B.L.: A-MI22006725

Marca / Markenbezeichnung / Brand / Nuance: MVAPML ( MAXIVAL )

Punzonatura / Kennzeichnung / Marking / Marquage: 1.4401/4/316/L

**SPECIFICHE :** / Anforderungen / Requirements / Exigences

VAL STOCK 2020 1.4404/316L A,CF
AISI 316
AISI 316L
ASME SA276 2019 S31600 A,CF (0)
ASME SA276 2019 S31603 A,CF (1)
ASME SA479 2019 S31600 A (2)
ASME SA479 2019 S31603 A (3)
ASTM A262 2015 PRACTICE E (4)
ASTM A276 2017 S31600 A,CF
ASTM A276 2017 S31603 A,CF
ASTM A370 2020 .
ASTM A479 2020 S31600 A
ASTM A479 2020 S31603 A
ASTM E10 2018 .
ASTM E8 2021 .
EN 10088-3 2014 1.4401 A,CF
EN 10088-3 2014 1.4404 A,CF
EN 10272 2007 1.4401 A,CF
EN 10272 2007 1.4404 A,CF
ISO 6506-1 2014 .
ISO 6892-1 2019 .

Note: / Aufzeichnungen / Notes / Notes

(0)Section II Part A 2019 EDITION
(1)Section II Part A 2019 EDITION
(2)Section II Part A 2019 EDITION
(3)Section II Part A 2019 EDITION
(4)Reapproved 2021

| | | Tolleranza: h8 - DIN670/EN10278 Toleranz/Allowance/Tolerance | | | | | |
|---|---|---|---|---|---|---|---|
| Pos. nr. Pos. nr. Item nr. Nr. de poste | Oggetto Gegenstand Product description Descrip. du produit | Dimensioni - mm Abmessungen Dimension Dimension | Lunghezza - mm Lange Length Longueur | Colata Schmelze Heat Coulée | Pezzi Stückzahl Pieces Pieces | Peso - KG Gewicht Weight Poids | Lotto nr. Losnr. Lot nr. Lot nr. |
| 0070 | Tondo | 10,000 | 2900/ 3100 | 276383 | | 18,0 | 729305910 |

08 NOV. 2024
FRANCO CORBELLINI
DBA
CROSSWIND

☒ REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLA PINA DATE 08 NOV 2024

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| | | | |
|---|---|---|---|
| Vicenza, 09/11/2022<br>VCQ052 - MEST112865 | Direzione Qualità<br>Qualitätsmanagement/Quality Management/Gestion Qualité<br>R.BERTELLI | Direzione Prodotto<br>Produktmanagement/Product Management/Direction Produit<br>P.MESSORI | Pagina 1 di 3 |

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a / Nach/According to/Selon: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. / Prüfung/Test/Essai: MEST112865 / 2022 /

Cliente / Besteller/Purchaser/Client:
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura / Lieferzustand / Delivery state / Etat de livraison: Laminato - Solubilizzato Rettificato

Produttore / Hersteller/Item/Usine productrice:
ACCIAIERIE VALBRUNA S.P.A.

Tipo di Elaborazione / Erschmelzungsart / Melting process / Mode d'elaboration: E+AOD

Marchi di Fabbrica / Zeichen des Liefernwerkes / Trade marks / Sigles de l'usine productrice: AV

Ordine nr / Bestell / Your order / Commande: ORD.N.AQ2202071

Qualità / Werkstoff/Grade/Nuance: 1.4401/1.4404/316/316L

Punzone del Collaudatore / Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur: MR

Conferma ordine nr / Werks/Our Order/Ref nr.: MI22008136

Avviso di Spedizione / Lieferanzeige/Packing list/B.L.: A-MI22006725

Marca / Markenbezeichnung / Brand / Nuance: MVAPML ( MAXIVAL )

Punzonatura / Kennzeichnung / Marking / Marquage: 1.4401/4/316/L

### TEST ALLO STATO DI FORNITURA
Test on delivery condition / Prüefung auf lieferbereitem produkt / test a l'etat de fourniture / Prueba sobre el material así come entregado

1) L=longitudinale/längs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta / Probestab / Specimen/Eprouvette | °C | Posiz. Saggio / Prelevage / Location / Emplacement 1) | Snervamento / Streckgrenze / Yield Stress / Limite elastique Rp 0,2% N/mm2 | Snervamento / Streckgrenze / Yield Stress / Limite elastique Rp 1% N/mm2 | Resistenza / Zugfestigkeit / Tensile strength / Resistance à traction Rm N/mm2 | Allungamento / Bruchdehnung / Elongation / Allongement A5 % | Allungamento E 4d % | Strizione / Einschnürung / Reduction of area / Striction Z % | Strizione RA % | Resilienza / Kerbschlagarbeit / Impact Value / Resilience | | | Durezza / Haerte / Hardness / Durete HB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Lang.diam Spess. Breite Diam. Dicke Width Diam. Thickness Lang. diam. epais mm | | | | | | | | | | | | | | | |
| Valori richiesti / Anforderungen/Required values / Valeurs démendées | | min | | 310 | 235 | 620 | 20 | 30 | - | 40 | - | | | - | | |
| | | max | | | | 900 | | | | | | | | 315 | | |
| A | 10 | 20 | L | 477 | 559 | 665 | 47 | 50 | 70 | 70 | | | | 225 | | |
| B | 10 | 20 | L | 482 | 561 | 669 | 46 | 50 | 69 | 69 | | | | 228 | | |

### TEST ALLO STATO DI FORNITURA
Test on delivery condition / Prüefung auf lieferbereitem produkt / Test a l'etat de fourniture / Prueba sobre el material así come entregado

| TEST | | min | max | |
|---|---|---|---|---|
| A | Dimensioni grano x ASTM E112 | | | 7 |

Mechanical properties according to ASTM A370.
Brinnell hardness according to ASTM E10
Tensile testing according to ASTM E8
Brinnell hardness according to ISO 6506-1
Tensile testing according to ISO 6892-1

FRANCO CORBELLINI
08 NOV. 2024
CROSSWIND

### Analisi chimica
Chemische Zusammensetzung/Chemical Analysis/Analyse chimique

| Colata / Heat / Schmelze/Coulée | C % | Si % | Mn % | Cr % | Mo % | Ni % | P % | S % | N % |
|---|---|---|---|---|---|---|---|---|---|
| | min - | - | - | 16,50 | 2,00 | 10,00 | - | - | - |
| | max 0,030 | 1,00 | 2,00 | 18,00 | 2,50 | 13,00 | 0,045 | 0,030 | 0,100 |
| 276383 | 0,014 | 0,63 | 1,44 | 16,84 | 2,07 | 10,06 | 0,028 | 0,026 | 0,061 |

### Corrosion test in 16% sulfuric acid and copper sulfate solutions

**Test standard:** ASTM A262-Practice E

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitization | 15 | boil | 180 | 5 | Absence of cracks | SATISFACTORY |

☒ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| Vicenza, 09/11/2022 | Direzione Qualità / Qualitätsmanagement/Quality Management/Gestion Qualité | Direzione Prodotto / Produktmanagement/Product Management/Direction Produit | Pagina |
|---|---|---|---|
| VCQ052 - MEST112865 | R.BERTELLI | P.MESSORI | 2 di 3 |

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
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Certificato nr. / Prüfung/Test/Essai: MEST112865 / 2022 /

Cliente / Besteller/Purchaser/Client:
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VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Ordine nr: ORD.N.AQ2202071
Bestell / Your order / Commande

Conferma ordine nr: MI22008136
Werks/Our Order/Ref nr.

Avviso di Spedizione: A-MI22006725
Lieferanzeige/Packing list/B.L.

Stato di fornitura: Laminato - Solubilizzato Rettificato
Lieferzustand / Delivery state / Etat de livraison

Tipo di Elaborazione: E+AOD
Erschmelzungsart / Melting process / Mode d'elaboration

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung / Brand / Nuance

Produttore:
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Marchi di Fabbrica:
Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice
AV

Punzone del Collaudatore:
Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur
MR

Punzonatura: 1.4401/4/316/L
Kennzeichnung / Marking / Marquage

**Corrosion test in 16% sulfuric acid and copper sulfate solutions**

**Test standard:** UNI EN ISO 3651-2 Method A

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitized T1 | 20 | boil | 90 | 5 | Absence of cracks | **SATISFACTORY** |

Reduction ratio = 374,4 : 1
Material solution annealed 1060° C for 0.5h/air cooled.

Sono state soddisfatte tutte le condizioni richieste
Die gestellen Anforderungen sind it. Anlage erfüllt
The material has been furnished in accordance with the requirements
Le materiel à été trouvé conforme aux exigences

Controllo antimescolanza con tecnica XRF/OES portatile : OK
Verwechslungprüfung: durch XRF/QES Gerät geführt : OK
Antimixing testing performed with XRF/OES portable : OK
Contrôle antimélange svt technique XRF/QES portable : OK

Controllo visivo e dimensionale: soddisfa le esigenze
Besichtigung und Ausmessung: ohne Beanstandung
Visual inspection and dimensional checks:satisfactory
Contrôle visuel et dimensions: satisfaisant

Melted, poured and manufactured in Italy  No welding or weld repair  Material free from Mercury contamination

We declare that the finished product is checked for radioactive contamination by the portal system when it leaves the production plant.

The Quality Management System is also Certified according Pressure Equipment Directive 2014/68/EU Annex 1,chapt.4.3 by TÜV and LLOYD'S
Any act of tampering, modification, alteration, counterfeiting and/or falsification and/or any other action which modifies the contents of this test certificate shall constitute a violation of applicable civil and criminal laws. Acciaierie Valbruna shall protect its rights and interests before any competent court, authority and jurisdiction.
Maxival and/or Valplus grades/products are manufactured with ladle techniques to control composition, distribution, size and shape of non-metallic inclusions for improved machinability.
The supplied product conforms to requirements expressly requested by the purchaser and conforms to requirements specified by certified norms and standards. Should the product be used for more severe, critical and/ or in any case different applications than those the material is generally intended for, any different and/or supplementary requirements shall be specifically demanded, at least, upon order of the Product by the Purchaser. Acciaierie Valbruna SpA shall not be responsible for any improper use of the Products.

WSPC37000C7C1825C17D4051FA0045E469C2

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND

☒ REVIEW ☐ WITNESS
ON BEHALF OF RMG
A. DELLA PINA DATE 08 NOV 2024

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| Vicenza, 09/11/2022<br>VCQ052 - MEST112865 | Direzione Qualità<br>Qualitätsmanagement/Quality Management/Gestion Qualité<br>R.BERTELLI | Direzione Prodotto<br>Produktmanagement/Product Management/Direction Produit<br>P.MESSORI | Pagina 3 di 3 |
|---|---|---|---|

**AST S.p.A.**
Via R. Merendi, 40
I-20007 Cornaredo MI

P +39 02 934848.1
F +39 02 9362248
W www.astspa.it

**MATERIAL CERTIFICATES INDEX**
**CERTIFICATO DEI MATERIALI**

**No.** 2400596

EN 10204 3.1

**Customer**
ROSETTI MARINO S.P.A.

**P.Order / Project**
1724000740 123A90A Rev. 1

**ITEM Number**
140

**Tag**
25-PV-055B

**Quantity delivered**
1

**AST Job**
CV2400221

**AST Code**
CV2400221CV8407A004

**Serial Number**
2400596

**Valve Type**
Valvole Regolazione

**Size**
NPS 1-1/2" CLASS 300 RF

**Port Size**
5/32"

| Part Name | Material | Heat No. | Certificate No. | Supplier |
|---|---|---|---|---|
| BODY | ASTM A351 CF3M | G1181 | PKC-G1181-AT223-1 | PEEKAY STEEL CASTING (P) LTD |
| SEAT RING | ASTM A479 316/316L | 291581 | MEST135479/2023/ | ACCIAIERIE VALBRUNA |
| PLUG | ASTM A479 316/316L +PTFE | 274483 | 2023001918 | COGNE ACCIAI SPECIALI SPA |
| BONNET | ASTM A479 316/316L | 293820 | MEST053921/2024/ | ACCIAIERIE VALBRUNA |
| STEM | ASTM A479 316/316L | 276383 | MEST112865-2022 | ACCIAIERIE VALBRUNA |

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND

☑ REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLA PINA DATE 08 NOV 2024

**Remarks** :

**AST Q.C. Department**

**Customer's Inspector**

**Third Party Inspection**

**Date** : 06.11.2024 **Date** : _____ **Date** : _____

# PEEKAY STEEL CASTINGS (P) LTD

**4/242 Chinnamaddampalayam, Billichi Post, Coimbatore - 641 019**
**Email: info@pkcbe.co.in, Phone: 04254 - 271610**


## INSPECTION CERTIFICATE

EN 10204.3.1

| | | | | |
|---|---|---|---|---|
| Customer: | AST SPA | | | |
| Order No and Date | | PO Line No | Heat Code | TCNo PKC/G1181/AT223/1 |
| AQ2101495 / 30/07/2021 | | 15 | PYM01K09 | Date 22-Nov-2021 |
| F.P. No | Part Name | | | Item Code / Part No |
| AT223 | 1.5" ANSI RF RTJ 300RF | | | CABDWG0060 |
| Casting Drawing No and Machining Drg.No<br>**M060 REV 0** | | Pattern No | | No.of pieces<br>4 |
| Specification /Material<br>**ASTM A351-2018/ASME SA351-2021 Gr.CF3M** | | | | Poured Date : 09/10/2021 |

| Heat treatment | Melting Process | State of Delivery |
|---|---|---|
| Solution Anneling at 1100°c soaked for 5 hours then water cooled.<br>HT Cycle No:E8080 Dt:16/10/2021 Sl.No:1,2,4,6 | INDUCTION | Unmachined |

FRANCO CORRELLINI
08 NOV. 2024
QBO
CROSSWIND

### Chemical Composition (%)

| Element | C | Mn | Si | P | S | Cr | Ni | Mo | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Min. Specified | ... | ... | ... | ... | ... | **17.000** | **9.000** | **2.000** | ... | ... | ... | ... | ... | | | |
| Max. Specified | **0.030** | **1.500** | **1.500** | **0.040** | **0.040** | **21.000** | **13.000** | **3.000** | ... | ... | ... | ... | ... | | | |
| Heat No | | | | | | | | | | | | | | | | |
| G1181 | 0.015 | 1.100 | 1.040 | 0.028 | 0.003 | 18.770 | 9.950 | 2.120 | | | | | | | | |

Heat Slnos: 1,2,4,6

| Mechanical Properties | Yield Strength (0.2% Offset) | Tensile Strength | % of Elongation | | Reduction of Area | Hardness | Bend Test Angle at 0° | Impact value at -196°C in Joules (10mm x 10mm x 55mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | GL=50 mm | GL=62.5 mm | | | | Average 40 J | | | |
| Min | **205** | **485** | **30** | ... | ... | ... | D=0t | Single Value | | | |
| Max | ... | ... | ... | ... | ... | **237** | | | | | |
| Heat No | Mpa | Mpa | | | | HBW | | 1 | 2 | 3 | Avg |
| G1181 | 294 | 551 | 56.08 | - | - | 163.00 | .... | 98 | 112 | 110 | 106.667 |

Remarks/Observations

Material conform to :AST SPA Specifications FOR 001 Rev 15 & ASTM A351-2018/ASME SA351-2021 Gr.CF3M.NACE MR0175/ISO 15156-3.Castings are acid pickled and passivated.
Penetrant Test of inspection According to ASME B16.34 Appendix III
Visual inspection of casting :Satisfactory According to MSS-SP-55
Dimensional inspection:Satisfactory,According to Approved Drawing

Certified that the products supplied is free from Radioactive element or contamination

☒ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

Certified that the above mentioned material have been manufactured,tested and inspected in compliance with the requirements of Purchase order, conform in all respects to the relevant specification and drawings.

| Suppliers Logo | Prepared by | Stamp | Approved by | |
|---|---|---|---|---|
| PKC | Ramkumar D | | Vijaya Kumar K | PK 02 |

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a / Nach/According to/Selon: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. / Prufung/Test/Essai: MEST135479 / 2023 /

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Ordine nr: ORD N AQ2302275
Bestell / Your order / Commande

Conferma ordine nr: MI23008231
Werks/Our Order/Ref nr.

Avviso di Spedizione: A-MI23006313
Lieferanzeige/Packing list/B.L.

Stato di fornitura: Laminato - Solubilizzato Pelato
Lieferzustand / Delivery state / Etat de livraison

Tipo di Elaborazione: E+AOD
Erschmelzungsart / Melting process / Mode d'elaboration

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung / Brand / Nuance

Produttore :
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Marchi di Fabbrica: AV
Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice

Punzone del Collaudatore: MR
Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur

Punzonatura: 1.4401/1.4404
Kennzeichnung / Marking / Marquage

**SPECIFICHE :**
Anforderungen / Requirements / Exigences

VAL STOCK W2 A/1 1.4404/316L A
MDS S01 5 316 A (0)
MDS S17 1 316 A (1)
AD 2000-M. W 2 01/20 1.4401 A (2)
AD 2000-M. W 2 01/20 1.4404 A (3)
AISI . 316/316L
ASME SA182 2021 S31600/03 A (4)
ASME SA193 2021 B8M CLASS 1D (5)
ASME SA276 2021 S31600/03 A (6)
ASME SA320 2021 B8M CLASS 1 (7)
ASME SA479 2021 S31600/03 A (8)
ASTM A182 2022A S31600/03 A (9)
ASTM A193 2023 B8M CLASS 1D
ASTM A262 PR. E 2015 316/316L (A)
ASTM A276 2017 S31600/03 A
ASTM A320 2022 B8M CLASS 1 CLASS1
ASTM A370 2022 .
ASTM A479 2021 S31600/03 A
ASTM E10 2018 .
ASTM E8 2022 .
EN 10088 PART 3 2014 1.4401 A
EN 10088 PART 3 2014 1.4404 A
EN 10272 2016. 1.4401 A
EN 10272 2016. 1.4404 A
ISO 148-1 2016 .
ISO 3651-2 98 METHOD A T1
ISO 6506-1 2014 .
ISO 6892-1 2019 .
NACE MR0103 2015 S31600/03 A (B)
NACE MR0175 2015 S31600/03 A (C)
ACH CO . .
KV L -196C . ISO 148-1

**Note:**
Anmerkungen / Notes / Notes

(0)Norsok-standard M-630 Edition 6, October 2013
(1)Norsok-standard M-630: 2020 (2020-09-30)
(2)AD 2000-MERKBLATT W 2 edition 01.2020 AD 2000-MERKBLATT W 10 edition 01.2020
(3)AD 2000-MERKBLATT W 2 edition 01.2020 AD 2000-MERKBLATT W 10 edition 01.2020
(4)Section II Part A 2021 EDITION For products machined directly from bar refer to ASME SA479.
(5)Section II Part A 2021 EDITION
(6)Section II Part A 2021 EDITION
(7)Section II Part A 2021 EDITION
(8)Section II Part A 2021 EDITION
(9)For products machined directly from bar refer also to ASTM A479.
(A)Reapproved 2021
(B)ANSI/NACE MR0103/ISO 17945 November 23, 2015
(C)ANSI/NACE MR0175/ISO 15156-3, third edition November 23 2015

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND

☒ REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLA PINA DATE 08 NOV 2024

| Pos. nr. | Oggetto | Tolleranza: k12 Toleranz/Allowance/Tolerance Dimensioni - mm | Lunghezza - mm | Colata | Pezzi | Peso - KG | Lotto nr. |
|---|---|---|---|---|---|---|---|
| Pos. nr. / Item nr. / Nr. de poste | Gegenstand / Product description / Descrip. du produit | Abmessungen / Dimension / Dimension | Länge / Length / Longueur | Schmelze / Heat / Coulée | Stückzahl / Pieces / Pieces | Gewicht / Weight / Poids | Los nr. / Lot nr. / Lot nr. |
| 0020 | Tondo | 60,000 | 6165/ 6194 | 291581 | | 141,0 | 305210011 |

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| Vicenza, 08/11/2023 | Direzione Qualità<br>Qualitätsmanagement/Quality Management/Gestion Qualité | Direzione Prodotto<br>Produktmanagement/Product Management/Direction Produit | Pagina |
|---|---|---|---|
| VCQ012 - MEST135479 | R.BERTELLI | P.MESSORI | 1 di 4 |

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a : EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1
Nach/According to/Selon

Certificato nr. MEST135479 / 2023 /
Prüfung/Test/Essai

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Ordine nr: ORD N AQ2302275
Bestell
Your order
Commande

Conferma ordine nr: MI23008231
Werks/Our Order/Ref nr.

Avviso di Spedizione: A-MI23006313
Lieferanzeige/Packing list/B L

Stato di fornitura : Laminato - Solubilizzato Pelato
Lieferzustand
Delivery state
Etat de livraison

Tipo di Elaborazione: E+AOD
Erschmelzungsart
Melting process
Mode d'elaboration

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung
Brand / Nuance

Produttore :
Hersteller/Item/Usine productrice

**ACCIAIERIE VALBRUNA S.P.A.**

Marchi di Fabbrica: AV
Zeichen des Lieferwerkes
Trade marks
Sigles de l'usine productrice

Punzone del Collaudatore: MR
Stempel des Werkssachverständigen
Inspector's stamp/Poinçon de l'assayeur

Punzonatura: 1.4401/1.4404
Kennzeichnung
Marking
Marquage

### TEST ALLO STATO DI FORNITURA
Test on delivery condition Prüefung auf lieferbereitem produkt test a l'etat de fourniture Prueba sobre el material asi come entregado

1) L=longitudinale/lengs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg.diam.Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | | Posiz. Saggio Probenlage Location Emplacement 1) | Snervamento Streckgrenze Yield Stress Limite elastique Rp 0,2% N/mm2 | Snervamento Streckgrenze Yield Stress Limite elastique Rp 1% N/mm2 | Resistenza Zugfestigkeit Tensile strength Resistance à traction Rm N/mm2 | Allungamento Bruchdehnung Elongation Allongement A5 % | | Strizione Einschnürung Reduction of area Striction Z % | | Resilienza Kerbschlagarbeit Impact Value Resilience | | | Durezza Haerte Hardness Durete HB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti Anforderungen/Required values Valeurs demandées | | min max | | | 200 | 235 | 500 700 | 40 | - | - | - | - | | | - 215 | | |
| A | 10 | 20 | L | | 294 | 338 | 599 | 51 | | 68 | | | | | 182 | | |
| I | 10 | 20 | L | | 297 | 341 | 602 | 50 | | 68 | | | | | 184 | | |

### TEST ALLO STATO DI FORNITURA
Test on delivery condition / Prüefung auf lieferbereitem produkt / Test a l'etat de fourniture / Prueba sobre el material asi come entregado

| TEST | | min | max | |
|---|---|---|---|---|
| A | Dimensioni grano x ASTM E112 | | | 5 |

### Charpy per ISO 148-1

1) L=longitudinale/lengs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg.diam.Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | | Posiz. Saggio Probenlage Location Emplacement 1) | Resilienza Kerbschlagarbeit Impact Value Resilience KV2 J | | | Espansione laterale Lateral Expansion Lateral ex mm | | | Shear Shear % Shear % | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti Anforderungen/Required values Valeurs demandées | | min max | | | - | - | - | - | - | - | - | - | - |
| D | 10X10 | -196 | L | | 180 | 194 | 192 | 1,858 | 1,748 | 1,852 | 67 | 65 | 70 |

### Test allo stato di fornitura per ASTM A370

1) L=longitudinale/lengs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg.diam.Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | | Posiz. Saggio Probenlage Location Emplacement % | Snervamento Streckgrenze Yield Stress Limite elastique Rp 0,2% N/mm2 | Snervamento Streckgrenze Yield Stress Limite elastique | Resistenza Zugfestigkeit Tensile strength Resistance à traction Rm N/mm2 | Allungamento Bruchdehnung Elongation Allongement E 4d % | | Strizione Einschnürung Reduction of area Striction RA % | | Resilienza Kerbschlagarbeit Impact Value Resilience | | | Durezza Haerte Hardness Durete HB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti Anforderungen/Required values Valeurs demandées | | min max | | | 205 | - | 515 | - | 40 | - | 50 | - | | | - 223 | | |
| E | 12,5 | 20 | L | | 289 | | 593 | | 53 | | 69 | | | | 179 | | |

08 NOV. 2024
FRANCO CORBELLINI
QBO
CROSSWIND

☒ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLABINA DATE 08 NOV 2024

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| Vicenza, 08/11/2023 | Direzione Qualità | Direzione Prodotto | Pagina |
|---|---|---|---|
| VCQ012 - MEST135479 | Qualitätsmanagement/Quality Management/Gestion Qualité | Produktmanagement/Product Management/Direction Produit | 2 di 4 |
| | R.BERTELLI | P.MESSORI | |

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a / Nach/According to/Selon: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. / Prüfung/Test/Essai: MEST135479 / 2023 /

Cliente / Besteller/Purchaser/Client:
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Ordine nr: ORD N AQ2302275
Bestell / Your order / Commande

Conferma ordine nr: MI23008231
Werks/Our Order/Ref nr.

Avviso di Spedizione: A-MI23006313
Lieferanzeige/Packing list/B.L

Stato di fornitura: Laminato - Solubilizzato Pelato
Lieferzustand / Delivery state / Etat de livraison

Tipo di Elaborazione: E+AOD
Erschmelzungsart / Melting process / Mode d'elaboration

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung / Brand / Nuance

Produttore:
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Marchi di Fabbrica: AV
Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice

Punzone del Collaudatore: MR
Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur

Punzonatura: 1.4401/1.4404
Kennzeichnung / Marking / Marquage

### Charpy per ISO 148-1

1) L=longitudinale/lengs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg diam Spess. Breite Diam Dicke Width Diam. Thickness Larg. diam. epais mm | °C | Posiz. Saggio Probenlage Location Emplacement 1) | Resilienza Kerbschlagarbeit Impact Value Resilience KV2 J | | | Espansione laterale Lateral Expansion | | | Shear Shear | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti Anforderungen/Required values Valeurs demandées | | min max | | 100 | 100 | 100 | - | - | - | - | - | - |
| H | 10X10 | 20 | L | 252 | 248 | 241 | | | | | | |
| L | 10X10 | 20 | L | 244 | 251 | 248 | | | | | | |

Tensile testing according to ISO 6892-1
Impact testing according to ISO 148-1
Mechanical properties according to ASTM A370.
Brinnell hardness according to ASTM E10
Tensile testing according to ASTM E8
Brinnell hardness according to ISO 6506-1

08 NOV. 2024
FRANCO CORBELLINI
QSO
CROSSWIND R

☒ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

### Analisi chimica

Chemische Zusammensetzung/Chemical Analysis/Analyse chimique

| Colata / Heat Schmelze/Coulée | C % | Si % | Mn % | Cr % | Mo % | Ni % | Co % | P % | S % | N % |
|---|---|---|---|---|---|---|---|---|---|---|
| min | | | | 16,50 | 2,00 | 10,00 | | | | |
| max | 0,030 | 1,00 | 2,00 | 18,00 | 2,50 | 13,00 | | 0,045 | 0,030 | 0,100 |
| 291581 | 0,014 | 0,61 | 1,41 | 16,66 | 2,07 | 10,04 | 0,163 | 0,029 | 0,025 | 0,070 |

### Corrosion test in 16% sulfuric acid and copper sulfate solutions

**Test standard:** UNI EN ISO 3651-2 Method A

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitized T1 | 20 | boil | 90 | 5 | Absence of cracks | **SATISFACTORY** |

### Corrosion test in 16% sulfuric acid and copper sulfate solutions

**Test standard:** ASTM A262-Practice E

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitization | 15 | boil | 180 | 5 | Absence of cracks | **SATISFACTORY** |

# Acciaierie Valbruna S.p.A.

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Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a / Nach/According to/Selon: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. / Prüfbig/Test/Essai: MEST135479 / 2023 /

Cliente / Besteller/Purchaser/Client:
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Ordine nr: ORD N AQ2302275
Bestell / Your order / Commande

Conferma ordine nr: MI23008231
Werks/Our Order/Ref nr.

Avviso di Spedizione: A-MI23006313
Lieferanzeige/Packing list/B.L.

Stato di fornitura / Lieferzustand / Delivery state / Etat de livraison: Laminato - Solubilizzato Pelato

Tipo di Elaborazione / Erschmelzungsart / Melting process / Mode d'elaboration: E+AOD

Qualità / Werkstoff/Grade/Nuance: 1.4401/1.4404/316/316L

Marca / Markenbezeichnung / Brand / Nuance: MVAPML ( MAXIVAL )

Produttore / Hersteller/Item/Usine productrice:
**ACCIAIERIE VALBRUNA S.P.A.**

Marchi di Fabbrica / Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice: AV

Punzone del Collaudatore / Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur: MR

Punzonatura / Kennzeichnung / Marking / Marquage: 1.4401/1.4404

Solution annealing by process annealing 1040°C min /
/ cooling rapidly
Controlled rolled
Reduction ratio = 10,7 : 1
SURFACE QUALITY COMPLIANT TO EN 10088-3 TAB.1 COND. 1X
"Issued in agreement with TÜV SÜD Industrie Service GMBH
(07/1972)"
"Qs approved according to PED, Annex I, Para. 4.3 by
Notified Body 0036"
"(Certification no. DGR-0036-QS-W 23/2002/MUC)"

| Sono state soddisfatte tutte le condizioni richieste<br>Die gestellen Anforderungen sind it. Anlage erfüllt<br>The material has been furnished in accordance with the requirements<br>Le materiel à été trouvé conforme aux exigences | Controllo antimescolanza con tecnica XRF/OES portatile : OK<br>Verwechslungsprüfung: durch XRF/OES Gerät geführt : OK<br>Antimixing testing performed with XRF/OES portable : OK<br>Contrôle antimélange svt technique XRF/OES portable : OK | Controllo visivo e dimensionale: soddisfa le esigenze<br>Besichtigung und Ausmessung: ohne Beanstandung<br>Visual inspection and dimensional checks satisfactory<br>Contrôle visuel et dimensions: satisfaisant |
|---|---|---|

Melted, poured and manufactured in Italy  No welding or weld repair  Material free from Mercury contamination

We declare that the finished product is checked for radioactive contamination by the portal system when it leaves the production plant.

The Quality Management System is also Certified according to Pressure Equipment Directive 2014/68/EU Annex 1,chapt.4.3 by TÜV and LLOYD'S
The Quality Management System is also Certified according to PER 2016/1105, Schedule 2, Part 4, Para 31 (8) by Competent Body TÜV SUD BABT Unlimited.
Any act of tampering, modification, alteration, counterfeiting and/or falsification and/or any other action which modifies the contents of this test certificate shall constitute a violation of applicable civil and criminal laws. Acciaierie Valbruna shall protect its rights and interests before any competent court, authority and jurisdiction.
Maxival and/or Valplus grades/products are manufactured with ladle techniques to control composition, distribution, size and shape of non-metallic inclusions for improved machinability.
The supplied product conforms to requirements expressly requested by the purchaser and conforms to requirements specified by certified norms and standards. Should the product be used for more severe, critical and/ or in any case different applications than those the material is generally intended for, any different and/or supplementary requirements shall be specifically demanded, at least, upon order of the Product by the Purchaser. Acciaierie Valbruna SpA shall not be responsible for any improper use of the Products.

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND

☑ REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLA VINA DATE 08 NOV 2024

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| Vicenza, 08/11/2023<br>VCQ012 - MEST135479 | Direzione Qualità<br>Qualitätsmanagement/Quality Management/Gestion Qualité<br>R.BERTELLI | Direzione Prodotto<br>Produktmanagement/Product Management/Direction Produit<br>P.MESSORI | Pagina<br>4 di 4 |
|---|---|---|---|

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 250.000.000 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, IATF 16949, EN 9100, ISO 14001 and ISO 45001.

# INSPECTION CERTIFICATE 3.1 (EN 10204:2004)

DOCUMENT NUMBER 2023001918



1724000740-QC-DB-00016_01

| | |
|---|---|
| CUSTOMER: | A.S.T. SPA |
| CUSTOMER'S ORDER: | AQ2301925 |
| MANUFACTURER'S WORKS: | AOSTA, VIA PARAVERA 16 - ITALY |
| PRODUCER OF THE DOC: | QUALITY DEPARTMENT |
| MANUFACTURER'S WORKS ORDER NO: | 0001136538 / 000010 |
| MARK OF THE MANUFACTURER: | **COGNE** |
| DISPATCH NOTE: | 0081566096 / 000010 WEIGHT: 50 KG / 110 LB |
| INTERNAL SPEC: | STOCKBARREW2 TECHNICAL RULE: AD2000 |
| PRODUCT: | PEL PEELED ROUND BARS TOLERANCE: ISOK11 |
| SURFACE FINISH: | 2B Cold Finished |
| PRODUCT DELIVERY CONDITION: | RS SOLUTION ANNEALED |
| PRODUCT DIMENSIONS (mm): | 26,000 ( 1,024 in) LENGTH (mm) 03000 03100 ( 00118 00122 in) |
| GRADE: | 316L-S31600/31603-1.4404/1.4401 INTERNAL GRADE: F316L IMCO |
| IDENTIFICATION HEAT NO: | 274483 IDENTIFICATION LOT NO: 508440 |
| MARKING OF THE PRODUCT: | 1.4404 TEST PIECE N: 844 |

REFERENCE NORMS: EN 10088-3 2014, EN 10272 2016, ASTM A276/A276M, ASTM A479/A479M, ASTM A193 B8MCLASSE 1D, ASME SA276/SA276M, ASME SA479/SA479M, AMS 5653J, AMS 5648M, ISO15156-3/NACE MR0175 2015, NACE MR0103/ISO 17945, NORSOK M630 MDSS01 REV5.
REFERENCE NORMS FOR CHEMICAL COMPOSITION AND MECHANICAL PROPERTIES: ASTM A182, ASME SA182.
REFERENCE NORMS ONLY FOR CHEMICAL COMPOSITION: EN 10222-5 2017,ASTM A403-07a, ASTM A484-18a,ASTM A314-08, AMS-QQ-S-763D.
ASME SECT.II PART A EDITION 2015-2017-2019-2021
AISI 316/316L - UNS S31600/S31603 - 1.4404/1.4401
THE PRODUCT IS CONFORMING TO THE CONTRACT AGREEMENT AND TO THE RULE AD2000-MERKBLATT W0/W2.
ASTM A484 DOES NOT APPLY FOR SIZE AND LENGTH TOLERANCES.
STEELMAKING EAF + AOD + CONTINUOUS CASTING
REFERENCE FOR APPLICABLE ASME STANDARD: SECTION II PART A ED. 2015-2017-2019-2021
HOT ROLLED
REDUCTION RATIO 43,1

CHEMICAL LADLE ANALYSIS ACCORDING TO ASTM A751 - EN ISO 14284
Control lot No. - Weight :020000947859 - 86.307 KG - 190.271 LB

| ELEMENTS | C | Si | Mn | P | S | N | Cr | Mo | Ni | Cu |
|---|---|---|---|---|---|---|---|---|---|---|
| MEASUREMENT UNIT | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w |
| OBTAINED | 0,015 | 0,31 | 1,75 | 0,026 | 0,022 | 0,079 | 16,63 | 2,07 | 10,25 | 0,43 |

| ELEMENTS | Co |
|---|---|
| MEASUREMENT UNIT | % w/w |
| OBTAINED | 0,18 |

HARDNESS TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000949437 - 2.750 KG - 6.063 LB

| | | | |
|---|---|---|---|
| SPECIFICATION | ENISO6506 | HARDNESS TEST | HB TESTING METHOD: 10/3000 |
| OBTAINED | 157 | | |

REVIEWED ON BEHALF OF A. DELLA RENNA DATE 08 NOV 2024 WITNESS

08 NOV. 2024 FRANCO CORBELLINI DBR CROSSWIND R

DATE 18.01.2023

MORABITO ROSA CF(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

-Cogne

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 250.000.000 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.



1724000740-QC-DB-00016_01

IMPACT TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000949437 - 2.750 KG - 6.063 LB
SPECIFICATION EN ISO 148-1-KV2 DIRECTION OF THE TEST PIECE: L
TYPE OF TEST PIECE KV
TEST TEMPERATURE °C 20
MEASUREMENT UNIT J

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| OBTAINED | 432 | 443 | 434 | 426 | 441 | 425 | 430 | 428 | 426 | 438 |
| | 443 | 441 | | | | | | | | |

TENSILE TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000949437 - 2.750 KG - 6.063 LB
SPECIFICATION EN-ISO6892-1 DIRECTION OF THE TEST PIECE: L

| | RM | RP02 | A5 | Z | RP1 |
|---|---|---|---|---|---|
| MEASUREMENT UNIT | MPA | MPA | % 5.0 D | % | NMM |
| OBTAINED | 576 | 280 | 55,2 | 72,1 | 328 |
| | 576 | 285 | 53,9 | 73,1 | 323 |
| | 581 | 282 | 53,0 | 74,7 | 322 |
| | 569 | 269 | 59,5 | 78,5 | 311 |

GRAIN SIZE
Control lot No. - Weight :020000949437 - 2.750 KG - 6.063 LB
SPECIFICATION ASTME112 --
OBTAINED 6

MATERIAL IN COMPLIANCE WITH THE NORSOK M-630 MDS S01
IMPACT TEST
Control lot No. - Weight :020000949437 - 2.750 KG - 6.063 LB
SPECIFICATION EN ISO 148-1 DIRECTION OF THE TEST PIECE: L
TYPE OF TEST PIECE KV
TEST TEMPERATURE °C 196-
MEASUREMENT UNIT J

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| OBTAINED | 170 | 200 | 188 | 192 | 195 | 188 | 193 | 195 | 188 | 191 |
| | 191 | 186 | | | | | | | | |

TENSILE TEST
Control lot No. - Weight :020000949437 - 2.750 KG - 6.063 LB
SPECIFICATION ASTMA370-E8-0.5"SPEC DIRECTION OF THE TEST PIECE: L

| | RMB | RP02B | ZB | AL2B |
|---|---|---|---|---|
| MEASUREMENT UNIT | KSI | KSI | % | % 4,0 D |
| OBTAINED | 84 | 39 | 75,5 | 57,5 |
| | 83 | 39 | 76,1 | 59,1 |
| | 82 | 39 | 74,2 | 65,2 |
| | 82 | 40 | 77,4 | 62,3 |

A. DELLA PINA DATE 08 NOV 2024 ON BEHALF OF ☒ REVIEW ☐ WITNESS

FRANCO CORBELLINI
DOSSWIND

08 NOV. 2024

DATE 18.01.2023 MORABITO ROSA CF(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE -Cogne

COGNE ACCIAI SPECIALI S.p.a.

ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 250.000.000 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.



1724000740-QC-DB-00016_01

COUNTRY OF MELTING AND ORIGIN: ITALY, THE MATERIAL COMPLIES WITH FAR DFARS
252.225-7009 ALT 1.
The products delivered are conforming to EN10088-5 and bear the CE marking on the basis of the test results here reported and the continuous surveillance, assessment and approval by MPA NRW
(certificate no. 0432-CPR-00166-01)
Material produced according to the system #Regulation 305/2011/EU of the European Parliament and of the Council of 9 March 2011#
DOCUMENT ISSUED IN AGREEMENT WITH TUEV BAYERN(11.1972) WAVING OF COUNTERSIGNING (SEE TUEV BAYERN LETTER DATED 17.01.80).
MARKING: SYMBOL OF THE MANUF. WORK, MATERIAL N. , CAST N., LOT N., RECEIVING AGENT STAMP
CORROSION TEST ACCORDING TO ASTM A262 PRACTICE E EN ISO 3651-2 PRACTICE A: SATISFACTORY.
ANTIMIXING TEST BY PORTABLE SPECTROMETRE: CONFORMING
EDDY CURRENT INSPECTION OF SURFACE ACCORDING TO EN 10277 CLASS 4.
DIMENSIONAL CONTROL ACCORDING TO EN 10278: SATISFACTORY.
NO WELDING REPAIR ON THE MATERIAL.
ULTRASONIC TEST ACCORDING TO EN 10308 Class.3: SATISFACTORY
QUALITY SYSTEM CERTIFIED BY KIWA CERMET ACCORDING TO UNI EN ISO 9001:2015 -IATF 16949:2016 (THE LAST ONE ONLY FOR WIRE ROD AND HOT ROLLED-PEELED-GROUND STAINLESS STEEL BARS).
INSPECTOR'S STAMP LF
THE MATERIAL IS FREE OF ANY MERCURY, MERCURY COMPOUNDS AND OR RADIUM CONTAMINATION AT TIME OF SHIPMENT AND WAS PRODUCED WITHOUT USING OZONE DEPLETING SUBSTANCES OF CLASS I AND II.
RADIOACTIVITY CONTROL PERFORMED WITH A GAMMA SPECTROMETER: ASTM E181.
GAMMA ACTIVITY ON THE PRODUCTS BELOW 0.1 BQ/G ACCORDING TO EU RESOLUTION 2013/59/EURATOM , IAEA RS-G-1.7 AND IAEA SSG-17.

CE 0432

REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLA PINA DATE 08 NOV 2023

08 NOV. 2023
FRANCO CORBELLINI
CROSSWIND DBO

DATE 18.01.2023 MORABITO ROSA CF(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE -Cogne

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a: Nach/According to/Selon EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. Prüfung/Test/Essai MEST053921 / 2024 /

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Ordine nr: ORD N AQ2400724
Bestell
Your order
Commande

Conferma ordine nr: MI24003416
Werks/Our Order/Ref nr

Avviso di Spedizione: A-MI24002488
Lieferanzeige/Packing list/B.L.

Stato di fornitura: Laminato - Solubilizzato Pelato
Lieferzustand
Delivery state
Etat de livraison

Tipo di Elaborazione: E+AOD
Erschmelzungsart
Melting process
Mode d'elaboration

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung
Brand / Nuance

Produttore :
Hersteller/Item/Usine productrice

**ACCIAIERIE VALBRUNA S.P.A.**

Marchi di Fabbrica:
Zeichen des Lieferwerkes
Trade marks
Sigles de l'usine productrice

Punzone del Collaudatore: MR
Stempel des Werkssachverständigen
Inspector's stamp/Poinçon de l'assayeur

Punzonatura: 1.4401/1.4404
Kennzeichnung
Marking
Marquage

| SPECIFICHE : Anforderungen / Requirements / Exigences | Note: Aufzeichnungen / Notes / Notes |
|---|---|
| VAL STOCK W2 A/1 1.4404/316L A | |
| IS107 01 316 A | |
| MDS S01 5 316 A (0) | (0)Norsok-standard M-630 Edition 6, October 2013 |
| MDS S17 1 316 A (1) | (1)Norsok-standard M-630: 2020 (2020-09-30) |
| AD 2000-M. W 2 2022 1.4401 A (2) | (2)AD 2000-MERKBLATT W 2 edition 03.2022 AD 2000-MERKBLATT W 10 edition 06.2022 |
| AD 2000-M. W 2 2022 1.4404 A (3) | (3)AD 2000-MERKBLATT W 2 edition 03.2022 AD 2000-MERKBLATT W 10 edition 06.2022 |
| AISI . 316/316L | |
| AMS-QQ-S-763 D 316/316L A | |
| ASME SA182 2023 S31600/03 A (4) | (4)Section II Part A 2023 EDITION For products machined directly from bar refer to ASME SA479. |
| ASME SA193 2023 B8M CLASS 1 (5) | (5)Section II Part A 2023 EDITION |
| ASME SA276 2023 S31600/03 A (6) | (6)Section II Part A 2023 EDITION |
| ASME SA320 2021 B8M CLASS 1 (7) | (7)Section II Part A 2021 EDITION |
| ASME SA479 2023 S31600/03 A (8) | (8)Section II Part A 2023 EDITION |
| ASTM A182 2024 S31600/03 A (9) | (9)For products machined directly from bar refer also to ASTM A479. |
| ASTM A193 2023 B8M CLASS 1 | |
| ASTM A262 PR. E 2015 316/316L (A) | (A)Reapproved 2021 |
| ASTM A276 2024A S31600/03 A | |
| ASTM A320 2022 B8M CLASS 1 CLASS1 | |
| ASTM A370 2022 . | |
| ASTM A479 2023A S31600/03 A | |
| ASTM E10 2023 . | |
| ASTM E8 2024 . | |
| EN 10088 PART 3 2014 1.4401 A | |
| EN 10088 PART 3 2014 1.4404 A | |
| EN 10272 2016. 1.4401 A | |
| EN 10272 2016. 1.4404 A | |
| ISO 148-1 2016 . | |
| ISO 3651-2 98 METHOD A T1 | |
| ISO 6506-1 2014 . | |
| ISO 6892-1 2019 . | |
| NACE MR0103 2015 S31600/03 A (B) | (B)ANSI/NACE MR0103/ISO 17945 November 23, 2015 |
| NACE MR0175 4 S31600/03 A (C) | (C)ANSI/NACE MR0175/ISO 15156-3:2020 Fourth edition, approved 21 Sep 2022 |
| QQ-S-763 F 316/316L A | |
| ACH CO . . | |
| KV L -196C . ISO 148-1 | |
| KV T -196C . ISO 148-1 | |
| PREN . . | |

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND

☒ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| Vicenza, 16/04/2024 | Direzione Qualità<br>Qualitätsmanagement/Quality Management/Gestion Qualité | Direzione Prodotto<br>Produktmanagement/Product Management/Direction Produit | Pagina |
|---|---|---|---|
| VCQ052 - MEST053921 | R.BERTELLI | P.MESSORI | 1 di 5 |

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a / Nach/According to/Selon: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. / Prüfung/Test/Essai: MEST053921 / 2024 /

Cliente / Besteller/Purchaser/Client:
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Ordine nr: ORD N AQ2400724
Bestell / Your order / Commande

Conferma ordine nr: MI24003416
Werks/Our Order/Ref nr

Avviso di Spedizione: A-MI24002488
Lieferanzeige/Packing list/B.L.

Stato di fornitura: Laminato - Solubilizzato Pelato
Lieferzustand / Delivery state / Etat de livraison

Tipo di Elaborazione: E+AOD
Erschmelzungsart / Melting process / Mode d'elaboration

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung / Brand / Nuance

Produttore:
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Marchi di Fabbrica: AV
Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice

Punzone del Collaudatore: MR
Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur

Punzonatura: 1.4401/1.4404
Kennzeichnung / Marking / Marquage

Tolleranza: k12
Toleranz/Allowance/Tolerance

| Pos. nr. | Oggetto | Dimensioni - mm | Lunghezza - mm | Colata | Pezzi | Peso - KG | Lotto nr. |
|---|---|---|---|---|---|---|---|
| Pos. nr. / Item nr. / Nr. de poste | Oggetto / Product description / Designa. du produit | Abmessungen / Dimensions / Dimension | Lange / Length / Longueur | Schmelze / Heat / Coulée | Stückzahl / Pieces / Pieces | Gewicht / Weight / Poids | Losnr. / Lot nr. / Lot nr. |
| 0030 | Tondo | 140,000 | 4443/ 4757 | 293820 | 1 | 544,0 | 332700542 |

### TEST ALLO STATO DI FORNITURA

Test on delivery condition / Prüefung auf lieferbereitem produkt / test a l'etat de fourniture / Prueba sobre el material así come entregado

1) L=longitudinale/langs, T=trasversale/quer, G=Tangenziale/tangential

| TEST | Provetta/ Probestab / Specimen/Eprouvette: Larg diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | Posiz. Saggio / Probenlage / Location / Emplacement 1) | Snervamento / Streckgrenze / Yield Stress / Limite elastique: Rp 0,2% N/mm2 | Snervamento / Streckgrenze / Yield Stress / Limite elastique: Rp 1% N/mm2 | Resistenza / Zugfestigkeit / Tensile strength / Resistance à traction: Rm N/mm2 | Allungamento / Bruchdehnung / Elongation / Allongement: A5 % | | Strizione / Einschnürung / Reduction of area / Striction: Z % | | Resilienza / Kerbschlagzähigkeit / Impact Value / Resilience | | | Durezza / Harte / Hardness / Durete: HB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti / Anforderungen/Required values / Valeurs demandées | | min / max | | 200 | 235 | 500 / 700 | 40 | - | - | - | - | | | - / 215 | | |
| A | 10 | 20 | L | 260 | 305 | 562 | 61 | | 71 | | | | | 168 | | |
| I | 10 | 20 | L | 264 | 308 | 566 | 60 | | 71 | | | | | 172 | | |

### TEST ALLO STATO DI FORNITURA

Test on delivery condition / Prüefung auf lieferbereitem produkt / Test a l'etat de fourniture / Prueba sobre el material así come entregado

| TEST | | min | max | |
|---|---|---|---|---|
| A | Dimensioni grano x ASTM E112 | | | 4 |

### Charpy per ISO 148-1

1) L=longitudinale/langs, T=trasversale/quer, G=Tangenziale/tangential

| TEST | Provetta/ Probestab / Specimen/Eprouvette: Larg diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | Posiz. Saggio / Probenlage / Location / Emplacement 1) | Resilienza / Kerbschlagarbeit / Impact Value / Resilience: KV2 J | | | Espansione laterale / Lateral Expansion: Lateral ex mm | | | Shear: % Shear % | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti / Anforderungen/Required values / Valeurs demandées | | min / max | | - | - | - | - | - | - | - | - | - |
| B | 10X10 | -196 | L | 211 | 215 | 219 | 1,758 | 1,800 | 1,792 | 73 | 73 | 68 |

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND

REVIEW ☐ WITNESS ☐
ON BEHALF OF
A. DELLA PINA DATE 08 NOV 2024

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| Vicenza, 16/04/2024 | Direzione Qualità / Qualitätsmanagement/Quality Management/Gestion Qualité | Direzione Prodotto / Produktmanagement/Product Management/Direction Produit | Pagina |
|---|---|---|---|
| VCQ052 - MEST053921 | R.BERTELLI | P.MESSORI | 2 di 5 |

FRANCO CORBELLINI
08 NOV. 2024
CROSSWIND R

**Acciaierie Valbruna S.p.A.**

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497

# CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a / Nach/According to/Selon: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. / Prüfung/Test/Essai: MEST053921 / 2024 /

Cliente / Besteller/Purchaser/Client:
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Ordine nr: ORD N AQ2400724
Bestell / Your order / Commande

Conferma ordine nr: MI24003416
Werks/Our Order/Ref nr.

Avviso di Spedizione: A-MI24002488
Lieferanzeige/Packing list/B.L.

Stato di fornitura: Laminato - Solubilizzato Pelato
Lieferzustand / Delivery state / Etat de livraison

Tipo di Elaborazione: E+AOD
Erschmelzungsart / Melting process / Mode d'elaboration

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung / Brand / Nuance

Produttore:
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Marchi di Fabbrica: AV
Zeichen des Liefernwerkes / Trade marks / Sigles de l'usine productrice

Punzone del Collaudatore: MR
Stempel des Werksachverständigen / Inspector's stamp/Poinçon de l'assayeur

Punzonatura: 1.4401/1.4404
Kennzeichnung / Marking / Marquage

## Test allo stato di fornitura per ASTM A370

1) L=longitudinale/longs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg.diam.Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | Posiz. Saggio Probentage Location Emplacement 1) | Snervamento Streckgrenze Yield Stress Limite elastique Rp 0,2% N/mm2 | Snervamento Streckgrenze Yield Stress Limite elastique | Resistenza Zugfestigkeit Tensile strength Resistance à traction Rm N/mm2 | Allungamento Bruchdehnung Elongation Allongement E 4d % | | Strizione Einschnürung Reduction of area Striction RA % | | Resilienza Kerbschlagarbeit Impact Value Resilience | | | Durezza Haerte Hardness Durete HB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti / Anforderungen/Required values / Valeurs demandées | | min | | 210 | - | 520 | - | 40 | - | 50 | - | | | - | | |
| | | max | | | | 790 | | | | | | | | 223 | | |
| C | 12,5 | 20 | L | 257 | | 557 | | 62 | | 72 | | | | 156 | | |

## Test allo stato di fornitura per ASTM A370

1) L=longitudinale/longs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg.diam.Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | Posiz. Saggio Probentage Location Emplacement 1) | Snervamento Streckgrenze Yield Stress Limite elastique Rp 0,2% N/mm2 | Snervamento Streckgrenze Yield Stress Limite elastique | Resistenza Zugfestigkeit Tensile strength Resistance à traction Rm N/mm2 | Allungamento Bruchdehnung Elongation Allongement E 4d % | | Strizione Einschnürung Reduction of area Striction RA % | | Resilienza Kerbschlagarbeit Impact Value Resilience | | | Durezza Haerte Hardness Durete | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti / Anforderungen/Required values / Valeurs demandées | | min | | 205 | - | 515 | - | 40 | - | 50 | - | | | - | | |
| | | max | | | | | | | | | | | | | | |
| D | 6.25 | 20 | T | 252 | | 550 | | 55 | | 65 | | | | | | |

## Charpy per ISO 148-1

1) L=longitudinale/longs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg.diam.Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | Posiz. Saggio Probentage Location Emplacement 1) | Resilienza Kerbschlagarbeit Impact Value Resilience KV2 J | | | Espansione laterale Lateral Expansion Lateral ex mm | | | Shear Shear % Shear % | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti / Anforderungen/Required values / Valeurs demandées | | min | | - | - | - | - | - | - | - | - | - |
| | | max | | | | | | | | | | |
| E | 10X10 | -196 | T | 94 | 88 | 85 | 0,748 | 0,710 | 0,677 | 25 | 25 | 20 |

## Charpy per ISO 148-1

1) L=longitudinale/longs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg.diam.Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | Posiz. Saggio Probentage Location Emplacement 1) | Resilienza Kerbschlagarbeit Impact Value Resilience KV2 J | | | Espansione laterale Lateral Expansion | | | Shear Shear | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti / Anforderungen/Required values / Valeurs demandées | | min | | 100 | 100 | 100 | - | - | - | - | - | - |
| | | max | | | | | | | | | | |
| H | 10X10 | 20 | L | 277 | 278 | 271 | | | | | | |
| J | 10X10 | 20 | L | 270 | 279 | 265 | | | | | | |

Tensile testing according to ISO 6892-1

REVIEW ☐ WITNESS
ON BEHALF OF RMG
08 NOV 2024

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| Vicenza, 16/04/2024 | Direzione Qualità<br>Qualitätsmanagement/Quality Management/Gestion Qualité | Direzione Prodotto<br>Produktmanagement/Product Management/Direction Produit | Pagina |
|---|---|---|---|
| VCQ052 - MEST053921 | R.BERTELLI | P.MESSORI | 3 di 5 |

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a / Nach/According to/Selon: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. / Prüfung/Test/Essai: MEST053921 / 2024 /

Cliente / Besteller/Purchaser/Client:
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Ordine nr: ORD N AQ2400724
Bestell / Your order / Commande

Conferma ordine nr: MI24003416
Werks/Our Order/Ref nr

Avviso di Spedizione: A-MI24002488
Lieferanzeige/Packing list/B.L.

Stato di fornitura: Laminato - Solubilizzato Pelato
Lieferzustand / Delivery state / Etat de livraison

Tipo di Elaborazione: E+AOD
Erschmelzungsart / Melting process / Mode d'elaboration

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung / Brand / Nuance

Produttore:
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Marchi di Fabbrica: AV
Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice

Punzone del Collaudatore: MR
Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur

Punzonatura: 1.4401/1.4404
Kennzeichnung / Marking / Marquage

8 NOV. 2024
FRANCO CORBELLINI
Q80
CROSSWIND R

Impact testing according to ISO 148-1
Mechanical properties according to ASTM A370.
Brinnell hardness according to ASTM E10
Tensile testing according to ASTM E8
Brinnell hardness according to ISO 6506-1

## Analisi chimica

Chemische Zusammensetzung/Chemical Analysis/Analyse chimique

| Colata /Heat / Schmelze/Coulée | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | min | 23,0 | - | - | - | 16,50 | 2,00 | - | 10,00 | - | - | - | - | - | - | - |
| | max | 28,0 | 0,030 | 1,00 | 2,00 | 18,00 | 2,50 | 1,00 | 13,00 | - | 0,045 | 0,030 | 0,100 | - | - | - |
| | PRE | | C % | Si % | Mn % | Cr % | Mo % | Cu % | Ni % | Co % | P % | S % | N % | | | |
| 293820 | 24,7 | | 0,019 | 0,44 | 1,71 | 16,77 | 2,01 | 0,59 | 10,13 | 0,137 | 0,031 | 0,025 | 0,083 | | | |

**Corrosion test in 16% sulfuric acid and copper sulfate solutions**

**Test standard:** UNI EN ISO 3651-2 Method A

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitized T1 | 20 | boil | 90 | 5 | Absence of cracks | **SATISFACTORY** |

**Corrosion test in 16% sulfuric acid and copper sulfate solutions**

**Test standard:** ASTM A262-Practice E

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitization | 15 | boil | 180 | 5 | Absence of cracks | **SATISFACTORY** |

Reduction ratio = 19,6 : 1
Furnace calibrated according to API 6A REV 21th ED ANNEX M.
Furnace calibrated according to API 6D REV 25th ED ANNEX H.
Solution annealed 1080°C for 3 h /water cooled.
SURFACE QUALITY GUARANTEE BY ET INSPECTION (max defect depth 1% DIAMETER)
UT ACC. TO ASTM A388
"Issued in agreement with TÜV SÜD Industrie Service GMBH (07/1972)"
"Qs approved according to PED, Annex I, Para. 4.3 by Notified Body 0036"
"(Certification no. DGR-0036-QS-W 23/2002/MUC)"

☒ REVIEW ☐ WITNESS
ON BEHALF OF RTC
A. DELLA PINA DATE 08 NOV 2024

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a / Nach/According to/Selon: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. / Prüfung/Test/Essai: MEST053921 / 2024 /

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Ordine nr: ORD N AQ2400724
Bestell / Your order / Commande

Conferma ordine nr: MI24003416
Werks/Our Order/Ref nr

Avviso di Spedizione: A-MI24002488
Lieferanzeige/Packing list/B.L.

Stato di fornitura: Laminato - Solubilizzato Pelato
Lieferzustand / Delivery state / Etat de livraison

Tipo di Elaborazione: E+AOD
Erschmelzungsart / Melting process / Mode d'elaboration

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung / Brand / Nuance

Produttore :
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Marchi di Fabbrica: AV
Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice

Punzone del Collaudatore: MR
Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l' assayeur

Punzonatura: 1.4401/1.4404
Kennzeichnung / Marking / Marquage

Sono state soddisfatte tutte le condizioni richieste
Die gestellen Anforderungen sind it. Anlage erfüllt
The material has been furnished in accordance with the requirements
Le materiel a été trouvé conforme aux exigences

Controllo antimescolanza con tecnica XRF/OES portatile : OK
Verwechslungprüfung: durch XRF/OES Gerät geführt : OK
Antimixing testing performed with XRF/OES portable : OK
Contrôle antimélange evt technique XRF/QES portable : OK

Controllo visivo e dimensionale: soddisfa le esigenze
Besichtigung und Ausmessung ohne Beanstandung
Visual inspection and dimensional checks satisfactory
Contrôle visuel et dimensions satisfaisant

Melted, poured and manufactured in Italy  No welding or weld repair  Material free from Mercury contamination

We declare that the finished product is checked for radioactive contamination by the portal system when it leaves the production plant.

The Quality Management System is also Certified according to Pressure Equipment Directive 2014/68/EU Annex 1,chapt.4.3 by TÜV and LLOYD'S
The Quality Management System is also Certified according to PER 2016/1105, Schedule 2, Part 4, Para 31 (8) by Competent Body TÜV SUD BABT Unlimited.
Any act of tampering, modification, alteration, counterfeiting and/or falsification and/or any other action which modifies the contents of this test certificate shall constitute a violation of applicable civil and criminal laws. Acciaierie Valbruna shall protect its rights and interests before any competent court, authority and jurisdiction.
Maxival and/or Valplus grades/products are manufactured with ladle techniques to control composition, distribution, size and shape of non-metallic inclusions for improved machinability.
The supplied product conforms to requirements expressly requested by the purchaser and conforms to requirements specified by certified norms and standards. Should the product be used for more severe, critical and/ or in any case different applications than those the material is generally intended for, any different and/or supplementary requirements shall be specifically demanded, at least, upon order of the Product by the Purchaser. Acciaierie Valbruna SpA shall not be responsible for any improper use of the Products.

0 8 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND

☒ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 0 8 NOV 2024

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.l.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a / Nach/According to/Selon: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. / Prüfung/Test/Essai: MEST112865 / 2022 /

Cliente / Besteller/Purchaser/Client:
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura / Lieferzustand / Delivery state / Etat de livraison: Laminato - Solubilizzato Rettificato

Produttore / Hersteller/Item/Usine productrice:
ACCIAIERIE VALBRUNA S.P.A.

Ordine nr. / Bestell / Your order / Commande: ORD.N.AQ2202071

Tipo di Elaborazione / Erschmelzungsart / Melting process / Mode d'elaboration: E+AOD

Marchi di Fabbrica / Zeichen des Lieferwerkes / Trade marks / Sigles de fusine productrice: AV

Conferma ordine nr. / Werks/Our Order/Ref nr.: MI22008136

Qualità / Werkstoff/Grade/Nuance: 1.4401/1.4404/316/316L

Punzone del Collaudatore / Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur: MR

Avviso di Spedizione / Lieferanzeige/Packing list/B.L.: A-MI22006725

Marca / Markenbezeichnung / Brand / Nuance: MVAPML ( MAXIVAL )

Punzonatura / Kennzeichnung / Marking / Marquage: 1.4401/4/316/L

**SPECIFICHE :**
Anforderungen / Requirements / Exigences

VAL STOCK 2020 1.4404/316L A,CF
AISI 316
AISI 316L
ASME SA276 2019 S31600 A,CF (0)
ASME SA276 2019 S31603 A,CF (1)
ASME SA479 2019 S31600 A (2)
ASME SA479 2019 S31603 A (3)
ASTM A262 2015 PRACTICE E (4)
ASTM A276 2017 S31600 A,CF
ASTM A276 2017 S31603 A,CF
ASTM A370 2020 .
ASTM A479 2020 S31600 A
ASTM A479 2020 S31603 A
ASTM E10 2018 .
ASTM E8 2021 .
EN 10088-3 2014 1.4401 A,CF
EN 10088-3 2014 1.4404 A,CF
EN 10272 2007 1.4401 A,CF
EN 10272 2007 1.4404 A,CF
ISO 6506-1 2014 .
ISO 6892-1 2019 .

Note:
Aufzeichnungen / Notes / Notes

(0)Section II Part A 2019 EDITION
(1)Section II Part A 2019 EDITION
(2)Section II Part A 2019 EDITION
(3)Section II Part A 2019 EDITION
(4)Reapproved 2021

| | | Tolleranza: h8 - DIN670/EN10278<br>Toleranz/Allowance/Tolerance | | | | | |
|---|---|---|---|---|---|---|---|
| Pos. nr.<br>Pos. nr.<br>Item nr.<br>Nr. de poste | Oggetto<br>Gegenstand<br>Product description<br>Descrip. du produit | Dimensioni - mm<br>Abmessungen<br>Dimension<br>Dimension | Lunghezza - mm<br>Lange<br>Length<br>Longueur | Colata<br>Schmelze<br>Heat<br>Coulée | Pezzi<br>Stückzahl<br>Pieces<br>Pieces | Peso - KG<br>Gewicht<br>Weight<br>Poids | Lotto nr.<br>Losnr.<br>Lot nr.<br>Lot nr. |
| 0070 | Tondo | 10,000 | 2900/ 3100 | 276383 | | 18,0 | 729305910 |

08 NOV. 2024
FRANCO CORBELLINI
DBD
CROSSWIND

REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLA PINA DATE 08 NOV 2024

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| Vicenza, 09/11/2022<br>VCQ052 - MEST112865 | Direzione Qualità<br>Qualitätsmanagement/Quality Management/Gestion Qualité<br>R.BERTELLI | Direzione Prodotto<br>Produktmanagement/Product Management/Direction Produit<br>P.MESSORI | Pagina<br>1 di 3 |
|---|---|---|---|

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a / Nach/According to/Selon: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. / Prüfung/Test/Essai: MEST112865 / 2022 /

Cliente / Besteller/Purchaser/Client:
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura / Lieferzustand / Delivery state / Etat de livraison: Laminato - Solubilizzato Rettificato

Produttore / Hersteller/Item/Usine productrice:
ACCIAIERIE VALBRUNA S.P.A.

Tipo di Elaborazione / Erschmelzungsart / Melting process / Mode d'elaboration: E+AOD

Marchi di Fabbrica / Zeichen des Herstellwerkes / Trade marks / Sigles de l'usine productrice: AV

Ordine nr. / Bestell / Your order / Commande: ORD.N.AQ2202071

Qualità / Werkstoff/Grade/Nuance: 1.4401/1.4404/316/316L

Punzone del Collaudatore / Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur: MR

Conferma ordine nr. / Werks/Our Order/Ref nr.: MI22008136

Avviso di Spedizione / Lieferanzeige/Packing list/B.L.: A-MI22006725

Marca / Markenbezeichnung / Brand / Nuance: MVAPML ( MAXIVAL )

Punzonatura / Kennzeichnung / Marking / Marquage: 1.4401/4/316/L

### TEST ALLO STATO DI FORNITURA

Test on delivery condition / Prüefung auf lieferbereitem produkt / test a l'etat de fourniture / Prueba sobre el material así come entregado

1) L=longitudinale/längs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta/ Probestab / Specimen/Eprouvette Larg.diam Spess. / Breite Diam. Dicke / Width Diam. Thickness / Larg. diam. epais mm | °C | Posiz. Saggio / Probestage / Location / Emplacement 1) | Snervamento / Streckgrenze / Yield Stress / Limite elastique Rp 0,2% N/mm2 | Snervamento / Streckgrenze / Yield Stress / Limite elastique Rp 1% N/mm2 | Resistenza / Zugfestigkeit / Tensile strength / Resistance à traction Rm N/mm2 | Allungamento / Bruchdehnung / Elongation / Allongement A5 % | Allungamento E 4d % | Strizione / Einschnürung / Reduction of area / Striction Z % | Strizione RA % | Resilienza / Kerbschlagarbeit / Impact Value / Resilience | | | Durezza / Haerte / Hardness / Durete HB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti / Anforderungen/Required values / Valeurs démandées | | min max | | 310 | 235 | 620 900 | 20 | 30 | - | 40 | - | | | - 315 | | |
| A | 10 | 20 | L | 477 | 559 | 665 | 47 | 50 | 70 | 70 | | | | 225 | | |
| B | 10 | 20 | L | 482 | 561 | 669 | 46 | 50 | 69 | 69 | | | | 228 | | |

### TEST ALLO STATO DI FORNITURA

Test on delivery condition / Prüefung auf lieferbereitem produkt / Test a l'etat de fourniture / Prueba sobre el material así come entregado

| TEST | | min | max | |
|---|---|---|---|---|
| A | Dimensioni grano x ASTM E112 | | | |

08 NOV. 2024

FRANCO CORBELLINI

089

CROSSWIND

Mechanical properties according to ASTM A370.
Brinnell hardness according to ASTM E10
Tensile testing according to ASTM E8
Brinnell hardness according to ISO 6506-1
Tensile testing according to ISO 6892-1

### Analisi chimica

Chemische Zusammensetzung/Chemical Analysis/Analyse chimique

| Colata /Heat / Schmelze/Coulée | C % | Si % | Mn % | Cr % | Mo % | Ni % | P % | S % | N % |
|---|---|---|---|---|---|---|---|---|---|
| min - max | - 0,030 | - 1,00 | - 2,00 | 16,50 18,00 | 2,00 2,50 | 10,00 13,00 | - 0,045 | - 0,030 | - 0,100 |
| 276383 | 0,014 | 0,63 | 1,44 | 16,84 | 2,07 | 10,06 | 0,028 | 0,026 | 0,061 |

### Corrosion test in 16% sulfuric acid and copper sulfate solutions

**Test standard:** ASTM A262-Practice E

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitization | 15 | boil | 180 | 5 | Absence of cracks | SATISFACTORY |

☒ REVIEW ☐ WITNESS

ON BEHALF OF

A. DELLA PINA DATE 08 NOV 2024

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| Vicenza, 09/11/2022 | Direzione Qualità / Qualitätsmanagement/Quality Management/Gestion Qualité | Direzione Prodotto / Produktmanagement/Product Management/Direction Produit | Pagina |
|---|---|---|---|
| VCQ052 - MEST112865 | R.BERTELLI | P.MESSORI | 2 di 3 |

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a : Nach/According to/Selon: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. Prüfung/Test/Essai: MEST112865 / 2022 /

Cliente / Besteller/Purchaser/Client:
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura : Lieferzustand / Delivery state / Etat de livraison: Laminato - Solubilizzato Rettificato

Produttore : Hersteller/Item/Usine productrice:
**ACCIAIERIE VALBRUNA S.P.A.**

Ordine nr: Bestell / Your order / Commande: ORD.N.AQ2202071

Tipo di Elaborazione: Erschmelzungsart / Melting process / Mode d'elaboration: E+AOD

Marchi di Fabbrica: Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice: AV

Conferma ordine nr: Werks/Our Order/Ref nr.: MI22008136

Qualità: Werkstoff/Grade/Nuance: 1.4401/1.4404/316/316L

Punzone del Collaudatore: Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur: MR

Avviso di Spedizione: Lieferanzeige/Packing list/B.L.: A-MI22006725

Marca: Markenbezeichnung / Brand / Nuance: MVAPML ( MAXIVAL )

Punzonatura: Kennzeichnung / Marking / Marquage: 1.4401/4/316/L

**Corrosion test in 16% sulfuric acid and copper sulfate solutions**

**Test standard:** UNI EN ISO 3651-2 Method A

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitized T1 | 20 | boil | 90 | 5 | Absence of cracks | SATISFACTORY |

Reduction ratio = 374,4 : 1
Material solution annealed 1060° C for 0.5h/air cooled.

Sono state soddisfatte tutte le condizioni richieste
Die gestellen Anforderungen sind it. Anlage erfüllt
The material has been furnished in accordance with the requirements
Le materiel â été trouvé conforme aux exigences

Controllo antimescolanza con tecnica XRF/OES portatile : OK
Verwechslungprüfung: durch XRF/QES Gerät geführt : OK
Antimixing testing performed with XRF/OES portable : OK
Contrôle antimélange svt technique XRF/QES portable : OK

Controllo visivo e dimensionale: soddisfa le esigenze
Besichtigung und Ausmessung: ohne Beanstandung
Visual inspection and dimensional checks:satisfactory
Contrôle visuel et dimensions: satisfaisant

Melted, poured and manufactured in Italy  No welding or weld repair  Material free from Mercury contamination

We declare that the finished product is checked for radioactive contamination by the portal system when it leaves the production plant.

The Quality Management System is also Certified according Pressure Equipment Directive 2014/68/EU Annex 1,chapt.4.3 by TÜV and LLOYD`S
Any act of tampering, modification, alteration, counterfeiting and/or falsification and/or any other action which modifies the contents of this test certificate shall constitute a violation of applicable civil and criminal laws. Acciaierie Valbruna shall protect its rights and interests before any competent court, authority and jurisdiction.
Maxival and/or Valplus grades/products are manufactured with ladle techniques to control composition, distribution, size and shape of non-metallic inclusions for improved machinability.
The supplied product conforms to requirements expressly requested by the purchaser and conforms to requirements specified by certified norms and standards. Should the product be used for more severe, critical and/ or in any case different applications than those the material is generally intended for, any different and/or supplementary requirements shall be specifically demanded, at least, upon order of the Product by the Purchaser. Acciaierie Valbruna SpA shall not be responsible for any improper use of the Products.

WSPC37000C7C1B2BC17D4051FA0D6E450C2

0 8 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND R

☒ REVIEW ☐ WITNESS
ON BEHALF OF RPL
A. BELLAFINA DATE 0 8 NOV 2024

**QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D**

| Vicenza, 09/11/2022<br>VCQ052 - MEST112865 | Direzione Qualità<br>Qualitätsmanagement/Quality Management/Gestion Qualité<br>R.BERTELLI | Direzione Prodotto<br>Produktmanagement/Product Management/Direction Produit<br>P.MESSORI | Pagina 3 di 3 |
|---|---|---|---|

**AST S.p.A.**
Via R. Merendi, 40
I-20007 Cornaredo MI

P +39 02 934848.1
F +39 02 9362248
W www.astspa.it

**MATERIAL CERTIFICATES INDEX**
**CERTIFICATO DEI MATERIALI**

**No.** 2400597

EN 10204 3.1

**Customer**
ROSETTI MARINO S.P.A.

**P.Order / Project**
1724000740 123A90A Rev. 1

**ITEM Number**
150-160

**Tag**
64-PV-031A

**Quantity delivered**
1

**AST Job**
CV2400221

**AST Code**
CV2400221CV8407A003

**Serial Number**
2400597

**Valve Type**
Valvole Regolazione

**Size**
NPS 1" CLASS 150 RF

**Port Size**
3/8"

| Part Name | Material | Heat No. | Certificate No. | Supplier |
|---|---|---|---|---|
| BODY | ASTM A350 LF2 Cl. 1 | 15442 | A20-1797 | FORGIATURA MODERNA ARESE SPA |
| SEAT RING | ASTM A479 316/316L+Stellite Gr.6 | 372445 | 2023016714 | COGNE ACCIAI SPECIALI SPA |
| PLUG | ASTM A479 316/316L+Stellite Gr.6 | 293003 | MEST053920/2024/ | ACCIAIERIE VALBRUNA |
| BONNET | ASTM A350 LF2 Cl. 1 | 806160 | CE22035104 | FERLAT ACCIAI SPA |
| STEM | ASTM A479 316/316L | 276383 | MEST112865-2022 | ACCIAIERIE VALBRUNA |

0 8 NOV. 2024
FRANCO CORBELLINI
080
CROSSWIND

☑ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA RINA DATE 0 8 NOV 2024

**Remarks** :

**AST Q.C. Department**

**Customer's Inspector**

**Third Party Inspection**

**Date** : 06.11.2024 **Date** : _____ **Date** : _____

FORGIATURA MODERNA ARESE

# CERTIFICATO DI COLLAUDO

*Inspection certificate / Certificat de recette*

**EN10204/3.1**

N° **A20-1797**
Del **21/07/20**
Foglio 1 di 1

| CLIENTE<br>Purchaser/Client | Cod. A0598 | ORDINE<br>Order/Commande | MATERIALE<br>Material/Matiere |
|---|---|---|---|
| **A.S.T. S.P.A.** | | AQ2001162 | ASTM A350 LF2 Cl.1 |

**SPECIFICHE RICHIESTE**
Specification request/Specifications technique

ASTM/ASME LAST EDITION + NACE MR 01-75 + SPEC. FOR003 REV.12

| DESCRIZIONE MATERIALE<br>Material description | DISEGNO/DIMEN.<br>Drawing/Dimension | COLATA<br>Heat/Coulee | PROVA<br>Test N° | COMM.<br>Prod. order | POS. |
|---|---|---|---|---|---|
| N°1 FORGED BAR, NORMALIZED AT 900°C | Ø 160 MT 6 | 15442 | 2057 | 1355/3 | 3 |

**CARATTERISTICHE MECCANICHE**
Mechanical requirements/Caracteristiques mecaniques

| | | | | | Rp - Yp<br>N/mm2 | Rm - Ts<br>N/mm2 | A - E<br>% | Z - Ra<br>% | KV -46°C<br>Joule | | | HB |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **PROVA N°**<br>Specimen n° | **DIREZ.**<br>Direction | **Ø**<br>mm | **Lo**<br>mm | **Min<br>Max** | **250** | **485<br>655** | **22** | **30** | **27** | | | **197** |
| 2057 | Long | 12,5 | 50 | | 328 | 531 | 28,9 | 59,4 | 88-85-91 | | | 150-148-147 |

**CARATTERISTICHE CHIMICHE**
Chemical requirements/Caracteristiques chimiques

| | | C | Mn | Si | P | S | Cr | Ni | Mo | Al | Cu | V | Nb | N | Ti | Ceq. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| COLATA | Min. | | 0,60 | 0,15 | | | | | | | | | | | | |
| Heat/Coulee | Max. | 0,30 | 1,35 | 0,30 | 0,035 | 0,040 | 0,30 | 0,40 | 0,12 | | 0,40 | 0,08 | 0,02 | | | |
| 15442 | | 0,19 | 1,02 | 0,20 | 0,004 | 0,002 | 0,14 | 0,16 | 0,06 | 0,032 | 0,14 | 0,002 | 0,001 | 0,0072 | 0,001 | 0,4204 |

08 NOV. 2024
FRANCO CORBELLINI
080
CROSSWIND

☑ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

VISUAL AND DIMENSIONAL INSPECTION CONFORMS TO CONTRACTUAL REQUIREMENTS - THE PRODUCTS ARE IN COMPLIANCE WITH THE REQUIREMENTS OF THE ORDER

FORGIATURA MODERNA ARESE SPA
DIVISIONE ASA

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 250.000.000 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.

# INSPECTION CERTIFICATE 3.1 (EN 10204:2004)



| | | | |
|---|---|---|---|
| CUSTOMER: | A.S.T. SPA | | |
| CUSTOMER'S ORDER: | AQ2301925 | | |
| MANUFACTURER'S WORKS: | AOSTA, VIA PARAVERA 16 - ITALY | | |
| PRODUCER OF THE DOC: | QUALITY DEPARTMENT | | |
| MANUFACTURER'S WORKS ORDER NO: | 0001136538 / 000020 | | |
| MARK OF THE MANUFACTURER: | **COGNE** | | |
| DISPATCH NOTE: | 0081566096 / 000020 WEIGHT: 190 KG / 419 LB | | |
| INTERNAL SPEC: | STOCKBARREW2 | TECHNICAL RULE: | AD2000 |
| PRODUCT: | PEL PEELED ROUND BARS TOLERANCE: ISOK11 | | |
| SURFACE FINISH: | 2B Cold Finished | | |
| PRODUCT DELIVERY CONDITION: | RS SOLUTION ANNEALED | | |
| PRODUCT DIMENSIONS (mm): | 50,000 ( 1,969 in) | LENGTH (mm) | 03000 03100 ( 00118 00122 in) |
| GRADE: | 316L-S31600/31603-1.4404/4401 | INTERNAL GRADE: | F316L IMCO |
| IDENTIFICATION HEAT NO: | 372445 | IDENTIFICATION LOT NO: | 725970 |
| MARKING OF THE PRODUCT: | 1.4404 | TEST PIECE N: | 597 |

REFERENCE NORMS: EN 10088-3 2014, EN 10272 2016, ASTM A276/A276M, ASTM A479/A479M, ASTM A193 B8MCLASSE 1D, ASME SA276/SA276M, ASME SA479/SA479M, AMS 5653J, AMS 5648N, ISO15156-3/NACE MR0175 2015, NACE MR0103/ISO 17945, NORSOK M630 MDSS01 REV5.
REFERENCE NORMS FOR CHEMICAL COMPOSITION AND MECHANICAL PROPERTIES: ASTM A182, ASME SA182.
REFERENCE NORMS ONLY FOR CHEMICAL COMPOSITION: EN 10222-5 2017,ASTM A403-07a, ASTM A484-18a,ASTM A314-08, AMS-QQ-S-763D.
ASME SECT.II PART A EDITION 2015-2017-2019-2021
AISI 316/316L - UNS S31600/S31603 - 1.4404/1.4401
THE PRODUCT IS CONFORMING TO THE CONTRACT AGREEMENT AND TO THE RULE AD2000-MERKBLATT W0/W2.
STEELMAKING EAF + AOD + CONTINUOUS CASTING
ASTM A484 DOES NOT APPLY FOR SIZE AND LENGTH TOLERANCES.
STEELMAKING EAF + AOD + CONTINUOUS CASTING
REFERENCE FOR APPLICABLE ASME STANDARD: SECTION II PART A ED. 2015-2017-2019-2021
HOT ROLLED
REDUCTION RATIO 11,8

CHEMICAL LADLE ANALYSIS ACCORDING TO ASTM A751 - EN ISO 14284
Control lot No. - Weight :020000959742 - 85.921 KG - 189.420 LB

| ELEMENTS | C | Si | Mn | P | S | N | Cr | Mo | Ni | Cu |
|---|---|---|---|---|---|---|---|---|---|---|
| MEASUREMENT UNIT | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w |
| OBTAINED | 0,018 | 0,26 | 1,77 | 0,026 | 0,028 | 0,077 | 16,97 | 2,04 | 10,28 | 0,46 |

| ELEMENTS | Co |
|---|---|
| MEASUREMENT UNIT | % w/w |
| OBTAINED | 0,16 |

HARDNESS TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000960410 - 7.449 KG - 16.422 LB
SPECIFICATION ENISO6506 HARDNESS TEST HB TESTING METHOD: 10/3000
OBTAINED 157

A DELLA PINA DATE 0-8 NOV 2023 ON BEHALF OF ☐ REVIEW ☐ WITNESS

0 8 NOV. 2024 FRANCO CORBELLINI CROSSWIND QBQ

DATE 05.04.2023 BARBARA VIETTI MV(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE -Cogne

1724000740-QC-DB-00016_01

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 250.000.000 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.



1724000740-QC-DB-00016_01

IMPACT TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000960410 - 7.449 KG - 16.422 LB
SPECIFICATION EN ISO 148-1-KV2 DIRECTION OF THE TEST PIECE: L
TYPE OF TEST PIECE KV
TEST TEMPERATURE °C 20
MEASUREMENT UNIT J

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| OBTAINED | 435 | 430 | 428 | 435 | 438 | 439 | 429 | 435 | 436 | 426 |
| | 432 | 434 | | | | | | | | |

TENSILE TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000960410 - 7.449 KG - 16.422 LB
SPECIFICATION EN-ISO6892-1 DIRECTION OF THE TEST PIECE: L

| | RM | RP02 | A5 | Z | RP1 |
|---|---|---|---|---|---|
| MEASUREMENT UNIT | MPA | MPA | % 5.0 D | % | NMM |
| OBTAINED | 611 | 282 | 55,2 | 78,3 | 325 |
| | 613 | 287 | 51,3 | 72,1 | 342 |
| | 614 | 301 | 48,8 | 73,1 | 341 |
| | 612 | 272 | 56,7 | 76,3 | 325 |

GRAIN SIZE
Control lot No. - Weight :020000960410 - 7.449 KG - 16.422 LB
SPECIFICATION ASTME112 --
OBTAINED 6

MATERIAL IN COMPLIANCE WITH THE NORSOK M-630 MDS S01
IMPACT TEST
Control lot No. - Weight :020000960410 - 7.449 KG - 16.422 LB
SPECIFICATION EN ISO 148-1 DIRECTION OF THE TEST PIECE: L
TYPE OF TEST PIECE KV
TEST TEMPERATURE °C 196-
MEASUREMENT UNIT J

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| OBTAINED | 198 | 185 | 195 | 190 | 177 | 173 | 173 | 173 | 197 | 175 |
| | 182 | 179 | | | | | | | | |

TENSILE TEST
Control lot No. - Weight :020000960410 - 7.449 KG - 16.422 LB
SPECIFICATION ASTMA370-E8-0.5"SPEC DIRECTION OF THE TEST PIECE: L

| | RMB | RP02B | ZB | AL2B |
|---|---|---|---|---|
| MEASUREMENT UNIT | KSI | KSI | % | % 4,0 D |
| OBTAINED | 88 | 40 | 78,0 | 57,6 |
| | 89 | 41 | 73,3 | 55,7 |
| | 89 | 41 | 72,9 | 54,0 |
| | 89 | 40 | 78,1 | 61,1 |

DATE 05.04.2023 BARBARA VIETTI MV(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE -Cogne

A. DELLA FINA DATE 08 NOV 2024 ON BEHALF OF REVIEW WITNESS
FRANCO CORRELLINI DBQ CROSSWIND 08 NOV. 2024

COGNE ACCIAI SPECIALI S.p.a.

ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 250.000.000 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.



1724000740-QC-DB-00016_01

COUNTRY OF MELTING AND ORIGIN: ITALY, THE MATERIAL COMPLIES WITH FAR DFARS 252.225-7009 ALT 1.
The products delivered are conforming to EN10088-5 and bear the CE marking on the basis of the test results here reported and the continuous surveillance, assessment and approval by MPA NRW (certificate no. 0432-CPR-00166-01)
Material produced according to the system #Regulation 305/2011/EU of the European Parliament and of the Council of 9 March 2011#
DOCUMENT ISSUED IN AGREEMENT WITH TUEV BAYERN(11.1972) WAVING OF COUNTERSIGNING (SEE TUEV BAYERN LETTER DATED 17.01.80).
MARKING: SYMBOL OF THE MANUF. WORK, MATERIAL N. , CAST N., LOT N., RECEIVING AGENT STAMP
CORROSION TEST ACCORDING TO ASTM A262 PRACTICE E EN ISO 3651-2 PRACTICE A: SATISFACTORY.
ANTIMIXING TEST BY PORTABLE SPECTROMETRE: CONFORMING
EDDY CURRENT INSPECTION OF SURFACE ACCORDING TO EN 10277 CLASS 4.
DIMENSIONAL CONTROL ACCORDING TO EN 10278: SATISFACTORY.
NO WELDING REPAIR ON THE MATERIAL.
ULTRASONIC TEST ACCORDING TO EN 10308 Class.3: SATISFACTORY
QUALITY SYSTEM CERTIFIED BY KIWA CERMET ACCORDING TO UNI EN ISO 9001:2015 -IATF 16949:2016 (THE LAST ONE ONLY FOR WIRE ROD AND HOT ROLLED-PEELED-GROUND STAINLESS STEEL BARS).
INSPECTOR'S STAMP LF
MATERIAL CONFORM TO: 2015/863/UE (RoHS3) - 2011/65/UE (RoHS2) - 2000/53/UE - 2002/95/UE (RoHS) - 2003/11/UE - 2005/618/UE - PED 2014/68/UE e PE(S)R 2016/1105
THE MATERIAL IS FREE OF ANY MERCURY, MERCURY COMPOUNDS AND OR RADIUM CONTAMINATION AT TIME OF SHIPMENT AND WAS PRODUCED WITHOUT USING OZONE DEPLETING SUBSTANCES OF CLASS I AND II.
RADIOACTIVITY CONTROL PERFORMED WITH A GAMMA SPECTROMETER: ASTM E181.
GAMMA ACTIVITY ON THE PRODUCTS BELOW 0.1 BQ/G ACCORDING TO EU RESOLUTION 2013/59/EURATOM , IAEA RS-G-1.7 AND IAEA SSG-17.

CE 0432

REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLAPINA DATE 08 NOV 2023

FRANCO CORBELLINI
CROSSWIND
08 NOV 2023

DATE 05.04.2023

BARBARA VIETTI MV(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

-Cogne

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1
Nach/According to/Selon

Certificato nr. MEST053920 / 2024 /
Prüfung/Test/Essai

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Ordine nr: ORD N AQ2400724
Bestell
Your order
Commande

Conferma ordine nr: MI24003416
Werks/Our Order/Ref nr.

Avviso di Spedizione: A-MI24002488
Lieferanzeige/Packing list/B.L.

Stato di fornitura: Laminato - Solubilizzato FINITO A FREDDO
Lieferzustand
Delivery state
Etat de livraison

Tipo di Elaborazione: E+AOD
Erschmelzungsart
Melting process
Mode d'elaboration

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung
Brand / Nuance

Produttore:
Hersteller/Item/Usine productrice

**ACCIAIERIE VALBRUNA S.P.A.**

Marchi di Fabbrica: AV
Zeichen des Lieferwerkes
Trade marks
Sigles de l'usine productrice

Punzone del Collaudatore: MR
Stempel des Werkssachverständigen
Inspector's stamp/Poinçon de l'assayeur

Punzonatura: 1.4401/1.4404
Kennzeichnung
Marking
Marquage

**SPECIFICHE:**
Anforderungen / Requirements / Exigences

Note:
Aufzeichnungen / Notes / Notes

VAL STOCK W2 A/1 1.4404/316L A,CF
AD 2000-M. W 2 2022 1.4401 A,CF (0)
AD 2000-M. W 2 2022 1.4404 A,CF (1)
(0)AD 2000-MERKBLATT W 2 edition 01.2020 AD 2000-MERKBLATT W 10 edition 01.2020
(1)AD 2000-MERKBLATT W 2 edition 01.2020 AD 2000-MERKBLATT W 10 edition 01.2020

AISI . 316/316L
AMS-QQ-S-763 D 316/316L A,CF
ASME SA182 2021 S31600/03 A (2)
(2)Section II Part A 2021 EDITION For products machined directly from bar refer to ASME SA479.

ASME SA276 2021 S31600/03 A,CF (3)
(3)Section II Part A 2021 EDITION

ASME SA479 2021 S31600/03 A (4)
(4)Section II Part A 2021 EDITION

ASTM A182 2023 S31600/03 A (5)
(5)For products machined directly from bar refer also to ASTM A479.

ASTM A262 PR. E 2015 316/316L (6)
(6)Reapproved 2021

ASTM A276 2023 S31600/03 A,CF
ASTM A370 2022 .
ASTM A479 2023A S31600/03 A
ASTM E10 2023 .
ASTM E8 2022 .
EN 10088 PART 3 2014 1.4401 A,CF
EN 10088 PART 3 2014 1.4404 A,CF
EN 10272 2016. 1.4401 A,CF
EN 10272 2016. 1.4404 A,CF
ISO 148-1 2016 .
ISO 3651-2 98 METHOD A T1
ISO 6506-1 2014 .
ISO 6892-1 2019 .

NACE MR0103 2015 S31600/03 A (7)
(7)ANSI/NACE MR0103/ISO 17945 November 23, 2015

NACE MR0175 4 S31600/03 A (8)
(8)ANSI/NACE MR0175/ISO 15156-3:2020 Fourth edition, approved 21 Sep 2022.

QQ-S-763 F 316/316L A,CF
ACH CO . .
KV L -196C . ISO 148-1

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND

| | | Toleranza: k12<br>Toleranz/Allowance/Tolerance | | | | | |
|---|---|---|---|---|---|---|---|
| Pos. nr.<br>Pos. nr.<br>Item nr.<br>Nr. de poste | Oggetto<br>Gegenstand<br>Product description<br>Descrip. du produit | Dimensioni - mm<br>Abmessungen<br>Dimension<br>Dimension | Lunghezza - mm<br>Lange<br>Length<br>Longueur | Colata<br>Schmelze<br>Heat<br>Coulée | Pezzi<br>Stückzahl<br>Pieces<br>Pièces | Peso - KG<br>Gewicht<br>Weight<br>Poids | Lotto nr.<br>Losnr.<br>Lot nr.<br>Lot nr. |
| 0010 | Tondo | 25,000 | 6000/ 6070 | 293003 | | 71,0 | 310808820 |

☒ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| | | | |
|---|---|---|---|
| Vicenza, 16/04/2024<br>VCQ052 - MEST053920 | Direzione Qualità<br>Qualitätsmanagement/Quality Management/Gestion Qualité<br>R.BERTELLI | Direzione Prodotto<br>Produktmanagement/Product Management/Direction Produit<br>P.MESSORI | Pagina 1 di 4 |

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a / Nach/According to/Selon: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. / Prüfung/Test/Essai: MEST053920 / 2024 /

Cliente / Besteller/Purchaser/Client:
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Ordine nr: ORD N AQ2400724
Bestell / Your order / Commande

Conferma ordine nr: MI24003416
Werks/Our Order/Ref nr.

Avviso di Spedizione: A-MI24002488
Lieferanzeige/Packing list/B.L.

Stato di fornitura / Lieferzustand / Delivery state / Etat de livraison: Laminato - Solubilizzato FINITO A FREDDO

Tipo di Elaborazione / Erschmelzungsart / Melting process / Mode d'elaboration: E+AOD

Qualità / Werkstoff/Grade/Nuance: 1.4401/1.4404/316/316L

Marca / Markenbezeichnung / Brand / Nuance: MVAPML ( MAXIVAL )

Produttore / Hersteller/Item/Usine productrice:
**ACCIAIERIE VALBRUNA S.P.A.**

Marchi di Fabbrica / Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice: AV

Punzone del Collaudatore / Stempel des Werksachverständigen / Inspector's stamp/Poinçon de l'assayeur: MR

Punzonatura / Kennzeichnung / Marking / Marquage: 1.4401/1.4404

### TEST ALLO STATO DI FORNITURA

Test on delivery condition / Prüefung auf lieferbereitem produkt / test a l'etat de fourniture / Prueba sobre el material asi come entregado

1) L=longitudinale/lange, T=trasversale/quer, D=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | Posiz Saggio Probentage Location Emplacement 1) | Snervamento Streckgrenze Yield Stress Limite elastique Rp 0,2% N/mm2 | Snervamento Streckgrenze Yield Stress Limite elastique Rp 1% N/mm2 | Resistenza Zugfestigkeit Tensile strength Resistance à traction Rm N/mm2 | Allungamento Bruchdehnung Elongation Allongement A5 % | | Strizione Einschnürung Reduction of area Striction Z % | | Resilienza Kerbschlagarbeit Impact Value Resilience | | | Durezza Haerte Hardness Durete HB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti Anforderungen/Required values Valeurs demandées | | min max | | 200 | 235 | 500 900 | 20 | - | - | - | - | | | - | 315 | |
| A | 10 | 20 | L | 429 | 528 | 658 | 45 | | 68 | | | | | 219 | | |
| G | 10 | 20 | L | 431 | 543 | 662 | 44 | | 66 | | | | | 223 | | |

### TEST ALLO STATO DI FORNITURA

Test on delivery condition / Prüefung auf lieferbereitem produkt / Test a l'etat de fourniture / Prueba sobre el material asi come entregado

| TEST | | min | max | |
|---|---|---|---|---|
| A | Dimensioni grano x ASTM E112 | | | 5 |

### Charpy per ISO 148-1

1) L=longitudinale/lange, T=trasversale/quer, D=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | Posiz Saggio Probentage Location Emplacement 1) | Resilienza Kerbschlagarbeit Impact Value Resilience KV2 J | | | Espansione laterale Lateral Expansion Lateral ex mm | | | Shear Shear % Shear % | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti Anforderungen/Required values Valeurs demandées | | min max | | - | - | - | - | - | - | - | - | - |
| B | 10X10 | -196 | L | 158 | 160 | 161 | 1,702 | 1,528 | 1,395 | 58 | 59 | 62 |

### Test allo stato di fornitura per ASTM A370

1) L=longitudinale/lange, T=trasversale/quer, D=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | Posiz. Saggio Probentage Location Emplacement 1) | Snervamento Streckgrenze Yield Stress Limite elastique Rp 0,2% N/mm2 | Snervamento Streckgrenze Yield Stress Limite elastique | Resistenza Zugfestigkeit Tensile strength Resistance à traction Rm N/mm2 | Allungamento Bruchdehnung Elongation Allongement E 4d % | | Strizione Einschnürung Reduction of area Striction RA % | | Resilienza Kerbschlagarbeit Impact Value Resilience | | | Durezza Haerte Hardness Durete HB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti Anforderungen/Required values Valeurs demandées | | min max | | 210 | - | 517 | - | 30 | - | 50 | - | | | - | 235 | |
| C | 12,5 | 20 | L | 441 | | 661 | | 47 | | 69 | | | | 220 | | |

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND

REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLA PINA DATE 08 NOV 2024

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| Vicenza, 16/04/2024<br>VCQ052 - MEST053920 | Direzione Qualità<br>Qualitätsmanagement/Quality Management/Gestion Qualité<br>R.BERTELLI | Direzione Prodotto<br>Produktmanagement/Product Management/Direction Produit<br>P.MESSORI | Pagina 2 di 4 |
|---|---|---|---|

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a / Nach/According to/Selon: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. / Prüfung/Test/Essai: MEST053920 / 2024 /

Cliente / Besteller/Purchaser/Client:
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Ordine nr: ORD N AQ2400724
Bestell / Your order / Commande

Conferma ordine nr: MI24003416
Werks/Our Order/Ref nr.

Avviso di Spedizione: A-MI24002488
Lieferanzeige/Packing list/B.L.

Stato di fornitura: Laminato - Solubilizzato FINITO A FREDDO
Lieferzustand / Delivery state / Etat de livraison

Tipo di Elaborazione: E+AOD
Erschmelzungsart / Melting process / Mode d'elaboration

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung / Brand / Nuance

Produttore: Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Marchi di Fabbrica: Zeichen des Liefernwerkes / Trade marks / Sigles de l'usine productrice — AV

Punzone del Collaudatore: Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur — MR

Punzonatura: 1.4401/1.4404
Kennzeichnung / Marking / Marquage

### Charpy per ISO 148-1

1) L=longitudinale/längs, T=transversale/quer, G=Tangentiale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | Posiz Saggio Probenlage Location Emplacement 1) | Resilienza Kerbschlagarbeit Impact Value Resilience KV2 J | | | Espansione laterale Lateral Expansion | | | Shear Shear | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti Anforderungen/Required values Valeurs demandées | | min max | | 100 | 100 | 100 | - | - | - | - | - | - |
| F | 10X10 | 20 | L | 188 | 194 | 196 | | | | | | |
| J | 10X10 | 20 | L | 181 | 190 | 192 | | | | | | |

Tensile testing according to ISO 6892-1
Impact testing according to ISO 148-1
Mechanical properties according to ASTM A370.
Brinnell hardness according to ASTM E10
Tensile testing according to ASTM E8
Brinnell hardness according to ISO 6506-1

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND

☒ REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLA PINA DATE 08 NOV 2024

### Analisi chimica

Chemische Zusammensetzung/Chemical Analysis/Analyse chimique

| Colata /Heat Schmelz/Coulée | | C % | Si % | Mn % | Cr % | Mo % | Cu % | Ni % | Co % | P % | S % | N % | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | min | | | | 16,50 | 2,00 | | 10,00 | - | | | | - | - | - | - |
| | max | 0,030 | 1,00 | 2,00 | 18,00 | 2,50 | 1,00 | 13,00 | - | 0,045 | 0,030 | 0,100 | - | - | - | - |
| 293003 | | 0,016 | 0,61 | 1,47 | 16,64 | 2,05 | 0,46 | 10,02 | 0,163 | 0,032 | 0,027 | 0,065 | | | | |

**Corrosion test in 16% sulfuric acid and copper sulfate solutions**

**Test standard:** UNI EN ISO 3651-2 Method A

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitized T1 | 20 | boil | 90 | 5 | Absence of cracks | **SATISFACTORY** |

**Corrosion test in 16% sulfuric acid and copper sulfate solutions**

**Test standard:** ASTM A262-Practice E

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitization | 15 | boil | 180 | 5 | Absence of cracks | **SATISFACTORY** |

# Acciaierie Valbruna S.p.A.

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Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a / Nach/According to/Selon: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. / Prüfung/Test/Essai: MEST053920 / 2024 /

Cliente / Besteller/Purchaser/Client:
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Ordine nr: ORD N AQ2400724
Bestell / Your order / Commande

Conferma ordine nr: MI24003416
Werks/Our Order/Ref nr.

Avviso di Spedizione: A-MI24002488
Lieferanzeige/Packing list/B.L.

Stato di fornitura / Lieferzustand / Delivery state / Etat de livraison: Laminato - Solubilizzato FINITO A FREDDO

Tipo di Elaborazione / Erschmelzungsart / Melting process / Mode d'elaboration: E+AOD

Qualità / Werkstoff/Grade/Nuance: 1.4401/1.4404/316/316L

Marca / Markenbezeichnung / Brand / Nuance: MVAPML ( MAXIVAL )

Produttore / Hersteller/Item/Usine productrice:
**ACCIAIERIE VALBRUNA S.P.A.**

Marchi di Fabbrica / Zeichen des Liefemwerkes / Trade marks / Sigles de l'usine productrice: AV

Punzone del Collaudatore / Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur: MR

Punzonatura / Kennzeichnung / Marking / Marquage: 1.4401/1.4404

Reduction ratio = 61,1 : 1
Solution annealed 1040°C for 135'(total time)/water cooled.
SURFACE QUALITY COMPLIANT TO EN 10088-3 TAB.1 COND. 2H equivalent to EN 10277-1 Cl.3
"Issued in agreement with TÜV SÜD Industrie Service GMBH
(07/1972)"
"Qs approved according to PED, Annex I, Para. 4.3 by
Notified Body 0036"
"(Certification no. DGR-0036-QS-W 23/2002/MUC)"

Sono state soddisfatte tutte le condizioni richieste / Die gestellen Anforderungen sind d. Anlage erfüllt / The material has been furnished in accordance with the requirements / Le materiel á été trouvé conforme aux exigences

Controllo antimescolanza con tecnica XRF/OES portatile : OK / Verwechslungsprüfung: durch XRF/OES Gerät geführt : OK / Antimixing testing performed with XRF/OES portable : OK / Contrôle antimélange avt technique XRF/OES portable : OK

Controllo visivo e dimensionale: soddisfa le esigenze / Besichtigung und Ausmessung: ohne Beanstandung / Visual inspection and dimensional checks satisfactory / Contrôle visuel et dimensions: satisfaisant

Melted, poured and manufactured in Italy  No welding or weld repair  Material free from Mercury contamination

We declare that the finished product is checked for radioactive contamination by the portal system when it leaves the production plant.

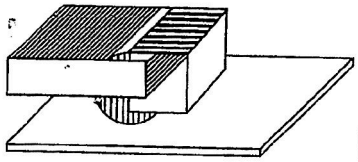
The Quality Management System is also Certified according to Pressure Equipment Directive 2014/68/EU Annex 1,chapt.4.3 by TÜV and LLOYD'S
The Quality Management System is also Certified according to PER 2016/1105, Schedule 2, Part 4, Para 31 (8) by Competent Body TÜV SUD BABT Unlimited.
Any act of tampering, modification, alteration, counterfeiting and/or falsification and/or any other action which modifies the contents of this test certificate shall constitute a violation of applicable civil and criminal laws. Acciaierie Valbruna shall protect its rights and interests before any competent court, authority and jurisdiction.
Maxival and/or Valplus grades/products are manufactured with ladle techniques to control composition, distribution, size and shape of non-metallic inclusions for improved machinability.
The supplied product conforms to requirements expressly requested by the purchaser and conforms to requirements specified by certified norms and standards. Should the product be used for more severe, critical and/ or in any case different applications than those the material is generally intended for, any different and/or supplementary requirements shall be specifically demanded, at least, upon order of the Product by the Purchaser. Acciaierie Valbruna SpA shall not be responsible for any improper use of the Products.

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND

☒ REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLA PINA DATE 08 NOV 2024

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| | | | |
|---|---|---|---|
| Vicenza, 16/04/2024<br>VCQ052 - MEST053920 | Direzione Qualità<br>Qualitätsmanagement/Quality Management/Gestion Qualité<br>R.BERTELLI | Direzione Prodotto<br>Produktmanagement/Product Management/Direction Produit<br>P.MESSORI | Pagina 4 di 4 |




# FERLAT ACCIAI

Codice Fiscale e Registro Imprese 08986430158 - R.E.A. VI nr.231980 - P.IVA IT 02441940240 Capitale Sociale € 4.836.000,00 int.versat.
Società Unipersonale soggetta alla direzione e coordinamento di ACCIAIERIEVALBRUNA spa - www.ferlataccial.com

SEDE DI VICENZA:via M.D'Azeglio 43/45 - 36077 Altavila Vicentina (VI) - T + 39 0444334711 - F +39 0444 370099 - info@ferlataccial.com
MAGAZZINO DI MILANO:via A.Bizzozzero B2 - 20032 Cormano (MI) - T +39 02 66302243 - F +39 02 66302202 - milano@ferlataccial.com
MAGAZZINO DI BARI:via dei Gladioli 6 Z.I.- 70026 Modugno (BA) - T +39 080 5314928 - F +39 080 5397657 - bari@ferlataccial.com


## *Certificato EN 10204 3.1*

*Nro.* CE22035104 *Data* 01/06/2022 ***Pagina*** ***1 di 1***

| | |
|---|---|
| *Vs. Riferimento* | AQ2201029 |
| *Ordine* | 31517 *Bolla N.ro:* MI22001211 *del:* 01.06.2022 |

| | |
|---|---|
| ***Indirizzo Amministrativo*** *Cod cliente:* | 10024593 |
| *Rag Sociale* | A.S.T. SPA APPARECCHI DI SICUREZZA |
| *Indirizzo* | VIA R. MERENDI 40 |
| *Località* | 20007 CORNAREDOMI IT |

**Normative di riferimento: ASTM A350/A350M-18**

### Prodotto
**-Product description-**

| *Marca Grade* | *Descrizione Description* | *Colata Heat* | *Quantità UO Quantity* | *Lotto Batch* |
|---|---|---|---|---|
| A350LF2 | Barra A350LF2 Tondo Lam. a caldo Normalizzato - DIAM. 120 mm x 3.000 mm N. 1 pezzo | 806160 | 267,000 KG | M000072748 |

### Analisi chimica del prodotto
***Chemical analysis product***

| *Colata Heat* | *C %* | *Ceq %* | *Mn %* | *P %* | *Cr %* | *Mo %* | *Nb %* | *Ni %* | *Si %* | *V %* | *S %* | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *806160* | *0,190* | *0,400* | *0,940* | *0,006* | *0,160* | *0,030* | *0,002* | *0,080* | *0,230* | *0,004* | *0,012* | | | | |

### Caratteristiche Meccaniche
***Mechanical Characteristic***

| *Resistenza Tensile strength Rm N/mm2* | *Snervamento Yield stress Rp 0,2 N/mm2* | *Allungamento Elongation A %* | *Strizione Reducion area Z %* | *Durezza HB Hardness HB* | | *Resilienza longitudinale Impact value -46° KVL (J)* | | | *Resilienza longitudinale Impact value -20° KVL (J)* | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *509,0* | *324,0* | *30,1* | *69,0* | *187,0* | | *96,0* | *106,0* | *90,0* | *60,0* | *36,0* | *47,0* | |

### Prove Jomini
***Test Jomini***

| *Prova 01* | | *Prova 02* | | *Prova 03* | | *Prova 04* | | *Prova 05* | | *Prova 06* | | *Prova 07* | | *Prova 08* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Dist.* | *Dur.* | *Dist.* | *Dur.* | *Dist.* | *Dur.* | *Dist.* | *Dur.* | *Dist.* | *Dur.* | *Dist.* | *Dur.* | *Dist.* | *Dur.* | *Dist.* | *Dur.* |
| | | | | | | | | | | | | | | | |

| *Prova 09* | | *Prova 10* | | *Prova 11* | | *Prova 12* | | *Prova 13* | | *Prova 14* | | *Prova 15* | | *Prova 16* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Dist.* | *Dur.* | *Dist.* | *Dur.* | *Dist.* | *Dur.* | *Dist.* | *Dur.* | *Dist.* | *Dur.* | *Dist.* | *Dur.* | *Dist.* | *Dur.* | *Dist.* | *Dur.* |
| | | | | | | | | | | | | | | | |

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND

☑ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

**Commenti:**

**Firma responsabile**
FERLAT ACCIAI SPA
Trevisan Enrico

**Il certificato originale è a disposizione e conservato nei nostri archivi.**

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497

## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a / Nach/According to/Selon: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. / Prüfung/Test/Essai: MEST112865 / 2022 /

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Ordine nr: ORD.N.AQ2202071
Bestell / Your order / Commande

Conferma ordine nr: MI22008136
Werks/Our Order/Ref nr.

Avviso di Spedizione: A-MI22006725
Lieferanzeige/Packing list/B.L.

Stato di fornitura: Laminato - Solubilizzato Rettificato
Lieferzustand / Delivery state / Etat de livraison

Tipo di Elaborazione: E+AOD
Erschmelzungsart / Melting process / Mode d'elaboration

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung / Brand / Nuance

Produttore:
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Marchi di Fabbrica:
Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice
AV

Punzone del Collaudatore:
Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur
MR

Punzonatura: 1.4401/4/316/L
Kennzeichnung / Marking / Marquage

**SPECIFICHE :**
Anforderungen / Requirements / Exigences

VAL STOCK 2020 1.4404/316L A,CF
AISI 316
AISI 316L
ASME SA276 2019 S31600 A,CF (0)
ASME SA276 2019 S31603 A,CF (1)
ASME SA479 2019 S31600 A (2)
ASME SA479 2019 S31603 A (3)
ASTM A262 2015 PRACTICE E (4)
ASTM A276 2017 S31600 A,CF
ASTM A276 2017 S31603 A,CF
ASTM A370 2020 .
ASTM A479 2020 S31600 A
ASTM A479 2020 S31603 A
ASTM E10 2018 .
ASTM E8 2021 .
EN 10088-3 2014 1.4401 A,CF
EN 10088-3 2014 1.4404 A,CF
EN 10272 2007 1.4401 A,CF
EN 10272 2007 1.4404 A,CF
ISO 6506-1 2014 .
ISO 6892-1 2019 .

Note:
Aufzeichnungen / Notes / Notes

(0)Section II Part A 2019 EDITION
(1)Section II Part A 2019 EDITION
(2)Section II Part A 2019 EDITION
(3)Section II Part A 2019 EDITION
(4)Reapproved 2021

Tolleranza: h8 - DIN670/EN10278
Toleranz/Allowance/Tolerance

| Pos. nr. Pos. nr. Item nr. Nr. de poste | Oggetto Gegenstand Product description Descrip. du produit | Dimensioni - mm Abmessungen Dimension Dimension | Lunghezza - mm Länge Length Longueur | Colata Schmelze Heat Coulée | Pezzi Stückzahl Pieces Pièces | Peso - KG Gewicht Weight Poids | Lotto nr. Losnr. Lot nr. Lot nr. |
|---|---|---|---|---|---|---|---|
| 0070 | Tondo | 10,000 | 2900/ 3100 | 276383 | | 18,0 | 729305910 |

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND

☒ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| Vicenza, 09/11/2022<br>VCQ052 - MEST112865 | Direzione Qualità<br>Qualitätsmanagement/Quality Management/Gestion Qualité<br>R.BERTELLI | Direzione Prodotto<br>Produktmanagement/Product Management/Direction Produit<br>P.MESSORI | Pagina 1 di 3 |
|---|---|---|---|

# Acciaierie Valbruna S.p.A.

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Erschmelzungsart / Melting process / Mode d'elaboration

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung / Brand / Nuance

Produttore / Hersteller/Item/Usine productrice:
**ACCIAIERIE VALBRUNA S.P.A.**

Marchi di Fabbrica / Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice: AV

Punzone del Collaudatore / Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur: MR

Punzonatura / Kennzeichnung / Marking / Marquage: 1.4401/4/316/L

### TEST ALLO STATO DI FORNITURA

Test on delivery condition — Prüfung auf lieferbereitem produkt — test a l'etat de fourniture — Prueba sobre el material así come entregado

1) L=longitudinale/längs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg.diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | Posiz. Saggio Prelevage Location Emplacement 1) | Snervamento Streckgrenze Yield Stress Limite elastique Rp 0,2% N/mm2 | Snervamento Streckgrenze Yield Stress Limite elastique Rp 1% N/mm2 | Resistenza Zugfestigkeit Tensile strength Resistance à traction Rm N/mm2 | Allungamento Bruchdehnung Elongation Allongement A5 % | Allungamento E 4d % | Strizione Einschnürung Reduction of area Striction Z % | Strizione RA % | Resilienza Kerbschlagarbeit Impact Value Resilience | Durezza Haerte Hardness Durete HB |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti / Anforderungen/Required values / Valeurs démandées | | min / max | | 310 | 235 | 620 / 900 | 20 | 30 | - | 40 | - | - / 315 |
| A | 10 | 20 | L | 477 | 559 | 665 | 47 | 50 | 70 | 70 | | 225 |
| B | 10 | 20 | L | 482 | 561 | 669 | 46 | 50 | 69 | 69 | | 228 |

### TEST ALLO STATO DI FORNITURA

Test on delivery condition / Prüfung auf lieferbereitem produkt / Test a l'etat de fourniture / Prueba sobre el material así come entregado

| TEST | | min | max | |
|---|---|---|---|---|
| A | Dimensioni grano x ASTM E112 | | | 7 |

Mechanical properties according to ASTM A370.
Brinnell hardness according to ASTM E10
Tensile testing according to ASTM E8
Brinnell hardness according to ISO 6506-1
Tensile testing according to ISO 6892-1

### Analisi chimica

Chemische Zusammensetzung/Chemical Analysis/Analyse chimique

| Colata /Heat Schmelze/Coulée | C % | Si % | Mn % | Cr % | Mo % | Ni % | P % | S % | N % |
|---|---|---|---|---|---|---|---|---|---|
| min - max | - 0,030 | - 1,00 | - 2,00 | 16,50 18,00 | 2,00 2,50 | 10,00 13,00 | - 0,045 | - 0,030 | - 0,100 |
| 276383 | 0,014 | 0,63 | 1,44 | 16,84 | 2,07 | 10,06 | 0,028 | 0,026 | 0,061 |

### Corrosion test in 16% sulfuric acid and copper sulfate solutions

**Test standard:** ASTM A262-Practice E

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitization | 15 | boil | 180 | 5 | Absence of cracks | SATISFACTORY |

08 NOV. 2024
FRANCO CORBELLINI
DBQ
CROSSWIND

REVIEW ☐WITNESS
ON BEHALF OF
A. DELLA PINA DATE 08 NOV 2024

**QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D**

| Vicenza, 09/11/2022 | Direzione Qualità | Direzione Prodotto | Pagina |
|---|---|---|---|
| VCQ052 - MEST112865 | Qualitätsmanagement/Quality Management/Gestion Qualité: R.BERTELLI | Produktmanagement/Product Management/Direction Produit: P.MESSORI | 2 di 3 |

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a : EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1
Nach/According to/Selon

Certificato nr. MEST112865 / 2022 /
Prüfung/Test/Essai

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Ordine nr: ORD.N.AQ2202071
Bestell
Your order
Commande

Conferma ordine nr: MI22008136
Werks/Our Order/Ref nr.

Avviso di Spedizione: A-MI22006725
Lieferanzeige/Packing list/B.L.

Stato di fornitura : Laminato - Solubilizzato Rettificato
Lieferzustand
Delivery state
Etat de livraison

Tipo di Elaborazione: E+AOD
Erschmelzungsart
Melting process
Mode d'elaboration

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung
Brand / Nuance

Produttore :
Hersteller/Item/Usine productrice

**ACCIAIERIE VALBRUNA S.P.A.**

Marchi di Fabbrica: AV
Zeichen des Lieferwerkes
Trade marks
Sigles de l'usine productrice

Punzone del Collaudatore: MR
Stempel des Werkssachverständigen
Inspector's stamp/Poinçon de l'assayeur

Punzonatura: 1.4401/4/316/L
Kennzeichnung
Marking
Marquage

**Corrosion test in 16% sulfuric acid and copper sulfate solutions**

**Test standard:** UNI EN ISO 3651-2 Method A

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitized T1 | 20 | boil | 90 | 5 | Absence of cracks | **SATISFACTORY** |

Reduction ratio = 374,4 : 1
Material solution annealed 1060° C for 0.5h/air cooled.

Sono state soddisfatte tutte le condizioni richieste
Die gestellten Anforderungen sind it. Anlage erfüllt
The material has been furnished in accordance with the requirements
Le materiel â été trouvé conforme aux exigences

Controllo antimescolanza con tecnica XRF/OES portatile : OK
Verwechslungprüfung: durch XRF/QES Gerät geführt : OK
Antimixing testing performed with XRF/OES portable : OK
Contrôle antimélange svt technique XRF/QES portable : OK

Controllo visivo e dimensionale: soddisfa le esigenze
Besichtigung und Ausmessung: ohne Beanstandung
Visual inspection and dimensional checks:satisfactory
Contrôle visuel et dimensions: satisfaisant

Melted, poured and manufactured in Italy  No welding or weld repair  Material free from Mercury contamination

We declare that the finished product is checked for radioactive contamination by the portal system when it leaves the production plant.

The Quality Management System is also Certified according Pressure Equipment Directive 2014/68/EU Annex 1,chapt.4.3 by TÜV and LLOYD'S
Any act of tampering, modification, alteration, counterfeiting and/or falsification and/or any other action which modifies the contents of this test certificate shall constitute a violation of applicable civil and criminal laws. Acciaierie Valbruna shall protect its rights and interests before any competent court, authority and jurisdiction.
Maxival and/or Valplus grades/products are manufactured with ladle techniques to control composition, distribution, size and shape of non-metallic inclusions for improved machinability.
The supplied product conforms to requirements expressly requested by the purchaser and conforms to requirements specified by certified norms and standards. Should the product be used for more severe, critical and/ or in any case different applications than those the material is generally intended for, any different and/or supplementary requirements shall be specifically demanded, at least, upon order of the Product by the Purchaser. Acciaierie Valbruna SpA shall not be responsible for any improper use of the Products.

W5PC37B0D07C1B29C17D451FA056E469C2

8 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND

☒ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA NINA DATE 08 NOV 2024

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| Vicenza, 09/11/2022<br>VCQ052 - MEST112865 | Direzione Qualità<br>Qualitätsmanagement/Quality Management/Gestion Qualité<br>R.BERTELLI | Direzione Prodotto<br>Produktmanagement/Product Management/Direction Produit<br>P.MESSORI | Pagina 3 di 3 |
|---|---|---|---|

**AST S.p.A.**
Via R. Merendi, 40
I-20007 Cornaredo MI

P +39 02 934848.1
F +39 02 9362248
W www.astspa.it

**MATERIAL CERTIFICATES INDEX**
**CERTIFICATO DEI MATERIALI**

**No.** 2400598

EN 10204 3.1

**Customer**
ROSETTI MARINO S.P.A.

**P.Order / Project**
1724000740 123A90A Rev. 1

**ITEM Number**
150-160

**Tag**
64-PV-031B

**Quantity delivered**
1

**AST Job**
CV2400221

**AST Code**
CV2400221CV8407A003

**Serial Number**
2400598

**Valve Type**
Valvole Regolazione

**Size**
NPS 1" CLASS 150 RF

**Port Size**
3/8"

| Part Name | Material | Heat No. | Certificate No. | Supplier |
|---|---|---|---|---|
| BODY | ASTM A350 LF2 Cl. 1 | 15442 | A20-1797 | FORGIATURA MODERNA ARESE SPA |
| SEAT RING | ASTM A479 316/316L+Stellite Gr.6 | 372445 | 2023016714 | COGNE ACCIAI SPECIALI SPA |
| PLUG | ASTM A479 316/316L+Stellite Gr.6 | 293003 | MEST053920/2024/ | ACCIAIERIE VALBRUNA |
| BONNET | ASTM A350 LF2 Cl. 1 | 806160 | CE22035104 | FERLAT ACCIAI SPA |
| STEM | ASTM A479 316/316L | 276383 | MEST112865-2022 | ACCIAIERIE VALBRUNA |

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND

☑ REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLA PINA DATE 08 NOV 2024

**Remarks** :

**AST Q.C. Department**

**Customer's Inspector**

**Third Party Inspection**

**Date** : 06.11.2024 **Date** : _____ **Date** : _____

FORGIATURA MODERNA ARESE

# CERTIFICATO DI COLLAUDO

*Inspection certificate / Certificat de recette*

**EN10204/3.1**

N° **A20-1797**
Del **21/07/20**
Foglio 1 di 1

| CLIENTE<br>Purchaser/Client | Cod. A0598 | ORDINE<br>Order/Commande | MATERIALE<br>Material/Matiere |
|---|---|---|---|
| **A.S.T. S.P.A.** | | AQ2001162 | ASTM A350 LF2 Cl.1 |

**SPECIFICHE RICHIESTE**
Specification request/Specifications technique

ASTM/ASME LAST EDITION + NACE MR 01-75 + SPEC. FOR003 REV.12

| DESCRIZIONE MATERIALE<br>Material description | DISEGNO/DIMEN.<br>Drawing/Dimension | COLATA<br>Heat/Coulee | PROVA<br>Test N° | COMM.<br>Prod. order | POS. |
|---|---|---|---|---|---|
| N°1 FORGED BAR, NORMALIZED AT 900°C | Ø 160 MT 6 | 15442 | 2057 | 1355/3 | 3 |

**CARATTERISTICHE MECCANICHE**
Mechanical requirements/Caracteristiques mecaniques

| | | | | | Rp - Yp<br>N/mm2 | Rm - Ts<br>N/mm2 | A - E<br>% | Z - Ra<br>% | KV -46°C<br>Joule | | | HB |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PROVA N°<br>Specimen n° | DIREZ.<br>Direction | Ø<br>mm | Lo<br>mm | Min<br>Max | 250 | 485<br>655 | 22 | 30 | 27 | | | 197 |
| 2057 | Long | 12,5 | 50 | | 328 | 531 | 28,9 | 59,4 | 88-85-91 | | | 150-148-147 |

**CARATTERISTICHE CHIMICHE**
Chemical requirements/Caracteristiques chimiques

| | | C | Mn | Si | P | S | Cr | Ni | Mo | Al | Cu | V | Nb | N | Ti | Ceq. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| COLATA | Min. | | 0,60 | 0,15 | | | | | | | | | | | | |
| Heat/Coulee | Max. | 0,30 | 1,35 | 0,30 | 0,035 | 0,040 | 0,30 | 0,40 | 0,12 | | 0,40 | 0,08 | 0,02 | | | |
| 15442 | | 0,19 | 1,02 | 0,20 | 0,004 | 0,002 | 0,14 | 0,16 | 0,06 | 0,032 | 0,14 | 0,002 | 0,001 | 0,0072 | 0,001 | 0,420 |

0 8 NOV. 2024
FRANCO CORBELLINI
OBO
CROSSWIND

☒ REVIEW ☐ WITNESS
ON BEHALF OF ROLL
A. DELLA PINA DATE 0 8 NOV 2024

VISUAL AND DIMENSIONAL INSPECTION CONFORMS TO CONTRACTUAL REQUIREMENTS - THE PRODUCTS ARE IN COMPLIANCE WITH THE REQUIREMENTS OF THE ORDER

FORGIATURA MODERNA ARESE SPA
DIVISIONE ASSA

COGNE ACCIAI SPECIALI S.p.a.

ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 250.000.000 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.

# INSPECTION CERTIFICATE 3.1 (EN 10204:2004)

DOCUMENT NUMBER 2023016714



| | | | |
|---|---|---|---|
| CUSTOMER: | A.S.T. SPA | | |
| CUSTOMER'S ORDER: | AQ2301925 | | |
| MANUFACTURER'S WORKS: | AOSTA, VIA PARAVERA 16 - ITALY | | |
| PRODUCER OF THE DOC: | OUALITY DEPARTMENT | | |
| MANUFACTURER'S WORKS ORDER NO: | 0001136538 / 000020 | | |
| MARK OF THE MANUFACTURER: | **COGNE** | | |
| DISPATCH NOTE: | 0081566096 / 000020 WEIGHT: 190 KG / 419 LB | | |
| INTERNAL SPEC: | STOCKBARREW2 | TECHNICAL RULE: | AD2000 |
| PRODUCT: | PEL PEELED ROUND BARS TOLERANCE: ISOK11 | | |
| SURFACE FINISH: | 2B Cold Finished | | |
| PRODUCT DELIVERY CONDITION: | RS SOLUTION ANNEALED | | |
| PRODUCT DIMENSIONS (mm): | 50,000 ( 1,969 in) | LENGTH (mm) | 03000 03100 ( 00118 00122 in) |
| GRADE: | 316L-S31600/31603-1.4404/4401 | INTERNAL GRADE: | F316L IMCO |
| IDENTIFICATION HEAT NO: | 372445 | IDENTIFICATION LOT NO: | 725970 |
| MARKING OF THE PRODUCT: | 1.4404 | TEST PIECE N: | 597 |

REFERENCE NORMS: EN 10088-3 2014, EN 10272 2016, ASTM A276/A276M, ASTM A479/A479M, ASTM A193 B8MCLASSE 1D, ASME SA276/SA276M, ASME SA479/SA479M, AMS 5653J, AMS 5648N, ISO15156-3/NACE MR0175 2015, NACE MR0103/ISO 17945, NORSOK M630 MDSS01 REV5.
REFERENCE NORMS FOR CHEMICAL COMPOSITION AND MECHANICAL PROPERTIES: ASTM A182, ASME SA182.
REFERENCE NORMS ONLY FOR CHEMICAL COMPOSITION: EN 10222-5 2017,ASTM A403-07a, ASTM A484-18a,ASTM A314-08, AMS-QQ-S-763D.
ASME SECT.II PART A EDITION 2015-2017-2019-2021
AISI 316/316L - UNS S31600/S31603 - 1.4404/1.4401
THE PRODUCT IS CONFORMING TO THE CONTRACT AGREEMENT AND TO THE RULE AD2000-MERKBLATT W0/W2.
STEELMAKING EAF + AOD + CONTINUOUS CASTING
ASTM A484 DOES NOT APPLY FOR SIZE AND LENGTH TOLERANCES.
STEELMAKING EAF + AOD + CONTINUOUS CASTING
REFERENCE FOR APPLICABLE ASME STANDARD: SECTION II PART A ED. 2015-2017-2019-2021
HOT ROLLED
REDUCTION RATIO 11,8

CHEMICAL LADLE ANALYSIS ACCORDING TO ASTM A751 - EN ISO 14284
Control lot No. - Weight :020000959742 - 85.921 KG - 189.420 LB

| ELEMENTS | C | Si | Mn | P | S | N | Cr | Mo | Ni | Cu |
|---|---|---|---|---|---|---|---|---|---|---|
| MEASUREMENT UNIT | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w | % w/w |
| OBTAINED | 0,018 | 0,26 | 1,77 | 0,026 | 0,028 | 0,077 | 16,97 | 2,04 | 10,28 | 0,46 |

| ELEMENTS | Co |
|---|---|
| MEASUREMENT UNIT | % w/w |
| OBTAINED | 0,16 |

HARDNESS TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000960410 - 7.449 KG - 16.422 LB
SPECIFICATION ENISO6506 HARDNESS TEST HB TESTING METHOD: 10/3000
OBTAINED 157

ON BEHALF OF A. DEL PINA DATE 08 NOV 2024 GREEN W. WITNESS

DATE 05.04.2023 BARBARA VIETTI MV(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE -Cogne

FRANCO CORBELLINI CROSSWIND R

08 NOV. 2024

1724000740-QC-DB-00016_01

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 250.000.000 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.



1724000740-QC-DB-00016_01

IMPACT TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000960410 - 7.449 KG - 16.422 LB
SPECIFICATION EN ISO 148-1-KV2 DIRECTION OF THE TEST PIECE: L
TYPE OF TEST PIECE KV
TEST TEMPERATURE °C 20
MEASUREMENT UNIT J

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| OBTAINED | 435 | 430 | 428 | 435 | 438 | 439 | 429 | 435 | 436 | 426 |
| | 432 | 434 | | | | | | | | |

TENSILE TEST IN AS DELIVERY CONDITION
Control lot No. - Weight :020000960410 - 7.449 KG - 16.422 LB
SPECIFICATION EN-ISO6892-1 DIRECTION OF THE TEST PIECE: L

| MEASUREMENT UNIT | RM MPA | RP02 MPA | A5 % 5.0 D | Z % | RP1 NMM |
|---|---|---|---|---|---|
| OBTAINED | 611 | 282 | 55,2 | 78,3 | 325 |
| | 613 | 287 | 51,3 | 72,1 | 342 |
| | 614 | 301 | 48,8 | 73,1 | 341 |
| | 612 | 272 | 56,7 | 76,3 | 325 |

GRAIN SIZE
Control lot No. - Weight :020000960410 - 7.449 KG - 16.422 LB
SPECIFICATION ASTME112 --
OBTAINED 6

MATERIAL IN COMPLIANCE WITH THE NORSOK M-630 MDS S01
IMPACT TEST
Control lot No. - Weight :020000960410 - 7.449 KG - 16.422 LB
SPECIFICATION EN ISO 148-1 DIRECTION OF THE TEST PIECE: L
TYPE OF TEST PIECE KV
TEST TEMPERATURE °C 196-
MEASUREMENT UNIT J

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| OBTAINED | 198 | 185 | 195 | 190 | 177 | 173 | 173 | 173 | 197 | 175 |
| | 192 | 179 | | | | | | | | |

TENSILE TEST
Control lot No. - Weight :020000960410 - 7.449 KG - 16.422 LB
SPECIFICATION ASTMA370-E8-0.5"SPEC DIRECTION OF THE TEST PIECE: L

| MEASUREMENT UNIT | RMB KSI | RP02B KSI | ZB % | AL2B % 4,0 D |
|---|---|---|---|---|
| OBTAINED | 88 | 40 | 78,0 | 57,6 |
| | 89 | 41 | 73,3 | 55,7 |
| | 89 | 41 | 72,9 | 54,0 |
| | 89 | 40 | 78,1 | 61,1 |

DATE 05.04.2023 BARBARA VIETTI MV(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE -Cogne

REVIEW WITNESS
ON BEHALF OF
A. DELLA PINA DATED 08 NOV 2024
0 8 NOV. 2024
FRANCO CORBELLINI
ROSSWIN

COGNE ACCIAI SPECIALI S.p.a.
ITALY - 11100 AOSTA - VIA PARAVERA, 16
TEL +39.0165.3021 - FAX +39.0165.302296
CAP. SOC. 250.000.000 EUR INT. VERS.
C.F. 02187360967
VAT: IT00571320076 - R.E.A. n. AO-50474

Company with Management Systems certified according to ISO 9001, ITAF 16949, EN 9100, ISO 14001 and ISO 45001.



1724000740-QC-DB-00016_01

COUNTRY OF MELTING AND ORIGIN: ITALY, THE MATERIAL COMPLIES WITH FAR DFARS 252.225-7009 ALT 1.
The products delivered are conforming to EN10088-5 and bear the CE marking on the basis of the test results here reported and the continuous surveillance, assessment and approval by MPA NRW (certificate no. 0432-CPR-00166-01)
Material produced according to the system #Regulation 305/2011/EU of the European Parliament and of the Council of 9 March 2011#
DOCUMENT ISSUED IN AGREEMENT WITH TUEV BAYERN(11.1972) WAVING OF COUNTERSIGNING (SEE TUEV BAYERN LETTER DATED 17.01.80).
MARKING: SYMBOL OF THE MANUF. WORK, MATERIAL N. , CAST N., LOT N., RECEIVING AGENT STAMP
CORROSION TEST ACCORDING TO ASTM A262 PRACTICE E EN ISO 3651-2 PRACTICE A: SATISFACTORY.
ANTIMIXING TEST BY PORTABLE SPECTROMETRE: CONFORMING
EDDY CURRENT INSPECTION OF SURFACE ACCORDING TO EN 10277 CLASS 4.
DIMENSIONAL CONTROL ACCORDING TO EN 10278: SATISFACTORY.
NO WELDING REPAIR ON THE MATERIAL.
ULTRASONIC TEST ACCORDING TO EN 10308 Class.3: SATISFACTORY
QUALITY SYSTEM CERTIFIED BY KIWA CERMET ACCORDING TO UNI EN ISO 9001:2015 -IATF 16949:2016 (THE LAST ONE ONLY FOR WIRE ROD AND HOT ROLLED-PEELED-GROUND STAINLESS STEEL BARS).
INSPECTOR'S STAMP LF
MATERIAL CONFORM TO: 2015/863/UE (RoHS3) - 2011/65/UE (RoHS2) - 2000/53/UE - 2002/95/UE (RoHS) - 2003/11/UE - 2005/618/UE - PED 2014/68/UE e PE(S)R 2016/1105
THE MATERIAL IS FREE OF ANY MERCURY, MERCURY COMPOUNDS AND OR RADIUM CONTAMINATION AT TIME OF SHIPMENT AND WAS PRODUCED WITHOUT USING OZONE DEPLETING SUBSTANCES OF CLASS I AND II.
RADIOACTIVITY CONTROL PERFORMED WITH A GAMMA SPECTROMETER: ASTM E181.
GAMMA ACTIVITY ON THE PRODUCTS BELOW 0.1 BQ/G ACCORDING TO EU RESOLUTION 2013/59/EURATOM , IAEA RS-G-1.7 AND IAEA SSG-17.

CE 0432

REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLA PINA DATE 08 NOV 2024

FRANCO CORBELLINI
CROSSWIND DB
08 NOV. 2024

DATE 05.04.2023

BARBARA VIETTI MV(WORKS INSPECTOR) - ELECTRONICALLY GENERATED CERTIFICATE

-Cogne

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a : Nach/According to/Selon: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. Prüfung/Test/Essai: MEST053920 / 2024 /

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Ordine nr: ORD N AQ2400724
Bestell / Your order / Commande

Conferma ordine nr: MI24003416
Werks/Our Order/Ref nr.

Avviso di Spedizione: A-MI24002488
Lieferanzeige/Packing list/B.L.

Stato di fornitura : Lieferzustand / Delivery state / Etat de livraison: Laminato - Solubilizzato FINITO A FREDDO

Tipo di Elaborazione: Erschmelzungsart / Melting process / Mode d'elaboration: E+AOD

Qualità: Werkstoff/Grade/Nuance: 1.4401/1.4404/316/316L

Marca: Markenbezeichnung / Brand / Nuance: MVAPML ( MAXIVAL )

Produttore : Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Marchi di Fabbrica: Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice: AV

Punzone del Collaudatore: Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur: MR

Punzonatura: 1.4401/1.4404 Kennzeichnung / Marking / Marquage

**SPECIFICHE :**
Anforderungen / Requirements / Exigences

VAL STOCK W2 A/1 1.4404/316L A,CF
AD 2000-M. W 2 2022 1.4401 A,CF (0)
AD 2000-M. W 2 2022 1.4404 A,CF (1)
AISI . 316/316L
AMS-QQ-S-763 D 316/316L A,CF
ASME SA182 2021 S31600/03 A (2)
ASME SA276 2021 S31600/03 A,CF (3)
ASME SA479 2021 S31600/03 A (4)
ASTM A182 2023 S31600/03 A (5)
ASTM A262 PR. E 2015 316/316L (6)
ASTM A276 2023 S31600/03 A,CF
ASTM A370 2022 .
ASTM A479 2023A S31600/03 A
ASTM E10 2023 .
ASTM E8 2022 .
EN 10088 PART 3 2014 1.4401 A,CF
EN 10088 PART 3 2014 1.4404 A,CF
EN 10272 2016. 1.4401 A,CF
EN 10272 2016. 1.4404 A,CF
ISO 148-1 2016 .
ISO 3651-2 98 METHOD A T1
ISO 6506-1 2014 .
ISO 6892-1 2019 .
NACE MR0103 2015 S31600/03 A (7)
NACE MR0175 4 S31600/03 A (8)
QQ-S-763 F 316/316L A,CF
ACH CO . .
KV L -196C . ISO 148-1

Note:
Aufzeichnungen / Notes / Notes

(0)AD 2000-MERKBLATT W 2 edition 01.2020 AD 2000-MERKBLATT W 10 edition 01.2020
(1)AD 2000-MERKBLATT W 2 edition 01.2020 AD 2000-MERKBLATT W 10 edition 01.2020

(2)Section II Part A 2021 EDITION For products machined directly from bar refer to ASME SA479.
(3)Section II Part A 2021 EDITION
(4)Section II Part A 2021 EDITION
(5)For products machined directly from bar refer also to ASTM A479.
(6)Reapproved 2021

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND R

(7)ANSI/NACE MR0103/ISO 17945 November 23, 2015
(8)ANSI/NACE MR0175/ISO 15156-3:2020 Fourth edition, approved 21 Sep 2022.

| | | Tolleranza: k12<br>Toleranz/Allowance/Tolerance | | | | | |
|---|---|---|---|---|---|---|---|
| Pos. nr.<br>Pos. nr.<br>Item nr.<br>Nr. de pièce | Oggetto<br>Gegenstand<br>Product description<br>Descrip. du produit | Dimensioni - mm<br>Abmessungen<br>Dimension<br>Dimension | Lunghezza - mm<br>Länge<br>Length<br>Longueur | Colata<br>Schmelze<br>Heat<br>Coulée | Pezzi<br>Stückzahl<br>Pieces<br>Pièces | Peso - KG<br>Gewicht<br>Weight<br>Poids | Lotto nr.<br>Losnr.<br>Lot nr.<br>Lot nr. |
| 0010 | Tondo | 25,000 | 6000/ 6070 | 293003 | | 71,0 | 310808820 |

☑ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA FINA DATE 08 NOV 2024

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| Vicenza, 16/04/2024<br>VCQ052 - MEST053920 | Direzione Qualità<br>Qualitätsmanagement/Quality Management/Gestion Qualité<br>R.BERTELLI | Direzione Prodotto<br>Produktmanagement/Product Management/Direction Produit<br>P.MESSORI | Pagina<br>1 di 4 |
|---|---|---|---|

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a / Nach/According to/Selon: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. / Prüfung/Test/Essai: MEST053920 / 2024 /

Cliente / Besteller/Purchaser/Client:
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura / Lieferzustand / Delivery state / Etat de livraison: Laminato - Solubilizzato FINITO A FREDDO

Produttore / Hersteller/Item/Usine productrice:
ACCIAIERIE VALBRUNA S.P.A.

Tipo di Elaborazione / Erschmelzungsart / Melting process / Mode d'elaboration: E+AOD

Marchi di Fabbrica / Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice: AV

Ordine nr. / Bestell / Your order / Commande: ORD N AQ2400724

Qualità / Werkstoff/Grade/Nuance: 1.4401/1.4404/316/316L

Punzone del Collaudatore / Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur: MR

Conferma ordine nr. / Werks/Our Order/Ref nr.: MI24003416

Marca / Markenbezeichnung / Brand / Nuance: MVAPML ( MAXIVAL )

Punzonatura / Kennzeichnung / Marking / Marquage: 1.4401/1.4404

Avviso di Spedizione / Lieferanzeige/Packing list/B.L.: A-MI24002488

### TEST ALLO STATO DI FORNITURA

Test on delivery condition / Prüefung auf lieferbereitem produkt / test a l'etat de fourniture / Prueba sobre el material asi come entregado

1) L=longitudinale/längs, T=trasversale/quer, D=Tangenziale/Tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | Posiz Saggio Probentage Location Emplacement | Snervamento Streckgrenze Yield Stress Limite elastique Rp 0,2% N/mm2 | Snervamento Streckgrenze Yield Stress Limite elastique Rp 1% N/mm2 | Resistenza Zugfestigkeit Tensile strength Resistance à traction Rm N/mm2 | Allungamento Bruchdehnung Elongation Allongement A5 % | | Strizione Einschnürung Reduction of area Striction Z % | | Resilienza Kerbschlagarbeit Impact Value Resilience | | | Durezza Haerte Hardness Durete HB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti Anforderungen/Required values Valeurs demandées | | min max | | 200 | 235 | 500 900 | 20 | - | - | - | - | | | - 315 | | |
| A | 10 | 20 | L | 429 | 528 | 658 | 45 | | 68 | | | | | 219 | | |
| G | 10 | 20 | L | 431 | 543 | 662 | 44 | | 66 | | | | | 223 | | |

### TEST ALLO STATO DI FORNITURA

Test on delivery condition / Prüefung auf lieferbereitem produkt / Test a l'etat de fourniture / Prueba sobre el material asi come entregado

| TEST | | min | max | |
|---|---|---|---|---|
| A | Dimensioni grano x ASTM E112 | | | 5 |

### Charpy per ISO 148-1

1) L=longitudinale/längs, T=trasversale/quer, D=Tangenziale/Tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | Posiz Saggio Probentage Location Emplacement | Resilienza Kerbschlagarbeit Impact Value Resilience KV2 J | | | Espansione laterale Lateral Expansion Lateral ex mm | | | Shear Shear % Shear % | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti Anforderungen/Required values Valeurs demandées | | min max | | - | - | - | - | - | - | - | - | - |
| B | 10X10 | -196 | L | 158 | 160 | 161 | 1,702 | 1,528 | 1,395 | 58 | 59 | 62 |

### Test allo stato di fornitura per ASTM A370

1) L=longitudinale/längs, T=trasversale/quer, D=Tangenziale/Tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | Posiz. Saggio Probentage Location Emplacement | Snervamento Streckgrenze Yield Stress Limite elastique Rp 0,2% N/mm2 | Snervamento Streckgrenze Yield Stress Limite elastique | Resistenza Zugfestigkeit Tensile strength Resistance à traction Rm N/mm2 | Allungamento Bruchdehnung Elongation Allongement E 4d % | | Strizione Einschnürung Reduction of area Striction RA % | | Resilienza Kerbschlagarbeit Impact Value Resilience | | | Durezza Haerte Hardness Durete HB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti Anforderungen/Required values Valeurs demandées | | min max | | 210 | - | 517 | - | 30 | - | 50 | - | | | - 235 | | |
| C | 12,5 | 20 | L | 441 | | 661 | | 47 | | 69 | | | | 220 | | |

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND

REVIEW ☐ WITNESS
ON BEHALF OF
08 NOV 2024

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001:2015, IATF 16949:2016, AS 9100D

| Vicenza, 16/04/2024 | Direzione Qualità / Qualitätsmanagement/Quality Management/Gestion Qualité | Direzione Prodotto / Produktmanagement/Product Management/Direction Produit | Pagina |
|---|---|---|---|
| VCQ052 - MEST053920 | R.BERTELLI | P.MESSORI | 2 di 4 |

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a : EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1
Nach/According to/Selon

Certificato nr. MEST053920 / 2024 /
Prüfung/Test/Essai

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Ordine nr: ORD N AQ2400724
Bestell
Your order
Commande

Conferma ordine nr: MI24003416
Werks/Our Order/Ref nr.

Avviso di Spedizione: A-MI24002488
Lieferanzeige/Packing list/B.L.

Stato di fornitura : Laminato - Solubilizzato FINITO A FREDDO
Lieferzustand
Delivery state
Etat de livraison

Tipo di Elaborazione: E+AOD
Erschmelzungsart
Melting process
Mode d'elaboration

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung
Brand / Nuance

Produttore :
Hersteller/Item/Usine productrice

**ACCIAIERIE VALBRUNA S.P.A.**

Marchi di Fabbrica: AV
Zeichen des Lieferwerkes
Trade marks
Sigles de l'usine productrice

Punzone del Collaudatore: MR
Stempel des Werksachverständigen
Inspector's stamp/Poinçon de l'assayeur

Punzonatura: 1.4401/1.4404
Kennzeichnung
Marking
Marquage

### Charpy per ISO 148-1

(1) L=Longitudinale/längs, T=Transversale/quer, Q=Tangenziale/tangential

| TEST | Provetta/ Probestab Specimen/Eprouvette Larg diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais. mm | °C | Posiz Saggio Probenlage Location Emplacement | Resilienza Kerbschlagarbeit Impact Value Resilience $KV_2$ J | | | Espansione laterale Lateral Expansion | | | Shear Shear | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti Anforderungen/Required values Valeurs demandées | | min max | | 100 | 100 | 100 | - | - | - | - | - | - |
| F | 10X10 | 20 | L | 188 | 194 | 196 | | | | | | |
| J | 10X10 | 20 | L | 181 | 190 | 192 | | | | | | |

Tensile testing according to ISO 6892-1
Impact testing according to ISO 148-1
Mechanical properties according to ASTM A370.
Brinnell hardness according to ASTM E10
Tensile testing according to ASTM E8
Brinnell hardness according to ISO 6506-1

0 8 NOV. 2024
FRANCO CORBELLINI
CROSSWIND

☑ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 0 8 NOV 2024

### Analisi chimica

Chemische Zusammensetzung/Chemical Analysis/Analyse chimique

| Colata /Heat Schmelza/Coulée | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | min - | - | - | 16,50 | 2,00 | - | 10,00 | - | - | - | - | - | - | - | - |
| | max 0,030 | 1,00 | 2,00 | 18,00 | 2,50 | 1,00 | 13,00 | - | 0,045 | 0,030 | 0,100 | - | - | - | - |
| | C % | Si % | Mn % | Cr % | Mo % | Cu % | Ni % | Co % | P % | S % | N % | | | | |
| 293003 | 0,016 | 0,61 | 1,47 | 16,64 | 2,05 | 0,46 | 10,02 | 0,163 | 0,032 | 0,027 | 0,065 | | | | |

**Corrosion test in 16% sulfuric acid and copper sulfate solutions**

**Test standard:** UNI EN ISO 3651-2 Method A

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitized T1 | 20 | boil | 90 | 5 | Absence of cracks | **SATISFACTORY** |

**Corrosion test in 16% sulfuric acid and copper sulfate solutions**

**Test standard:** ASTM A262-Practice E

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitization | 15 | boil | 180 | 5 | Absence of cracks | **SATISFACTORY** |

**QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D**

**Vicenza, 16/04/2024**
VCQ052 - MEST053920

**Direzione Qualità**
Qualitätsmanagement/Quality Management/Gestion Qualité
**R.BERTELLI**

**Direzione Prodotto**
Produktmanagement/Product Management/Direction Produit
**P.MESSORI**

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a / Nach/According to/Selon: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. / Prüfung/Test/Essai: MEST053920 / 2024 /

Cliente / Besteller/Purchaser/Client:
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Ordine nr: ORD N AQ2400724
Bestell/Your order/Commande

Conferma ordine nr: MI24003416
Werks/Our Order/Ref nr.

Avviso di Spedizione: A-MI24002488
Lieferanzeige/Packing list/B.L.

Stato di fornitura / Lieferzustand / Delivery state / Etat de livraison: Laminato - Solubilizzato FINITO A FREDDO

Tipo di Elaborazione / Erschmelzungsart / Melting process / Mode d'elaboration: E+AOD

Qualità / Werkstoff/Grade/Nuance: 1.4401/1.4404/316/316L

Marca / Markenbezeichnung / Brand / Nuance: MVAPML ( MAXIVAL )

Produttore / Hersteller/Item/Usine productrice:
**ACCIAIERIE VALBRUNA S.P.A.**

Marchi di Fabbrica / Zeichen des Liefernwerkes / Trade marks / Sigles de l'usine productrice: AV

Punzone del Collaudatore / Stempel des Werksachverstandigen / Inspector's stamp/Poinçon de l'assayeur: MR

Punzonatura / Kennzeichnung / Marking / Marquage: 1.4401/1.4404

Reduction ratio = 61,1 : 1
Solution annealed 1040°C for 135'(total time)/water cooled.
SURFACE QUALITY COMPLIANT TO EN 10088-3 TAB.1 COND. 2H equivalent to EN 10277-1 Cl.3
"Issued in agreement with TÜV SÜD Industrie Service GMBH
(07/1972)"
"Qs approved according to PED, Annex I, Para. 4.3 by
Notified Body 0036"
"(Certification no. DGR-0036-QS-W 23/2002/MUC)"

Sono state soddisfatte tutte le condizioni richieste / Die gestellen Anforderungen sind it. Anlage erfüllt / The material has been furnished in accordance with the requirements / Le materiel à été trouvé conforme aux exigences

Controllo antimescolanza con tecnica XRF/OES portatile : OK / Verwechslungsprüfung: durch XRF/OES Gerat geführt : OK / Antimixing testing performed with XRF/OES portable : OK / Contrôle antimélange avt technique XRF/OES portable : OK

Controllo visivo e dimensionale: soddisfa le esigenze / Besichtigung und Ausmessung: ohne Beanstandung / Visual inspection and dimensional checks satisfactory / Contrôle visuel et dimensions: satisfaisant

Melted, poured and manufactured in Italy — No welding or weld repair — Material free from Mercury contamination

We declare that the finished product is checked for radioactive contamination by the portal system when it leaves the production plant.

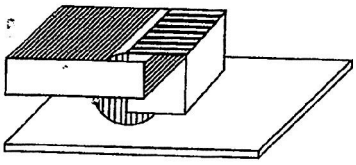
The Quality Management System is also Certified according to Pressure Equipment Directive 2014/68/EU Annex 1,chapt.4.3 by TÜV and LLOYD`S
The Quality Management System is also Certified according to PER 2016/1105, Schedule 2, Part 4, Para 31 (8) by Competent Body TUV SUD BABT Unlimited.
Any act of tampering, modification, alteration, counterfeiting and/or falsification and/or any other action which modifies the contents of this test certificate shall constitute a violation of applicable civil and criminal laws. Acciaierie Valbruna shall protect its rights and interests before any competent court, authority and jurisdiction.
Maxival and/or Valplus grades/products are manufactured with ladle techniques to control composition, distribution, size and shape of non-metallic inclusions for improved machinability.
The supplied product conforms to requirements expressly requested by the purchaser and conforms to requirements specified by certified norms and standards. Should the product be used for more severe, critical and/ or in any case different applications than those the material is generally intended for, any different and/or supplementary requirements shall be specifically demanded, at least, upon order of the Product by the Purchaser. Acciaierie Valbruna SpA shall not be responsible for any improper use of the Products.

08 NOV. 2024
FRANCO CORBELLINI
QBT
CROSSWIND R

☒ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| Vicenza, 16/04/2024 | Direzione Qualità / Qualitätsmanagement/Quality Management/Gestion Qualité | Direzione Prodotto / Produktmanagement/Product Management/Direction Produit | Pagina |
|---|---|---|---|
| VCQ052 - MEST053920 | R.BERTELLI | P.MESSORI | 4 di 4 |




# FERLAT ACCIAI

Codice Fiscale e Registro Imprese 08986430158 - R.E.A. VI nr.231980 - P.IVA IT 02441940240 Capitale Sociale € 4.836.000,00 int.versat.
Società Unipersonale soggetta alla direzione e coordinamento di ACCIAIERIEVALBRUNA spa - www.ferlatacciai.com
SEDE DI VICENZA:via M.D'Azeglio 43/45 - 36077 Altavila Vicentina (VI) - T + 39 0444334711 - F +39 0444 370099 - info@ferlatacciai.com
MAGAZZINO DI MILANO:via A.Bizzozzero B2 - 20032 Cormano (MI) - T +39 02 66302243 - F +39 02 66302202 - milano@ferlatacciai.com
MAGAZZINO DI BARI:via dei Gladioli 6 Z.I.- 70026 Modugno (BA) - T +39 080 5314928 - F +39 080 5397657 - bari@ferlatacciai.com


## Certificato EN 10204 3.1

Nro. CE22035104 Data 01/06/2022 **Pagina** 1 di 1

| | |
|---|---|
| Vs. Riferimento | AQ2201029 |
| Ordine | 31517 Bolla N.ro: MI22001211 del: 01.06.2022 |

| | |
|---|---|
| **Indirizzo Amministrativo** Cod cliente: | 10024593 |
| Rag Sociale | A.S.T. SPA APPARECCHI DI SICUREZZA |
| Indirizzo | VIA R. MERENDI 40 |
| Località | 20007 CORNAREDOMI IT |

**Normative di riferimento: ASTM A350/A350M-18**

## Prodotto

**-Product description-**

| Marca Grade | Descrizione Description | Colata Heat | Quantità UO Quantity | Lotto Batch |
|---|---|---|---|---|
| A350LF2 | Barra A350LF2 Tondo Lam. a caldo Normalizzato - DIAM. 120 mm x 3.000 mm N. 1 pezzo | 806160 | 267,000 KG | M000072748 |

## Analisi chimica del prodotto

***Chemical analysis product***

| Colata Heat | C % | Ceq % | Mn % | P % | Cr % | Mo % | Nb % | Ni % | Si % | V % | S % | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 806160 | 0,190 | 0,400 | 0,940 | 0,006 | 0,160 | 0,030 | 0,002 | 0,080 | 0,230 | 0,004 | 0,012 | | | | |

## Caratteristiche Meccaniche

***Mechanical Characteristic***

| Resistenza Tensile strength Rm N/mm2 | Snervamento Yield stress Rp 0,2 N/mm2 | Allungamento Elongation A % | Strizione Reducion area Z % | Durezza HB Hardness HB | | Resilienza longitudinale Impact value -46° KVL (J) | | | Resilienza longitudinale Impact value -20° KVL (J) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 509,0 | 324,0 | 30,1 | 69,0 | 187,0 | | 96,0 | 106,0 | 90,0 | 60,0 | 36,0 | 47,0 | |

## Prove Jomini

***Test Jomini***

| Prova 01 | | Prova 02 | | Prova 03 | | Prova 04 | | Prova 05 | | Prova 06 | | Prova 07 | | Prova 08 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dist. | Dur. | Dist. | Dur. | Dist. | Dur. | Dist. | Dur. | Dist. | Dur. | Dist. | Dur. | Dist. | Dur. | Dist. | Dur. |
| | | | | | | | | | | | | | | | |

| Prova 09 | | Prova 10 | | Prova 11 | | Prova 12 | | Prova 13 | | Prova 14 | | Prova 15 | | Prova 16 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dist. | Dur. | Dist. | Dur. | Dist. | Dur. | Dist. | Dur. | Dist. | Dur. | Dist. | Dur. | Dist. | Dur. | Dist. | Dur. |
| | | | | | | | | | | | | | | | |

08 NOV. 2024
FRANCO CORBELLINI
089
CROSSWIND R

REVIEW ☐ WITNESS
ON BEHALF OF
A. DELLAPINA DATE 08 NOV 2024

**Commenti:**

**Firma responsabile**

FERLAT ACCIAI SPA
Trevisan Enrico

**Il certificato originale è a disposizione e conservato nei nostri archivi.**

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a : EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1
Nach/According to/Selon

Certificato nr. MEST112865 / 2022 /
Prüfung/Test/Essai

Cliente / Besteller/Purchaser/Client
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura : Laminato - Solubilizzato Rettificato
Lieferzustand / Delivery state / Etat de livraison

Produttore :
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Ordine nr: ORD.N.AQ2202071
Bestell / Your order / Commande

Tipo di Elaborazione: E+AOD
Erschmelzungsart / Melting process / Mode d'elaboration

Marchi di Fabbrica:
Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice

Conferma ordine nr: MI22008136
Werks/Our Order/Ref nr.

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Punzone del Collaudatore:
Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur

Avviso di Spedizione: A-MI22006725
Lieferanzeige/Packing list/B.L.

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung / Brand / Nuance

Punzonatura: 1.4401/4/316/L
Kennzeichnung / Marking / Marquage

**SPECIFICHE :**
Anforderungen / Requirements / Exigences

Note:
Aufzeichnungen / Notes / Notes

VAL STOCK 2020 1.4404/316L A,CF
AISI 316
AISI 316L
ASME SA276 2019 S31600 A,CF (0)
ASME SA276 2019 S31603 A,CF (1)
ASME SA479 2019 S31600 A (2)
ASME SA479 2019 S31603 A (3)
ASTM A262 2015 PRACTICE E (4)
ASTM A276 2017 S31600 A,CF
ASTM A276 2017 S31603 A,CF
ASTM A370 2020 .
ASTM A479 2020 S31600 A
ASTM A479 2020 S31603 A
ASTM E10 2018 .
ASTM E8 2021 .
EN 10088-3 2014 1.4401 A,CF
EN 10088-3 2014 1.4404 A,CF
EN 10272 2007 1.4401 A,CF
EN 10272 2007 1.4404 A,CF
ISO 6506-1 2014 .
ISO 6892-1 2019 .

(0)Section II Part A 2019 EDITION
(1)Section II Part A 2019 EDITION
(2)Section II Part A 2019 EDITION
(3)Section II Part A 2019 EDITION
(4)Reapproved 2021

| | | Tolleranza: h8 - DIN670/EN10278<br>Toleranz/Allowance/Tolerance | | | | | |
|---|---|---|---|---|---|---|---|
| Pos. nr.<br>Pos. nr.<br>Item nr.<br>Nr. de poste | Oggetto<br>Gegenstand<br>Product description<br>Descrip. du produit | Dimensioni - mm<br>Abmessungen<br>Dimension<br>Dimension | Lunghezza - mm<br>Lange<br>Length<br>Longueur | Colata<br>Schmelze<br>Heat<br>Coulée | Pezzi<br>Stückzahl<br>Pieces<br>Pieces | Peso - KG<br>Gewicht<br>Weight<br>Poids | Lotto nr.<br>Losnr.<br>Lot nr.<br>Lot nr. |
| 0070 | Tondo | 10,000 | 2900/ 3100 | 276383 | | 18,0 | 729305910 |

08 NOV. 2024
FRANCO CORBELLINI
DBA
CROSSWIND

☒ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| | | | |
|---|---|---|---|
| **Vicenza, 09/11/2022**<br>VCQ052 - MEST112865 | **Direzione Qualità**<br>Qualitätsmanagement/Quality Management/Gestion Qualité<br>**R.BERTELLI** | **Direzione Prodotto**<br>Produktmanagement/Product Management/Direction Produit<br>**P.MESSORI** | Pagina 1 di 3 |

# Acciaierie Valbruna S.p.A.

36100 VICENZA (Italia) - Viale della scienza, 25 z.i.
Telefono 0444.968211 - Fax 0444.963836
Stab.: 39100 BOLZANO (Italia) - Via A. Volta, 4/37
Telefono 0471.924111 - Fax 0471.924497


## CERTIFICATO DI COLLAUDO - ABNAHMEPRUEFZEUGNIS - INSPECTION CERTIFICATE - CERTIFICAT DE RECEPTION

In conformità a / Nach/According to/Selon: EN 10204 (2004) , 3.1 / ISO 10474 (2013) , 3.1

Certificato nr. / Prüfung/Test/Essai: MEST112865 / 2022 /

Cliente / Besteller/Purchaser/Client:
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Stato di fornitura / Lieferzustand / Delivery state / Etat de livraison: Laminato - Solubilizzato Rettificato

Produttore / Hersteller/Item/Usine productrice:
**ACCIAIERIE VALBRUNA S.P.A.**

Tipo di Elaborazione / Erschmelzungsart / Melting process / Mode d'elaboration: E+AOD

Marchi di Fabbrica / Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice: AV

Ordine nr. / Bestell / Your order / Commande: ORD.N.AQ2202071

Qualità / Werkstoff/Grade/Nuance: 1.4401/1.4404/316/316L

Punzone del Collaudatore / Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur: MR

Conferma ordine nr. / Werks/Our Order/Ref nr.: MI22008136

Marca / Markenbezeichnung / Brand / Nuance: MVAPML ( MAXIVAL )

Punzonatura / Kennzeichnung / Marking / Marquage: 1.4401/4/316/L

Avviso di Spedizione / Lieferanzeige/Packing list/B.L.: A-MI22006725

### TEST ALLO STATO DI FORNITURA

Test on delivery condition / Prüefung auf lieferbereitem produkt / test a l'etat de fourniture / Prueba sobre el material así come entregado

1) L=longitudinale/längs, T=trasversale/quer, Q=Tangenziale/tangential

| TEST | Provetta / Probestab / Specimen/Eprouvette Larg.diam Spess. Breite Diam. Dicke Width Diam. Thickness Larg. diam. epais mm | °C | Posiz. Saggio / Probelage / Location / Emplacement 1) | Snervamento / Streckgrenze / Yield Stress / Limite elastique Rp 0,2% N/mm2 | Snervamento / Streckgrenze / Yield Stress / Limite elastique Rp 1% N/mm2 | Resistenza / Zugfestigkeit / Tensile strength / Resistance à traction Rm N/mm2 | Allungamento / Bruchdehnung / Elongation / Allongement A5 % | Allungamento E 4d % | Strizione / Einschnürung / Reduction of area / Striction Z % | Strizione RA % | Resilienza / Kerbschlagarbeit / Impact Value / Resilience | | | Durezza / Haerte / Hardness / Durete HB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valori richiesti / Anforderungen/Required values / Valeurs démandées | | min max | | 310 | 235 | 620 900 | 20 | 30 | - | 40 | - | | | - 315 | | |
| A | 10 | 20 | L | 477 | 559 | 665 | 47 | 50 | 70 | 70 | | | | 225 | | |
| B | 10 | 20 | L | 482 | 561 | 669 | 46 | 50 | 69 | 69 | | | | 228 | | |

### TEST ALLO STATO DI FORNITURA

Test on delivery condition / Prüefung auf lieferbereitem produkt / Test a l'etat de fourniture / Prueba sobre el material así come entregado

| TEST | | min | max | |
|---|---|---|---|---|
| A | Dimensioni grano x ASTM E112 | | | 7 |

Mechanical properties according to ASTM A370.
Brinnell hardness according to ASTM E10
Tensile testing according to ASTM E8
Brinnell hardness according to ISO 6506-1
Tensile testing according to ISO 6892-1

8 NOV. 2024
FRANCO CORBELLINI
QB1
CROSSWIND R

### Analisi chimica

Chemische Zusammensetzung/Chemical Analysis/Analyse chimique

| Colata / Heat / Schmelze/Coulée | C % | Si % | Mn % | Cr % | Mo % | Ni % | P % | S % | N % |
|---|---|---|---|---|---|---|---|---|---|
| min - | - | - | - | 16,50 | 2,00 | 10,00 | - | - | - |
| max 0,030 | 1,00 | 2,00 | 18,00 | 2,50 | 13,00 | 0,045 | 0,030 | 0,100 | |
| 276383 | 0,014 | 0,63 | 1,44 | 16,84 | 2,07 | 10,06 | 0,028 | 0,026 | 0,061 |

### Corrosion test in 16% sulfuric acid and copper sulfate solutions

**Test standard:** ASTM A262-Practice E

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitization | 15 | boil | 180 | 5 | Absence of cracks | SATISFACTORY |

☑ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

**QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D**

| Vicenza, 09/11/2022<br>VCQ052 - MEST112865 | Direzione Qualità<br>Qualitätsmanagement/Quality Management/Gestion Qualité<br>R.BERTELLI | Direzione Prodotto<br>Produktmanagement/Product Management/Direction Produit<br>P.MESSORI | Pagina 2 di 3 |
|---|---|---|---|

# Acciaierie Valbruna S.p.A.

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Certificato nr. Prüfung/Test/Essai: MEST112865 / 2022 /

Cliente / Besteller/Purchaser/Client:
AST S.P.A.
VIA R.MERENDI, 20
20010 - CORNAREDO (MI) - MI

Ordine nr: ORD.N.AQ2202071
Bestell / Your order / Commande

Conferma ordine nr: MI22008136
Werks/Our Order/Ref nr.

Avviso di Spedizione: A-MI22006725
Lieferanzeige/Packing list/B.L.

Stato di fornitura : Laminato - Solubilizzato Rettificato
Lieferzustand / Delivery state / Etat de livraison

Tipo di Elaborazione: E+AOD
Erschmelzungsart / Melting process / Mode d'elaboration

Qualità: 1.4401/1.4404/316/316L
Werkstoff/Grade/Nuance

Marca: MVAPML ( MAXIVAL )
Markenbezeichnung / Brand / Nuance

Produttore :
Hersteller/Item/Usine productrice
**ACCIAIERIE VALBRUNA S.P.A.**

Marchi di Fabbrica: AV
Zeichen des Lieferwerkes / Trade marks / Sigles de l'usine productrice

Punzone del Collaudatore: MR
Stempel des Werkssachverständigen / Inspector's stamp/Poinçon de l'assayeur

Punzonatura: 1.4401/4/316/L
Kennzeichnung / Marking / Marquage

**Corrosion test in 16% sulfuric acid and copper sulfate solutions**

**Test standard:** UNI EN ISO 3651-2 Method A

| Test | Heat treatment before test | Length of Period (h) | Test temp (°C) | Bend Angle (°) | Ø spindle (mm) | Result of visual inspection at 20 x magnification after bend test | Result |
|---|---|---|---|---|---|---|---|
| Intergranular corrosion | Sensitized T1 | 20 | boil | 90 | 5 | Absence of cracks | **SATISFACTORY** |

Reduction ratio = 374,4 : 1
Material solution annealed 1060° C for 0.5h/air cooled.

Sono state soddisfatte tutte le condizioni richieste
Die gestellen Anforderungen sind it. Anlage erfüllt
The material has been furnished in accordance with the requirements
Le materiel â eté trouvé conforme aux exigences

Controllo antimescolanza con tecnica XRF/OES portatile : OK
Verwechslungprüfung: durch XRF/QES Gerät geführt : OK
Antimixing testing performed with XRF/OES portable : OK
Contrôle antimélange svt technique XRF/QES portable : OK

Controllo visivo e dimensionale: soddisfa le esigenze
Besichtigung und Ausmessung: ohne Beanstandung
Visual inspection and dimensional checks:satisfactory
Contrôle visuel et dimensions: satisfaisant

Melted, poured and manufactured in Italy  No welding or weld repair  Material free from Mercury contamination

We declare that the finished product is checked for radioactive contamination by the portal system when it leaves the production plant.

The Quality Management System is also Certified according Pressure Equipment Directive 2014/68/EU Annex 1,chapt.4.3 by TÜV and LLOYD'S
Any act of tampering, modification, alteration, counterfeiting and/or falsification and/or any other action which modifies the contents of this test certificate shall constitute a violation of applicable civil and criminal laws. Acciaierie Valbruna shall protect its rights and interests before any competent court, authority and jurisdiction.
Maxival and/or Valplus grades/products are manufactured with ladle techniques to control composition, distribution, size and shape of non-metallic inclusions for improved machinability.
The supplied product conforms to requirements expressly requested by the purchaser and conforms to requirements specified by certified norms and standards. Should the product be used for more severe, critical and/ or in any case different applications than those the material is generally intended for, any different and/or supplementary requirements shall be specifically demanded, at least, upon order of the Product by the Purchaser. Acciaierie Valbruna SpA shall not be responsible for any improper use of the Products.

W5PC37600C7C1825C17D455FA056F450C2

08 NOV. 2024
FRANCO CORBELLINI
DBA
CROSSWIND R

☒REVIEW ☐WITNESS
ON BEHALF OF RTC
A. DELLAPINA DATE 08 NOV 2024

QUALITY MANAGEMENT SYSTEM CERTIFIED BY LLOYD'S REGISTER ACCORDING TO ISO 9001 : 2015, IATF 16949 : 2016, AS 9100D

| Vicenza, 09/11/2022<br>VCQ052 - MEST112865 | Direzione Qualità<br>Qualitätsmanagement/Quality Management/Gestion Qualité<br>R.BERTELLI | Direzione Prodotto<br>Produktmanagement/Product Management/Direction Produit<br>P.MESSORI | Pagina 3 di 3 |
|---|---|---|---|

# RAPPORTO DI IDENTIFICAZIONE DEL MATERIALE
## *POSITIVE MATERIAL IDENTIFICATION REPORT (PMI)*

**PMI-CV2400221**
**Sheet 1/2**

| Cliente / Customer | Ordine / Order | Commessa / Job | TAG |
|---|---|---|---|
| ROSETTI MARINO S.P.A. | 1724000740 123A90A | CV2400221 | SEE NOTE |

| Tipo Valvola – Valve type |
|---|
| Q.TY 16 CONTROL VALVES |

| | |
|---|---|
| **Tipo Apparecchiatura Equipment Type** | Analizzatore XRF portatile OLYMPUS DE-2000 (Portable XRF analyzer) |
| | **Matr. / ID number : 580719** |
| **Procedura PMI PMI Procedure** | **NDT 004_4 PMI** |

| Materiale in esame / Tested materials | N° Colata / Heat Nr. | Matricola Valvola / Valve Serial Number |
|---|---|---|
| SEE LIST | SEE LIST | SEE LIST |

| Particolare/ Part Name | Materiale/ Material | Colata/ Heat | Risultato / Result | |
|---|---|---|---|---|
| | | | Positive | Negative |
| SEE THE ATTACHED LIST | | | ☒ | ☐ |
| | | | ☐ | ☐ |
| | | | ☐ | ☐ |
| | | | ☐ | ☐ |
| | | | ☐ | ☐ |
| | | | ☐ | ☐ |
| | | | ☐ | ☐ |
| | | | ☐ | ☐ |
| | | | ☐ | ☐ |
| | | | ☐ | ☐ |
| | | | ☐ | ☐ |
| | | | ☐ | ☐ |
| | | | ☐ | ☐ |
| | | | ☐ | ☐ |
| | | | ☐ | ☐ |

NOTE:
ACCORDING TO 1724000740-NDT-PRO-00009

08 NOV. 2024
FRANCO CORSELLINI
QSO
CROSSWIND R

**ESITO / Result :** POSITIVO / satisfactory ☒ NEGATIVO / not satisfactory ☐

**NOTE :**

| AST Q.C. Department | Customer's Inspector | Third Party Inspection |
|---|---|---|
| IBBA ALESSANDRO QC INSPECTOR | ☑ REVIEW ☐ WITNESS ON BEHALF OF A. DELLA PINA DATE 08 NOV 2024 | |
| **Data** 31/10/2024 | **Data** | **Data** |

| S/N | TAG | PART NAME | MATERIAL | HEAT |
|---|---|---|---|---|
| 2400583 | 25-FV-031 | BODY | ASTM A351 CF3M | E360 |
| | | BONNET | ASTM A479 316/316L | 476355 |
| 2400584 | 25-FV-032 | BODY | ASTM A351 CF3M | E360 |
| | | BONNET | ASTM A479 316/316L | 476355 |
| 2400585 | 25-FV-033 | BODY | ASTM A351 CF3M | E360 |
| | | BONNET | ASTM A479 316/316L | 476355 |
| 2400586 | 25-FV-034 | BODY | ASTM A351 CF3M | E360 |
| | | BONNET | ASTM A479 316/316L | 476355 |
| 2400587 | 25-FV-036 | BODY | ASTM A351 CF3M | E360 |
| | | BONNET | ASTM A479 316/316L | 476355 |
| 2400588 | 25-FV-038 | BODY | ASTM A351 CF3M | E276 |
| | | BONNET | ASTM A479 316/316L | 476355 |
| 2400589 | 25-PV-035 | BODY | ASTM A351 CF3M | G1014 |
| | | BONNET | ASTM A479 316/316L | 000082 |
| 2400590 | 25-PV-037 | BODY | ASTM A351 CF3M | G1014 |
| | | BONNET | ASTM A479 316/316L | 000082 |
| 2400591 | 25-PV-040 | BODY | ASTM A351 CF3M | G1014 |
| | | BONNET | ASTM A479 316/316L | 000082 |
| 2400592 | 25-PV-043 | BODY | ASTM A351 CF3M | H1412 |
| | | BONNET | ASTM A479 316/316L | 000082 |
| 2400593 | 25-PV-046 | BODY | ASTM A351 CF3M | H1412 |
| | | BONNET | ASTM A479 316/316L | 000082 |
| 2400594 | 25-PV-049 | BODY | ASTM A351 CF3M | G1014 |
| | | BONNET | ASTM A479 316/316L | 000082 |
| 2400595 | 25-PV-055A | BODY | ASTM A351 CF3M | G1181 |
| | | BONNET | ASTM A479 316/316L | 293820 |
| 2400596 | 25-PV-055B | BODY | ASTM A351 CF3M | G1181 |
| | | BONNET | ASTM A479 316/316L | 293820 |
| 2400597 | 64-PV-031A | BODY | ASTM A350 LF2 | 15442 |
| | | BONNET | ASTM A350 LF2 | 806160 |
| 2400598 | 64-PV-031B | BODY | ASTM A350 LF2 | 15442 |
| | | BONNET | ASTM A350 LF2 | 806160 |

# CERTIFICATO DI CONTROLLO CON LIQUIDI PENETRANTI
## LIQUID PENETRANT TEST CERTIFICATE

N.PTCV2400221

Sheet 1 of 2

| CLIENTE customer | ORDINE order | COMM.AST ast job |
|---|---|---|
| ROSETTI MARINO S.P.A. | 1724000740 123A90A | CV2400221 |

| PROCEDURA D'ESAME examination procedure | SPECIFICA GENERALE general specification | Criteri di accettabilità acceptance criteria |
|---|---|---|
| PT001 | ASME VIII DIV.1 APPENDIX 7;8 | ASME VIII DIV.1 APPENDIX 7;8 |

| FASE DI LAVORO working step | CONDIZIONE SUPERFICIALE surface condition |
|---|---|
| FINISHED | MACHINED |

TECNICA (technique): LAVABILI AD ACQUA (WATER WASHABLE)

| IDENTIFICATIVO identification | COLATA heat | MATERIALE material | DISEGNO dwg | SCHIZZO sketch |
|---|---|---|---|---|
| SEE ATTACHED REPORT | | | | EXTENSION TO CRITICAL ZONES ASME VIII |

| MATERIALI materials | VISIBILE visible | FLUORESCENTE fluorescent |
|---|---|---|
| SOLVENTE solvent | R 2.60 VELNET/SOLNET | |
| PENETRANTE penetrant | R 2.71 RED WW AG 1 | |
| RIVELATORE developer | R 2.82 ROTRIVEL U-WHITE | |
| MARCA mark | C.G.M | |

| | | | |
|---|---|---|---|
| PULITURA cleaning | SOLVENT | ASCIUGATURA Drying | AIR / ABSORBING PAPER |
| APPLICAZIONE PENETRANTE penetrant application | SPRAY | TEMPO MIN. PENETRAZIONE min. penetration time | 15 min. |
| RIMOZIONE PENETRANTE penetrant removal | WATER SPRAY MAX 30 Psi | MINIMO TEMPO DI SVILUPPO min. developing time | 10 min. |
| APPLICAZIONE SVILUPPATORE developer application | SPRAY | TEMPERATURA Temperature | 20 ° C |
| TEMPO MASSIMO DI LETTURA max. reading time | 20 min. | ILLUMINAZIONE Visible light intensity | ≥ 1076 lux |

RISULTATI results: ☑ CONFORME ALLA SPECIFICA according to specification — NON CONFORME ALLA SPECIFICA not according to specification — SCARTO rejection

NOTE: notes

ACCORDING TO 1724000740-NDT-PRO-00009

| OPERATORE operator | LIVELLO SNT-TC-1A / ISO 9712 SNT-TC-1A/ISO 9712 level | ISPETTORI TERZE PARTI third part inspectors | A.S.T. Quality Assurance Department |
|---|---|---|---|
| DATA Date 31/10/2024 | IBBA ALESSANDRO QC INSPECTOR II LEVEL | DATA Date | DATA Date 31/10/2024 A.S.T. S.p.A. Quality Assurance |

08 NOV. 2024 FRANCO CORBELLINI QBQ CROSSWIND R

Rev. 3

☑ REVIEW ☐ WITNESS ON BEHALF OF RINA A. DELLA PINA DATE 08 NOV 2024

| S/N | TAG | PART NAME | MATERIAL | HEAT |
|---|---|---|---|---|
| 2400583 | 25-FV-031 | PLUG | F316+PTFE | 290960 |
| | | SEAT | ASTM A479 316/316L | 372445 |
| 2400584 | 25-FV-032 | PLUG | F316+PTFE | 290960 |
| | | SEAT | ASTM A479 316/316L | 372445 |
| 2400585 | 25-FV-033 | PLUG | F316+PTFE | 290960 |
| | | SEAT | ASTM A479 316/316L | 372445 |
| 2400586 | 25-FV-034 | PLUG | F316+PTFE | 290960 |
| | | SEAT | ASTM A479 316/316L | 372445 |
| 2400587 | 25-FV-036 | PLUG | F316+PTFE | 290960 |
| | | SEAT | ASTM A479 316/316L | 372445 |
| 2400588 | 25-FV-038 | PLUG | F316+PTFE | 290960 |
| | | SEAT | ASTM A479 316/316L | 372445 |
| 2400589 | 25-PV-035 | PLUG | F316+PTFE | 293368 |
| | | SEAT | ASTM A479 316/316L | 380150 |
| 2400590 | 25-PV-037 | PLUG | F316+PTFE | 293368 |
| | | SEAT | ASTM A479 316/316L | 380150 |
| 2400591 | 25-PV-040 | PLUG | F316+PTFE | 293368 |
| | | SEAT | ASTM A479 316/316L | 380150 |
| 2400592 | 25-PV-043 | PLUG | F316+PTFE | 293368 |
| | | SEAT | ASTM A479 316/316L | 380150 |
| 2400593 | 25-PV-046 | PLUG | F316+PTFE | 293368 |
| | | SEAT | ASTM A479 316/316L | 380150 |
| 2400594 | 25-PV-049 | PLUG | F316+PTFE | 293368 |
| | | SEAT | ASTM A479 316/316L | 380150 |
| 2400595 | 25-PV-055A | PLUG | F316+PTFE | 293368 |
| | | SEAT | ASTM A479 316/316L | 291581 |
| 2400596 | 25-PV-055B | PLUG | ASTM A479 316/316L+PTFE | 274483 |
| | | SEAT | ASTM A479 316/316L | 291581 |
| 2400597 | 64-PV-031A | PLUG | ASTM A479 316/316L+STELL.GR.6 | 293003 |
| | | SEAT | ASTM A479 316/316L+STELL.GR.6 | 372445 |
| 2400598 | 64-PV-031B | PLUG | ASTM A479 316/316L+STELL.GR.6 | 293003 |
| | | SEAT | ASTM A479 316/316L+STELL.GR.6 | 372445 |



0 8 NOV. 2024
FRANCO CORBELLINI
DBQ
CROSSWIND R

☑ REVIEW ☐ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 0 8 NOV 2024

# Bescheinigung über die Hinterlegung der Dokumentation

Certification of acknowledgement of receipt

| | |
|---|---|
| **Hinterlegungsnummer**<br>*Deposit number* | **557/Ex-Ab 2893/18** |
| **Gegenstand: Gerät / Typ**<br>*Subject: Equipment / type* | Technische Dokumentation<br>*Technical documentation*<br><br>**Valvole di Sicurezza/**<br>***Security Valves***<br><br>Serie SLKC, GLVC/<br>*Series SLKC, GLVC* |
| **Anschrift**<br>*Address* | COI TECHNOLOGY SRL<br>Via Della Liberazione 29/d<br>20098 San Giuliano Milanese (MI)<br>Italy |

Die Unterlagen sind bei uns am 2018-06-28 eingegangen und werden unter o. g. Hinterlegungs-Nr. ordnungsgemäß gelagert bis 2028-06-28.
*The documents were received* 2018-06-28 *and will be stored properly until 2028-06-28 under deposit number above.*

Die TÜV Rheinland Industrie Service GmbH ist mit der Kenn-Nr. 0035 benannte Stelle für den Geltungsbereich der Richtlinie 2014/34/EU.
*TÜV Rheinland Industrie Service GmbH has notified body number 0035 with the identification of the scope of Directive 2014/34/EU.*

**TÜV Rheinland Industrie Service GmbH**
Anerkannte ATEX-Zertifizierstelle / ATEX-Notified Body No. 0035
**Am Grauen Stein - 51105 Köln - Germany**
(bearbeitende Stelle/executing unit:
Alfredstr. 81, 45130 Essen)

i.A./ o/o Diego Sirtori

2018-06-28

TÜVRheinland® 0035 Notified Body

www.tuv.com

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Fiditas
explosion safety solutions

17065 · HAA
3635

[1] # EU – TYPE EXAMINATION CERTIFICATE

[2] Equipment or Protective Systems Intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU.

[3] EU-Type Examination Certificate Number: **FIDI 20 ATEX 0039X** Issue: **1**

[4] Product: **Limit switch box**

Type: **Guardbox – GD series**

[5] Manufacturer: **Eisenbau s.r.l.**

[6] Address: **Viale Europa 39, 20047 Cusago (MI), Italy**

[7] This product and any acceptable variation thereto is specified in the schedule to this certificate and documents therein referred to.

[8] FIDITAS Ltd., Notified Body number 2829 in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II of the Directive.

The examination and test results are recorded in confidential Report No: **FIDI 20 CR 030**

[9] Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

**EN IEC 60079-0:2018** **EN 60079-1:2014** **EN 60079-31:2014**

except in respect of those requirements listed at item 18 of the Schedule.

[10] If the sign 'X' is placed after the certificate number, it indicates that the product is subject to Specific Conditions of Use specified in the schedule to this certificate.

[11] This EU-Type Examination Certificate relates only to the design, examination and test of the specified product in accordance with Annex III. Further requirements of the Directive apply to the manufacturing process and supply of this products. These are not covered by this certificate.

[12] The marking of the product shall include the following:

**II 2G Ex db IIC T6...T4 Gb**

**II 2D Ex tb IIIC T85°C...T135°C Db**

Our ref.: 20.CRT.261

Date: 30.10.2020.

Fiditas d.o.o. ZAGREB

**FIDITAS Ltd.**
**Certification department**
Approved:

Marino Kelava, M.E.Eng.


This certificate may only be reproduced in its entirety, without any change, schedule included

**[13]** **SCHEDULE**

**[14]** **EU - TYPE EXAMINATION CERTIFICATE No.:** **FIDI 20 ATEX 0039X**

**[15]** **Description of product**

Guardbox limit switch boxes are electromechanical devices used for the monitoring of the operation of industrial valves in facilities. Guardbox devices are used to control the position of the valve and to provide electrical feedback signal of valve position status to plant control system. They are equipped with a visible position indicator that represents a true indication of valve position.

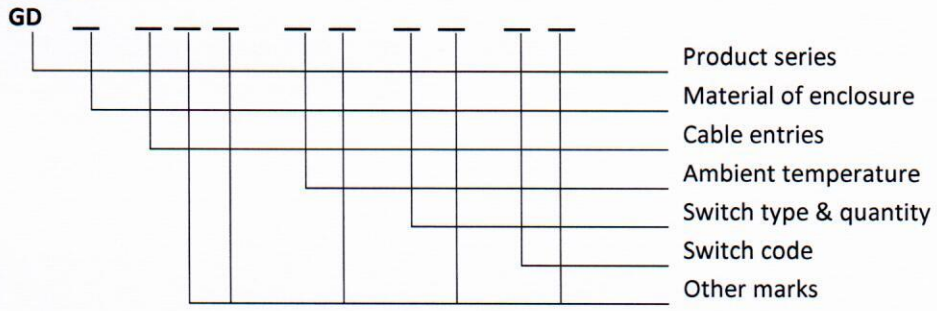
Separately certified cable glands in type of protection flameproof enclosure "db" and protection by enclosure "tb" shall be used for cable entry.

**Technical data:**

| | |
|---|---|
| Nominal voltage: | 0 Vdc - 125 Vdc<br>0 Vac - 250 Vac |
| Nominal current: | 0.1 A – 10 A |
| Ambient temperature range: | -60°C to +105°C |
| Mechanical protection: | IP 66 according to EN IEC 60079-0 and EN 60529<br>IP 68 (20 m / 2h) according to EN 60529 |

| $T_{a\ max}$ [°C] | Maximally allowed power dissipation [W] | Temperature class | Maximum surface temperature | Min. cable temperature resistance [°C] |
|---|---|---|---|---|
| 40 | 10 | T6 | T85°C | 70 |
| 65 | 4 | T6 | T85°C | 80 |
| | 10 | T5 | T100°C | 100 |
| 85 | 4 | T5 | T100°C | 100 |
| | 10 | T4 | T135°C | 120 |
| 90 | 4 | T4 | T135°C | 105 |
| | 10 | | | 125 |
| 105 | 4 | T4 | T135°C | 120 |

**Marking:**




**Warning markings:**

"DO NOT OPEN IN A GAS/DUST EXPLOSIVE ATMOSPHERE"
"DUE TO RISK OF STATIC HAZARD, THE ENCLOSURE MUST ONLY BE CLEANED WITH A DAMP CLOTH"

**[16] Confidential Report No.** FIDI 20 CR 030

**[16.1 ] Routine testing**

None

**[17] Specific Conditions of Use**

- Flameproof joints are not intended to be repaired.
- An appropriate method of installation, maintenance and operation should prevent the accumulation of static charges on the enclosure of the device.
- Use screws of quality A2-70 or A4-70 according to UNI 5931 with the ultimate tensile strength of at least 700 N/mm$^2$.

**[18] Essential Health and Safety Requirements**

Covered by the conformity with harmonized standards listed under item 9.

**[19] Drawings and Documents**

| Title: | Drawing No.: | Rev. level: | Date: |
|---|---|---|---|
| Installation, Operation & Maintenance Manual | 0100-ENG | 6 | 21.10.2020. |
| Certification drawings: | | | |
| Stainless steel body GD | EC-0101005-02 | 02 | 14.10.2020. |
| Cover GD | EC-0102002-02 | 02 | 21.10.2020. |
| Part list switch box blind GD | EC-0120003-02 | 02 | 21.10.2020. |
| Body GD | EC-0101002-01 | 01 | 10.02.2015 |
| Stainless steel cover GD | EC-0102009-02 | 02 | 14.10.2020. |
| Part list GD | EC-0120001-02 | 02 | 21.10.2020. |
| Part list GD stainless steel | EC-0120002-02 | 02 | 21.10.2020. |
| Blind cover GD | EC-0102008-01 | 02 | 21.10.2020. |
| Part list switch box blind stainless GD | EC-0120004-02 | 02 | 21.10.2020. |
| Stainless steel cover blind GD | EC-0102010-02 | 02 | 14.10.2020. |
| Shaft box GD certification | EC-0104001-00 | 00 | 10.07.2014. |
| Shaft switch box blind certification | EC-0104003-00 | 00 | 10.07.2014. |
| GD limit switch box gasket | EC-0107002-00 | 00 | 18.12.2014. |
| External nameplate with certification data | EC-0108001-01 | 01 | 14.10.2020. |
| Screw box | EC-0109001-00 | 00 | 30.07.2014. |
| Width of flameproof joint GD | EC-0120011-00 | 00 | 15.09.2014. |
| Width of flameproof joint GD stainless steel | EC-0120012-00 | 00 | 15.09.2014. |
| External nameplate for marking operating parameters | EC-0108005-00 | 00 | 14.10.2020. |

GuaRdboX - *Gd series*

# Eu Declaration of conformity

## Issued in accordance with the relevant Union harmonization legislation: ATEX Directive 2014/34/EU

The manufacturer:

*Eisenbau s.r.l.*
*Viale europa, 39*
*20047 Cusago (MI) - Italy*

herewith declare under his sole responsibility, that the limit switch box:

Series: **GD**
Model: **GDAR0LIS2TX1T8**
Batch n°: **44131**

*Ex – Equipment Marking:* **II2G Ex db IIC T6...T4 Gb**
**II2D Ex tb IIIC T85°C...T135°C Db**

when installed in accordance with the installation and safety instructions, is in conformity with all the following applicable EU directives, regulations and all the essential Health and Safety requirements:

| *Standards:* | | |
|---|---|---|
| | **IEC 60079-0:2011 (Ed6.0)** | **EN IEC 60079-0:2018** |
| | **IEC 60079-1:2014-06 (Ed7.0)** | **EN 60079-1:2014** |
| | **IEC 60079-31:2013 (Ed2.0)** | **EN 60079-31:2014** |

ATEX EC - Type examination certificate: **FIDI 20 ATEX 0039X**
IECEx - Certificate of conformity: **IECEx EXA 15.0008X**

(QAN) - Production Quality Assurance Notification: **ATEX: 01 220 1909020**
(QAR) - Production Quality Assessment Report: **IECEx: DE/TUR/QAR/19.0006/00**

Notified body (number 0035): **TÜV Rheinland Industrie Service GmbH**
**Am Grauen Stein**
**51105 Köln**

Print Name: BARBARA BARENGHI
Signature:

Function of the signer: CEO

Date: 30/04/2024

*Eisenbau s.r.l. a socio unico*
*Viale europa, 39 - 20047 Cusago (MI) Italy*
*Phone : +390293562116 Fax: +390290119663 Guardbox production unit : Viale europa, 39 - 20047 Cusago (MI) Italy*
*Phone : +390293562116 Fax: +390290119663*

Eisenbau INSTRUMENTS AND MONITORING PRODUCTS
www.eisenbau.it

GUARDBOX VALVE MONITORING PRODUCTS
www.guardbox-ex.com

*ENG rev.4*

# Smart Valve Positioner
# TS900/TS905 Series (Flame proof type)



## Description

TS900 Smart Valve Positioner controls the valve stroke in response to an input signal of 4-20mA from the control panel, DCS, or calibrator.

## Certified

HART COMMUNICATION PROTOCOL IP66 SIL2 SGS TÜV SAAR FUNKTIONALE SICHERHEIT GEPRÜFT FUNCTIONAL SAFETY APPROVED

## Features



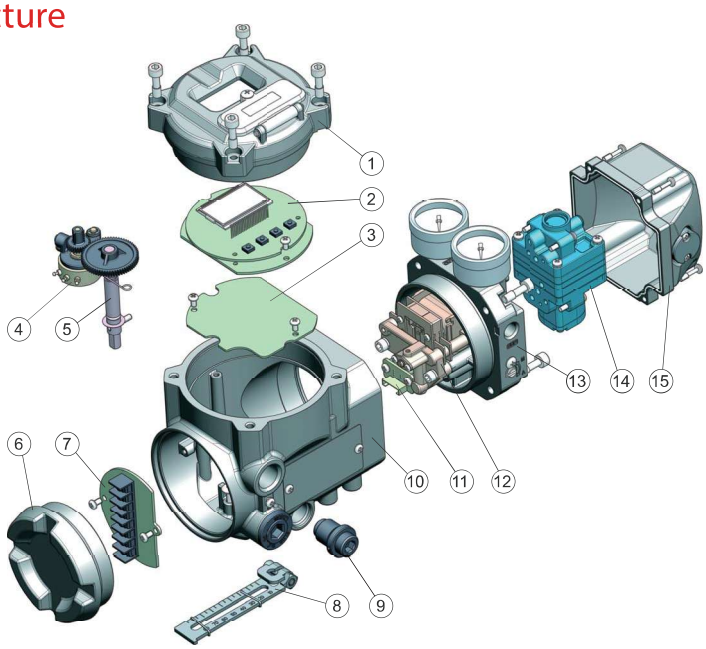

TS900




TS905

- Quick and easy auto calibration
- Large flow pilot valve (Over than 100LPM)
- Flapper / Nozzle type Torque motor
- By-pass valve (A/M switch) installed
- HART communication (HART 7)
- Partial stroke test (PST) function
- Alarm function
- Self diagnostic

## Structure




1. Body cover
2. Main PCB
3. PCB guide
4. Potentiometer
5. Main shaft
6. Junction box cover
7. Terminal PCB
8. Feedback lever
9. Plug drain
10. Base body
11. Pressure sensor(Option)
12. Torque motor
13. Air connection block
14. Pilot valve
15. Pilot valve cover

## Specifications

| Model | | TS900 | TS905 |
|---|---|---|---|
| Input signal | | 4~20mA DC | |
| Impedance | | 500Ω at 20mA DC | |
| Supply pressure | | 0.14~0.7MPa | |
| Stroke | | 10~150mm(Linear), 0~90°(Rotary) | |
| Air connection | | NPT1/4, G1/4 | |
| Gauge connection | | NPT1/8 | |
| Conduit | | NPT1/2, M20 | |
| Explosion proof type | | II 2G Ex db IIC T5/T6 Gb<br>II 2D Ex tb IIIC T85°C/T100 °C Db | |
| Enclosure | | IP66 (EN60529) | |
| Ambient Temp. | Standard type | -30°C~80°C | |
| | Low temp type | -40°C~80°C | |
| | Explosion proof | -40°C~80°C(T5) / -40°C~70°C(T6) | |
| | LCD operating | -30°C~85°C | |
| Linearity | | ±0.5% F.S. | |
| Sensitivity | | ±0.2% F.S. | |
| Hysteresis | | ±0.5% F.S. | |
| Repeatability | | ±0.3% F.S. | |
| Air consumption | | Below 2.3LPM (Sup=0.14MPa) | |
| Required air quality | | Class 3 (ISO 8573-1) | |
| Flow capacity | | Over 100LPM (Sup=0.14MPa) | |
| Material | | Aluminum die cast | Stainless Steel 316 |
| Weight | | 3.5kg | 7.0kg |
| HART version* | | HART 7 | |
| Position transmitter* | Connection type | 2 Wire | |
| | Supply voltage | 9~30V DC | |
| Alarm switch* | | 9~30V DC | |

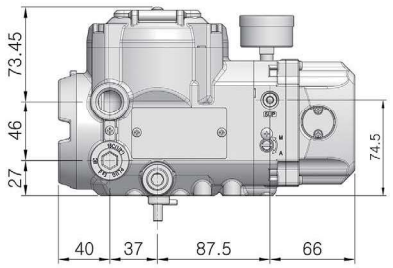
* Options

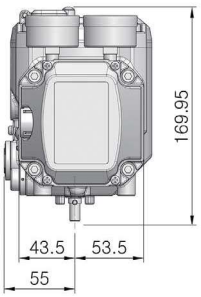
## Product code

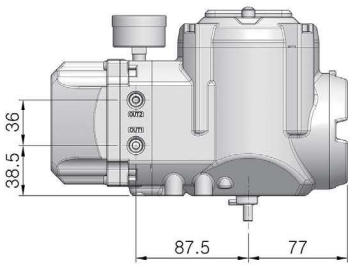
| Model | TS900 | | C | | | | | |
|---|---|---|---|---|---|---|---|---|
| Standard type<br>STS316 type | TS900<br>TS905 | | | | | | | |
| Acting type | Linear type | L | | | | | | |
| | Rotary type | R | | | | | | |
| Explosion proof type | Ex db IIC T5/T6 | | C | | | | | |
| Connection type | Conduit entry | Air connection | | | | | | |
| | G1/2 | PT1/4 | 1 | | | | | |
| | G1/2 | NPT1/4 | 2 | | | | | |
| | NPT1/2 | NPT1/4 | 3 | | | | | |
| | M20 | NPT1/4 | 4 | | | | | |
| | M20 | G1/4 | 5 | | | | | |
| Lever (Linear type) | 10 ~ 80mm | | | 1 | | | | |
| | 70 ~ 150mm | | | 2 | | | | |
| | Adapter type(30mm) | | | 3 | | | | |
| | Adapter type(70mm) | | | 4 | | | | |
| Lever (Rotary type) | M6 x 39L | | | 1 | | | | |
| | NAMUR | | | 5 | | | | |
| Ambient Temp. | -30°C~80°C | | | | S | | | |
| | -40°C~80°C | | | | L | | | |
| | -60°C~85°C (For Russia EAC) | | | | U | | | |
| Communication | None | | | | | 0 | | |
| | 4~20mA Position transmitter | | | | | 1 | | |
| | HART | | | | | 2 | | |
| | HART with 4~20mA Position transmitter | | | | | 3 | | |
| Alarm switch | None | | | | | | 0 | |
| | Included Alarm switch | | | | | | A | |

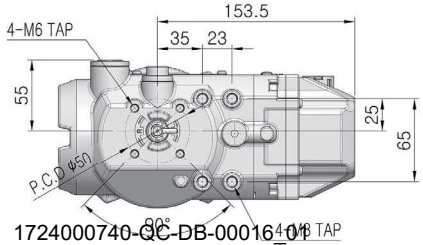
Notes:
1. Conduit entry for ATEX/IECEx/CCC/NEPSI should be “NPT1/2” or “M20”.

## Dimension [Unit:mm]



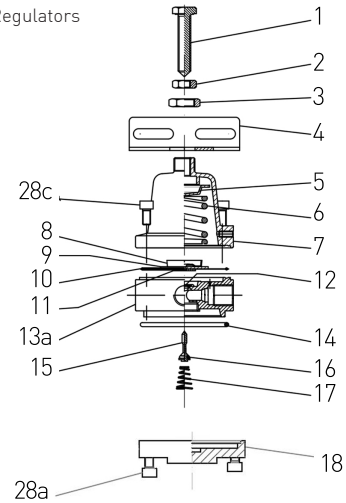



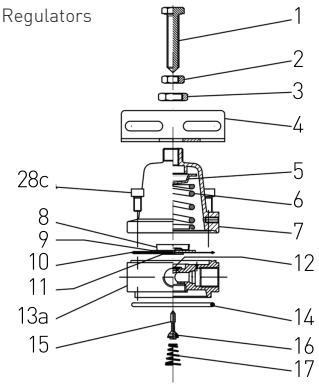
Sitecna Srl a Socio Unico
Via G. Di Vittorio, 22
20068 Peschira Borromeo
Milano - ITALY

Tel. +39 025475482
Fax +39 0255303713
E-mail info@sitecna.eu
Web www.sitecna.eu

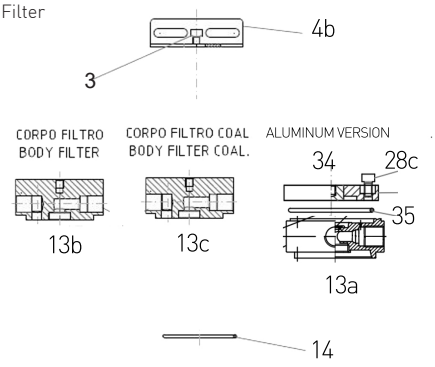
Regulators

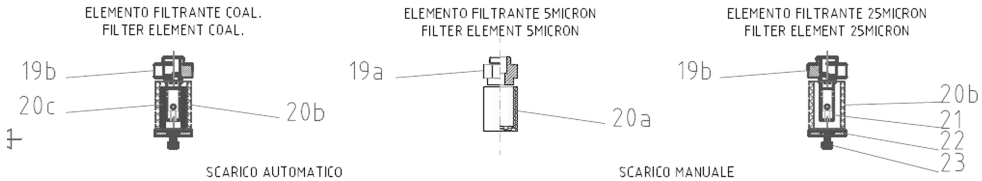


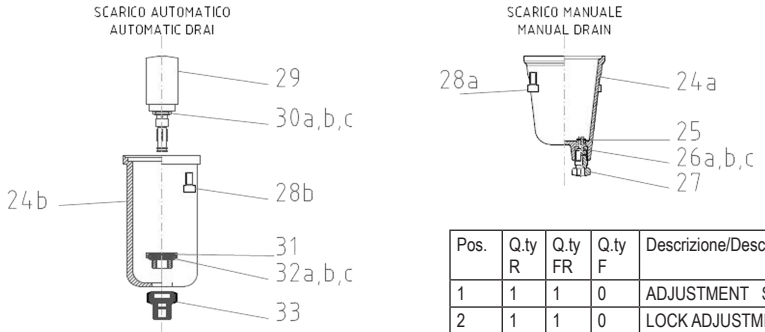

Filter Regulators




Filter




# Installation, Regulation and Maintenance Instructions

*Filter, Regulator & Filter Regulators*
*Serie 04 - 1/4"NPT*

CE Ex EAC Ex SIL IP66

## HOW TO ORDER

**TYPE**
F= Filter
FR= Filter Regulator
R= Regulator

* only for filters

**SIZE**
04= 1/4" NPT
06= 3/8" NPT
08= 1/2" NPT
12= 3/4" NPT
16= 1" NPT
24= 1" 1/2"NPT*
32= 2"NPT*

**RANGE**
0= None
1= 0.2-2 bar
2= 0.2-4 bar
3= 0.4-8 bar
4= 0.4-10 bar
5= 0.4-12 bar

**ACCESSORIES**
0= None
2= SS bracket kit
3= Panel nut&handwheel
4= Customised Tag
5= SS bracket kit + nut&handwheel
6= SS bracket kit+custom.Tag

**Specials**

| FR | 06 | 3 | 1 | 1S | 5 | 6 | SS | FK | 2 | # | # |
|---|---|---|---|---|---|---|---|---|---|---|---|

**FILTER ELEMENT**
0= None
1= 5 micron
2= 25 micron
3= 40 micron
4= coalescing*
5= 3 micron for 1/4", 3/8", 1/2"NPT

**PRESSURE GAUGE**
0= None
1S= AISI304 or AISI316 case (SS316 connection)
1B= AISI304 case (brass connect.)

**OPTION**
00= None
05= No relieving
06= 1/4" gauge port
07= Automatic drain
56= No relieving 1/4" gauge port
57= No relieving Automatic drain
67= 1/4" gauge port Automatic drain

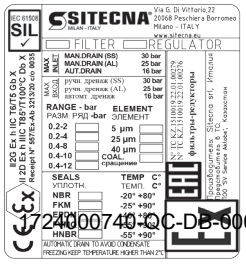
**DIAPHRAGM & SEALS MATERIAL**
FK= FKM ( WT-25° +90°C )
NB= NBR ( WT-20° +80°C )
LT= EPDM ( WT-40° +80°C )
FL= Special compound (WT-60°+90°C)
HN= HNBR (WT -60°+90°C)

**MATERIAL**
SS= 316-316L Stainless steel
AL= Copper free aluminum alloy

## PART LIST

| Pos. | Q.ty R | Q.ty FR | Q.ty F | Descrizione/Description |
|---|---|---|---|---|
| 1 | 1 | 1 | 0 | ADJUSTMENT SCREW |
| 2 | 1 | 1 | 0 | LOCK ADJUSTMENT NUT |
| 3 | 1 | 1 | 1 | BRACKET NUT |
| 4a | 1 | 1 | 0 | BRACKET FR/R |
| 4b | 0 | 0 | 1 | BRACKET F |
| 5 | 1 | 1 | 0 | UPPER SPRING SEAT |
| 6 | 1 | 1 | 0 | ADJUSTMENT SPRING |
| 7 | 1 | 1 | 0 | BONNET |
| 8 | 1 | 1 | 0 | LOWER SPRING GUIDE |
| 9 | 1 | 1 | 0 | LOWER SPRING RESET |
| 10 | 1 | 1 | 0 | DIAPRAGHM |
| 11 | 1 | 1 | 0 | VALVE SEAT |
| 12 | 1 | 1 | 0 | PTFE RING |
| 13a | 1 | 1 | 0 | FR BODY |
| 13b | 0 | 0 | 1 | F BODY |
| 13c | 0 | 0 | 1 | COALESCING F BODY |
| 14 | 1 | 1 | 2 | O-RING |
| 15 | 1 | 1 | 0 | VALVE STEAM |
| 16 | 1 | 1 | 0 | O'RING VALVE STEAM |
| 17 | 1 | 1 | 0 | VALVE SPRING |
| 18 | 1 | 0 | 0 | REGULATOR BOTTOM |
| 19a | 0 | 1 | 1 | FILTER ELEMENT SUPPORT 5mic |
| 19b | 0 | 1 | 1 | FILTER ELEMENT SUPPORT 25mic |
| 20a | 0 | 1 | 1 | FILTER ELEMENT 5 MICRON |
| 20b | 0 | 1 | 1 | FILTER ELEMENT 25 MICRON |
| 21 | 0 | 1 | 1 | FILTER ELEMENT SUPPORT |
| 22 | 0 | 1 | 1 | FILTER ELEMENT CASEBACK |
| 23 | 0 | 1 | 1 | SCREW M4X6 |
| 24a | 0 | 1 | 1 | MANUAL DRAIN BOLW |
| 24b | 0 | 1 | 1 | AUTOMATIC DRAIN BOLW |
| 25 | 0 | 1 | 1 | BENZIN |
| 26 | 0 | 1 | 1 | O'RING DRAIN |
| 27 | 0 | 1 | 1 | MANUAL DRAIN |
| 28a | 0 | 4 | 4 | SCREW MAN. DRAIN M5X10 |
| 28b | 0 | 4 | 4 | SCREW AUTO DRAIN M5X16 |
| 28c | 8 | 4 | 4 | BONNET SCREW M5X10 |
| 29 | 0 | 1 | 1 | AUTOMATIC DRAIN |
| 30 | 0 | 1 | 1 | O'RING AUTO DRAIN |
| 31 | 0 | 1 | 1 | AUTOMATIC DRAIN SEAT |
| 32 | 0 | 1 | 1 | O'RING AUTOM. DRAIN |
| 33 | 0 | 1 | 1 | AUTOMATIC DRAIN SEAT |
| 34 | 0 | 0 | 1 | FILTER TOP |
| 35 | 0 | 0 | 1 | O-RING |

**LABEL**




**REPARING KIT**

Contains: 8, 9, 10, 11, 14, 16, 26, 20, 30, 32, 35
+ for 5 micron FR & F: 20a
+ for 25 micron FR & F: 20b

**For technical information refer to the corresponding technical data sheet**

# INSTALLATION, REGULATION & MAINTENANCE INSTRUCTIONS

***AISI316 and Aluminum Filter, Regulator, Filter-regulator - 1/4"NPT***

IP66

SITECNA Flow Control Technologies

## 1.INTRODUCTION

Throughout this manual there are a number of HAZARD WARNINGS that must be read and adhered to in order to prevent possible personal injury and/or damage to equipment. Three signal work "DANGER", "WARNING" and "CAUTION" are used to indicate the severity of a hazard, and are preceded by the safety alert symbol.

**⚠ Danger** Denotes the most serious hazard and is used when serious injury or death WILL result from misuse or failure to follow specific instructions.

**⚠ Warning** Used when serious injury or death MAY result from misuse or failure to follow specific instructions.

**⚠ Caution** Used when injury or product/equipment damage may result from misuse or failure to follow specific instructions.

**⚠ Caution** **⚠ Warning** **⚠ Danger** It is the responsibility and duty of all personnel involved in the installation, operation and maintenance of the equipment on which this device is used, to fully understand the procedures by which hazards can be avoided.

The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.

Only personnel with appropriate training should operate machinery and equipment.

Do not service or attempt to remove the machinery or equipment until safety is confirmed.

## 2.DESCRIPTION

Before you can feed a plant with a gaseous fluid, it must be processed to remove contaminants such as water and oil particles, dirt and is also necessary to reduce the pressure to the level required by the equipment downstream.

- Filters are designed to remove airborne solid and liquid contaminants which may plug small orifices and hinder performance or cause excessive wear and premature equipment failure.
- Regulators provide controlled, consistent air pressure as required for specific pneumatic equipment connected to the air system.
- Filter/regulators are designed to remove airborne solid and liquid contaminants which may plug small orifices and hinder performance or cause excessive wear and premature equipment failure. In addition to filtration the regulators portion provides controlled, consistent air pressure as required for specific pneumatic equipment connected to the air system.

## 3. OPERATION

In these devices, the main spring (6) exerts a force on a diaphragm assembly (8,9,10,11). This force can be adjusted by turning the adjustment screw (1). By readjusting the main spring, the regulator valve assembly (15,16) is pushed down and the seat of the lower seal is released, while the front side of the adjusting piston continues to be sealed by the element sealing in the diaphragm. This allows the flow from the pressure to the processing lines for the supply and exhausting of the system. Small pressure fluctuations can be compensated by slight movements of the piston adjustment and changes of the flow on the lower valve seat. If the pressure on the line of work exceeds the set pressure of work, this generates a force on the lower side of the diaphragms that pushes the diaphragm upwards, the air then flows over the sealing element in the diaphragm and through a light of drain on the body of the compressed air regulator.

## 4. PNEUMATIC DIAGHRAM

Fig.1 Filter Regulator

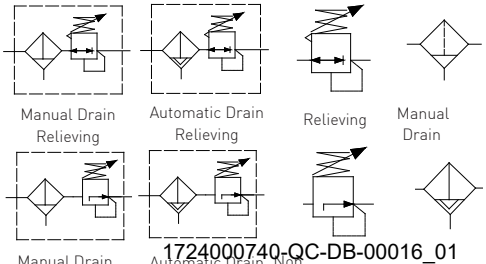



Fig.2 Regulator




Fig.3 Filter




## 5. TECHNICAL FEATURES

Medium: compressed air or inert gases, filtered
Port thread: 1/8" – 1/4" NPT
Gauge connection: 1/8" – 1/4"NPT
for FR & F: 5, 25, 40 micron, coalescing (only F)
Max inlet pressure: 25 bar (for aluminum version)
30 bar (for AISI 316 version)
16 bar (only for F, FR with automatic drain)
Drain valve: manual or automatic
Flow rate: FR, R: 940dm3/min CV=0.9 (P.in 10bar - P.reg.6bar - Δ P 1bar)
1000dm3/min CV=1 (P.in 10bar - delta P. 0.5bar)
Pressure range: 0.2/2, 0.2/4, 0.4/8, 0.4/10, 0.4-12 bar
Materials: Body - SS316L or aluminum alloy
Filter element - SS316
Internal parts - stainless steel

| MATERIAL | | TEMPERATURE | | |
|---|---|---|---|---|
| DIAPHRAGM | SEALS | TRANSPORT | STORAGE | OPERATING |
| NBR | NBR | -20°C...+80°C | -20°C...+80°C | -20°C...+80°C |
| FKM | FKM | -25°C...+90°C | -25°C...+90°C | -25°C...+90°C |
| EPDM | EPDM | -40°C...+80°C | -40°C...+80°C | -40°C...+80°C |
| FVMQ | FVMQ | -60°C...+90°C | -60°C...+90°C | -60°C...+90°C |
| HNBR | HNBR | -60°C...+90°C | -60°C...+90°C | -60°C...+90°C |

## 6.TRANSPORTATION & STORAGE

The preferred storage location is a clean, dry and protected warehouse. If the components have to be stored outside, precautions should be taken to keep valves clean and dry. For storage temperatures, refer to the table in paragraph "TECHNICAL FEATURS".

To avoid contamination of impurities during the storage period, don't remove thread protection caps; remove them just before the installation phase.

## 7. INSTALLATION

**⚠ Warning** Before performing any work, read this manual and study all figures. Assure yourself that you understand and you can do what is required in each step. Failure to follow these instructions may affect quick release valve operation and may result in exposure to personal injury.

Before installing the valve, set and block the machine or equipment in a secure position; close the air shutoff valve and exhaust air from air lines and disconnect all electrical power.

- Upstream of lubricators and cycling valves
- As close as possible to the air supply when used as a main line filter
- As close as possible to the device being serviced when used as a final filter
- **⚠ Caution** In the version with automatic drain and with hazardous area medium but compatible with the materials, you must remember that the device is designed with allowable leakage. In the cases, it is necessary to provide for the conveyance of the discharge in safe area. No responsibility will be charged to SITECNA to unsafe use.

## 8. MOUNTING

- Vertically (bowl down),
- With air flow in direction of arrow on body,
- Connect piping to proper ports using pipe thread sealant on male threads only. Do not allow sealant to enter interior of unit.
- Install a pressure gauge or plug the gauge ports. Gaugeports can also be used as additional outlets for regulated air.

## 9. TESTING

- Before applying inlet pressure to filter/regulator, turn adjustment (1) counterclockwise to remove all force on regulating spring (6).
- Apply inlet pressure, then turn adjustment (1) clockwise to increase and counterclockwise to decrease outlet pressure setting.
- Always approach the desired pressure from a lower pressure. When reducing from a higher to a lower setting, first reduce to some pressure less than thatdesired, then bring up to the desired pressure.

**NOTE**

**⚠ Warning** As option is available an "Anti-tamper system" to avoid the un-authorized modification of the setting. This option is mandatory for safety related applications..

**⚠ Caution** With non-relieving filter/regulators, make pressure reductions with some air flow in the system. If made under no flow (dead-end) conditions, the filter/regulator will trap the over-pressure in the downstream line.

- Once required pressure is achieved tighten locknut (2) to lock setting.

## 10. MAINTENANCE

**⚠ Warning** Before performing any work, read this manual and study all figures. Assure yourself that you understand and can do what is required in each step. Failure to follow these instructions may affect quick release valve operation and may result in exposure to personal injury.

Before uninstalling the valve, set and block the machine or equipment in a secure position; close the air shutoff valve and exhaust air from air lines; disconnect all electrical power.

- Filter/regulator can be disassembled without removal from air line.
- Shut off inlet pressure. Reduce pressure in inlet and outlet lines to zero.
- Turn adjustment screw fully counter clockwise.
- Disassemble in general accordance with the item numbers on exploded view. Do not remove the drains unless replacement is necessary. Remove and replace drains only if they malfunction.

### A.Ordinary maintenance

**⚠ Caution** The FR, F and R should be periodically checked for proper functioning:

- Clean the FR, F and R from impurities and dirt;
- Visually check of the integrity of the body and cup
- Check that there aren't leakages;
- Check the correct functionality of the FR, F and R;
- For manual drain models, regularly open drain to expel accumulated liquids. Keep liquids below filter element (20);
- At approximately 6 month intervals it is advisable to remove the bowl assembly by removing the securing screws (28) and unscrewing the filter element (20) for inspection;
- Clean or replace filter element when dirty.

### B. Troubleshooting

| Issue | Possible Cause | Fixes |
|---|---|---|
| leakage between body and lower cup for FR, F, R | Seal damage | replace the o-ring (14) or contact SITECNA technical support for more information |
| no adjustment pressure for FR and R | Diaphragm or valve damaged | replace diaphragm assembly (8, 9, 10, 11) and valve assembly (15, 16) or contact SITECNA technical support for more information |
| pressure drop reaches or exceeds 10psig (0.7bar) | dirty filter element | replace filter element (20) or contact SITECNA technical support for more information |

After replacing repeat TESTING" phase

### C. Assembly

- Lubricate threads and nose of adjusting screw (1) at regular intervals with suitable grease.
- Lubricate seals with light coat of good quality grease
- Assemble the unit as shown on the exploded view.

## 11. MARKING ACORDING TO 2014/34/UEAtex

II 2G Ex h IIC T6/T5 Gb X
II 2D Ex h IIIC T85°C/T100°C Db X

For using these equipment in potentially explosive atmospheres, it is recommended - for the installation and the maintenance operation - to use tools and instruments that can produce only a single spark (for instance: screwdrivers, spanners). Avoid use of tools that can produce sparks like disk saw or grinder.

Action must be taken to put to earth the units through a suitable connection, checking that all the metal components (fittings and pipe line) have to be equitable potential.

Equipment have to be installed in the corresponding zone according to the marking.

**NOTE: special conditions for safe use (X conditions)**

Before performing any work, read this manual and assure yourself you understand. X at the end of ATEX sobstitutes T amb depending on used seales based on the following corrispondance:

Series VB, EP, VSR, LK04: NBR=-20°C+80°C, FMK=-25°C+90°C, EPDM= -40°C+80°C, FVMQ & HNBR= -60°C+90°C
Series: DP, RF, LK08, TF: NBR=-20°C+80°C, FMK=-25°C+90°C, EPDM= -40°C+80°C, FVMQ & HNBR= -55°C+90°C
Serie FP: -30°+180°C / Series SLHF, SLVP, SLSC: -55°C+150°C
Serie PV, PVSL: -20°C +80°C / Serie SCLP: 2°C+80°C
Serie FLGS: -20°C+90°C / Serie VS: -50°C+230°C

SITECNA®
Flow Control Technologies

Trace No: xxxx

## Dichiarazione di conformità UE
In accordo con la Direttiva Europea 2014/34/UE

## EU-Declaration of Conformity
In accordance with Directive 2014/34/EU

Noi, Sitecna Srl, dichiariamo che i seguenti prodotti / Sitecna Srl declares that the following equipment:

| Product | mod. | Product | mod. | Product | mod. |
|---|---|---|---|---|---|
| Filter | **F** | Control spool valve | DP | Vacuum pump | ST-VP |
| Regulator | R | Poppet Valves | EP | Silencer | SLHF, SLVP, SLSC |
| Filter Regulator | FR | Quick exhaust valve | VSR | Dust excluder | PV, PVSL |
| Back Pressure valve | BP | Lock-up valve | LK | Pressure gauge | MBSS, MBS6, MBSN |
| 2 ways switching valve | SV | Overload protector | SCLP | Vacuum pump | ST-VP |
| 3 ways switching valve | S3 | Flow regulator | RF | Ball valve | VS |
| Volume Booster | VB | Tee Filter | TF | | |

Sono conformi alla normativa di armonizzazione dell'Unione / They comply with the Union harmonization legislation:

| | |
|---|---|
| **Direttiva 2014/34/UE ATEX** | Direttiva 2014/34/UE del Parlamento europeo e del Consiglio, del 26 febbraio 2014, concernente l'armonizzazione delle legislazioni degli Stati membri relative agli apparecchi e sistemi di protezione destinati a essere utilizzati in atmosfera potenzialmente esplosiva (rifusione) Testo rilevante ai fini del SEE. |
| | Directive 2014/34/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to equipment and protective systems intended for use in potentially explosive atmospheres (recast) Text with EEA relevance. |

Secondo le seguenti Norme di riferimento / As per folowing reference Normative Documents:

| | |
|---|---|
| **EN ISO 80079-36:2016** | Atmosfere esplosive - Apparecchi non elettrici per atmosfere esplosive - Metodo di base e requisiti |
| | Explosive atmospheres - Non-Electrical equipment for explosive atmospheres - Basic method and requirements |
| **EN ISO 80079-37:2016** | Atmosfere esplosive - Apparecchi non elettrici per atmosfere esplosive – Tipo di protezione non elettrica per sicurezza costruttiva "c", per controllo della sorgente di accensione "b", per immersione in liquido "k" |
| | Explosive atmospheres - Non-Electrical equipment for explosive atmospheres - Non-electrical type of protection constructional safety "c", control of ignition sources "b", liquid immersion "k" |
| **N 1127-1:2011** | Atmosfere esplosive - Prevenzione dell'esplosione e protezione contro l'esplosione - Concetti fondamentali e metodologia |
| | Explosive atmospheres - Explosion prevention and protection - Basic concepts and methodology |

Ai sensi della Direttiva 2014/34/EU, i prodotti sopra indicati riportano la seguente marcatura / According to the Directive 2014/34/EU, above mentioned products reports the following marking:

**II 2G Ex h IIC T6/T5 Gb X**
**II 2D Ex h IIIC T85°C/T100°C Db X**

Inoltre, ai sensi della direttiva 2014/34/UE, i prodotti sopra menzionati sono oggetto, per gli aspetti relativi sia alla progettazione sia alla fabbricazione, al controllo interno di fabbricazione (Allegato VIII – Modulo A). **Ref 557/Ex-Ab 3213/20 c/o N° 0035 TÜV Rheinland.**
In conformity to Directive 2014/34/EU, the afore mentioned equipment, regarding their design and production, are object to internal manufacturing check (Attachment VIII – Module A). **Ref 557/Ex-Ab 3213/20 c/o N° 0035 TÜV Rheinland.**

La presente dichiarazione di conformità è rilasciata sotto la responsabilità esclusiva del fabbricante.
This declaration of conformity is issued under exclusive responsibility of the manufacturer.

Milan, 08/02/2022
Davide Matteo De Corrado
**Managing Director**

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# PART 2-CERTIFICATION DOSSIER

# Section 2.2

Inspection and test plan

# Base Load Power Hub (BLPH)

## INSPECTION AND TEST PLAN STRUCTURE
## CONTROL VALVES

Document Number: 1724000740-QC-ITP-00002

| ROSETTI MARINO | |
|---|---|
| 1 | NO COMMENTS - APPROVED - WORK MAY PROCEED |
| 2 | MINOR COMMENTS - REVISE AND RESUBMIT - WORK MAY PROCEED |
| 3 | MAJOR COMMENTS – REJECTED – DO NOT PROCEED |
| 4 | APPROVAL NOT REQUIRED |
| *NOTE: Approval doesn't relieve the supplier from mandatory compliance with contractual documents and specifications. Comments made do not imply acceptance of any cost or delivery impact.* | |
| Sign | Date |
| | 19/10/2024 |

Document Class: 2

| Rev. | Date | Description | Prepared | Reviewed | Approved |
|---|---|---|---|---|---|
| 04 | 20/09/2024 | Accepted for Construction (AFC) | L.P. | E.M. | L.P. |
| 03 | 07/08/2024 | Accepted for Construction (AFC) | L.P. | E.M. | L.P. |
| 02 | 16/07/2024 | Accepted for Construction (AFC) | L.P. | E.M. | L.P. |
| 01 | 05/06/2024 | Issue for Review (IFR) | L.P. | E.M. | L.P. |
| 00 | 13/05/2024 | Issue for Review (IFR) | L.P. | E.M. | L.P. |

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## Revision / Change Log

| Rev. | Description |
|---|---|
| *00* | *Issue for Review (IFR)* |
| *01* | *Issue for Review (IFR)* |
| *02* | *Accepted for Construction (AFC)* |
| *03* | *"Minor comments reviewed"; Accepted for Construction (AFC)* |
| *04* | (W) points Reviewed Accepted for Construction (AFC) |
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## HOLDS LIST

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# 1 INTRODUCTION

## 1.1 PROJECT OVERVIEW

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

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

### 1.1.1 Project Location

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

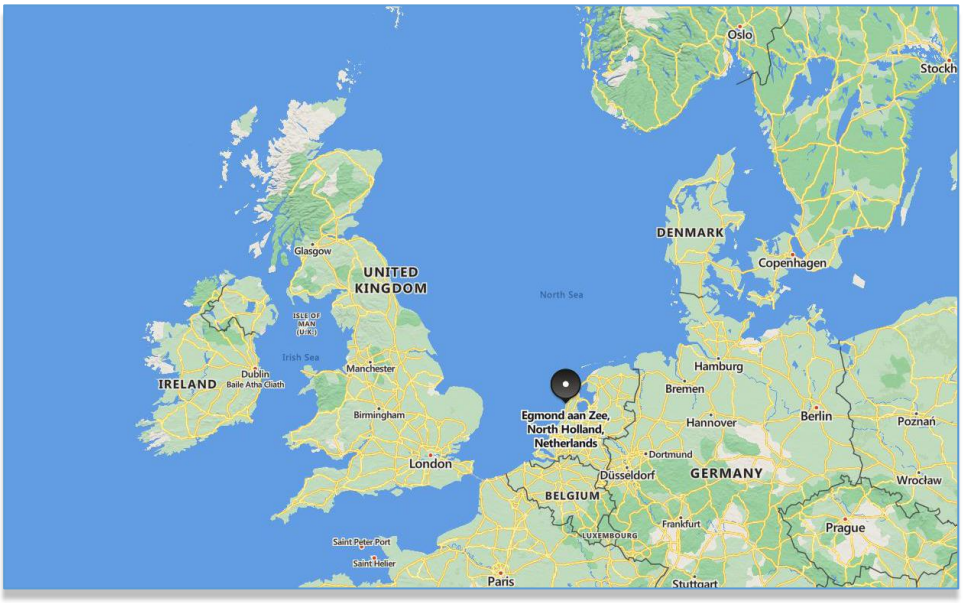



*Figure 1 HOLLANDSE KUST NOORD WIND PARK Location Map*




*Figure 2 - Wind Park Details*

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

### 1.1.2 Project Concept

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

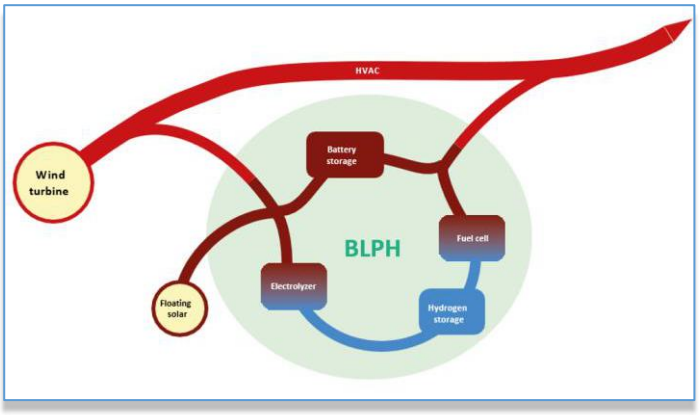



*Figure 3 – BLPH Concept*

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

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

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# 2 DOCUMENT PURPOSE AND SCOPE

This plan defines inspections and tests to be carried out to verify quality requirements identified in all contractual documents: Drawings, Specification, Codes and Standards latest revisions.

This document shall be applied to structural fabrication and erection activities for Base Load Power Hub (BLPH), including sea fastening and grillage. Disciplines other than structural are covered by dedicated project ITPs.

## 2.1 REFERENCES

| Doc. No. | Description |
|---|---|
| | |
| | |

*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 |
| CA | Certification Agency |
| DS | Surveyor |
| EXP | Expediting dept. |
| LOG | Logistic Dept. |
| NDE | Non Destructive Examination |
| PQR | Procedure Qualification Record |
| QC | Quality Control Dept. |
| QCI | Quality Control Inspector |
| SC | Sub-contractor |
| WI | Welding Inspector |
| WLD | Welding Dept. |
| WQR | Welder Qualification Record |
| WPS | Welding Procedure Specification |

*Table 2 - Definitions and Abbreviations*

# 3 RESPONSIBILITIES

## 3.1 PROJECT QUALITY MANAGER

The PQM shall assure that :

- the project quality requirements are implemented through all phase of the project;
- project works are properly controlled, inspected, tested and documented.
- The required documentation for certification purpose is submitted to CPY for review and signature on continuous basis;
- fabrication facilities are properly maintained and/or calibrated according to contractors and project quality standards ; all personnel holds required competence level and training in compliance with project specifications

## 3.2 QC INSPECTOR (QCI) / WELDING INSPECTOR (WI)

QCI / WI shall:

- perform the checks and tests as stated in responsibility column of this ITP;
- document the inspections issuing proper inspection reports;
- produce daily welding monitoring reports
- supervise and monitor the activities on site;
- interface with the CPY QA/QC site representative for the management of the inspection;
- notify the inspections to be attended to the CPY QA/QC site representative.
- coordinate all NDE activities;
- mark-up repairs area to be excavated in line with NDE report and control weld repairs (mark-up of areas to be repaired should be managed and independently performed by the NDE operator. Judgement of welds including characteristics of any repair shall be ensured the sole responsibility of the NDE operator).

## 3.3 NDE OPERATOR

The NDE operator shall :

- be suitably qualified (certified) in accordance with project requirements
- perform NDE according to the project requirements and applicable procedure, and ensure that NDE results shall be concluded subsequently after the inspection (at least daily), ensuring that inspection results are preserved and maintained
- prepare inspection reports within 48 hours from the inspection

## 3.4 DIMENSIONAL CONTROL ENGINEER

The dimensional control engineer shall:

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- carry out dimensional check
- issue dimensional reports, including relevant mark-up drawing
- Surveys will be carried out for the following items and steps :
  - Upper grillage subassemblies as-built
  - Upper grillage assembly, positioning and as-built
  - Topside structure subassemblies, as-built
  - Topside structure assemblies (by level), as built
  - Primary nodes at fit-up stage
  - Primary nodes as-built
  - Overall structure, including interfaces, as-built

## 3.5 SUB-CONTRACTOR

Subcontractor (1) shall:

- provide resources suitable for the required quality level, in terms of both personnel and equipment; RM has the right to reject or ask for replacement at any time in case of inadequate resources
- comply with instructions and coordination by RM construction supervisors
- execute the work in accordance with project requirements, by applying RM procedures and CPY specifications referenced in this document, supported by RM construction and inspection personnel

*(1) for the purpose of this document "subcontractor" is intended as the organization providing resources and executing fabrication activities, with supervision by RM Construction Dept. and Quality Control by RM QC Dept. Such subcontractors may execute the work both within RM premises (yard, workshop) or in external workshops.*

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# 4 NOTIFICATION FOR INSPECTION

CPY and CA site surveyor shall be notified for inspection attendance by means of "Notification for Inspection" form, containing all details on the inspection, sent by e-mail to the CPY QA/QC site representative and CA surveyor. The notification shall be issued to CPY and CA at least 24 hours in advance for site inspections and 48 hours in advance for local off-site inspections. In case of emergencies, such notification can be sent even with shorter notice, provided it has been previously agreed upon.

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# 5 INSPECTION RECORDS

Inspection records shall be made available for CPY and CA in due time after completion of activities. Original records shall be filed in the CTR QC dept. and made available for CPY and CA re-view at any time.

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# 6 INTERVENTION POINTS DESCRIPTION

| Code | Description |
|---|---|
| M | Routine intervention (Monitoring).<br>Activities concerned shall be continuously monitored. Monitoring activities are not formalised. |
| S | Percentage intervention (Spot).<br>Activities shall be monitored in percentage. The intervention is formalised by issuing a document related to the specific activity (report, certificate or control report). |
| R | Documentation review (Review).<br>Certificates, reports and documents issued for the specific activity foreseen by the Quality Control Plan shall be checked. Personnel in charge of controls shall formalise the review by signing relevant documents. |
| W | Witnessed intervention (Witness).<br>CPY and\or CA shall be notified in written; should CPY and\or CA not be present at notified date and time, the activity may proceed. |
| H | Hold point (Hold).<br>CPY and\or CA shall be notified in written; should CPY and\or CA decide not to witness the activity, the waiver shall be in written. In case the activity is not waived, it shall not proceed until CPY and\or CA are present. |

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# 7 INSPECTION AND TEST

| Step | Step Description | Inspection/Test Requirement | Resp. | Reference Document / n. project document if applicable | Acceptance Criteria | Ref. Record | Intervention Point | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | *NOTE | AST | RM | CW |
| 01 | Procurement / inspection of components | AST Purchase Order | AST | QSM 8.4<br>TEC028<br>1724000740-IN-DD-00005<br>1724000740-IN-DA-00004<br>1724000740-IN-DG-00006<br>1724000740-IN-DS-00003<br>1724000740-IN-DS-00007 | AST FOR,<br>ASTM std.,<br>ASME std.<br>DWG | - | 1 | H | R | R |
| 01a | Raw material for body, bonnet:<br>-chemical analysis;<br>-heat treatment;<br>-mechanical properties; | AST Purchase Order | AST | AST Purchase Order<br>1724000740-IN-DD-00005<br>1724000740-IN-DA-00004<br>1724000740-IN-DS-00007 | AST FOR001<br>A351 CF3M; A479 316L<br>A350 LF2 | Material certificates<br>EN 10204 3.1 | 1,3 | H | R | R |
| 01b | Raw material for<br>stem, plug and seat:<br>- chemical analysis;<br>heat treatment; | AST Purchase Order | AST | AST Purchase Order<br>1724000740-IN-DD-00005<br>1724000740-IN-DA-00004<br>1724000740-IN-DS-00007 | AST FOR002; AST FOR003<br>ASTM A 479 316L | Material certificates<br>EN 10204 3.1 | 1,3 | H | R | R |

| Step | Step Description | Inspection/Test Requirement | Resp. | Reference Document / n. project document if applicable | Acceptance Criteria | Ref. Record | Intervention Point | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | *NOTE | AST | RM | CW |
| | mechanical properties; | | | | | | | | | |
| 01c | PMI on body bonnet | AST Purchase Order | AST | NDT004<br>1724000740-NDT-PRO-00009 | ASTM / ASME II ref | PMI Test Report | | H | R | R |
| 01d | PT check on machined plug/seats | AST Purchase Order | AST | ASME VIII Div.1 App.7;8.<br>AST procedure PT001<br>1724000740-NDT-PRO-00009 | ASME VIII Div.1 App.7;8. | PT Test Report | | H | R | R |
| 02 | Machining | DWG related<br>Work order | AST | AST Purchase Order<br>1724000740-IN-DD-00005<br>Work internal order | Work order | AST production schedule | | H | - | - |
| 03 | Hydrostatic test of body (including marking) – DIS-assemble valve | AST Purchase Order | AST | PI0001<br>1724000740-QC-PRO-00010 | EN 12266-1<br>ASME B16.34<br>EN ISO 4126-1 | Test Report | 2 | H | W | W |
| 04 | Visual, dimensional and tagging check | AST Purchase Order | AST | QSM 8.5<br>PI0049<br>1724000740-IN-DD-00005<br>1724000740-IN-LIS-00012 | Nameplate drawings<br>Dimensional drawings<br>Work order | AST Instrument record sheet | | H | R | M/R |

| Step | Step Description | Inspection/Test Requirement | Resp. | Reference Document / n. project document if applicable | Acceptance Criteria | Ref. Record | Intervention Point | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | *NOTE | AST | RM | CW |
| 05 | Calibration Control of measurement instruments used for tests | AST Purchase Order | AST | PI0003<br>PI0013 | AST Instrument record sheet | AST Instrument record sheet | 1 | H | R | M/R |
| 06 | Machining & assembling parts | DWG related<br>Work order | AST | 1724000740-IN-DD-00005<br>1724000740-IN-DG-00006<br>AST Purchase Order<br>Work order | Work order | AST production schedule | | H | - | - |
| 07 | Seat tightness, by pass and valve assembled test | AST Purchase Order | AST | PI0014<br>1724000740-QC-PRO-00011 | IEC 60534-4 | Test Report | 2 | H | W | W |
| 08 | Packing tightness test | AST Purchase Order | AST | PI0014<br>1724000740-QC-PRO-00011 | IEC 60534-4 | Test Report | | H | W | W |
| 09 | Pneumatic circuit tightness test | AST Purchase Order | AST | PI0014<br>1724000740-QC-PRO-00011 | IEC 60534-4 | Test Report | | H | W | W |

| Step | Step Description | Inspection/Test Requirement | Resp. | Reference Document / n. project document if applicable | Acceptance Criteria | Ref. Record | Intervention Point | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | *NOTE | AST | RM | CW |
| 10 | Functional verification tests instruments & actuator valves | AST Purchase Order | AST | PI0014<br>1724000740-QC-PRO-00011 | IEC 60534-4 | Test Report | | H | W | W |
| 10a | Control Valve fugitive emissions | Helium test (as Production test ISO15848-2) | AST | PI0063<br>1724000740-IN-PRO-00020 | ISO 15848-2. | Test Report | 4 | H | R | W |
| 11 | Painting check (DFT and final color check)<br>FROSIO LIV.II | AST Purchase Order | AST | QSM 8.5<br>1724000740-MAT-PRO-00008 | TEC-015 1A for CS valve & actuators<br>TEC-015 6C for SS<br>CV2400221_PI0060 | Test Report | | H | W | W |
| 12 | Packing and preparation for shipping | AST Purchase Order | AST | PI0018<br>1724000740-QC-PRO-00019 | Packing list | - | | H | R | R |
| 13 | Review of final certificates | AST Purchase Order | AST | QSM 9.2.8<br>1724000740-QC-LIS-00013<br>1724000740-MD-LIS-00001 | VDRL | MRB | | H | R | R |
| 14 | Issue IRN (inspection Release Note) | - | AST | Client's condition / AST Purchase Order<br>1724000740-QC-DB-00016 | Client's condition / MRB | IRN | | R | H | R |

*NOTE:

1) FOR THESE ACTIVITIES "HOLD POINT" BY CUSTOMER IS NOT ACCEPTED
2) A.S.T. INTERNAL PROCEDURES ARE SENT FOR INFORMATION / APPROVAL ONLY – CUSTOMIZATION OF PROCEDURES NOT AGREED / NOT INCLUDED FOR THE JOB IF REQUIRED BY THE CUSTOMER A JOB SPECIFIC PROCEDURE CAN BE ISSUED AFTER CONTRACTUAL AGREEMENT
3) FOR THESE ACTIVITIES "HOLD POINT" BY CUSTOMER IS NOT ACCEPTED
4) Helium test (as production test ISO15848-2) on 1 valve / size; in detail on: "DETAIL DRAWING INCLUDING NAMEPLATE DRAWING - CONTROL VALVES (AST) Document Number: 1724000740-IN-DD-00005", please see that FET test will be executed on 1 tag N° for DWG 240221-0200OD; 1 tag N° for DWG 240221-0300OD. Total 2 valves included for FET tests.

# PART 2-CERTIFICATION DOSSIER

# Section 2.3

Painting report

# PAINTING REPORT

| PAINTING REPORT No. *240221-L1* | PAGE: 1/1 | DATE: 13/11/2024 |
|---|---|---|

## IDENTIFICATION DATA

| CUSTOMER: *ROSETTI MARINO S.P.A.* | CUSTOMER ORDER: *1724000740 123A90A* |
|---|---|
| JOB NO.: *CV2400221* | PLANT REF.: *Wind Farm Hollandse Kust Noord Wind Park Project* |

MATERIAL DESCRIPTION: *NR. 2 CONTROL VALVES*
*S.N.:2400597/2400598*

## WEATHER CONDITIONS, STEEL and SURFACE PREPARATION

| | | | |
|---|---|---|---|
| DATE – TIME: *09/10/2024 7.10 AM* | | STEEL PREPARATION - ISO 8501-3: | P2 |
| BLOTTER TEST- ASTM D 4285: | OK | ABRASIVE TYPE and SIZE - ISO 11126 | CORUNDUM #20 |
| AIR TEMPERATURE – ISO 8502-4: | *20.7* °C | BLAST PROFILE - ISO 8503-2/5: | MEDIUM G / 58µm |
| STEEL TEMPERATURE– ISO 8502-4: | *22°C* | DUST CLEANLINESS- ISO 8502-3 | CLASS 1 RATING 1 |
| RELATIVE UMIDITY – ISO 8502-4: | *77 %* | WATER SOLUBLE SALTS- ISO 8502-6/9 | 9.9 mg/m2 |
| DEW POINT - ISO 8502-4: | *16* °C | / | |
| DEGREE OF CLEANLINESS: *SSPC-SP1: DONE SSPC-SP10 ISO 8501-1 Sa2 ½* | | Note: | |

## *APPLICATION*

PAINTING PROCEDURE: CV2400221_PI0060 - SYSTEM L1

| TYPE of COATS | PRIMER | INTERMEDIATE | INTERMEDIATE | TOP COAT | TYPE of INSTRUMENTS |
|---|---|---|---|---|---|
| Environmental Conditions | Date: 09/10/2024<br>Hour: 8 AM<br>Air T:21°C<br>Surface T:22°C<br>RH%: 71%<br>Dew Point: 15°C | Date:<br>Hour:<br>Air T:<br>Surface T:<br>RH%:<br>Dew Point: | Date:11/11/2024<br>Hour:7 AM<br>Air T:18°C<br>Surface T:17°C<br>RH% 49.4%<br>Dew Point: 7°C | Date:12/11/2024<br>Hour:7.30 AM<br>Air T: 20°C<br>Surface T: 18°C<br>RH%: 47%<br>Dew Point: 8°C | B107AM7151<br>B107AM7128 |
| STRIPE COAT by brush/roller | YES | / | YES | YES | / |
| APPLICATION METHOD | CONV. SPRAY | / | CONV. SPRAY | CONV. SPRAY | / |
| PRODUCT TYPE | ORGANIC ZINC RICH EPOXY PRIMER | / | MODIFIED EPOXY MASTIC | ALIPHATIC POLYURETHANE | / |
| BRAND NAME | CARBOZINC 858 | / | CARBOMASTIC 15 LT ATEX | CARBOTHANE 134 HP | / |
| BATCH NUMBER A)<br>B) | 240508005A<br>240729018A | / | 240802044A<br>240801012A | 230728012A<br>240417004A | / |
| Thinner N°<br>% BV<br>BATCH | 2<br>10<br>TH2221220 | / | 2<br>15<br>TH2221220 | 25<br>15<br>0804202403C | / |
| COLOUR<br>*COLORE* | GREY | / | BLACK | 9002 | / |
| DFT REQUIRED µm | 60µm | / | 190µm | 50µm | / |
| WFT APPLIED. µm | 225µm | / | 300µm | 125µm | / |
| ISO 19840 DFT µm | 132-25=107µm | / | 347-25=332µm | 414-25=389µm | B107AM7151 |
| VISUAL CHECK | CONFORM | / | CONFORM | CONFORM | CONFORM |
| MEK TEST ASTM D 4752 for inorganic zinc only | / | / | / | / | / |
| *NOTE:* | | | | | |

| Q.C. SIGNATURE<br>*FIRMA CONTROLLO QUALITA'* | INSPECTOR SIGNATURE<br>*FIRMA ISPETTORE* | INSPECTOR SIGNATURE<br>*FIRMA ISPETTORE* | INSPECTOR SIGNATURE<br>*FIRMA ISPETTORE* |
|---|---|---|---|
| DATE:13/11/2024 | DATE: | DATE: | DATE: |

GIUSEPPE GRAZIANO FROSIO NS 476 CERTIFICATE n° 10646

20-11-2024 FRANCO CORBELLINI QBQ

L. FONTANA ON BEHALF OF Rosetti Marino S.p.A ☐ REVIEW ☒ WITNESS 20-11-2024

# PAINTING REPORT

| PAINTING REPORT No. *240221-6C* | PAGE: 1/1 | DATE: 12/11/2024 |
|---|---|---|

## IDENTIFICATION DATA

| CUSTOMER: *ROSETTI MARINO S.P.A.* | CUSTOMER ORDER: *1724000740 123A90A* |
|---|---|
| JOB NO.: *CV2400221* | PLANT REF.: *Wind Farm Hollandse Kust Noord Wind Park Project* |

MATERIAL DESCRIPTION NR. 14 CONTROL VALVES
S.N.:*2400583/2400584/2400585/2400586/2400587/2400588/2400589/2400590/2400591/2400592/2400593/2400594/2400595/2400596*

## WEATHER CONDITIONS, STEEL and SURFACE PREPARATION

| | | | |
|---|---|---|---|
| DATE – TIME: *14/10/2024 7.00 AM* | | STEEL PREPARATION - ISO 8501-3: | P2 |
| BLOTTER TEST- ASTM D 4285: | OK | ABRASIVE TYPE and SIZE - ISO 11126 | CORUNDUM #20 |
| AIR TEMPERATURE – ISO 8502-4: | *21* °C | BLAST PROFILE - ISO 8503-2/5: | MEDIUM G / 41µm |
| STEEL TEMPERATURE– ISO 8502-4: | *22*°C | DUST CLEANLINESS- ISO 8502-3 | CLASS 1 RATING 1 |
| RELATIVE UMIDITY – ISO 8502-4: | *67.6%* | WATER SOLUBLE SALTS- ISO 8502-6/9 | 11.4 mg/m2 |
| DEW POINT - ISO 8502-4: | *14*°C | / | |
| DEGREE OF CLEANLINESS:<br>*SSPC-SP1: DONE SSPC-SP16* | | Note: | |

## *APPLICATION*

PAINTING PROCEDURE: PI0060 - SYSTEM 6C

| TYPE of COATS | PRIMER | INTERMEDIATE | INTERMEDIATE | TOP COAT | TYPE of INSTRUMENTS |
|---|---|---|---|---|---|
| Environmental Conditions | Date:14/10/2024<br>Hour: 7.30 AM<br>Air T: 21°C<br>Surface T: 22°C<br>RH%: 67.6%<br>Dew Point: 14 °C | Date:<br>Hour:<br>Air T:<br>Surface T:<br>RH%:<br>Dew Point: | Date:<br>Hour:<br>Air T:<br>Surface T:<br>RH%<br>Dew Point: | Date:11/11/2024<br>Hour: 8 AM<br>Air T: 20°C<br>Surface T: 21°C<br>RH%: 43.5%<br>Dew Point: 21°C | B107AM7151<br>B107AM7128 |
| STRIPE COAT by brush/roller | YES | / | / | YES | / |
| APPLICATION METHOD | CONV. SPRAY | / | / | CONV. SPRAY | / |
| PRODUCT TYPE | EPOXY PHENOLIC | / | / | EPOXY PHENOLIC | / |
| BRAND NAME | THERMALINE 440 | / | / | THERMALINE 440 | / |
| BATCH NUMBER A)<br>B) | 231025052A<br>231004039A | / | / | 240620052A<br>240111001A | / |
| Thinner N°<br>% BV<br>BATCH | 33<br>5<br>100520242 | / | / | 33<br>5<br>100520242 | / |
| COLOUR<br>*COLORE* | RAL 7032 | / | / | RAL 9002 | / |
| DFT REQUIRED µm | 125µm | / | / | 125µm | / |
| WFT APPLIED. µm | 350µm | / | / | 385µm | / |
| ISO 19840 DFT µm | 171-25=146µ | / | / | 362-25=337µm | B107AM7151 |
| VISUAL CHECK | CONFORM | / | / | CONFORM | / |
| MEK TEST ASTM D 4752 for inorganic zinc only | / | / | / | / | / |
| *NOTE:* | | | | | |

| Q.C. SIGNATURE<br>*FIRMA CONTROLLO QUALITA'* | INSPECTOR SIGNATURE<br>*FIRMA ISPETTORE* | INSPECTOR SIGNATURE<br>*FIRMA ISPETTORE* | INSPECTOR SIGNATURE<br>*FIRMA ISPETTORE* |
|---|---|---|---|
| DATE:12/11/2024 | DATE: | DATE: | DATE: |

GIUSEPPE GRAZIANO FROSIO NS 476 CERTIFICATE n° 10646

20-11-2024
FRANCO CORBELLINI
QBQ
W/R

L. FONTANA
ON BEHALF OF ROSETTI MARINO S.p.A
☐ REVIEW ☒ WITNESS
20-11-2024

| | | |
|---|---|---|
| | CERTIFICATO COLLAUDO MISURATORE SPESSORE VERNICE<br>*(paint thickness gauge test certificate)* | CODICE AST (AST code):<br>B107AM7151<br>DATA (date):<br>25/11/2022 |

**DESCRIZIONE MISURATORE SPESSORE VERNICI** *(paint thickness gauge description)*

| | | | |
|---|---|---|---|
| CAMPO DI MISURA | *(range):* | | **1500 µm** |
| MODELLO | *(model)* | : | **PosiTector 6000 FNS Probe - DeFelsko** |
| NUMERO DI SERIE | *(serial number)* | : | **1028947** |
| PRECISIONE | *(precision)* | : | **0-50 µm ± (1,0 µm + 1% of reading) / >50 µm ± (2,0 µm + 1% of reading)** |
| COLLOCAZIONE | *(collocation)* | : | **PAINTING** |

**DATI DEL COLLAUDO** - *test data*

STRUMENTO DA CALIBRARE PRIMA DI OGNI UTILIZZO CON SPESSORI PLASTICI B107AM7117 O B107AM7149
*instrument to be calibrated before every use with plastic shims code B107AM7117 or B107AM7149*

COLLAUDO EFFETTUATO IN ACCORDO ALLA PROCEDURA PI0013
*(test performed according to PI0013)*

| FIRMA Q.C. *(Q.C. signature)* | FIRMA Q.A. *(Q.A. signature)* |
|---|---|
| A.S.T. S.p.A. | A.S.T. S.p.A. Quality Assurance |

Mod_045 Scheda Strumenti di Misura

# PART 2-CERTIFICATION DOSSIER

# Section 2.4

Surface preparation and painting procedures

Base Load Power Hub (BLPH)

# SURFACE PREPARATION AND PAINTING PROCEDURES - CONTROL VALVES (AST)

25-FV-031, 25-FV-032, 25-FV-033, 25-FV-034, 25-FV-036, 25-FV-038
25-PV-035, 25-PV-037, 25-PV-040, 25-PV-043, 25-PV-046, 25-PV-049
25-PV-055A, 25-PV-055B, 64-PV-031A, 64-PV-031B

Document Number: 1724000740-MAT-PRO-00008

Document Class: 2

ROSETTI MARINO

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

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

| Sign | Date |
|---|---|
| Michele Sacchi | 15-11-2024 |

| Rev. | Date | Description | Prepared | Reviewed | Approved |
|---|---|---|---|---|---|
| 05 | 13/11/2024 | Approved for Construction (AFC) | EM | AI | EM |
| 04 | 30/09/2024 | Approved for Construction (AFC) | EM | AI | EM |
| 03 | 31/07/2024 | Approved for Construction (AFC) | EM | AI | EM |
| 02 | 12/07/2024 | Issue for Review (IFR) | EM | AI | EM |
| 01 | 26/06/2024 | Issue for Review (IFR) | EM | AI | EM |
| 00 | 31/05/2024 | Issue for Review (IFR) | EM | AI | EM |




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| SH. | DESCRIPTION | REVISIONS | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 00 | 01 | 02 | 03 | 04 | 05 | | |
| 1 | Cover | X | X | X | X | X | X | | |
| 2 | Table of Contents | X | X | X | X | X | X | | |
| 3 | Revision / Change Log | X | X | X | X | X | X | | |
| 4 | References | X | X | X | X | X | X | | |
| 5 | Surface Preparation and Painting Procedures | X | X | X | X | X | X | | |





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Revision / Change Log

| Rev. | Description |
|---|---|
| 00 | ISSUE FOR REVIEW (IFR) |
| 01 | ISSUE FOR REVIEW (IFR) |
| 02 | ISSUE FOR REVIEW (IFR) |
| 03 | APPROVED FOR CONSTRUCTION (AFC) |
| 04 | APPROVED FOR CONSTRUCTION (AFC) |
| 05 | APPROVED FOR CONSTRUCTION (AFC) |
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| Rev | Date | Description | Issued | Checked | Approved |
|---|---|---|---|---|---|
| 2 | 30/09/2024 | Revised after Customer's comments | EM | AI | EM |
| 1 | 25/06/2024 | Revised after Customer's comments | EM | AI | EM |
| 0 | 31/05/2024 | Issue for approval | EM | AI | EM |

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## 1. PURPOSE

This document details AST Standard Specification for surfaces' treatment by painting of: Carbon Steel, Stainless Steel and HDG Valves.

The painting systems selected for Carbon steel and HDG, shall be in accordance with ISO 12944-2 and ISO 12944-5, for service temperature up to 120°C.

For operative temperature between 120°- 200°C epoxy phenolic system and for HT Inorganic zinc and Acryl Silicone or Silicone and Silicate resin shall be used.

For HT service, un-insulated or insulated surfaces, ISO 12944 standard does not provide guidelines for coating systems with operative temperatures over 120°C.

This documents also refers to intermediate requirements needed for each single working step such as preparation, paint application, procedures and inspections.

The indications and instructions written by the manufacturer on the product technical data sheets have to be followed.
Any discrepancies and/or disagreements between the data sheets and this specification will be submitted to the Company for approval.

## 2. REFERENCE DOCUMENTS

Company documents:

- Customer's Purchase Order 1724000740 123A90A
- Customer's Painting Specification 123A90-DDL-MAT-SP-60006
- Norsok M501 for controlling surface preparation and coating standard.
- AST Painting system:
    - TEC015_L1 (Valves in CS material &Actuators) Final color : RAL 9002
    - TEC015_6C (Valves in SS material) Final color : RAL 9002

## 3. STANDARDS

**ASTM D 4285 ED. 2018** Standards Test Method for indicating Oil or Water in compressed Air
**ASTM D 4228 ED.2023** Standard practice for Qualification of Coating Applicators for Application of Coating to steel surface
**ASTM D 3359 ED.2023** Standard Test Method for measuring adhesion by tape test
**ASTM D 4752 ED.2020** Standard Test Method for measuring MEK resistance of inorganic zinc rich primer by solvent rub
**ASTM D 4414 ED.2020** Standard practice for measurement of WFT by WF gauge
**ASTM D 4417 ED.2021** Standard Test Methods for Field Measurement of Surface Profile of Blast Cleaned Steel Method CD
**ASTM D 4541 ED.2022** Standard Test Method for measuring adhesion by pull off test
**ISO 8501-1 ED.2007** Preparation of steel substrates before application of paint and related products- Visual assessment of surface cleanliness- Part 1: Rust grades and preparation grades of uncoated steel substrates after overall removal of previous coatings
**ISO 8501-3 ED.2006** Preparation of steel substrates before application of paint and related products- Visual assessment of surface cleanliness- Part 3: Preparation grades of welds, edges and other areas with surface imperfections
**ISO 8502-3 ED.2017** Preparation of steel substrates before application of paint and related products- Test for the assessment of surface cleanliness- Part 3: Assessment of dust on steel surfaces prepared for painting (pressure sensitive

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tape method)

**ISO 8502-4 ED.2017** Preparation of steel substrates before application of paint and related products- Test for the assessment of surface cleanliness- Part 4: Guidance on the estimation of the probability of condensation prior to paint application
**ISO 8502-6 ED.2017** Preparation of steel substrates before application of paint and related products- Test for the assessment of surface cleanliness- Part 6: Extraction of soluble contaminants for analysis- Test Bresle Method
**ISO 8502-9 ED.2017** Preparation of steel substrates before application of paint and related products- Test for the assessment of surface cleanliness- Part 9: Field method for the conductometric determination of water-soluble salts

**ISO 8503-5 ED.2017** Preparation of steel substrates before application of paints and related products-Surface roughness characteristics of blast cleaned steel substrates- Part 5: Replica tape method for the determination of the surface profile (as ASTM D 4417)
**ISO 8504-2 ED.2020** Preparation of steel substrates before application of paint and related products- Surface preparation method- Part 2: Abrasive blast-cleaning
**ISO 8502-3 ED.2017** Preparation of steel substrates before application of paints and related products- Surface preparation method- Part 3: Hand-and power-tool cleaning
**ISO 11126-7 ED.2018** Preparation of steel substrates before application of paints and related products- Specifications for non-metallic blast-cleaning abrasives- Part 7: Fused Aluminum Oxide
**ISO 12944-5 ED.2019** Paints and varnishes- Corrosion protection of steel structures by protective paint system- Part 4: Types of surface and surface preparation
**ISO 12944-5 ED.2019** Paints and Varnishes-Corrosion protection of steel structures by protective paint system- Part 5: protective paint system
**ISO 17024 ED.2012** Conformity assessment- General requirements for bodies operating certification of persons
**ISO 19840 ED.2012** Measurement of and acceptance criteria for, the thickness of dry films on rough surface
**SSPC-SP 1 ED.2016** Solvent cleaning
**SSPC-PA2 ED.2022** Procedure for determining conformance to dry coating thickness requirements
**SSPC-SP 16 ED.2020** Brush-off Blast Cleaning of Coated and Uncoated Galvanized Steel, Stainless Steel, and Non-ferrous Metals

## 4. ABBREVIATIONS

PDS: Product data sheet

HDG: Hot dip galvanized

HT: High temperature

## 5. SAFETY

Any blast-cleaning or coating phase shall be carried out in accordance with all applicable local, national and international safety regulations.

Moreover, any paint, thinner, abrasive, material or equipment shall be used according to all applicable local, national and international safety regulations.

Product Data Sheets (PDS) shall be available in the facility where coating is applied for review.

All operators shall be provided with suitable safety personal equipment.

The use of solvents, paint, waste materials and cleaning materials shall be handled in strict accordance with PDS requirements and applicable local and national disposal procedures.

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## 6. AMBIENT CONDITIONS

Blast cleaning, coating application and paint curing shall not be performed in the following cases:

- When air temperature is <10°C (except for products suitable for low temperature applications);
- When air humidity is greater than 85%;
- When steel temperature is < 3°C above dew-point temperature.

Paint supplier shall specify the maximum and minimum application and curing temperature, and other relevant limitations regarding application and curing condition for each product.

## 7. UNPAINTED SURFACES

The following surfaces (if any) shall not be blast-cleaned and painted:

- RF Flanges;
- Machined surfaces.

All these surfaces shall be properly protected with tape rubber, plastic caps, etc. before proceeding with blast-cleaning and painting.

## 8. PRE-BLASTING PREPARATION

All items / components shall be thoroughly inspected to ensure that sharps, edges, fillets, corners and welds have been smoothened to achieve a minimum preparation grade P2 of ISO 8501-3.

All flame and plasma cut surfaces shall be ground smooth before blasting. Special attention shall be given to all welded areas for removal of weld flux, fumes, silvers, welding spatter and other foreign objects.

Any surfaces defects, particularly surface laminations or scrubs, which can likely cause a detrimental effect to protective coating system, shall be smoothened. Spot and discontinue welds shall not be allowed for ambient with Corrosivity C5 I\M as per ISO 12944-2.

Surface contaminants such as oil and grease shall be solvent cleaned as per SSPC-SP1. Soluble salt deposit, oil and any exogenous compounds shall be removed by steam or water pressure cleaning and brushing if necessary, in combination with detergent. The degreaser shall be further washed with fresh water to remove all traces of the degreaser chemicals.

## 9. SURFACE PREPARATION

The abrasive material for all surface shall be Corundum. It shall be dry, clean and free from oil, grease and other contaminants that could lead to detrimental effects to long term coating performance.

The compressed air used for blast-cleaning shall be free from water and oil. Adequate separators and traps shall be provided and these shall be kept emptied of water and oil.

Periodical check of the compressed air cleanliness shall be done according to Standard ASTM D 4285. Carbon Steel blasted surfaces, cleaned to SA 2.5-ISO 8501-1, shall have a roughness Medium G as per ISO 8503-2.

Stainless and HDG surfaces shall be blasted according to SSPC-SP 16, with minimum blast profile of 25µ.

Blast profile measurement shall be carried out in accordance with ISO 8503-5 Replica tape method. Welding spatter, silvers, laminations underlying mill scale removed during fabrication but still visible after blast cleaning operations shall be dressed and the edges smoothed or made flush. After surface preparation any grit, dust, etc, shall be removed. The residual particle quality and particle size shall not exceed dust size class 2 rating 2 of ISO 8502-3.

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Salt concentration (chloride) detected on the cleaned surface shall not exceed 30 mg\m² NaCl for all surface, when checked per ISO 8502\6 and 8502\9 (Bresle Method).

Test panels used to carry out the adhesion test (for each paint system), shall receive the same surface preparation of the components.

Final blast-cleaning shall not be done on any moist surface, or on surfaces that may become moist, before the application of primer.

## 10. PAINT APPLICATION

All paints provided shall be in closed, clearly identified containers.

No expired paint shall be used.

Containers shall remain un-opened before being used. Coating application shall be carried out within 4 hours after blast cleaning phase and before any rusting occurs. The blast-cleaned surface shall be vacuum cleaned or blown free of dust and other loose contaminants.

All application data shall be in accordance with the PDS of the paint Manufacturer.

The interval time between each coat of the paint system is indicated in the PDS of the paint Manufacturer.The type of thinner used shall comply with the Manufacturer's recommendation. Airless or conventional spray pumps shall be used. Stripe-coating with brush of edges, went corners and all irregular surfaces shall be performed to obtain the specified film thickness and to avoid paint holiday / jeep.

The blast-cleaned test panels shall be painted with the same paint, same method and at the same time of the component. During the drying and curing time, the freshly applied coating shall not come in contact with high RH%, water, handling equipment or any other that may impact the quality of coating, and shall be stored in a covered place protected from dust, wind and rain.

Over-coating time shall be recommended by the Paint Manufacturer in the PDS.

## 11. INSPECTION AND TESTING

| TEST TYPE | METHOD | FREQUENCY | ACCEPTANCE CRITERIA | CORRECTIVE ACTION IN CASE OF N.C. |
|---|---|---|---|---|
| **Blotter Test** | White adsorbent paper<br>ASTM D 4285 | Once per day | A piece of clean white absorbent paper shall be positioned at the air outlet. After about 1 min. of air discharge there shall be no trace of water / oil on the paper. | Any accumulated moisture and oil in the traps, separators and filters shall be emptied.<br>The air supply shall then be checked once again until conformity is achieved. |
| **Temperature**<br>**Relative Humidity**<br>**Dew point** | Thermo hygrometer<br>ISO 8502-4 | Before and during blasting / painting operations | Air Temperature min. 10°C, excluding those products which are suitable for at low temperature application.<br>See manufacturer PDS.<br>85% max.<br>Steel Temperature 3°C or more above DEW POINT TEMPERATURE. | Work can proceed only if these parameters are met. |

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| | | | | |
|---|---|---|---|---|
| **Visual Examination** | Visual<br>ISO 8501-3 | All surfaces | Sharp edges, fillets, corners, welds are dressed to achieve preparation grade P2 of ISO 8501-3. Flame and plasma cut surfaces are ground smooth. Welding is continuous. Raised slivers, burrs, scabs, weld spatter, laminations or hackles of steel are removed. | Non-Conformance items shall be kept aside. Vendor shall be notified. |
| **Pre-cleaning of surfaces** | Steam jet cleaner<br>SSPC-SP 1 | All surfaces | Surface contaminants such as oil and grease shall be cleaned with solvent as per SSPC-SP 1. Soluble salt deposits, soil and any exogenous compounds shall be removed by steam cleaning and brushing in combination with detergent. The degreased surfaces shall be further washed with fresh water to remove all traces of the degreaser chemicals. | If oil, grease and any exogenous compound is still visible on the surface the operations shall be repeated until accepted. |
| **Surface Preparation Cleanliness** | Blasting booth<br>SSPC-SP 16<br>ISO 8501-1 | All surfaces | For Carbon Steel the required visual standard of blast cleaning shall correspond to SA 2.5 Blast cleaning to visually clean steel as per SSPC-SP16. | Re-blasting and retesting until accepted. |
| **Water Soluble Salts** | Bresle-kit<br>ISO 8502-6<br>ISO 8502-9 | Spot checks | The salt concentration (chlorides) tested on the blast-cleaned surfaces shall not exceed 30 mg/m2 for all surfaces' types. | Washing with potable water and retesting until accepted. |
| **Blasted Surface Roughness** | Replica tape<br>NACE RP0287<br>ISO 8503-5 | Spot checks | For Carbon Steel the surface profile shall be 50 to 75 µm. For Stainless Steel the surface profile shall be 35 to 50 µm. | Re-blasting. |
| **Surface Dust Cleanliness** | Transparent adhesive tape<br>ISO 8502-3 | Spot checks | After surface preparation any grit, dust, etc. shall be removed. The residual particle quantity and particle size shall be class 2, rating 2. | Reclining and retesting until accepted. |
| **Wet Film Thickness** | Comb type<br>ISO 2808<br>Method 1° | Spot checks | As indicated in PDS. | Additional coating to be applied. |
| **Visual Inspection** | Visual | During all phases of coating application | The coating shall be Smooth, uniform in colour, free of runs, sags, visible paint holiday, blisters, orange peel, scratches, dust inclusions, solvent retention or any other irregularities. | Repair and repeat test. |

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| | | | | |
|---|---|---|---|---|
| **Dry Film Thickness** | Electromagnetic and eddy-current thickness gauge<br>ISO 2808 & ISO 19840 | See table 1<br>ISO 19840. | Gauge shall be calibrated at least once per shift on a smooth surface. Single measurement shall have min. value of 0,8 x NDFT (Nominal DryFilm Thickness) and max value as indicated in the Paint Manufacturer's PDS.<br>DFT values higher than those areas subjected to stripe-coating. | Repair, additional coats or recoating as appropriate. |
| **Adhesion Test** | PAT adhesion tester<br>ASTM D 4541<br>X-Cut or Cross –Cut<br>ASTM D 3359 | One test panel for each paint system. | Performed on the coated test panels when the coating system is fully cured.<br>Minimum acceptable adhesion value:<br>Pull Off: 5 MPa.<br>X-Cut: 4A<br>Cross-Cut: 4B | In case of poor Adhesion, test is repeated on the coated surfaces of the items. If test fails again, the items shall be blast-cleaned and coated again. |

**Every working day the painting operator fills a daily log where it is reported:**

- **the environmental conditions (temperature, humidity, dew point)**
- **the valves painted with reference to AST job**
- **painting systems applied**
- **products batches**
- **DFT measured**

## 12. COATING TOUCH-UP

- For standard AST systems, use the following touch-up instructions:

| TOTAL DAMAGED COATING TO BARE METAL | DAMAGED COATING NO BARE METAL |
|---|---|
| **SURFACE PREPARATION**<br>SSPC-SP 1 and SA 2 ½ of the damaged area and adjacent areas (for a min distance of 50 mm into the adjacent undamaged coating). If blasting is not possible, strong sand-papering of the damaged area and adjacent areas to ST 3 shall be performed. The non-damaged painted surfaced shall be properly protected with shields or screens to prevent it from possible damage. | **SURFACE PREPARATION**<br>SSPC-SP 1 and sand-papering of the damaged area and its surrounding (for a min distance of 50 mm into the adjacent undamaged coating). The non-damaged coated surface shall be properly protected with shields or screens in order to prevent it from any possible damage. |
| **Apply the complete coating system** | **Apply Top-Coat only** |
| **DFT of each single layer and the final DFT shall be as per original application.** | |

| OVER-THICK COATING THICKNESS |
|---|
| Where over-thickness cannot be accepted (as per PDS), for example if it shows mud cracking, wrinkling, sags, etc., coating shall be removed by blast cleaning or scraping. It is necessary to grind until bare metal until a proper visual appearance and DFT is achieved. Proceed then with operations as indicated in the relevant system. |
| **THIN DRY FILM THICKNESS** |
| An additional layer of Primer, Intermediate or Top-coat shall be applied whenever their DFT is too thin. |

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Final DFT shall be as per original application.

- For HT systems, when Inorganic zinc presents small damages, apply one coat of acryl silicone, silicone or silicate.

Do not apply inorganic zinc for touch up.
In case of touch-up on HT systems, only apply acryl silicone, silicone or silicate.

- For customized systems refer to related system data sheet.

## 13. HANDLING AND STORAGE

Finished painted items shall be handled and/or stored with extreme care, in order to protect coating from damages.
Painted items shall not be dropped or thrown against other objects. The use of ropes, hooks, chains or cables is not allowed.
Only rubber or nylon belts shall be used for lifting, lowering or hanging the items.
Coated items shall be stored off the ground on sufficiently padded skids, properly levelled and spaced.
Once loaded for transportation, they are packed in order to avoid scratches and to prevent hitting.
Nonabrasive and non-metallic supports, wooden board, pallets, mats or rubber strips shall be used.

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| | SPECIFICA TECNICA DI VERNICIATURA<br>Painting Specification | TEC015-L1 |
|---|---|---|
| | | REV 3 |
| | | SHEET 1 OF 1 |

This paint procedure is in accordance to SYSTEM 1 of Spec. 123A90-DDL-MAT-SP-60006

## PAINTING SYSTEM L1

| COAT | TYPE | N.D.F.T. |
|---|---|---|
| FIRST COAT | ORGANIC ZINC RICH EPOXY PRIMER<br>CARBOZINC 858 | 60 µm |
| SECOND COAT | MODIFIED EPOXY MASTIC<br>CARBOMASTIC 15 LT ATEX | 190 µm |
| THIRD COAT | ALIPHATIC POLYURETHANE<br>CARBOTHANE 134 HP | 50 µm |
| FOURTH COAT | N/A<br>N/A | N/A µm |

| | |
|---|---|
| N.D.F.T.= NOMINAL DRY FILM THICKNESS: | 300 µm |
| TEMPERATURE RANGE: | UP TO 120 °C |

| | | |
|---|---|---|
| SURFACE PREPARATION & CHECKS | ENVIRONMENTAL CONDITIONS ACCORDING TO: | ISO 8502-4 |
| | SURFACE CLEANING ACCORDING TO: | SSPC-SP1 |
| | VISUAL EXAMINATION ACCORDING TO: | ISO 8501-3 |
| | SURFACE PREPARATION ACCORDING TO: | ISO 8501-1 / Sa 2½ |
| | WET FILM THICKNESS ACC. TO: | ISO 2808 |
| | BLASTER SURFACE ROUGHNESS REPLICA TAPE: | ISO 8503-2 |
| | DRY FILM THICKNESS ACCORDING TO: | ISO 19840 |
| | VISUAL INSPECTION DURING ALL PHASES OF COATING APPLICATION | |
| | BATCH NUMBER | |
| ADDITIONAL FEATURES | PAINT MANUFACTURER QUALIFIED AS SUPPLIER BY AST: | CARBOLINE |
| | PAINTING SUITABLE FOR: | CARBON STEEL |
| | FINAL COLOR AS STD AST: | RAL 9002 |
| | CORROSION CLASS ACC. TO ISO 12944: | ISO 12944 CX |
| | ATEX COMPLIANCE: | YES |
| | | |
| NOTE | | |

| LAST REV. | DESCRIPTION | DATE | ISSUED | CHECKED | RELEASED |
|---|---|---|---|---|---|
| 3 | GENERAL REVISION | 25/06/2021 | AI | FC | EM |

# SPECIFICA TECNICA DI VERNICIATURA
## Painting Specification

TEC015-6C

REV 0

SHEET 1 OF 1

This paint procedure is in accordance to SYSTEM 6C of Spec. 123A90-DDL-MAT-SP-60006

## PAINTING SYSTEM 6C

| COAT | TYPE | N.D.F.T. |
|---|---|---|
| FIRST COAT | EPOXY PHENOLIC<br>THERMALINE 440 | 125 µm |
| SECOND COAT | EPOXY PHENOLIC<br>THERMALINE 440 | 125 µm |
| THIRD COAT | N/A<br>N/A | N/A µm |
| FOURTH COAT | N/A<br>N/A | N/A µm |

| | |
|---|---|
| N.D.F.T.= NOMINAL DRY FILM THICKNESS: | 250 µm |
| TEMPERATURE RANGE: | UP TO 205 °C |

| | | |
|---|---|---|
| SURFACE PREPARATION & CHECKS | ENVIRONMENTAL CONDITIONS ACCORDING TO: | ISO 8502-4 |
| | SURFACE CLEANING ACCORDING TO: | SSPC-SP1 |
| | VISUAL EXAMINATION ACCORDING TO: | ISO 8501-3 |
| | SURFACE PREPARATION ACCORDING TO: | ISO 8501-1 / Sa 2½ |
| | WET FILM THICKNESS ACC. TO: | ISO 2808 |
| | BLASTER SURFACE ROUGHNESS REPLICA TAPE: | ISO 8503-2 |
| | DRY FILM THICKNESS ACCORDING TO: | ISO 19840 |
| | VISUAL INSPECTION DURING ALL PHASES OF COATING APPLICATION | |
| | BATCH NUMBER | |
| ADDITIONAL FEATURES | PAINT MANUFACTURER QUALIFIED AS SUPPLIER BY AST: | CARBOLINE |
| | PAINTING SUITABLE FOR: | STAINLESS STEEL |
| | FINAL COLOR AS STD AST: | RAL 9002 |
| | CORROSION CLASS ACC. TO ISO 12944: | ISO 12944 CX |
| | ATEX COMPLIANCE: | NO |
| | | |
| NOTE | | |

| LAST REV. | DESCRIPTION | DATE | ISSUED | CHECKED | RELEASED |
|---|---|---|---|---|---|
| 0 | EMISSION | 25/06/2021 | AI | FC | EM |

Product Data

# Carbozinc®858

*formerly Carbozinc 858 (P)*

## Selection & Specification Data

**Generic Type**
Two component zinc filled, cross linked epoxy primer.

**General Properties**
Carbozinc 858 is high solids, organic zinc epoxy primer, for protection of structural steel in salt or weathering environments

**Features**
- Easily applicable
- Cures at low temperatures, 2°C (35°F)
- Hard tough film
- Pre-Thinned product, may be applied without thinner addition
- Good flexibility
- Excellent abrasion resistance
- Meets the requirements of SSPC-Paint N° 20 (rev. 11/2004) Type II Level 1.

**Recommended Uses**
Excellent as a maintenance or general use zinc epoxy primer over blasted steel. Used within industry, petrochemical process, off-shore or other heavy industries in severe environments with appropriate topcoats.
Recommended for shop application where fast handling and re-coating are requested.

**Not Recommended**
Direct exposure to strong acids and alkalies

**Chemical Resistance**
(with proper topcoat)

| | Splash & Spillage | Fumes |
|---|---|---|
| Acids | Very Good | Excellent |
| Alkalies | Very Good | Excellent |
| Solvents | Very Good | Excellent |
| Salt Water | Excellent | Excellent |
| Fresh Water | Excellent | Excellent |

**Color**
Gray / Green

**Finish Gloss**
Matte

**Dry Temp. Resistance**
Continuous: 150°C (300°F)
Non-Continuous: 200°C (400°F)

**Substrates**
Blasted steel or other as recommended

**Compatible Coatings**
May be top-coated with epoxy, polyurethane, or other as recommended

**Solids Content**
By Volume: 64 ± 2 %

**Zinc Content**
By Weight: 85 ± 2 % in dry film

**Dry Film Thickness**
50-150 microns (2-6 mils)

**Theoretical Coverage Rate**
25.2 $m^2$/l at 25 microns (1mil)
8.4 $m^2$/l at 75 microns (3mils)
Mixing and application losses will vary and must be taken into consideration when estimating job requirements.

**VOC Values**
VOC+ (Volatile Organic Content) are coating with high solids, in other words, coating that are less hazardous, more environmentally safe, and more economical for the users.

## Substrates & Surface Preparation

**General**
Surfaces must be clean and dry. Employ adequate methods to remove dirt, dust, oil and all other contaminants in accordance with Standard SSPC-SP1.

**Steel**
Blasted to minimum SA2 ½ (ISO 8501-1), SSPC-SP10, and obtain 25-50 microns (1-2 mils) blast profile. Alternative blast cleaning with Ultra high pressure water jetting to the standard of min CHB2 M.

## Application Equipment

**Spray Application (General)**
This is a high solids coating and may require adjustments in spray techniques. Wet film thickness is easily and quickly achieved. The following spray equipment has been found suitable and is available from manufacturers such as Binks, DeVilbiss and Graco.

**Conventional Spray**
Agitated pressure pot equipped with dual regulators, 3/8" I.D. minimum material hose, .070" I.D. fluid tip and appropriate air cap.

**Airless Spray**

| | |
|---|---|
| Pump Ratio: | 30:1 |
| GPM Output: | 3.0 (min.) 11.5 liters/min. |
| Material Hose: | 3/8" I.D. (min.) |
| Tip Size: | .017-.021" |
| Output PSI: | 2000-2200 |

Filter Size: 60 mesh
Teflon packings are recommended and available from the pump manufacturer.

**Brush & Roller (General)**
Recommended for touch up, striping of weld seams and hard-to-coat areas only. Avoid excessive re-brushing or re-rolling.

**Brush**
Use a medium bristle brush.

**Roller**
Not Recommended.

## Mixing & Thinning

**Mixing**
Power mix separately, then combine and power mix for a minimum of two minutes.
DO NOT MIX PARTIAL KITS.

**Ratio**
3:1 Ratio by volume (A to B)

**Thinning**
Normally not required but may be thinned up to 6% by volume, with Thinner N°2. Use of thinners than those supplied by Carboline, may adversely effect product warranty, whether expressed or implied.

**Pot Life**
24°C (75°F) 4 Hours lower at more elevated temperature
Pot life ends when coating loses body and begins to sag.

## Cleanup & Safety

**Cleanup** Use #2 Thinner or Acetone. In case of spillage, absorb and dispose of in accordance with local applicable regulations.

**Safety** Read and follow all caution statements on this product data sheet and on the MSDS for this product. Employ normal workmanlike safety precautions. Hypersensitive persons should wear protective clothing, gloves and use protective cream on face, hands and all exposed areas.

**Caution** This product contains flammable solvents. Keep away from sparks and open flames. All electrical equipment and installations should be made and grounded in accordance with the National Electric Code. In areas where explosion hazards exist, workmen should be required to use non-ferrous tools and wear conductive and non-sparking shoes.

## Application Conditions

| Condition | Material | Surface | Ambient | Humidity |
|---|---|---|---|---|
| Normal | 15-30°C | 15-30°C | 15-30°C | 0-90% |
| Minimum | 4°C | 2°C | 2°C | 0% |
| Maximum | 32°C | 50°C | 43°C | 95% |

Condensation due to substrate temperatures below the dew point can cause flash rusting on prepared steel and interfere with proper adhesion to the substrate. Special application techniques may be required above or below normal application conditions. Do not apply when the surface temperature is less than 3°C above the DEW- POINT

## Curing Schedule

| Surface Temp. & 50% R. H. | Minimum Recoat Time | Final Cure |
|---|---|---|
| 2°C (35°F) | 8 Hours | 10 Hours |
| 10°C (50°F) | 5 Hours | 6 Hours |
| 24°C (75°F) | 2 Hours | 3 Hours |
| 32°C (90°F) | 1 Hour | 1 Hour |

These times are based on a 75 microns (3 mils) dry film thickness. Higher film thickness, insufficient ventilation, high humidity or cooler temperatures will require longer cure times and could result in solvent entrapment and premature failure.

## Packaging, Handling & Storage

**Package** Part A: 7.5 litres Part B: 2.5 liters
Thinner N°2: 20 liters

**Flash Point (PMCC)**
Part A: 9°C
Part B: 3°C
Thinner N°2 -5°C

**Storage (General)** Store Indoors.

**Storage Temperature & Humidity** 5°-30°C
0-90% Relative Humidity

**Shelf Life** 12 months at 24°C (75°F)

Storage at temperatures higher than 30°C reduces the shelf life of Part A considerably

11/08 – BM mod. 08/07 Norge

Carboline Italia SpA
Part of the StonCor Group

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NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY CARBOLINE, EXPRESS OR IMPLIED, STATUTORY, BY OPERATION OF LAW, OR OTHERWISE, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

## Selection & Specification Data

| | |
|---|---|
| **Generic Type** | Two component, high build, modified epoxy mastic with antistatic agents according to CEI EN 60079 ( electric construction for explosive gas atmospheres) |
| **General Properties** | Carbomastic® 15 LT Atex is a high build coating with excellent and low temperature curing. |
| **Features** | ▪ Carbomastic 15 LT Atex has fast curing at Low Temperature<br>▪ High solid give good coverage and reduce solvent emissions |
| **Color** | Black |
| **Finish** | Semi gloss |
| **Primers** | It has to be applied over organic or inorganic zinc primers. A mist coat may be required to minimize bubbling over inorganic zinc primers. |
| **Topcoats** | Can be top coated with CC 1290 Atex recommended within 7days. |
| **Dry Film Thickness** | 100-300 microns (4.0-12.0 mils) per coat, , normally 150µ |
| **Solids Content** | By Volume: 79 ± 2% |
| **Theoretical Coverage Rate** | 5.3 $m^2$ / l at 150µ<br>Allow for loss in mixing and application. |
| **Dry Temp. Resistance** | Continuous: 70°C<br>Non-Continuous: 120°C |
| **Limitations** | Epoxies lose gloss, discolor and eventually chalk in sunlight exposure. Not recommended for immersion service in acids, alkalies or solvents. |

## Substrates & Surface Preparation

| | |
|---|---|
| **General** | Surfaces must be clean and dry. Employ adequate methods to remove dirt, dust, oil and all other contaminants. |
| **Stainless Steel** | SSPC SP 7 with non metallic abrasive and surface profile roughness of 35-45 µ |

## Application Equipment

| | |
|---|---|
| **Spray Application (General)** | The following spray equipment has been found suitable and is available from manufacturers such as Binks, DeVilbiss and Graco. |
| **Conventional Spray** | Pressure pot equipped with dual regulators, 3/8" I.D. minimum material hose, .070" I.D. fluid tip and appropriate air cap. |
| **Airless Spray** | Pump Ratio: 30:1<br>GPM Output: 3.0 (min.). (12 liters)<br>Material Hose: 3/8" I.D. (min.)<br>Tip Size: .023-.027"<br>Output PSI: 2000-2400<br>Filter Size: 60 mesh<br>Teflon packings are recommended and available from the pump manufacturer. |
| **Brush & Roller** | For touch up, small areas and strip coat only. Use a medium bristle brush and medium nap synthetic roller cover with phenolic core |

## Mixing & Thinning

| | |
|---|---|
| **Mixing** | Power mix separately, then combine and power mix. |
| **Ratio** | 1:1 Ratio by volume (A to B) |
| **Thinning** | May be thinned up to 15% with Thinner#2<br>Use of thinners other than those supplied or recommended by Carboline, may adversely effect product performance and void product warranty, whether expressed or implied. |
| **Pot Life** | 1 ½ Hours at 20°C and less at higher temperatures. |

## Cleanup & Safety

**Cleanup** Use Thinner#2 or 25..

**Safety** Read and follow all caution statements on this product data sheet and on the MSDS for this product. Employ normal workmanlike safety precautions. Hypersensitive persons should wear protective clothing, gloves and use protective cream on face, hands and all exposed areas.

**Ventilation** When used in enclosed areas, thorough air circulation must be used during and after application until the coating is cured. The ventilation system should be capable of preventing the solvent vapor concentration from reaching the lower explosion limit for the solvents used.

**Caution** This product contains flammable solvents. Keep away from sparks and open flames. All electrical equipment and installations should be made and grounded in accordance with the National Electric Code. In areas where explosion hazards exist, workmen should be required to use non-ferrous tools and wear conductive and non-sparking shoes.

## Application Conditions

| Condition | Material | Surface | Ambient | Humidity |
|---|---|---|---|---|
| Normal | 15-30°C | 15-30°C | 15-30°C | 35-80% |
| Minimum | 5°C | 2°C | 2°C | 0% |
| Maximum | 35°C | 75°C | 40°C | 90% |

Do not apply when the surface temperature is less than 3°C above the dew point. Condensation due to substrate temperatures below the dew point can cause flash rusting on prepared steel. Special application techniques may be required above or below normal application condition. Note: this product contains conductive pigments and cannot be holiday

## Curing Schedule

| Surface Temp. & 50% R. H. | Dry to Recoat/Topcoat | Final Cure |
|---|---|---|
| 5°C | 18 Hours | 7 Days |
| 10°C | 10 Hours | 5 Days |
| 20°C | 6 Hours | 3 Days |
| 30°C | 4 Hours | 2 Days |

These times are based on recommended DFT. Higher film thickness, insufficient ventilation or cooler temperatures will require longer cure times and could result in solvent entrapment and premature failure.

**Note 1:** Carbomastic® 15 LT ATEX contains conductive pigments and cannot be holiday tested.

## Packaging, Handling & Storage

**Shipping Weight (approximate)**

**CARBOMASTIC 15 LT ATEX** Part A: 10lt

Part B: 10lt

**Storage (General)** Store Indoors.

**Storage Temperature & Humidity** 5°-38°C
0-90% Relative Humidity

**Shelf Life** 12 months at 24°C (75°F)

Rev 01 July 2012

Carboline Italia SpA

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Product Data

carboline®

# Carbothane®134 HP
(Formerly Carbothane®834)

## Selection & Specification Data

| | |
|---|---|
| **Generic Type** | Acrylic aliphatic polyurethane |
| **Description** | Carbothane 134 HP (formerly Carbothane 834), is an attractive, high gloss, high solids urethane topcoat which is easily applied by airless or conventional spray to yield a hard, very cleanable surface. It exhibits excellent flow and leveling properties to minimize dry spray and lampmarks. |
| **Features** | ▪ Excellent weatherability<br>▪ Excellent flexibility<br>▪ Excellent abrasion resistance<br>▪ Meets most VOC (Volatile Organic Content) requirements |
| **Color** | Ral Color Chart, is standard, other colors may be required a special order. |
| **Finish** | High Gloss- with special order, can be manufactured in LG (Low Gloss) version |
| **Primers** | May be used over epoxies, urethanes and others as recommended. Typically applied as topcoat for CG 893, CM 15 LO/LT, CM 90, CG 890, CZ 858 (P) |
| **Topcoats** | Normally none |
| **Dry Film Thickness** | 50-75 µm (2.0-3.0 mils) per coat over smooth. Certain colors may require multiple coats for adequate hiding. Additional thickness may be required over rough surfaces for appearance. Dry Film Thickness in excess of 150 µm (6.0 mils) per coat is not recommended. |
| **Solids Content** | By Volume: 65 ± 2% |
| **Theoretical Coverage Rate** | 26.m²/l at 25 microns<br>Allow for loss in mixing and application |
| **Dry Temp. Resistance** | Continuous: 93°C (200°F)<br>Non-Continuous: 121°C (250°F) |
| **Limitations** | Immersion service |

## Substrates & Surface Preparation

| | |
|---|---|
| **General** | Surfaces must be clean and dry. Employ adequate methods to remove dirt, dust, oil and all other contaminants that could interfere with adhesion of the coating. |
| **Steel** | Prime with specific Carboline primers or as recommended. Refer to the primer's Product Data Sheet for detailed requirements of the specific primer or intermediate coat. |
| **Previously Painted Surfaces** | Lightly blast or abrade to roughen surface and degloss the surface. Existing paint must attain a minimum 3B rating in accordance with ASTM D3359 "X-Cut" adhesion test |

## Application Equipment

| | |
|---|---|
| **Spray Application (General)** | This is a high solids coating and may require adjustments in spray techniques. Wet film thickness is easily and quickly achieved. The following spray equipment has been found suitable and is available from manufacturers such as Binks, De Vilbiss and Graco |
| **Conventional Spray** | Pressure pot equipped with dual regulators, 3/8" I.D. minimum material hose, .070" I.D. fluid tip and appropriate air cap. |
| **Airless Spray** | Pump Ratio: 30:1 (min.)<br>GPM Output: 3.0 (min.)<br>Material Hose: 3/8" I.D. (min.)<br>Tip Size: .015"-.017"<br>Output PSI: 2100-2400<br>Filter Size: 60 mesh<br>Teflon packings are recommended and available from the pump manufacturer. |
| **Brush & Roller (General)** | Multiple coat may be required to obtain desired appearance, recommended dry film thickness and adequate hiding: Avoid excessive re-brushing or re-rolling. |
| **Brush** | Brushing recommended only for touch-up of small areas. Use natural bristle brush applying in full stokes. Two coats may be required to obtain desired appearance, hiding and recommended DFT |
| **Roller** | Use a short nap mohair roller with phenolic core. Avoid rerolling.<br>Two coats may be required to obtain desired appearance, hiding and recommended DFT |

## Mixing & Thinning

**Mixing** Power mix separately, then combine and power mix.
**DO NOT MIX PARTIAL KITS**

**Ratio** CT 134 HP Part A: 4 by volume
CT 134 HP Part B: 1 by volume

**Thinning** Spray : up to 15% by volume with Th.# 25
Brush : up to 10% by volume with Th.#215
Roller : up to 10% by volume with Th.#215
Use of thinners other than those supplied or recommended by Carboline may adversely affect product performance and void product warranty, whether expressed or implied.

**Pot Life** 4 hours at 24°C (75°F) and less at higher temperature
Pot-life end when material becomes too viscous to use. **This product is moisture sensitive. Avoid moisture contamination.**

## Cleanup & Safety

**Cleanup** Use #2 Thinner or Acetone. In case of spillage, absorb and dispose of in accordance with local applicable regulations.

**Safety** Read and follow all caution statements on this product data sheet and on the MSDS for this product. Employ normal workmanlike safety precautions. Hypersensitive persons should wear protective clothing, gloves and use protective cream on face, hands and all exposed areas.

**Ventilation** When used as a tank lining or in enclosed areas, thorough air circulation must be used during and after application until the coating is cured. The ventilation system should be capable of preventing the solvent vapor concentration from reaching the lower explosion limit for the solvents used. User should test and monitor exposure levels to insure all personnel are below guidelines. If not sure or if not able to monitor levels, use MSHA/NIOSH approved supplied air respirator.

**Caution** This product contains flammable solvents. Keep away from sparks and open flames. All electrical equipment and installations should be made and grounded in accordance with the National Electric Code. In areas where explosion hazards exist, workmen should be required to use non-ferrous tools and wear conductive and non-sparking

## Application Conditions

| Condition | Material | Surface | Ambient | Humidity |
|---|---|---|---|---|
| Normal | 16-29°C | 16-29°C | 16-29°C | 40-60% |
| Minimum | 10°C | 4°C | 4°C | 10% |
| Maximum | 38°C | 49°C | 35°C | 80% |

Do not apply when the surface temperature is less than 3°C above the dew point.
Special thinning and application techniques may be required above or below normal condition.

## Curing Schedule

| Surface Temp. & 50% Relative Humidity | Dry to Handle and To Recoat | Final Cure |
|---|---|---|
| 2°C | 18 Hours | 14 Days |
| 10°C | 8 Hours | 7 Days |
| 24°C | 4 Hours | 3 Days |
| 32°C | 1 Hours | 1 Day |

These times are based on a 50-75 µm dry film thickness. Excessive film thickness, insufficient ventilation or cooler temperatures will lengthen cure time.

## Packaging, Handling & Storage

**Kit Standard** Part A: 16 liters Part B: 4 liters

**Flash Point (PMCC)**
Part A: 32°C ( 90°F)
Part B: 53°C (106°F)
Thinner# 25: 30°C ( 87°F)
Thinner#215 54°C (128°F)

**Storage Temperature & Humidity**
Store indoors.
4°-43°C (40°-110°F)
0-80% Relative Humidity

**Shelf Life** 24 months at 24°C (75° F)
**NOTE:** Polyurethane materials are moisture sensitive. Keep tightly covered before use. Moisture contamination will cause poor cure of the coating or gellation of Part B

Carboline Italia SpA

02/12-08/08 ITA CT 834

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## SELECTION & SPECIFICATION DATA

| | |
|---|---|
| **Generic Type** | Modified epoxy-phenolic, amine adduct cured. |
| **Description** | Thermaline 440 (formerly Thermaline 400 EU) is a high performance, immersion grade coating system which has excellent resistance to wet/dry cycling conditions at elevated temperatures.<br><br>Used to protect steel substrates under thermal insulation. |
| **Features** | • Temperature resistant up to 204ºC<br>• Very good flexibility<br>• Excellent overall chemical resistance<br>• Very good abrasion resistance<br>• Easily applied by spray<br>• Acceptable for use over stainless steels |
| **Color** | Primer red<br>Finish White and grey<br>Coating discolouration can be expected when exposed to elevated temperatures. This discolouration does not affect performance. |
| **Finish** | Semi-Gloss |
| **Dry Film Thickness** | Th 440 Primer : 125 - 150 µm<br>Th 440 Finish : 125 - 150 µm<br>Dry film thickness above 250 microns per coat is not recommended. |
| **Solid(s) Content** | Th 440 Primer : 55 ± 2%<br>Th 440 Finish : 51 ± 2% |
| **Theoretical Coverage Rates** | **Th 440 Primer**<br>DFT 125 microns 4,4 sq.m/l<br>DFT 150 microns 3,6 sq.m/l<br>**Th 440 Finish**<br>DFT 125 microns 4,0 sq.m/l<br>DFT 150 microns 3,4 sq.m/l<br><br>Mixing and application losses will vary and must be taken into consideration when estimating job requirements. |
| **Dry Temp. Resistance** | Continuous: 204°C (399°F)<br>Non-Continuous: 232°C (450°F) |
| **Limitations** | Not recommended for strong mineral and organic acids. |

## SUBSTRATES & SURFACE PREPARATION

| | |
|---|---|
| **General** | Surface must be clean and dry. Employ adequate methods to remove dirt, dust, oil and all other contaminants in accordance with Standard SSPC-SP1. |
| **Steel** | Abrasive blast to ISO 8501-1 Sa 2½ to obtain a 35 – 75 µm blast profile.<br>Alternative Ultra High Pressure water jetting (UHPWJ) to the standard of min. CHB2 M, provided existing surface profile (e.g. maintenance projects) |
| **Stainless Steel** | Blast cleaning with non-metallic abrasive to obtain 25 – 50 µm profile. |

## MIXING & THINNING

| | |
|---|---|
| **Mixing** | Power mix separately, then combine and power mix for a minimum of two minutes. **DO NOT MIX PARTIAL KITS.** |
| **Thinning** | May be thinned up to 25% by volume with Thinner #33 for spray application. Use of thinners other than those supplied or approved by Carboline may adversely affect product performance and void product warranty, whether expressed or implied. |
| **Ratio** | 2 : 1 Ratio by volume (A to B) |
| **Pot Life** | 4 hours at 24ºC and less at higher temperatures. Pot life ends when coating loses body and begins to sag. |

## APPLICATION EQUIPMENT GUIDELINES

Listed below are general equipment guidelines for the application of this product. Job site conditions may require modifications to these guidelines to achieve the desired results.

| | |
|---|---|
| **General** | Thermaline 440 is a high solid coating and may require adjustments in spray techniques. Wet film thickness is easily and quickly achieved. The following spray equipment has been found suitable and is available from manufacturers such as Binks, DeVilbiss and Graco. |
| **Conventional Spray** | Pressure pot equipped with dual regulators, 3/8” I.D. minimum material hose, .055 - .070” I.D. fluid tip and appropriate air cap. |
| **Airless Spray** | Pump ratio: 30:1 (min.) *<br>GMP Output: 3.0 (min.)<br>Material Hose: 3/8” I.D. (min.)<br>Tip Size: .015 - .019”<br>Output PSI: 2100 - 2300<br>Filter Size: 60 mesh<br><br>* Teflon packings are recommended and available from the pump manufacturer. |
| **Brush & Roller (General)** | Recommended for touch-up, striping of weld seams and hard-to-reach areas only. Apply in full strokes, avoid re-brushing or re-rolling. Use a natural bristle brush and short nap mohair roller with phenolic core. |

## APPLICATION CONDITIONS

| Condition | Material | Surface | Ambient | Humidity |
|---|---|---|---|---|
| Minimum | 13°C (55°F) | 5°C (41°F) | 5°C (41°F) | 0% |
| Maximum | 35°C (95°F) | 75°C (167°F) | 40°C (104°F) | 85% |

Condensation due to substrate temperatures below the dew point can cause flash rusting on prepared steel and interfere with proper adhesion to the substrate. Special application techniques may be required above or below normal application conditions. Do not apply when the surface temperature is less than 3°C above the dew-point.

## CURING SCHEDULE

| Surface Temp. | Between Coats | Final Cure Immersion |
|---|---|---|
| 5°C (41°F) | 24 Hours | NR |
| 10°C (50°F) | 15 Hours | 4 Days |
| 15°C (59°F) | 10 Hours | 3 Days |
| 25°C (77°F) | 6 Hours | 2 Days |

These times are based on the recommended dry film thickness. Excessive film thickness or inadequate ventilation conditions after application require longer dry times and will cause premature failure in extreme cases.
Maximum recoat time is normally 60 days. If exceeded and depending on curing time and exposure, pretreatment may be required prior to overcoating. Contact Carboline for further information.
**EXCESSIVE HUMIDITY OR CONDENSATION ON THE SURFACE DURING CURING MAY RESULT IN SURFACE HAZE OR BLUSH; ANY HAZE OR BLUSH SHOULD BE REMOVED BY WASHING WITH WATER BEFORE RECOATING.**

## CLEANUP & SAFETY

| | |
|---|---|
| **Cleanup** | Use Carboline Thinner #33. In case of spillage, absorb and dispose of in accordance with local applicable regulations. |
| **Safety** | Read and follow all caution statements on this product data sheet and on the MSDS for this product. Employ normal workmanlike safety precautions. Hypersensitive persons should wear protective clothing, gloves and use protective cream on face, hands and all exposed areas. |
| **Ventilation** | When used in enclosed areas, thorough air circulation must be used during and after application until the coating is cured. The ventilation system should be capable of preventing the solvent vapor concentration from reaching the lower explosion limit for the solvents used. User should test and monitor exposure levels to insure all personnel are below guidelines. If not sure or if not able to monitor levels, use MSHA/NIOSH approved supplied air respirator. |
| **Caution** | This product contains flammable solvents. Keep away from sparks and open flames. All electrical equipment and installations should be made and grounded in accordance with applicable regulations. In areas where explosion hazards exist, workmen should be required to use nonferrous tools and wear conductive and nonsparking shoes. |

## PACKAGING, HANDLING & STORAGE

| | |
|---|---|
| **Shelf Life** | 24 months at 24ºC |
| **Storage Temperature & Humidity** | 4° - 43ºC<br>0 - 95% relative humidity |
| **Flash Point (Setaflash)** | THERMALINE 440 Primer Part A: 18°C<br>THERMALINE 440 Finish Part A: 18°C<br>THERMALINE 440 Primer/Finish, Part B: 18°C<br>Thinner 2 : -5°C |
| **Storage** | Stores indoors. |
| **Packaging** | Part A 13,3 litres<br>Part B 6,7 litres<br>or<br>Part A 6,7 litres *<br>Part B 3,3 litres *<br><br>* Not available in all Carboline. |

## WARRANTY

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# PAINTING REPORT

| PAINTING REPORT No. | PAGE: | DATE: |
|---|---|---|

## IDENTIFICATION DATA

| CUSTOMER*:* | PROJECT*:* |
|---|---|
| JOB NO.: | LOCATION*:* |
| MATERIAL DESCRIPTION*:* | |

## WEATHER CONDITIONS, STEEL and SURFACE PREPARATION

| | |
|---|---|
| DATE – TIME*:* | STEEL PREPARATION - ISO 8501-3: |
| BLOTTER TEST- ASTM D 4285 | ABRASIVE TYPE and SIZE - ISO 11124/26: |
| AIR TEMPERATURE °C – ISO 8502-4*:* | BLAST PROFILE - ISO 8503-2/5: |
| STEEL TEMPERATURE °C – ISO 8502-4*:* | ABRASIVE CONDUCTIVITY - ISO 11127-6: |
| RELATIVE UMIDITY % – ISO 8502-4*:* | SURFACE SOLUBLE SALTS - ISO 8502-6/9 Bresle: |
| DEW POINT – ISO 8502-4*:* | SURFACE CLEANLINESS - ISO 8503-2: Class Rating |
| DEGREE OF CLEANLINESS*:*<br>*SSPC-SP1: SSPC-SP16: ISO 8501-1:* | Note: |

## *APPLICATION*

| REF. SPECIFICATION*:* | COATING SYSTEM*:* |
|---|---|

| TYPE of COATS | PRIMER | INTERMEDIATE | INTERMEDIATE | TOP COAT | TYPE of INSTRUMENTS |
|---|---|---|---|---|---|
| Ambient Conditions | Date:<br>Hour:<br>Air °T:<br>Surface °T:<br>RH%<br>Dew Point: | Date:<br>Hour:<br>Air °T:<br>Surface °T:<br>RH%<br>Dew Point: | Date:<br>Hour:<br>Air °T:<br>Surface °T:<br>RH%<br>Dew Point: | Date:<br>Hour:<br>Air °T:<br>Surface °T:<br>RH%<br>Dew Point: | |
| STRIPE COAT<br>by brush/roller | | | | | |
| APPLICATION METHOD | | | | | |
| PRODUCTS TYPE<br>BRAND NAME | | | | | |
| BATCH NUMBER A)<br>B) | | | | | |
| Thinner N°<br>% BV | | | | | |
| COLOUR<br>*COLORE* | | | | | |
| DFT. REQUIRED µ | | | | | |
| WFT APPLIED. µm | | | | | |
| SSPC-PA2 D.F.T. µ<br>ISO 19840 DFT µ | | | | | |
| VISUAL CHECK | | | | | |
| MEK TEST ASTM D 4752<br>for inorganic zinc only | | | | | |
| *NOTE:* | | | | | |

| Q.C. SIGNATURE<br>*FIRMA CONTROLLO QUALITA'* | INSPECTOR SIGNATURE<br>*FIRMA ISPETTORE* | INSPECTOR SIGNATURE<br>*FIRMA ISPETTORE* | INSPECTOR SIGNATURE<br>*FIRMA ISPETTORE* |
|---|---|---|---|
| DATE: | DATE: | DATE: | DATE: |

# PART 2-CERTIFICATION DOSSIER

# Section 3.1

Test reports (including pressure test reports and dimensional test report)

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06-09-2024
FRANCO CORBELLINI
061
CROSSWIND

Cornaredo, 06/09/2024

L. FONTANA
ON BEHALF OF ROSETTI MARINO S.p.A
☐ REVIEW ☒ WITNESS
6-9-2024

Customer: ROSETTI MARINO
P.Order: 1724000740 123A90A
AST job : CV2400221

## *Certificato di Prova Idraulica / Hydrostatic Test Certificate*

Certifichiamo che i materiali sotto elencati in tabella sono stati sottoposti a prova idraulica con esito positivo (nessuna perdita riscontrata).
Il collaudo è stato eseguito col trasduttore di banco prova no. AM0070, con validità sino al 2024.10.10

*We hereby certify that the materials below listed have been hydrostatically tested with satisfactory result (no visible leakage).*
*The tests have been performed with calibrated pressure gauge S/N AM0070, with expired date on* 2024.10.10

| **DISEGNO** *DRAWING* | **MATERIALE** *MATERIAL* | **SIGLA** *TAG* | **MATRICOLA** *SERIAL No* | **DESCRIZIONE** *DESCRIPTION* | **PRESSIONE DI PROVA IDRAULICA** *HYDOSTATIC TEST PRESSURE* | **DURATA MINIMA DELLA PROVA** *MINIMUM TEST DURATION* |
|---|---|---|---|---|---|---|
| | | | | | [Bar G] | [min] |
| 84.25.121 | ASTM A351 CF3M | 25-FV-031 | 2400583 | BODY Valve CV-8407 NPS 1 CLASS 300 RFxRF [1/4"] | 75 | 1 |
| 84.25.121 | ASTM A351 CF3M | 25-FV-032 | 2400584 | BODY Valve CV-8407 NPS 1 CLASS 300 RFxRF [1/4"] | 75 | 1 |
| 84.25.121 | ASTM A351 CF3M | 25-FV-033 | 2400585 | BODY Valve CV-8407 NPS 1 CLASS 300 RFxRF [1/4"] | 75 | 1 |
| 84.25.121 | ASTM A351 CF3M | 25-FV-034 | 2400586 | BODY Valve CV-8407 NPS 1 CLASS 300 RFxRF [1/4"] | 75 | 1 |
| 84.25.121 | ASTM A351 CF3M | 25-FV-036 | 2400587 | BODY Valve CV-8407 NPS 1 CLASS 300 RFxRF [1/4"] | 75 | 1 |
| 84.25.121 | ASTM A351 CF3M | 25-FV-038 | 2400588 | BODY Valve CV-8407 NPS 1 CLASS 300 RFxRF [1/4"] | 75 | 1 |
| 84.50.121 | ASTM A351 CF3M | 25-PV-035 | 2400589 | BODY Valve CV-8407 NPS 2 CLASS 300 RFxRF [1"] | 75 | 1 |
| 84.50.121 | ASTM A351 CF3M | 25-PV-037 | 2400590 | BODY Valve CV-8407 NPS 2 CLASS 300 RFxRF [1"] | 75 | 1 |
| 84.50.121 | ASTM A351 CF3M | 25-PV-040 | 2400591 | BODY Valve CV-8407 NPS 2 CLASS 300 RFxRF [1"] | 75 | 1 |
| 84.50.121 | ASTM A351 CF3M | 25-PV-043 | 2400592 | BODY Valve CV-8407 NPS 2 CLASS 300 RFxRF [1"] | 75 | 1 |
| 84.50.121 | ASTM A351 CF3M | 25-PV-046 | 2400593 | BODY Valve CV-8407 NPS 2 CLASS 300 RFxRF [1"] | 75 | 1 |
| 84.50.121 | ASTM A351 CF3M | 25-PV-049 | 2400594 | BODY Valve CV-8407 NPS 2 CLASS 300 RFxRF [1"] | 75 | 1 |
| 84.40.121 | ASTM A351 CF3M | 25-PV-055A | 2400595 | BODY Valve CV-8407 NPS 1-1/2 CLASS 300 RFxRF [1"] | 75 | 1 |

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| | | | | | | |
|---|---|---|---|---|---|---|
| 84.40.121 | ASTM A351 CF3M | 25-PV-055B | 2400596 | BODY Valve CV-8407 NPS 1-1/2 CLASS 300 RFxRF [5/32"] | 75 | 1 |
| 8407BD-007-RF | ASTM A350 LF2 Cl. 1 | 64-PV-031A | 2400597 | BODY Valve CV-8407 NPS 1 CLASS 150 RFxRF [3/8"] | 30 | 1 |
| 8407BD-007-RF | ASTM A350 LF2 Cl. 1 | 64-PV-031B | 2400598 | BODY Valve CV-8407 NPS 1 CLASS 150 RFxRF [3/8"] | 30 | 1 |

In accordo a 1724000740-QC-ITP-00002 Rev.03 fase 03
*According to* 1724000740-QC-ITP-00002 Rev.03 fase 03

L. FONTANA
ON BEHALF OF ROSETTI MARINO S.p.A
☐ REVIEW ☑ WITNESS
6-9-2024

A.S.T. SPA
QUALITY DEPARTMENT
A.S.T. S.p.A.
Quality Assurance

FRANCO CORBELLINI
080
CROSSWIND
06-09-2024

| | | |
|---|---|---|
| | **CERTIFICATO DI COLLAUDO TRASDUTTORE BANCO PROVA IDROSTATICA**<br>***( certificate of hydrostatic test bench transducer )*** | **Codice :**<br>**B107AM0070**<br>***( code )***<br>**data : 10/04/2024**<br>***( date )*** |

**DESCRIZIONE** ***( description )***

COSTRUTTORE *(manufacturer):* **ITALCONTROL**
DATA DI ACQUISTO *(purchase date):* **DICEMBRE 2013**
MATRICOLA *(serial number):* **47-854**
IMPIEGO *(use):* **Banco di prova idrostatica**

**DATI TECNICI** ***( technical data )***

CAMPO DI MISURA *(range): 0 - 650*
UNITA' DI MISURA *(measure unit): Bar*
MASSIMA DEVIAZIONE AMMISSIBILE *(max allow.deviation): -0% +5%*

**DATI DI COLLAUDO** ***( test data )***

| **P.NOMINALE-Bar** *(nominal P-Bar)* | **MANOMETRO** *( pressure gauge)* | **P.RILEVATA** *(measured P)* | **DEVIAZIONE %** *(deviation)* | **ESITO** *(result)* |
|---|---|---|---|---|
| **30** | B101AM0068 | **30.0** | **0%** | OK |
| **78** | B101AM0055 | **80.0** | **+2.5%** | OK |
| **156** | B101AM0046 | **159** | **+1.9%** | OK |
| **233** | B101AM0046 | **234.5** | **+0.6%** | OK |
| **388** | B101AM0085 | **392.0** | **+1%** | OK |
| **647** | B101AM0048 | **648** | **+0.2%** | OK |

**ESITO COLLAUDO** *( test result )* **: SODDISFACENTE / satisfactory**

**SCADENZA: 10/10/2024**

| FIRMA Q.C.<br>*(Q.C. sign)* | FIRMA Q.A.M.<br>*(Q.A.M. sign)* |
|---|---|
| A.S.I. S.p.A.<br>Quality Control Dept | A.S.I. S.p.A.<br>Quality Assurance |

L. FONTANA
ON BEHALF OF ROSETTI MARINO S.p.A
☑ REVIEW ☐ WITNESS
6-9-2024

FRANCO CORBELLINI
UBQ
CROSSWIND R
06-09-2024

| | FUGITIVE EMISSION TEST REPORT | No. FET_2400593<br>DATE: 07/11/2024<br>Sheet 1/2 |
|---|---|---|

| | |
|---|---|
| Job no. | CV2400221 |
| Client | ROSETTI MARINO S.P.A. |
| Client PO | 1724000740 123A90A |
| Plant | Wind Farm Hollandse Kust Noord Wind Park Project |
| Serial no. | 2400593 |
| Tag no. | 25-PV-046 |
| Valve description | Valve CV-8407 NPS 2 CLASS 300 RFxRF [1"] |
| Reference standard and specification | ISO 15848-2 |
| Reference procedure | PI0063 rev.0 |
| Acceptance criteria | According to Class B of ISO 15848-2<br>Stem seals: ≤ 100 ppmv<br>Body seals: ≤ 50 ppmv |
| Test equipment | Helium M.S. detector<br>Model: œrlikon leybold vacuum PhoeniXL300<br>Serial no.: 90001097262<br>Sensibilty: - in vacuum mode: < 5.0 x 10-12 mbar·l/s<br>- in sniffer mode: < 1.0 x 10-7 mbar·l/s<br>Pressure gauge<br>Range: 0 – 10 Bar (G) Serial no.: B101AM0140<br>Calibrated leaks<br>*Internal permeation type PL80*<br>Serial no.: 091106-316<br>Nominal value: 6.33 x 10-8 mbar·l/s<br>Calibration date: 25/03/2022<br>Calibration temperature: 23°C Temperature drift: 3.5% / K<br>Leak rate decrease: 0.5% / Year |
| Detector calibration | The internal calibration of the Helium M.S. detector is performed automatically by pressing CAL button |

| Test Execution | | |
|---|---|---|
| | Pressure in the valve body: | 6 barg |
| | Test medium: | Helium gas 97% |
| | Helium concentration inside the valve C | 97 % |
| | Stabilization time: | 15 min |
| | Test temperature (measured inside the valve): | room temperature |
| | Soaking time: | up to the temperature stabilization |
| | Scanning duration (for any examined area): | 15 s |
| | Background noise (Rfp): | 5,48E+00 ppmv |
| | Actual leakage Qeff =Qr - Rfp | see following tables |

08 NOV. 2024
FRANCO CORBELLINI
DBB
CROSSWIND

☐ REVIEW ☑ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

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| | FUGITIVE EMISSION TEST REPORT | No. FET_2400593<br>DATE: 07/11/2024<br>Sheet 2/2 |
|---|---|---|

FE leak test at the room temperature

Table 1

Test results before the mechanical cycles

| Measure point | Stem position | Temp. (°C) | Acceptability (ppmv) | Detected leak Qr (ppmv) | Actual leak Qeff (ppmv) |
|---|---|---|---|---|---|
| Steam seals | Half open | 20 | ≤100 | 5,48E+00 | 0,00E+00 |
| Body seals | Half open | 20 | ≤50 | 5,48E+00 | 0,00E+00 |

Table 2

Test results after the mechanical cycles

| Measure point | Stem position | Temp. (°C) | Acceptability (ppmv) | Detected leak Qr (ppmv) | Actual leak Qeff (ppmv) |
|---|---|---|---|---|---|
| Steam seals | Half open | 20 | ≤100 | 5,48E+00 | 0,00E+00 |

**Test result:**

No leakage greater than the acceptance criteria has been detected on examined areas.

08 NOV. 2024
FRANCO CORBELLINI
QSQ
CROSSWIND

☐ REVIEW ☑ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

| Test date | Operator level II | Customer's Inspector | Third Party Inspector |
|---|---|---|---|
| 07/11/2024 | IBBA ALESSANDRO<br>QC INSPECTOR | | |

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| | FUGITIVE EMISSION TEST REPORT | No. FET_2400595<br>DATE: 07/11/2024<br>Sheet 1/2 |
|---|---|---|

| | |
|---|---|
| Job no. | CV2400221 |
| Client | ROSETTI MARINO S.P.A. |
| Client PO | 1724000740 123A90A |
| Plant | Wind Farm Hollandse Kust Noord Wind Park Project |
| Serial no. | 2400595 |
| Tag no. | 25-PV-055A |
| Valve description | Valve CV-8407 NPS 1-1/2 CLASS 300 RFxRF [1"] |
| Reference standard and specification | ISO 15848-2 |
| Reference procedure | PI0063 rev.0 |
| Acceptance criteria | According to Class B of ISO 15848-2<br>Stem seals: ≤ 100 ppmv<br>Body seals: ≤ 50 ppmv |
| Test equipment | Helium M.S. detector<br>Model: œrlikon leybold vacuum PhoeniXL300<br>Serial no.: 90001097262<br>Sensibilty: - in vacuum mode: < 5.0 x 10-12 mbar·l/s<br>- in sniffer mode: < 1.0 x 10-7 mbar·l/s |
| | Pressure gauge<br>Range: 0 – 10 Bar (G) Serial no.: B101AM0140 |
| | Calibrated leaks<br>*Internal permeation type PL80*<br>Serial no.: 091106-316<br>Nominal value: 6.33 x 10-8 mbar·l/s<br>Calibration date: 25/03/2022<br>Calibration temperature: 23°C Temperature drift: 3.5% / K<br>Leak rate decrease: 0.5% / Year |
| Detector calibration | The internal calibration of the Helium M.S. detector is performed automatically by pressing CAL button |

| Test Execution | | |
|---|---|---|
| | Pressure in the valve body: | 6 barg |
| | Test medium: | Helium gas 97% |
| | Helium concentration inside the valve C | 97 % |
| | Stabilization time: | 15 min |
| | Test temperature (measured inside the valve): | room temperature |
| | Soaking time: | up to the temperature stabilization |
| | Scanning duration (for any examined area): | 15 s |
| | Background noise (Rfp): | 5,55E+00 ppmv |
| | Actual leakage Qeff =Qr - Rfp | see following tables |

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CROSSWIND

☐ REVIEW ☑ WITNESS
ON BEHALF OF RMG
A. DELLA PINA DATE 08 NOV 2024

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FE leak test at the room temperature

Table 1

Test results before the mechanical cycles

| Measure point | Stem position | Temp. (°C) | Acceptability (ppmv) | Detected leak Qr (ppmv) | Actual leak Qeff (ppmv) |
|---|---|---|---|---|---|
| Steam seals | Half open | 20 | ≤100 | 5,55E+00 | 0,00E+00 |
| Body seals | Half open | 20 | ≤50 | 5,55E+00 | 0,00E+00 |

Table 2

Test results after the mechanical cycles

| Measure point | Stem position | Temp. (°C) | Acceptability (ppmv) | Detected leak Qr (ppmv) | Actual leak Qeff (ppmv) |
|---|---|---|---|---|---|
| Steam seals | Half open | 20 | ≤100 | 5,55E+00 | 0,00E+00 |

**Test result:**

No leakage greater than the acceptance criteria has been detected on examined areas.

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| Test date | Operator level II | Customer's Inspector | Third Party Inspector |
|---|---|---|---|
| 07/11/2024 | IBBA ALESSANDRO<br>QC INSPECTOR | | |

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| | | |
|---|---|---|
| | CERTIFICATO COLLAUDO FUGA A PERMEAZIONE<br>*(helium permeation reference leaks test certificate)* | CODICE AST (AST code):<br>B107AM7093<br>DATA (date):<br>25/03/2022 |

DESCRIZIONE FUGA A PERMEAZIONE *(helium permeation reference leaks description)*

| | | |
|---|---|---|
| COSTRUTTORE | *(manufacturer):* | ESA SERVICE |
| MODELLO | *(model)* : | PL80 |
| NUMERO DI SERIE | *(serial number)* : | 091106-316 |

DATI DEL COLLAUDO - *test data*

PER I VALORI DI RIFERIMENTO E I VALORI MISURATI VEDERE RAPPORTO DI TARATURA NR. 10979 DI ESA SERVICE
*for the reference values and measured values see calibration report nr. 10979 by Esa Service*

COLLAUDO EFFETTUATO IN ACCORDO ALLA PROCEDURA PI0013
*(test performed according to PI0013)*

| | |
|---|---|
| ESITO COLLAUDO *(test result):* | POSITIVO (positive) |
| DATA PROSSIMO COLLAUDO *(date of next test):* | 25/03/2025 |

| FIRMA Q.C. *(Q.C. signature)* | FIRMA Q.A. *(Q.A. signature)* |
|---|---|
| A.S.T. S.p.A. | A.S.T. S.p.A. |

Mod_045 Scheda Strumenti di Misura

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# CERTIFICATO DI CALIBRAZIONE N° 10979
**Certificate of calibration**

| | |
|---|---|
| **OGGETTO:** *Device:* | Fuga a permeazione |
| **COSTRUTTORE:** *Manufacturer:* | ESA SERVICE |
| **MODELLO:** *Type:* | PL80 |
| **N. CATALOGO:** *Part number:* | F390816 |
| **N° SERIE:** *Serial number:* | 091106-316 Riferimento cliente: B107AM7093 |
| **TIPO DI GAS TRACCIANTE:** *Type of tracer gas:* | Helium |
| **REGISTRO DI LABORATORIO:** *Laboratory reference:* | Certificazioni n. 158 pagina 09 riga 23 |
| **N° PAGINE:** *Number of pages:* | 2 |
| **DATA DI EMISSIONE:** *Date of issue:* | 25-03-2022 |
| **DESTINATARIO:** *Address:* | A.S.T. S.P.A. |
| **RICHIESTA:** *Application:* | Ordine nr° AQ2200598 del 18/03/2022 |
| **DATA DELLE MISURE:** *Date of measurements:* | 25/03/2022 |

0 8 NOV. 2024
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ON BEHALF OF
A. DELLA PINA DATE 0 8 NOV 2024



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ISO 9001 PED 2014/68/UE
Member of CISQ Federation
CERTIFIED MANAGEMENT SYSTEM ISO 9001

**ESA SERVICE S.r.l.**
Via Rossaro, 13 (zona ind. PIP) 24047 TREVIGLIO (BG) Italy
Cod. Fisc., P.IVA e n. Iscriz. Reg. Impr. Bergamo 02259150163
Capitale Sociale € 100.000 i.v. – Iscr CCIAA BG 275495 (REA)

tel ++39.0363.30.1550
e-mail: esa@esaservice.com
http: www.esaservice.com

**ESA & Service**
**MANUFACTURER**
Helium leak detection machines
Helium recovery system
Refrigerant gas filling machines

*certificato nr.* ***10979***

**METODO DI MISURA:** A UNI EN 13192
*Measuring Method:*

**PROCEDURA DI CALIBRAZIONE:** IST11/PT03
*Procedure of calibration:*

**VALORE DI FUGA MISURATO:** Q = 6,33 E-08 mbar l/s Q = 6,33 E-09 Pa m³/s
*Measurnig leakage rate :*

**PRESSIONE IN INGRESSO:** ---------- mbar a
*Inlet pressure:*

**PRESSIONE IN USCITA:** < 1,0 E -02 mbar a
*Oulet pressure:*

**COEFFICIENTE DI TEMPERATURA:** +3,5%/K
*Linear temperature coefficient:*

**TEMPERATURA DI PROVA:** (23,0 +/- 0,5) °C
*Nominal value at:*

**INCERTEZZA DI MISURA:** U = 5,10 E-09 mbarl/s
*Uncertainty of measurement:*

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L'incertezza estesa relativa U è espressa come l'incertezza tipo moltiplicata per il fattore di copertura k=2, che per una distribuzione normale corrisponde ad una probabilità di circa il 95%.

*The expanded relative uncertainty U is expressed as the standard uncertainty multiplied by the coverage factor k = 2, which for a normal distribution corresponds to a level of confidence of approximately 95%.*

ESA SERVICE quale costruttore della presente fuga tarata certifica che, il valore di fuga dichiarato in questo documento è stato determinato per confronto con la fuga campione D9714 00014 (certificata presso il centro D-K-15162-01-00,certificato n. 011692), in modo da garantire la tracciabilità del sistema di misura, come richiesto dagli standard nazionali della ISO 9001.

*ESA SERVICE as the manufacturer of the abothe mentioned product hereby certifies that the leakage rates given in our inspection certificates have been established by reference leak D9714 00014 (calibrated in D-K-15162-01-00 Institute, certificate n. 011692). In this way our measurements of leakage rates are traceable to national standards as required by ISO 9001.*

RESPONSABILE
*head of department*
R. Boldoni

OPERATORE
*operator*
A. Persico

TIMBRO
*stamp*
**ESA SERVICE S.R.L.**
Via Rossaro, 13
24047 TREVIGLIO (BG)
Tel. 0039 0363 301550 - Fax 0039 0363 303020
e-mail: esa@esaservice.com



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RINA CERTIFIED MANAGEMENT SYSTEM ISO 9001

ESA SERVICE S.r.l.
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Cod. Fisc., P.IVA e n. Iscriz. Reg. Impr. Bergamo 02259150163
Capitale Sociale € 100.000 i.v. – Iscr CCIAA BG 275495 (REA)

tel ++39.0363.30.1550
e-mail: esa@esaservice.com
http: www.esaservice.com

| | | |
|---|---|---|
| | **CERTIFICATO COLLAUDO MANOMETRO**<br>***(pressure gauge test certificate)*** | **CODICE AST (AST code):**<br>B101AM0157<br>**DATA (date):**<br>27/09/2024 |

**DESCRIZIONE MANOMETRO *(pressure gauge description)***

| | | |
|---|---|---|
| COSTRUTTORE | *(manufacturer)* : | **WIKA** |
| NUMERO DI SERIE | *(serial number)* : | **8974YCB2** |
| IMPIEGO | *(use)* : | **TEST VALVES** |

**DATI TECNICI *(technical data)***

| | | |
|---|---|---|
| CAMPO DI MISURA | *(range):* | **0 - 100** |
| UNITA' DI MISURA | *(measure unit):* | **bar** |
| CLASSE DI PRECISIONE | *(accuracy):* | **0,6%** |
| MASSIMA DEVIAZIONE AMMISSIBILE | *(max allowable deviation):* | **± 0,600** |

**DATI DEL COLLAUDO - *test data***

| PRESSIONE NOMINALE (bar)<br>*(nominal pressure)* | PRESSIONE RILEVATA (bar)<br>*(measured pressure)* | DEVIAZIONE (bar)<br>*(deviation)* | ACCETTABILE<br>*(acceptable)* |
|---|---|---|---|
| **25,000** | **25,000** | **0,000** | **YES** |
| **50,000** | **49,950** | **-0,050** | **YES** |
| **75,000** | **75,000** | **0,000** | **YES** |
| | | | |
| | | | |
| | | | |

COLLAUDO EFFETTUATO IN ACCORDO ALLA PROCEDURA PI0003
*(test performed according to PI0003)*

BILANCIA DI PRESSIONE DI RIFERIMENTO *(reference pressure balance)*: **B107AM7003**

ESITO COLLAUDO *(test result)*: **POSITIVO (positive)**

DATA PROSSIMO COLLAUDO *(date of next test)*: **27/03/2025**

| **FIRMA Q.C. *(Q.C. signature)*** | **FIRMA Q.A. *(Q.A. signature)*** |
|---|---|
| A.S.T. S.p.A. | A.S.T. S.p.A.<br>Quality Assurance |

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08 NOV 2024
DELLA RINA DATE

| | | |
|---|---|---|
| | **CERTIFICATO COLLAUDO MANOMETRO**<br>***(pressure gauge test certificate)*** | **CODICE AST (AST code):**<br>B101AM0155<br>**DATA (date):**<br>27/09/2024 |

**DESCRIZIONE MANOMETRO *(pressure gauge description)***

| | | |
|---|---|---|
| COSTRUTTORE | *(manufacturer)* : | **WIKA** |
| NUMERO DI SERIE | *(serial number)* : | **8974VR3B** |
| IMPIEGO | *(use)* : | **TEST VALVES** |

**DATI TECNICI *(technical data)***

| | | |
|---|---|---|
| CAMPO DI MISURA | *(range):* | **0 - 40** |
| UNITA' DI MISURA | *(measure unit):* | **bar** |
| CLASSE DI PRECISIONE | *(accuracy):* | **0,6%** |
| MASSIMA DEVIAZIONE AMMISSIBILE | *(max allowable deviation):* | **± 0,240** |

**DATI DEL COLLAUDO - *test data***

| PRESSIONE NOMINALE (bar)<br>*(nominal pressure)* | PRESSIONE RILEVATA (bar)<br>*(measured pressure)* | DEVIAZIONE (bar)<br>*(deviation)* | ACCETTABILE<br>*(acceptable)* |
|---|---|---|---|
| **10,000** | **10,000** | **0,000** | **YES** |
| **20,000** | **20,000** | **0,000** | **YES** |
| **30,000** | **30,000** | **0,000** | **YES** |
| | | | |
| | | | |
| | | | |

COLLAUDO EFFETTUATO IN ACCORDO ALLA PROCEDURA PI0003
*(test performed according to PI0003)*

BILANCIA DI PRESSIONE DI RIFERIMENTO *(reference pressure balance)*: **B107AM7003**

ESITO COLLAUDO *(test result)*: **POSITIVO (positive)**

DATA PROSSIMO COLLAUDO *(date of next test)*: **27/12/2024**

| **FIRMA Q.C. *(Q.C. signature)*** | **FIRMA Q.A. *(Q.A. signature)*** |
|---|---|
| A.S.T. S.p.A. | A.S.T. S.p.A.<br>Quality Assurance |

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ON BEHALF OF RINA
A. DELLAPINA DATE 08 NOV 2024

**AST S.p.A.**
Via R. Merendi, 40
I-20007 Cornaredo MI

P +39 02 934848.1
F +39 02 9362248
W www.astspa.it

Cornaredo, 08/11/2024

| | |
|---|---|
| **Manufacturer:** | **A.S.T. S.p.A.**<br>**via R. Merendi 40 – 20010 Cornaredo (Milano) – ITALY** |
| **Customer:** | **ROSETTI MARINO SPA** |
| **Purchase Order:** | **1724000740 123A90A** |
| **Supply:** | **KIT80000001 2 YEARS SPARE PARTS** |
| **Job:** | **CV2400221** |

## CERTIFICATE OF CONFORMITY

We **A.S.T. S.P.A.**, herewith declare and confirm that the materials supplied against the above mentioned reference have produced, manufactures, inspected and shipped by our Quality Department.
We moreover confirm that materials are perfectly in accordance with Customer ‘s requirements for quantity, quality and dimensions.

*A.S.T. Spa*
*Quality Department*

# CERTIFICATO VALVOLE DI REGOLAZIONE

## Control Valve Certificate

Nr.: 2400591
Date: 06/11/2024
Job: CV2400221

| | | | | |
|---|---|---|---|---|
| CLIENTE - Customer | : | ROSETTI MARINO S.P.A. | | |
| ORDINE - Order | : | 1724000740 123A90A | | |
| SPECIFICA - Specification | : | -- | | |
| SIGLA - Tag | : | 25-PV-040 | | |
| MATRICOLA - Serial | : | 2400591 | | |
| SERIE/MODELLO - Series/Model | : | CV - 8400 | / | CV - 8407 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| DIMENSIONI CORPO - Body Size | : | 2" | | | | | |
| CONNESSIONI - Connections | : | CLASS 300 RF | | | | | |
| DIAMETRO PASSAGGIO - Port Size | : | 1" | | | | | |
| CURVA CARATTERISTICA - Flow Characteristic | : | Equalpercentage | | | | | |
| CLASSE DI TENUTA - Leakage Class | : | VI | | | | | |
| PRESSIONE PROGETTO - Design Pressure | : | 40 | *bar-G* | | | | |
| TEMPERATURA PROGETTO - Design Temperature | | 80 | *°C* | | | | |
| TEMPERATURA AMBIENTE - Ambient Temperature | : | MIN: | -8,4 | *°C* | MAX: | 25 | *°C* |
| PRESSIONE DIFF. VALVOLA CHIUSA - Shutoff Pressure | : | 40 | *bar-G* | | | | |
| POSIZIONE IN MANCANZA ENERGIA - Failure Position | : | CLOSED | | | | | |
| AZIONE FLUSSO - Flow Action | : | TO OPEN | | | | | |

| | | |
|---|---|---|
| **MATERIALI - Materials** | | |
| CORPO / COPERCHIO - Body / Bonnet | : | ASTM A351 CF3M / ASTM A479 316/316L |
| OTTURATORE / SEDI - Plug / Seat | : | ASTM A479 316/316L+PTFE/ASTM A479 316/316L |
| BADERNA - Packing | : | GRAPHITE |
| STELO - Stem | : | ASTM A479 316/316L |

**ATTUATORE - Actuator** : ATTUATORE CON POSIZIONATORE - Actuator With Positioner

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| CORSA NOMINALE - Nominal Stroke | : | 25 | *mm* | | | | |
| CAMPO MOLLA - Spring Range | : | 20 | ÷ | 44 | | | |
| TEMPO DI MANOVRA - Stroking Time | : | ↑ | <15 | ↓ | <15 | *s* | |

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CROSSWIND

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ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

| | | | | |
|---|---|---|---|---|
| **PROVA IDRAULICA CORPO E COPERCHIO** - Hydrostatic Body and Bonnet test | : | 75 | *bar-G* | |
| **PROVA DI TENUTA INVOLUCRO** - Tightness Shell test | : | 44 | *bar-G* | |
| FLUIDO DI PROVA - Test Fluid | : | ACQUA - Water | | |

**PROVA DI TENUTA SEDE IN ACCORDO A** - Seat tightness test according to : IEC 60534-4

| | | | | |
|---|---|---|---|---|
| MANOMETRO - Gauge | : | B101AM0157 | | |
| PRESSIONE DI TEST - Test Pressure | : | 3,5 | *bar* | |
| PERDITA AMMESSA - Allowed Leakage | : | 1 | *Bubble/min* | |
| PERDITA RISCONTRATA - Measured Leakage | : | 0 | *Bubble/min* | |
| FLUIDO DI PROVA - Test Fluid | : | GAS - Gas | | |

| | | |
|---|---|---|
| DIMENSIONALE / FUNZIONALE<br>Dimensional / Functional Check<br>*SODDISFACENTE*<br>*** SATISFACTORY *** | VISTO CLIENTE<br>Customer Sign | A.S.T.<br>REPARTO GARANZIA QUALITÀ<br>Quality Assurance Department |

Rel. 11 - 19/12/2022

# CERTIFICATO VALVOLE DI REGOLAZIONE

## Control Valve Certificate

Nr.: 2400592
Date: 06/11/2024
Job: CV2400221

| | | | | |
|---|---|---|---|---|
| CLIENTE - Customer | : | ROSETTI MARINO S.P.A. | | |
| ORDINE - Order | : | 1724000740 123A90A | | |
| SPECIFICA - Specification | : | -- | | |
| SIGLA - Tag | : | 25-PV-043 | | |
| MATRICOLA - Serial | : | 2400592 | | |
| SERIE/MODELLO - Series/Model | : | CV - 8400 | / | CV - 8407 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| DIMENSIONI CORPO - Body Size | : | 2" | | | | | |
| CONNESSIONI - Connections | : | CLASS 300 RF | | | | | |
| DIAMETRO PASSAGGIO - Port Size | : | 1" | | | | | |
| CURVA CARATTERISTICA - Flow Characteristic | : | Equalpercentage | | | | | |
| CLASSE DI TENUTA - Leakage Class | : | VI | | | | | |
| PRESSIONE PROGETTO - Design Pressure | : | 40 | *bar-G* | | | | |
| TEMPERATURA PROGETTO - Design Temperature | | 80 | *°C* | | | | |
| TEMPERATURA AMBIENTE - Ambient Temperature | : | MIN: | -8,4 | *°C* | MAX: | 25 | *°C* |
| PRESSIONE DIFF. VALVOLA CHIUSA - Shutoff Pressure | : | 40 | *bar-G* | | | | |
| POSIZIONE IN MANCANZA ENERGIA - Failure Position | : | CLOSED | | | | | |
| AZIONE FLUSSO - Flow Action | : | TO OPEN | | | | | |

| | | |
|---|---|---|
| **MATERIALI - Materials** | | |
| CORPO / COPERCHIO - Body / Bonnet | : | ASTM A351 CF3M / ASTM A479 316/316L |
| OTTURATORE / SEDI - Plug / Seat | : | ASTM A479 316/316L+PTFE/ASTM A479 316/316L |
| BADERNA - Packing | : | GRAPHITE |
| STELO - Stem | : | ASTM A479 316/316L |

**ATTUATORE - Actuator** : ATTUATORE CON POSIZIONATORE - Actuator With Positioner

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| CORSA NOMINALE - Nominal Stroke | : | 25 | *mm* | | | | |
| CAMPO MOLLA - Spring Range | : | 20 | ÷ | 44 | | | |
| TEMPO DI MANOVRA - Stroking Time | : | ↑ | <15 | ↓ | <15 | *s* | |

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ON BEHALF OF
A. DELLAPINA DATE 0 8 NOV 2024

| | | | | |
|---|---|---|---|---|
| **PROVA IDRAULICA CORPO E COPERCHIO** - Hydrostatic Body and Bonnet test | : | 75 | *bar-G* | |
| **PROVA DI TENUTA INVOLUCRO** - Tightness Shell test | : | 44 | *bar-G* | |
| FLUIDO DI PROVA - Test Fluid | : | ACQUA - Water | | |

**PROVA DI TENUTA SEDE IN ACCORDO A** - Seat tightness test according to : IEC 60534-4

| | | | |
|---|---|---|---|
| MANOMETRO - Gauge | : | B101AM0157 | |
| PRESSIONE DI TEST - Test Pressure | : | 3,5 | *bar* |
| PERDITA AMMESSA - Allowed Leakage | : | 1 | *Bubble/min* |
| PERDITA RISCONTRATA - Measured Leakage | : | 0 | *Bubble/min* |
| FLUIDO DI PROVA - Test Fluid | : | GAS - Gas | |

| | | |
|---|---|---|
| DIMENSIONALE / FUNZIONALE<br>Dimensional / Functional Check<br>*SODDISFACENTE*<br>*** SATISFACTORY *** | VISTO CLIENTE<br>Customer Sign | A.S.T.<br>REPARTO GARANZIA QUALITÀ<br>Quality Assurance Department |

# CERTIFICATO VALVOLE DI REGOLAZIONE

## Control Valve Certificate

Nr.: 2400593
Date: 06/11/2024
Job: CV2400221

| | | | | | |
|---|---|---|---|---|---|
| CLIENTE - Customer | : | ROSETTI MARINO S.P.A. | | | |
| ORDINE - Order | : | 1724000740 123A90A | | | |
| SPECIFICA - Specification | : | -- | | | |
| SIGLA - Tag | : | 25-PV-046 | | | |
| MATRICOLA - Serial | : | 2400593 | | | |
| SERIE/MODELLO - Series/Model | : | CV - 8400 | / | CV - 8407 | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| DIMENSIONI CORPO - Body Size | : | 2" | | | | | | |
| CONNESSIONI - Connections | : | CLASS 300 RF | | | | | | |
| DIAMETRO PASSAGGIO - Port Size | : | 1" | | | | | | |
| CURVA CARATTERISTICA - Flow Characteristic | : | Equalpercentage | | | | | | |
| CLASSE DI TENUTA - Leakage Class | : | VI | | | | | | |
| PRESSIONE PROGETTO - Design Pressure | : | 40 | *bar-G* | | | | | |
| TEMPERATURA PROGETTO - Design Temperature | | 80 | *°C* | | | | | |
| TEMPERATURA AMBIENTE - Ambient Temperature | : | MIN: | -8,4 | *°C* | MAX: | 25 | *°C* | |
| PRESSIONE DIFF. VALVOLA CHIUSA - Shutoff Pressure | : | 40 | *bar-G* | | | | | |
| POSIZIONE IN MANCANZA ENERGIA - Failure Position | : | CLOSED | | | | | | |
| AZIONE FLUSSO - Flow Action | : | TO OPEN | | | | | | |

| | | |
|---|---|---|
| **MATERIALI - Materials** | | |
| CORPO / COPERCHIO - Body / Bonnet | : | ASTM A351 CF3M / ASTM A479 316/316L |
| OTTURATORE / SEDI - Plug / Seat | : | ASTM A479 316/316L+PTFE/ASTM A479 316/316L |
| BADERNA - Packing | : | GRAPHITE |
| STELO - Stem | : | ASTM A479 316/316L |

**ATTUATORE - Actuator** : ATTUATORE CON POSIZIONATORE - Actuator With Positioner

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| CORSA NOMINALE - Nominal Stroke | : | 25 | *mm* | | | | |
| CAMPO MOLLA - Spring Range | : | 20 | ÷ | 44 | | | |
| TEMPO DI MANOVRA - Stroking Time | : | ↑ | <15 | ↓ | <15 | *s* | |

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND

☐ REVIEW ☑ WITNESS
ON BEHALF OF RMC
A. DELLAPINA DATE 08 NOV 2024

| | | | | |
|---|---|---|---|---|
| **PROVA IDRAULICA CORPO E COPERCHIO** - Hydrostatic Body and Bonnet test | : | 75 | *bar-G* |
| **PROVA DI TENUTA INVOLUCRO** - Tightness Shell test | : | 44 | *bar-G* |
| FLUIDO DI PROVA - Test Fluid | : | ACQUA - Water | |

**PROVA DI TENUTA SEDE IN ACCORDO A** - Seat tightness test according to : IEC 60534-4

| | | | | |
|---|---|---|---|---|
| MANOMETRO - Gauge | : | B101AM0157 | | |
| PRESSIONE DI TEST - Test Pressure | : | 3,5 | *bar* | |
| PERDITA AMMESSA - Allowed Leakage | : | 1 | *Bubble/min* | |
| PERDITA RISCONTRATA - Measured Leakage | : | 0 | *Bubble/min* | |
| FLUIDO DI PROVA - Test Fluid | : | GAS - Gas | | |

| | | |
|---|---|---|
| DIMENSIONALE / FUNZIONALE<br>Dimensional / Functional Check<br>*SODDISFACENTE*<br>*** SATISFACTORY *** | VISTO CLIENTE<br>Customer Sign | A.S.T.<br>REPARTO GARANZIA QUALITÀ<br>Quality Assurance Department |

# CERTIFICATO VALVOLE DI REGOLAZIONE

## Control Valve Certificate

Nr.: 2400594
Date: 06/11/2024
Job: CV2400221

| | | | | |
|---|---|---|---|---|
| CLIENTE - Customer | : | ROSETTI MARINO S.P.A. | | |
| ORDINE - Order | : | 1724000740 123A90A | | |
| SPECIFICA - Specification | : | -- | | |
| SIGLA - Tag | : | 25-PV-049 | | |
| MATRICOLA - Serial | : | 2400594 | | |
| SERIE/MODELLO - Series/Model | : | CV - 8400 | / | CV - 8407 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| DIMENSIONI CORPO - Body Size | : | 2" | | | | | |
| CONNESSIONI - Connections | : | CLASS 300 RF | | | | | |
| DIAMETRO PASSAGGIO - Port Size | : | 1" | | | | | |
| CURVA CARATTERISTICA - Flow Characteristic | : | Equalpercentage | | | | | |
| CLASSE DI TENUTA - Leakage Class | : | VI | | | | | |
| PRESSIONE PROGETTO - Design Pressure | : | 40 | *bar-G* | | | | |
| TEMPERATURA PROGETTO - Design Temperature | | 80 | *°C* | | | | |
| TEMPERATURA AMBIENTE - Ambient Temperature | : | MIN: | -8,4 | *°C* | MAX: | 25 | *°C* |
| PRESSIONE DIFF. VALVOLA CHIUSA - Shutoff Pressure | : | 40 | *bar-G* | | | | |
| POSIZIONE IN MANCANZA ENERGIA - Failure Position | : | CLOSED | | | | | |
| AZIONE FLUSSO - Flow Action | : | TO OPEN | | | | | |

| | | |
|---|---|---|
| **MATERIALI - Materials** | | |
| CORPO / COPERCHIO - Body / Bonnet | : | ASTM A351 CF3M / ASTM A479 316/316L |
| OTTURATORE / SEDI - Plug / Seat | : | ASTM A479 316/316L+PTFE/ASTM A479 316/316L |
| BADERNA - Packing | : | GRAPHITE |
| STELO - Stem | : | ASTM A479 316/316L |

**ATTUATORE - Actuator** : ATTUATORE CON POSIZIONATORE - Actuator With Positioner

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| CORSA NOMINALE - Nominal Stroke | : | 25 | *mm* | | | | |
| CAMPO MOLLA - Spring Range | : | 20 | ÷ | 44 | | | |
| TEMPO DI MANOVRA - Stroking Time | : | ↑ | <15 | ↓ | <15 | *s* | |

08 NOV. 2024
FRANCO CORBELLINI
089
CROSSWIND

☑ REVIEW ☑ WITNESS
ON BEHALF OF RQC
A. DELLA PINA DATE 08 NOV 2024

| | | | | |
|---|---|---|---|---|
| **PROVA IDRAULICA CORPO E COPERCHIO** - Hydrostatic Body and Bonnet test | : | 75 | *bar-G* | |
| **PROVA DI TENUTA INVOLUCRO** - Tightness Shell test | : | 44 | *bar-G* | |
| FLUIDO DI PROVA - Test Fluid | : | ACQUA - Water | | |

**PROVA DI TENUTA SEDE IN ACCORDO A** - Seat tightness test according to : IEC 60534-4

| | | | | |
|---|---|---|---|---|
| MANOMETRO - Gauge | : | B101AM0157 | | |
| PRESSIONE DI TEST - Test Pressure | : | 3,5 | *bar* | |
| PERDITA AMMESSA - Allowed Leakage | : | 1 | *Bubble/min* | |
| PERDITA RISCONTRATA - Measured Leakage | : | 0 | *Bubble/min* | |
| FLUIDO DI PROVA - Test Fluid | : | GAS - Gas | | |

| | | |
|---|---|---|
| DIMENSIONALE / FUNZIONALE<br>Dimensional / Functional Check<br>*SODDISFACENTE*<br>*** SATISFACTORY *** | VISTO CLIENTE<br>Customer Sign | A.S.T.<br>REPARTO GARANZIA QUALITÀ<br>Quality Assurance Department |

# CERTIFICATO VALVOLE DI REGOLAZIONE

## Control Valve Certificate

Nr.: 2400595
Date: 06/11/2024
Job: CV2400221

| | | | | | | |
|---|---|---|---|---|---|---|
| CLIENTE | Customer | : | ROSETTI MARINO S.P.A. | | | |
| ORDINE | Order | : | 1724000740 123A90A | | | |
| SPECIFICA | Specification | : | -- | | | |
| SIGLA | Tag | : | 25-PV-055A | | | |
| MATRICOLA | Serial | : | 2400595 | | | |
| SERIE/MODELLO | Series/Model | : | CV - 8400 | / | CV - 8407 | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| DIMENSIONI CORPO | Body Size | : | 1 1/2" | | | | | |
| CONNESSIONI | Connections | : | CLASS 300 RF | | | | | |
| DIAMETRO PASSAGGIO | Port Size | : | 1" | | | | | |
| CURVA CARATTERISTICA | Flow Characteristic | : | Equalpercentage | | | | | |
| CLASSE DI TENUTA | Leakage Class | : | VI | | | | | |
| PRESSIONE PROGETTO | Design Pressure | : | 40 | *bar-G* | | | | |
| TEMPERATURA PROGETTO | Design Temperature | | 100 | *°C* | | | | |
| TEMPERATURA AMBIENTE | Ambient Temperature | : | MIN: | -8,4 | *°C* | MAX: | 25 | *°C* |
| PRESSIONE DIFF. VALVOLA CHIUSA | Shutoff Pressure | : | 40 | *bar-G* | | | | |
| POSIZIONE IN MANCANZA ENERGIA | Failure Position | : | CLOSED | | | | | |
| AZIONE FLUSSO | Flow Action | : | TO OPEN | | | | | |

| | | | |
|---|---|---|---|
| **MATERIALI** | **Materials** | | |
| CORPO / COPERCHIO | Body / Bonnet | : | ASTM A351 CF3M / ASTM A479 316/316L |
| OTTURATORE / SEDI | Plug / Seat | : | ASTM A479 316/316L+PTFE/ASTM A479 316/316L |
| BADERNA | Packing | : | GRAPHITE (VF1) |
| STELO | Stem | : | ASTM A479 316/316L |

**ATTUATORE - Actuator** : ATTUATORE CON POSIZIONATORE - Actuator With Positioner

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| CORSA NOMINALE | Nominal Stroke | : | 13 | *mm* | | | |
| CAMPO MOLLA | Spring Range | : | 20 | ÷ | 44 | | |
| TEMPO DI MANOVRA | Stroking Time | : | ↑ | <10 | ↓ | <10 | *s* |

0 8 NOV. 2024

FRANCO CORBELLINI

QBO

CROSSWIND

REVIEW WITNESS

ON BEHALF OF RINA

A. DELLA PINA DATE 0 8 NOV 2024

| | | | | |
|---|---|---|---|---|
| **PROVA IDRAULICA CORPO E COPERCHIO** | Hydrostatic Body and Bonnet test | : | 75 | *bar-G* |
| **PROVA DI TENUTA INVOLUCRO** | Tightness Shell test | : | 44 | *bar-G* |

FLUIDO DI PROVA - Test Fluid : ACQUA - Water

**PROVA DI TENUTA SEDE IN ACCORDO A** - Seat tightness test according to : IEC 60534-4

| | | | | |
|---|---|---|---|---|
| MANOMETRO | Gauge | : | B101AM0157 | |
| PRESSIONE DI TEST | Test Pressure | : | 3,5 | *bar* |
| PERDITA AMMESSA | Allowed Leakage | : | 1 | *Bubble/min* |
| PERDITA RISCONTRATA | Measured Leakage | : | 0 | *Bubble/min* |
| FLUIDO DI PROVA | Test Fluid | : | GAS - Gas | |

| DIMENSIONALE / FUNZIONALE<br>Dimensional / Functional Check<br>*SODDISFACENTE*<br>*** SATISFACTORY *** | VISTO CLIENTE<br>Customer Sign | A.S.T.<br>REPARTO GARANZIA QUALITÀ<br>Quality Assurance Department |
|---|---|---|

Ref. 11 - 19/12/2022

# CERTIFICATO VALVOLE DI REGOLAZIONE

## Control Valve Certificate

Nr.: 2400596
Date: 06/11/2024
Job: CV2400221

| | | | | | | |
|---|---|---|---|---|---|---|
| CLIENTE | - Customer | : | ROSETTI MARINO S.P.A. | | | |
| ORDINE | - Order | : | 1724000740 123A90A | | | |
| SPECIFICA | - Specification | : | -- | | | |
| SIGLA | - Tag | : | 25-PV-055B | | | |
| MATRICOLA | - Serial | : | 2400596 | | | |
| SERIE/MODELLO | - Series/Model | : | CV - 8400 | / | CV - 8407 | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| DIMENSIONI CORPO | - Body Size | : | 1 1/2" | | | | | |
| CONNESSIONI | - Connections | : | CLASS 300 RF | | | | | |
| DIAMETRO PASSAGGIO | - Port Size | : | 5/32" | | | | | |
| CURVA CARATTERISTICA | - Flow Characteristic | : | Equalpercentage | | | | | |
| CLASSE DI TENUTA | - Leakage Class | : | VI | | | | | |
| PRESSIONE PROGETTO | - Design Pressure | : | 40 | *bar-G* | | | | |
| TEMPERATURA PROGETTO | - Design Temperature | | 100 | *°C* | | | | |
| TEMPERATURA AMBIENTE | - Ambient Temperature | : | MIN: -8,4 | *°C* | MAX: | 25 | *°C* | |
| PRESSIONE DIFF. VALVOLA CHIUSA | - Shutoff Pressure | : | 40 | *bar-G* | | | | |
| POSIZIONE IN MANCANZA ENERGIA | - Failure Position | : | CLOSED | | | | | |
| AZIONE FLUSSO | - Flow Action | : | TO OPEN | | | | | |

| | | | |
|---|---|---|---|
| **MATERIALI** | - **Materials** | | |
| CORPO / COPERCHIO | - Body / Bonnet | : | ASTM A351 CF3M / ASTM A479 316/316L |
| OTTURATORE / SEDI | - Plug / Seat | : | ASTM A479 316/316L+PTFE/ASTM A479 316/316L |
| BADERNA | - Packing | : | GRAPHITE (VF1) |
| STELO | - Stem | : | ASTM A479 316/316L |

**ATTUATORE** - **Actuator** : ATTUATORE CON POSIZIONATORE - Actuator With Positioner

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| CORSA NOMINALE | - Nominal Stroke | : | 13 | *mm* | | | |
| CAMPO MOLLA | - Spring Range | : | 20 | ÷ | 44 | | |
| TEMPO DI MANOVRA | - Stroking Time | : | ↑ <10 | ↓ | <10 | *s* | |

08 NOV. 2024
FRANCO CORBELLINI
QBC
CROSSWIND

REVIEW WITNESS
ON BEHALF OF RTC
A. DELLAPINA DATE 08 NOV 2024

| | | | | |
|---|---|---|---|---|
| **PROVA IDRAULICA CORPO E COPERCHIO** | - Hydrostatic Body and Bonnet test | : | 75 | *bar-G* |
| **PROVA DI TENUTA INVOLUCRO** | - Tightness Shell test | : | 44 | *bar-G* |

FLUIDO DI PROVA - Test Fluid : ACQUA - Water

**PROVA DI TENUTA SEDE IN ACCORDO A** - Seat tightness test according to : IEC 60534-4

| | | | | |
|---|---|---|---|---|
| MANOMETRO | - Gauge | : | B101AM0157 | |
| PRESSIONE DI TEST | - Test Pressure | : | 3,5 | *bar* |
| PERDITA AMMESSA | - Allowed Leakage | : | 1 | *Bubble/min* |
| PERDITA RISCONTRATA | - Measured Leakage | : | 0 | *Bubble/min* |
| FLUIDO DI PROVA | - Test Fluid | : | GAS - Gas | |

| DIMENSIONALE / FUNZIONALE<br>Dimensional / Functional Check<br>*SODDISFACENTE*<br>*** SATISFACTORY *** | VISTO CLIENTE<br>Customer Sign | A.S.T.<br>REPARTO GARANZIA QUALITÀ<br>Quality Assurance Department |
|---|---|---|

~~1724000740-QC-DB-00016_01~~

# CERTIFICATO VALVOLE DI REGOLAZIONE

## Control Valve Certificate

Nr.: 2400597
Date: 06/11/2024
Job: CV2400221

| | | | | |
|---|---|---|---|---|
| CLIENTE - Customer | : | ROSETTI MARINO S.P.A. | | |
| ORDINE - Order | : | 1724000740 123A90A | | |
| SPECIFICA - Specification | : | -- | | |
| SIGLA - Tag | : | 64-PV-031A | | |
| MATRICOLA - Serial | : | 2400597 | | |
| SERIE/MODELLO - Series/Model | : | CV - 8400 | / | CV - 8407 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| DIMENSIONI CORPO - Body Size | : | 1" | | | | | | |
| CONNESSIONI - Connections | : | CLASS 150 RF | | | | | | |
| DIAMETRO PASSAGGIO - Port Size | : | 3/8" | | | | | | |
| CURVA CARATTERISTICA - Flow Characteristic | : | Equalpercentage | | | | | | |
| CLASSE DI TENUTA - Leakage Class | : | V | | | | | | |
| PRESSIONE PROGETTO - Design Pressure | : | 10 | *bar-G* | | | | | |
| TEMPERATURA PROGETTO - Design Temperature | | 100 | *°C* | | | | | |
| TEMPERATURA AMBIENTE - Ambient Temperature | : | MIN: | -8,4 | *°C* | MAX: | 25 | *°C* | |
| PRESSIONE DIFF. VALVOLA CHIUSA - Shutoff Pressure | : | 10 | *bar-G* | | | | | |
| POSIZIONE IN MANCANZA ENERGIA - Failure Position | : | CLOSED | | | | | | |
| AZIONE FLUSSO - Flow Action | : | TO OPEN | | | | | | |

| | | |
|---|---|---|
| **MATERIALI - Materials** | | |
| CORPO / COPERCHIO - Body / Bonnet | : | ASTM A350 LF2 |
| OTTURATORE / SEDI - Plug / Seat | : | ASTM A479 316/316L+CoCr-a |
| BADERNA - Packing | : | PTFE (VTG) |
| STELO - Stem | : | ASTM A479 316/316L |

**ATTUATORE - Actuator** : ATTUATORE CON POSIZIONATORE - Actuator With Positioner

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| CORSA NOMINALE - Nominal Stroke | : | 13 | *mm* | | | | |
| CAMPO MOLLA - Spring Range | : | 15 | ÷ | 30 | | | |
| TEMPO DI MANOVRA - Stroking Time | : | ↑ | <10 | ↓ | <10 | *s* | |

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND

☑ REVIEW ☑ WITNESS
ON BEHALF OF RMG
A. DELLA PINA DATE 08 NOV 2024

| | | | | |
|---|---|---|---|---|
| **PROVA IDRAULICA CORPO E COPERCHIO** - Hydrostatic Body and Bonnet test | : | 30 | *bar-G* | |
| **PROVA DI TENUTA INVOLUCRO** - Tightness Shell test | : | 15 | *bar-G* | |
| FLUIDO DI PROVA - Test Fluid | : | ACQUA - Water | | |

**PROVA DI TENUTA SEDE IN ACCORDO A** - Seat tightness test according to : IEC 60534-4

| | | | | |
|---|---|---|---|---|
| MANOMETRO - Gauge | : | B101AM0155 | | |
| PRESSIONE DI TEST - Test Pressure | : | 10 | *bar* | |
| PERDITA AMMESSA - Allowed Leakage | : | 0,036 | *ml/min* | |
| PERDITA RISCONTRATA - Measured Leakage | : | 0 | *ml/min* | |
| FLUIDO DI PROVA - Test Fluid | : | ACQUA - Water | | |

| DIMENSIONALE / FUNZIONALE<br>Dimensional / Functional Check<br>*SODDISFACENTE*<br>*** SATISFACTORY *** | VISTO CLIENTE<br>Customer Sign | A.S.T.<br>REPARTO GARANZIA QUALITÀ<br>Quality Assurance Department |
|---|---|---|

Rel. 11 - 19/12/2022

# CERTIFICATO VALVOLE DI REGOLAZIONE

## Control Valve Certificate

Nr.: 2400598
Date: 06/11/2024
Job: CV2400221

| | | | | | | |
|---|---|---|---|---|---|---|
| CLIENTE | - Customer | : | ROSETTI MARINO S.P.A. | | | |
| ORDINE | - Order | : | 1724000740 123A90A | | | |
| SPECIFICA | - Specification | : | -- | | | |
| SIGLA | - Tag | : | 64-PV-031B | | | |
| MATRICOLA | - Serial | : | 2400598 | | | |
| SERIE/MODELLO | - Series/Model | : | CV - 8400 | / | CV - 8407 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| DIMENSIONI CORPO | - Body Size | : | 1" | | | | |
| CONNESSIONI | - Connections | : | CLASS 150 RF | | | | |
| DIAMETRO PASSAGGIO | - Port Size | : | 3/8" | | | | |
| CURVA CARATTERISTICA | - Flow Characteristic | : | Equalpercentage | | | | |
| CLASSE DI TENUTA | - Leakage Class | : | V | | | | |
| PRESSIONE PROGETTO | - Design Pressure | : | 10 | *bar-G* | | | |
| TEMPERATURA PROGETTO | - Design Temperature | | 100 | *°C* | | | |
| TEMPERATURA AMBIENTE | - Ambient Temperature | : | MIN: -8,4 | *°C* | MAX: | 25 | *°C* |
| PRESSIONE DIFF. VALVOLA CHIUSA | - Shutoff Pressure | : | 10 | *bar-G* | | | |
| POSIZIONE IN MANCANZA ENERGIA | - Failure Position | : | CLOSED | | | | |
| AZIONE FLUSSO | - Flow Action | : | TO OPEN | | | | |

| | | | |
|---|---|---|---|
| **MATERIALI** | - **Materials** | | |
| CORPO / COPERCHIO | - Body / Bonnet | : | ASTM A350 LF2 |
| OTTURATORE / SEDI | - Plug / Seat | : | ASTM A479 316/316L+CoCr-a |
| BADERNA | - Packing | : | PTFE (VTG) |
| STELO | - Stem | : | ASTM A479 316/316L |

**ATTUATORE** - **Actuator** : ATTUATORE CON POSIZIONATORE - Actuator With Positioner

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| CORSA NOMINALE | - Nominal Stroke | : | 13 | *mm* | | | |
| CAMPO MOLLA | - Spring Range | : | 15 | ÷ | 30 | | |
| TEMPO DI MANOVRA | - Stroking Time | : | ↑ <10 | ↓ | <10 | *s* | |

08 NOV. 2024
FRANCO CORBELLINI
080
CROSSWIND

REVIEW ☑ WITNESS
ON BEHALF OF
A. DELLA PINA DATE 08 NOV 2024

| | | | | |
|---|---|---|---|---|
| **PROVA IDRAULICA CORPO E COPERCHIO** | - Hydrostatic Body and Bonnet test | : | 30 | *bar-G* |
| **PROVA DI TENUTA INVOLUCRO** | - Tightness Shell test | : | 15 | *bar-G* |

FLUIDO DI PROVA - Test Fluid : ACQUA - Water

**PROVA DI TENUTA SEDE IN ACCORDO A** - Seat tightness test according to : IEC 60534-4

| | | | | |
|---|---|---|---|---|
| MANOMETRO | - Gauge | : | B101AM0155 | |
| PRESSIONE DI TEST | - Test Pressure | : | 10 | *bar* |
| PERDITA AMMESSA | - Allowed Leakage | : | 0,036 | *ml/min* |
| PERDITA RISCONTRATA | - Measured Leakage | : | 0 | *ml/min* |
| FLUIDO DI PROVA | - Test Fluid | : | ACQUA - Water | |

| DIMENSIONALE / FUNZIONALE<br>Dimensional / Functional Check<br>*SODDISFACENTE*<br>*** SATISFACTORY *** | VISTO CLIENTE<br>Customer Sign | A.S.T.<br>REPARTO GARANZIA QUALITÀ<br>Quality Assurance Department |
|---|---|---|

Rel. 11 - 19/12/2022

# CERTIFICATO VALVOLE DI REGOLAZIONE

## Control Valve Certificate

Nr.: 2400583
Date: 06/11/2024
Job: CV2400221

| | | | | |
|---|---|---|---|---|
| CLIENTE - Customer | : | ROSETTI MARINO S.P.A. | | |
| ORDINE - Order | : | 1724000740 123A90A | | |
| SPECIFICA - Specification | : | -- | | |
| SIGLA - Tag | : | 25-FV-031 | | |
| MATRICOLA - Serial | : | 2400583 | | |
| SERIE/MODELLO - Series/Model | : | CV - 8400 | / | CV - 8407 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| DIMENSIONI CORPO - Body Size | : | 1" | | | | | |
| CONNESSIONI - Connections | : | CLASS 300 RF | | | | | |
| DIAMETRO PASSAGGIO - Port Size | : | 1/4" | | | | | |
| CURVA CARATTERISTICA - Flow Characteristic | : | Equalpercentage | | | | | |
| CLASSE DI TENUTA - Leakage Class | : | VI | | | | | |
| PRESSIONE PROGETTO - Design Pressure | : | 40 | *bar-G* | | | | |
| TEMPERATURA PROGETTO - Design Temperature | | 100 | *°C* | | | | |
| TEMPERATURA AMBIENTE - Ambient Temperature | : | MIN: | -8,4 | *°C* | MAX: | 25 | *°C* |
| PRESSIONE DIFF. VALVOLA CHIUSA - Shutoff Pressure | : | 40 | *bar-G* | | | | |
| POSIZIONE IN MANCANZA ENERGIA - Failure Position | : | CLOSED | | | | | |
| AZIONE FLUSSO - Flow Action | : | TO OPEN | | | | | |

| | | |
|---|---|---|
| **MATERIALI - Materials** | | |
| CORPO / COPERCHIO - Body / Bonnet | : | ASTM A351 CF3M / ASTM A479 316/316L |
| OTTURATORE / SEDI - Plug / Seat | : | ASTM A479 316/316L+PTFE/ASTM A479 316/316L |
| BADERNA - Packing | : | PTFE |
| STELO - Stem | : | ASTM A479 316/316L |

**ATTUATORE - Actuator** : ATTUATORE CON POSIZIONATORE - Actuator With Positioner

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| CORSA NOMINALE - Nominal Stroke | : | 13 | *mm* | | | | |
| CAMPO MOLLA - Spring Range | : | 15 | ÷ | 30 | | | |
| TEMPO DI MANOVRA - Stroking Time | : | ↑ | <3 | ↓ | <3 | *s* | |

08 NOV. 2024
FRANCO CORBELLINI
CBO
CROSSWIND

| | | | | |
|---|---|---|---|---|
| **PROVA IDRAULICA CORPO E COPERCHIO** - Hydrostatic Body and Bonnet test | : | 75 | *bar-G* | |
| **PROVA DI TENUTA INVOLUCRO** - Tightness Shell test | : | 44 | *bar-G* | |
| FLUIDO DI PROVA - Test Fluid | : | ACQUA - Water | | |

**PROVA DI TENUTA SEDE IN ACCORDO A** - Seat tightness test according to : IEC 60534-4

| | | | | |
|---|---|---|---|---|
| MANOMETRO - Gauge | : | B101AM0157 | | |
| PRESSIONE DI TEST - Test Pressure | : | 3,5 | *bar* | |
| PERDITA AMMESSA - Allowed Leakage | : | 1 | *Bubble/min* | |
| PERDITA RISCONTRATA - Measured Leakage | : | 0 | *Bubble/min* | |
| FLUIDO DI PROVA - Test Fluid | : | GAS - Gas | | |

| | | |
|---|---|---|
| DIMENSIONALE / FUNZIONALE<br>Dimensional / Functional Check<br>*SODDISFACENTE*<br>*** SATISFACTORY *** | VISTO CLIENTE<br>Customer Sign<br>PREVIEW WITNESS<br>ON BEHALF OF<br>A. DELLA PINA DATE 08 NOV 2024 | A.S.T.<br>REPARTO GARANZIA QUALITÀ<br>Quality Assurance Department |

Rel. 11 - 19/12/2022

# CERTIFICATO VALVOLE DI REGOLAZIONE

## Control Valve Certificate

Nr.: 2400584
Date: 06/11/2024
Job: CV2400221

| | | | | |
|---|---|---|---|---|
| CLIENTE - Customer | : | ROSETTI MARINO S.P.A. | | |
| ORDINE - Order | : | 1724000740 123A90A | | |
| SPECIFICA - Specification | : | -- | | |
| SIGLA - Tag | : | 25-FV-032 | | |
| MATRICOLA - Serial | : | 2400584 | | |
| SERIE/MODELLO - Series/Model | : | CV - 8400 | / | CV - 8407 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| DIMENSIONI CORPO - Body Size | : | 1" | | | | | |
| CONNESSIONI - Connections | : | CLASS 300 RF | | | | | |
| DIAMETRO PASSAGGIO - Port Size | : | 1/4" | | | | | |
| CURVA CARATTERISTICA - Flow Characteristic | : | Equalpercentage | | | | | |
| CLASSE DI TENUTA - Leakage Class | : | VI | | | | | |
| PRESSIONE PROGETTO - Design Pressure | : | 40 | *bar-G* | | | | |
| TEMPERATURA PROGETTO - Design Temperature | | 100 | *°C* | | | | |
| TEMPERATURA AMBIENTE - Ambient Temperature | : | MIN: | -8,4 | *°C* | MAX: | 25 | *°C* |
| PRESSIONE DIFF. VALVOLA CHIUSA - Shutoff Pressure | : | 40 | *bar-G* | | | | |
| POSIZIONE IN MANCANZA ENERGIA - Failure Position | : | CLOSED | | | | | |
| AZIONE FLUSSO - Flow Action | : | TO OPEN | | | | | |

| | | |
|---|---|---|
| **MATERIALI - Materials** | | |
| CORPO / COPERCHIO - Body / Bonnet | : | ASTM A351 CF3M / ASTM A479 316/316L |
| OTTURATORE / SEDI - Plug / Seat | : | ASTM A479 316/316L+PTFE/ASTM A479 316/316L |
| BADERNA - Packing | : | PTFE |
| STELO - Stem | : | ASTM A479 316/316L |

**ATTUATORE - Actuator** : ATTUATORE CON POSIZIONATORE - Actuator With Positioner

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| CORSA NOMINALE - Nominal Stroke | : | 13 | *mm* | | | | |
| CAMPO MOLLA - Spring Range | : | 15 | ÷ | 30 | | | |
| TEMPO DI MANOVRA - Stroking Time | : | ↑ | <3 | ↓ | <3 | *s* | |

0 8 NOV. 2024
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QBQ
CROSSWIND

REVIEW WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

| | | | | |
|---|---|---|---|---|
| **PROVA IDRAULICA CORPO E COPERCHIO** - Hydrostatic Body and Bonnet test | : | 75 | *bar-G* | |
| **PROVA DI TENUTA INVOLUCRO** - Tightness Shell test | : | 44 | *bar-G* | |
| FLUIDO DI PROVA - Test Fluid | : | ACQUA - Water | | |

**PROVA DI TENUTA SEDE IN ACCORDO A** - Seat tightness test according to : IEC 60534-4

| | | | |
|---|---|---|---|
| MANOMETRO - Gauge | : | B101AM0157 | |
| PRESSIONE DI TEST - Test Pressure | : | 3,5 | *bar* |
| PERDITA AMMESSA - Allowed Leakage | : | 1 | *Bubble/min* |
| PERDITA RISCONTRATA - Measured Leakage | : | 0 | *Bubble/min* |
| FLUIDO DI PROVA - Test Fluid | : | GAS - Gas | |

| DIMENSIONALE / FUNZIONALE<br>Dimensional / Functional Check<br>*SODDISFACENTE*<br>*** SATISFACTORY *** | VISTO CLIENTE<br>Customer Sign | A.S.T.<br>REPARTO GARANZIA QUALITÀ<br>Quality Assurance Department |
|---|---|---|

# CERTIFICATO VALVOLE DI REGOLAZIONE

## Control Valve Certificate

Nr.: 2400585
Date: 06/11/2024
Job: CV2400221

| | | | | | | |
|---|---|---|---|---|---|---|
| CLIENTE - Customer | : | ROSETTI MARINO S.P.A. | | | | |
| ORDINE - Order | : | 1724000740 123A90A | | | | |
| SPECIFICA - Specification | : | -- | | | | |
| SIGLA - Tag | : | 25-FV-033 | | | | |
| MATRICOLA - Serial | : | 2400585 | | | | |
| SERIE/MODELLO - Series/Model | : | CV - 8400 | / | CV - 8407 | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| DIMENSIONI CORPO - Body Size | : | 1" | | | | | | |
| CONNESSIONI - Connections | : | CLASS 300 RF | | | | | | |
| DIAMETRO PASSAGGIO - Port Size | : | 1/4" | | | | | | |
| CURVA CARATTERISTICA - Flow Characteristic | : | Equalpercentage | | | | | | |
| CLASSE DI TENUTA - Leakage Class | : | VI | | | | | | |
| PRESSIONE PROGETTO - Design Pressure | : | 40 | *bar-G* | | | | | |
| TEMPERATURA PROGETTO - Design Temperature | | 100 | *°C* | | | | | |
| TEMPERATURA AMBIENTE - Ambient Temperature | : | MIN: | -8,4 | *°C* | MAX: | 25 | *°C* | |
| PRESSIONE DIFF. VALVOLA CHIUSA - Shutoff Pressure | : | 40 | *bar-G* | | | | | |
| POSIZIONE IN MANCANZA ENERGIA - Failure Position | : | CLOSED | | | | | | |
| AZIONE FLUSSO - Flow Action | : | TO OPEN | | | | | | |

| | | |
|---|---|---|
| **MATERIALI - Materials** | | |
| CORPO / COPERCHIO - Body / Bonnet | : | ASTM A351 CF3M / ASTM A479 316/316L |
| OTTURATORE / SEDI - Plug / Seat | : | ASTM A479 316/316L+PTFE/ASTM A479 316/316L |
| BADERNA - Packing | : | PTFE |
| STELO - Stem | : | ASTM A479 316/316L |

**ATTUATORE - Actuator** : ATTUATORE CON POSIZIONATORE - Actuator With Positioner

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| CORSA NOMINALE - Nominal Stroke | : | 13 | *mm* | | | | |
| CAMPO MOLLA - Spring Range | : | 15 | ÷ | 30 | | | |
| TEMPO DI MANOVRA - Stroking Time | : | ↑ | <3 | ↓ | <3 | *s* | |

08 NOV. 2024
FRANCO CORBELLINI
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REVIEW WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

| | | | | |
|---|---|---|---|---|
| **PROVA IDRAULICA CORPO E COPERCHIO** - Hydrostatic Body and Bonnet test | : | 75 | *bar-G* |
| **PROVA DI TENUTA INVOLUCRO** - Tightness Shell test | : | 44 | *bar-G* |

FLUIDO DI PROVA - Test Fluid : ACQUA - Water

**PROVA DI TENUTA SEDE IN ACCORDO A** - Seat tightness test according to : IEC 60534-4

| | | | |
|---|---|---|---|
| MANOMETRO - Gauge | : | B101AM0157 | |
| PRESSIONE DI TEST - Test Pressure | : | 3,5 | *bar* |
| PERDITA AMMESSA - Allowed Leakage | : | 1 | *Bubble/min* |
| PERDITA RISCONTRATA - Measured Leakage | : | 0 | *Bubble/min* |
| FLUIDO DI PROVA - Test Fluid | : | GAS - Gas | |

| DIMENSIONALE / FUNZIONALE<br>Dimensional / Functional Check<br>*SODDISFACENTE*<br>*** SATISFACTORY *** | VISTO CLIENTE<br>Customer Sign | A.S.T.<br>REPARTO GARANZIA QUALITÀ<br>Quality Assurance Department |
|---|---|---|

# CERTIFICATO VALVOLE DI REGOLAZIONE

## Control Valve Certificate

Nr.: 2400586
Date: 06/11/2024
Job: CV2400221

| | | | | | | |
|---|---|---|---|---|---|---|
| CLIENTE - Customer | : | ROSETTI MARINO S.P.A. | | | | |
| ORDINE - Order | : | 1724000740 123A90A | | | | |
| SPECIFICA - Specification | : | -- | | | | |
| SIGLA - Tag | : | 25-FV-034 | | | | |
| MATRICOLA - Serial | : | 2400586 | | | | |
| SERIE/MODELLO - Series/Model | : | CV - 8400 | / | CV - 8407 | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| DIMENSIONI CORPO - Body Size | : | 1" | | | | | | |
| CONNESSIONI - Connections | : | CLASS 300 RF | | | | | | |
| DIAMETRO PASSAGGIO - Port Size | : | 1/4" | | | | | | |
| CURVA CARATTERISTICA - Flow Characteristic | : | Equalpercentage | | | | | | |
| CLASSE DI TENUTA - Leakage Class | : | VI | | | | | | |
| PRESSIONE PROGETTO - Design Pressure | : | 40 | *bar-G* | | | | | |
| TEMPERATURA PROGETTO - Design Temperature | | 100 | *°C* | | | | | |
| TEMPERATURA AMBIENTE - Ambient Temperature | : | MIN: | -8,4 | *°C* | MAX: | 25 | *°C* | |
| PRESSIONE DIFF. VALVOLA CHIUSA - Shutoff Pressure | : | 40 | *bar-G* | | | | | |
| POSIZIONE IN MANCANZA ENERGIA - Failure Position | : | CLOSED | | | | | | |
| AZIONE FLUSSO - Flow Action | : | TO OPEN | | | | | | |

| | | |
|---|---|---|
| **MATERIALI - Materials** | | |
| CORPO / COPERCHIO - Body / Bonnet | : | ASTM A351 CF3M / ASTM A479 316/316L |
| OTTURATORE / SEDI - Plug / Seat | : | ASTM A479 316/316L+PTFE/ASTM A479 316/316L |
| BADERNA - Packing | : | PTFE |
| STELO - Stem | : | ASTM A479 316/316L |

**ATTUATORE - Actuator** : ATTUATORE CON POSIZIONATORE - Actuator With Positioner

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| CORSA NOMINALE - Nominal Stroke | : | 13 | *mm* | | | | | |
| CAMPO MOLLA - Spring Range | : | 15 | ÷ | 30 | | | | |
| TEMPO DI MANOVRA - Stroking Time | : | ↑ | <3 | ↓ | <3 | *s* | | |

08 NOV. 2024
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CROSSWIND

☐ REVIEW ☑ WITNESS
ON BEHALF OF RCG
A. DELLA PINA DATE 08 NOV 2024

| | | | | |
|---|---|---|---|---|
| **PROVA IDRAULICA CORPO E COPERCHIO** - Hydrostatic Body and Bonnet test | : | 75 | *bar-G* |
| **PROVA DI TENUTA INVOLUCRO** - Tightness Shell test | : | 44 | *bar-G* |

FLUIDO DI PROVA - Test Fluid : ACQUA - Water

**PROVA DI TENUTA SEDE IN ACCORDO A** - Seat tightness test according to : IEC 60534-4

| | | | | |
|---|---|---|---|---|
| MANOMETRO - Gauge | : | B101AM0157 | |
| PRESSIONE DI TEST - Test Pressure | : | 3,5 | *bar* |
| PERDITA AMMESSA - Allowed Leakage | : | 1 | *Bubble/min* |
| PERDITA RISCONTRATA - Measured Leakage | : | 0 | *Bubble/min* |
| FLUIDO DI PROVA - Test Fluid | : | GAS - Gas | |

| | | |
|---|---|---|
| DIMENSIONALE / FUNZIONALE<br>Dimensional / Functional Check<br>*SODDISFACENTE*<br>*** SATISFACTORY *** | VISTO CLIENTE<br>Customer Sign | A.S.T.<br>REPARTO GARANZIA QUALITÀ<br>Quality Assurance Department |

# CERTIFICATO VALVOLE DI REGOLAZIONE

## Control Valve Certificate

Nr.: 2400587
Date: 06/11/2024
Job: CV2400221

| | | | | | | |
|---|---|---|---|---|---|---|
| CLIENTE | - Customer | : | ROSETTI MARINO S.P.A. | | | |
| ORDINE | - Order | : | 1724000740 123A90A | | | |
| SPECIFICA | - Specification | : | -- | | | |
| SIGLA | - Tag | : | 25-FV-036 | | | |
| MATRICOLA | - Serial | : | 2400587 | | | |
| SERIE/MODELLO | - Series/Model | : | CV - 8400 | / | CV - 8407 | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| DIMENSIONI CORPO | - Body Size | : | 1" | | | | | |
| CONNESSIONI | - Connections | : | CLASS 300 RF | | | | | |
| DIAMETRO PASSAGGIO | - Port Size | : | 1/4" | | | | | |
| CURVA CARATTERISTICA | - Flow Characteristic | : | Equalpercentage | | | | | |
| CLASSE DI TENUTA | - Leakage Class | : | VI | | | | | |
| PRESSIONE PROGETTO | - Design Pressure | : | 40 | *bar-G* | | | | |
| TEMPERATURA PROGETTO | - Design Temperature | | 100 | *°C* | | | | |
| TEMPERATURA AMBIENTE | - Ambient Temperature | : | MIN: | -8,4 | *°C* | MAX: | 25 | *°C* |
| PRESSIONE DIFF. VALVOLA CHIUSA | - Shutoff Pressure | : | 40 | *bar-G* | | | | |
| POSIZIONE IN MANCANZA ENERGIA | - Failure Position | : | CLOSED | | | | | |
| AZIONE FLUSSO | - Flow Action | : | TO OPEN | | | | | |

| | | | |
|---|---|---|---|
| **MATERIALI** | - **Materials** | | |
| CORPO / COPERCHIO | - Body / Bonnet | : | ASTM A351 CF3M / ASTM A479 316/316L |
| OTTURATORE / SEDI | - Plug / Seat | : | ASTM A479 316/316L+PTFE/ASTM A479 316/316L |
| BADERNA | - Packing | : | PTFE |
| STELO | - Stem | : | ASTM A479 316/316L |

**ATTUATORE** - **Actuator** : ATTUATORE CON POSIZIONATORE - Actuator With Positioner

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| CORSA NOMINALE | - Nominal Stroke | : | 13 | *mm* | | | |
| CAMPO MOLLA | - Spring Range | : | 15 | ÷ | 30 | | |
| TEMPO DI MANOVRA | - Stroking Time | : | ↑ <3 | ↓ | <3 | *s* | |

08 NOV. 2024
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CROSSWIND

PREVIEW WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

| | | | | |
|---|---|---|---|---|
| **PROVA IDRAULICA CORPO E COPERCHIO** | - Hydrostatic Body and Bonnet test | : | 75 | *bar-G* |
| **PROVA DI TENUTA INVOLUCRO** | - Tightness Shell test | : | 44 | *bar-G* |
| FLUIDO DI PROVA | - Test Fluid | : | ACQUA - Water | |

**PROVA DI TENUTA SEDE IN ACCORDO A** - Seat tightness test according to : IEC 60534-4

| | | | | |
|---|---|---|---|---|
| MANOMETRO | - Gauge | : | B101AM0157 | |
| PRESSIONE DI TEST | - Test Pressure | : | 3,5 | *bar* |
| PERDITA AMMESSA | - Allowed Leakage | : | 1 | *Bubble/min* |
| PERDITA RISCONTRATA | - Measured Leakage | : | 0 | *Bubble/min* |
| FLUIDO DI PROVA | - Test Fluid | : | GAS - Gas | |

| | | |
|---|---|---|
| DIMENSIONALE / FUNZIONALE<br>Dimensional / Functional Check<br>*SODDISFACENTE*<br>*** SATISFACTORY *** | VISTO CLIENTE<br>Customer Sign | A.S.T.<br>REPARTO GARANZIA QUALITÀ<br>Quality Assurance Department |

# CERTIFICATO VALVOLE DI REGOLAZIONE

## Control Valve Certificate

Nr.: 2400588
Date: 06/11/2024
Job: CV2400221

| | | | |
|---|---|---|---|
| CLIENTE - Customer | : | ROSETTI MARINO S.P.A. | |
| ORDINE - Order | : | 1724000740 123A90A | |
| SPECIFICA - Specification | : | -- | |
| SIGLA - Tag | : | 25-FV-038 | |
| MATRICOLA - Serial | : | 2400588 | |
| SERIE/MODELLO - Series/Model | : | CV - 8400 / CV - 8407 | |

| | | | |
|---|---|---|---|
| DIMENSIONI CORPO - Body Size | : | 1" | |
| CONNESSIONI - Connections | : | CLASS 300 RF | |
| DIAMETRO PASSAGGIO - Port Size | : | 1/4" | |
| CURVA CARATTERISTICA - Flow Characteristic | : | Equalpercentage | |
| CLASSE DI TENUTA - Leakage Class | : | VI | |
| PRESSIONE PROGETTO - Design Pressure | : | 40 | *bar-G* |
| TEMPERATURA PROGETTO - Design Temperature | | 100 | *°C* |
| TEMPERATURA AMBIENTE - Ambient Temperature | : | MIN: -8,4 *°C* | MAX: 25 *°C* |
| PRESSIONE DIFF. VALVOLA CHIUSA - Shutoff Pressure | : | 40 | *bar-G* |
| POSIZIONE IN MANCANZA ENERGIA - Failure Position | : | CLOSED | |
| AZIONE FLUSSO - Flow Action | : | TO OPEN | |

| | | |
|---|---|---|
| **MATERIALI - Materials** | | |
| CORPO / COPERCHIO - Body / Bonnet | : | ASTM A351 CF3M / ASTM A479 316/316L |
| OTTURATORE / SEDI - Plug / Seat | : | ASTM A479 316/316L+PTFE/ASTM A479 316/316L |
| BADERNA - Packing | : | PTFE |
| STELO - Stem | : | ASTM A479 316/316L |

**ATTUATORE - Actuator** : ATTUATORE CON POSIZIONATORE - Actuator With Positioner

| | | | |
|---|---|---|---|
| CORSA NOMINALE - Nominal Stroke | : | 13 | *mm* |
| CAMPO MOLLA - Spring Range | : | 15 ÷ 30 | |
| TEMPO DI MANOVRA - Stroking Time | : | ↑ <3 ↓ <3 | *s* |

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND

REVIEW WITNESS
ON BEHALF OF RRC
A. DELLA PINA DATE 08 NOV 2024

| | | | |
|---|---|---|---|
| **PROVA IDRAULICA CORPO E COPERCHIO** - Hydrostatic Body and Bonnet test | : | 75 | *bar-G* |
| **PROVA DI TENUTA INVOLUCRO** - Tightness Shell test | : | 44 | *bar-G* |
| FLUIDO DI PROVA - Test Fluid | : | ACQUA - Water | |

**PROVA DI TENUTA SEDE IN ACCORDO A** - Seat tightness test according to : IEC 60534-4

| | | | |
|---|---|---|---|
| MANOMETRO - Gauge | : | B101AM0157 | |
| PRESSIONE DI TEST - Test Pressure | : | 3,5 | *bar* |
| PERDITA AMMESSA - Allowed Leakage | : | 1 | *Bubble/min* |
| PERDITA RISCONTRATA - Measured Leakage | : | 0 | *Bubble/min* |
| FLUIDO DI PROVA - Test Fluid | : | GAS - Gas | |

| | | |
|---|---|---|
| DIMENSIONALE / FUNZIONALE<br>Dimensional / Functional Check<br>*SODDISFACENTE*<br>*** SATISFACTORY *** | VISTO CLIENTE<br>Customer Sign | A.S.T.<br>REPARTO GARANZIA QUALITÀ<br>Quality Assurance Department |

# CERTIFICATO VALVOLE DI REGOLAZIONE

## Control Valve Certificate

Nr.: 2400589
Date: 06/11/2024
Job: CV2400221

| | | | | | | |
|---|---|---|---|---|---|---|
| CLIENTE | - Customer | : | ROSETTI MARINO S.P.A. | | | |
| ORDINE | - Order | : | 1724000740 123A90A | | | |
| SPECIFICA | - Specification | : | -- | | | |
| SIGLA | - Tag | : | 25-PV-035 | | | |
| MATRICOLA | - Serial | : | 2400589 | | | |
| SERIE/MODELLO | - Series/Model | : | CV - 8400 | / | CV - 8407 | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| DIMENSIONI CORPO | - Body Size | : | 2" | | | | | |
| CONNESSIONI | - Connections | : | CLASS 300 RF | | | | | |
| DIAMETRO PASSAGGIO | - Port Size | : | 1" | | | | | |
| CURVA CARATTERISTICA | - Flow Characteristic | : | Equalpercentage | | | | | |
| CLASSE DI TENUTA | - Leakage Class | : | VI | | | | | |
| PRESSIONE PROGETTO | - Design Pressure | : | 40 | *bar-G* | | | | |
| TEMPERATURA PROGETTO | - Design Temperature | | 80 | *°C* | | | | |
| TEMPERATURA AMBIENTE | - Ambient Temperature | : | MIN: -8,4 | *°C* | MAX: | 25 | *°C* | |
| PRESSIONE DIFF. VALVOLA CHIUSA | - Shutoff Pressure | : | 40 | *bar-G* | | | | |
| POSIZIONE IN MANCANZA ENERGIA | - Failure Position | : | CLOSED | | | | | |
| AZIONE FLUSSO | - Flow Action | : | TO OPEN | | | | | |

| | | | |
|---|---|---|---|
| **MATERIALI** | - **Materials** | | |
| CORPO / COPERCHIO | - Body / Bonnet | : | ASTM A351 CF3M / ASTM A479 316/316L |
| OTTURATORE / SEDI | - Plug / Seat | : | ASTM A479 316/316L+PTFE/ASTM A479 316/316L |
| BADERNA | - Packing | : | GRAPHITE |
| STELO | - Stem | : | ASTM A479 316/316L |

**ATTUATORE - Actuator** : ATTUATORE CON POSIZIONATORE - Actuator With Positioner

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| CORSA NOMINALE | - Nominal Stroke | : | 25 | *mm* | | | |
| CAMPO MOLLA | - Spring Range | : | 20 | ÷ | 44 | | |
| TEMPO DI MANOVRA | - Stroking Time | : | ↑ <15 | ↓ | <15 | *s* | |

08 NOV. 2024
FRANCO CORSELLINI
080
CROSSWIND

REVIEW WITNESS
ON BEHALF OF RINA
A. DELLAPINA DATE 08 NOV 2024

| | | | | |
|---|---|---|---|---|
| **PROVA IDRAULICA CORPO E COPERCHIO** | - Hydrostatic Body and Bonnet test | : | 75 | *bar-G* |
| **PROVA DI TENUTA INVOLUCRO** | - Tightness Shell test | : | 44 | *bar-G* |
| FLUIDO DI PROVA | - Test Fluid | : | ACQUA - Water | |

**PROVA DI TENUTA SEDE IN ACCORDO A** - Seat tightness test according to : IEC 60534-4

| | | | | |
|---|---|---|---|---|
| MANOMETRO | - Gauge | : | B101AM0157 | |
| PRESSIONE DI TEST | - Test Pressure | : | 3,5 | *bar* |
| PERDITA AMMESSA | - Allowed Leakage | : | 1 | *Bubble/min* |
| PERDITA RISCONTRATA | - Measured Leakage | : | 0 | *Bubble/min* |
| FLUIDO DI PROVA | - Test Fluid | : | GAS - Gas | |

| DIMENSIONALE / FUNZIONALE<br>Dimensional / Functional Check<br>*SODDISFACENTE*<br>*** SATISFACTORY *** | VISTO CLIENTE<br>Customer Sign | A.S.T.<br>REPARTO GARANZIA QUALITÀ<br>Quality Assurance Department |
|---|---|---|

# CERTIFICATO VALVOLE DI REGOLAZIONE

## Control Valve Certificate

Nr.: 2400590
Date: 06/11/2024
Job: CV2400221

| | | | | |
|---|---|---|---|---|
| CLIENTE - Customer | : | ROSETTI MARINO S.P.A. | | |
| ORDINE - Order | : | 1724000740 123A90A | | |
| SPECIFICA - Specification | : | -- | | |
| SIGLA - Tag | : | 25-PV-037 | | |
| MATRICOLA - Serial | : | 2400590 | | |
| SERIE/MODELLO - Series/Model | : | CV - 8400 | / | CV - 8407 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| DIMENSIONI CORPO - Body Size | : | 2" | | | | | | |
| CONNESSIONI - Connections | : | CLASS 300 RF | | | | | | |
| DIAMETRO PASSAGGIO - Port Size | : | 1" | | | | | | |
| CURVA CARATTERISTICA - Flow Characteristic | : | Equalpercentage | | | | | | |
| CLASSE DI TENUTA - Leakage Class | : | VI | | | | | | |
| PRESSIONE PROGETTO - Design Pressure | : | 40 | *bar-G* | | | | | |
| TEMPERATURA PROGETTO - Design Temperature | | 80 | *°C* | | | | | |
| TEMPERATURA AMBIENTE - Ambient Temperature | : | MIN: | -8,4 | *°C* | MAX: | 25 | *°C* | |
| PRESSIONE DIFF. VALVOLA CHIUSA - Shutoff Pressure | : | 40 | *bar-G* | | | | | |
| POSIZIONE IN MANCANZA ENERGIA - Failure Position | : | CLOSED | | | | | | |
| AZIONE FLUSSO - Flow Action | : | TO OPEN | | | | | | |

| | | |
|---|---|---|
| **MATERIALI - Materials** | | |
| CORPO / COPERCHIO - Body / Bonnet | : | ASTM A351 CF3M / ASTM A479 316/316L |
| OTTURATORE / SEDI - Plug / Seat | : | ASTM A479 316/316L+PTFE/ASTM A479 316/316L |
| BADERNA - Packing | : | GRAPHITE |
| STELO - Stem | : | ASTM A479 316/316L |

**ATTUATORE - Actuator** : ATTUATORE CON POSIZIONATORE - Actuator With Positioner

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| CORSA NOMINALE - Nominal Stroke | : | 25 | *mm* | | | | |
| CAMPO MOLLA - Spring Range | : | 20 | ÷ | 44 | | | |
| TEMPO DI MANOVRA - Stroking Time | : | ↑ | <15 | ↓ | <15 | *s* | |

08 NOV. 2024
FRANCO CORBELLINI
QBQ
CROSSWIND

REVIEW ☑ WITNESS
ON BEHALF OF RINA
A. DELLA PINA DATE 08 NOV 2024

| | | | | |
|---|---|---|---|---|
| **PROVA IDRAULICA CORPO E COPERCHIO** - Hydrostatic Body and Bonnet test | : | 75 | *bar-G* | |
| **PROVA DI TENUTA INVOLUCRO** - Tightness Shell test | : | 44 | *bar-G* | |
| FLUIDO DI PROVA - Test Fluid | : | ACQUA - Water | | |

**PROVA DI TENUTA SEDE IN ACCORDO A** - Seat tightness test according to : IEC 60534-4

| | | | | |
|---|---|---|---|---|
| MANOMETRO - Gauge | : | B101AM0157 | | |
| PRESSIONE DI TEST - Test Pressure | : | 3,5 | *bar* | |
| PERDITA AMMESSA - Allowed Leakage | : | 1 | *Bubble/min* | |
| PERDITA RISCONTRATA - Measured Leakage | : | 0 | *Bubble/min* | |
| FLUIDO DI PROVA - Test Fluid | : | GAS - Gas | | |

| | | |
|---|---|---|
| DIMENSIONALE / FUNZIONALE<br>Dimensional / Functional Check<br>*SODDISFACENTE*<br>*** SATISFACTORY *** | VISTO CLIENTE<br>Customer Sign | A.S.T.<br>REPARTO GARANZIA QUALITÀ<br>Quality Assurance Department |

# PART 2-CERTIFICATION DOSSIER

# Section 3.2

PED declaration

**AST S.p.A.**
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W www.astspa.it

# Declaration of Conformity

| | |
|---|---|
| **Manufacturer:** | **A.S.T. S.p.A.** |
| **Pressure Equipment:** | **CONTROL VALVE** |
| **Job:** | **CV2400221** |
| **Type and Size:** | **CV-8407 NPS 1" CLASS 300 RF Port ¼"** |
| **Fluid:** | **Group 1 – Group 2** |
| **Temperature and Pressure:** | **100°C - 40 Bar g** |
| **Qty:** | **1** |
| **Serial Number:** | **2400583** |

**A.S.T. S.p.A. declare that the above-mentioned product has been designed and manufactured according to Customer's specifications, European Pressure Equipment Directive as follows:**

| **PED 2014/68/UE** | | | |
|---|---|---|---|
| **FLUID** | **Group no.** | **1** | **Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |
| ☒ | **Cat. I, II, III** | **Module H** | |
| ☐ | **Cat. IV** | **Module B+D** | |
| ☐ | **Art. 4.3** | | |

**and to ATEX Directive as follows:**

| **ATEX 2014/34/EU** | |
|---|---|
| ☒ CE Ex **II 2 G Ex h IIC T6…T1 Gb X** | **Technical file # TEC079 filed at Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |

The following Codes and Standards are applied, when needed
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Construction materials used according to ASTM standard and subjected to Particular Material Appraisal. Alternatively, materials according to European harmonized standards are used.

***Delegate for signature***

Name: Luca Pressato
Title: Quality Assurance Manager
Date: 06/11/2024

*Signature:*

A.S.T. S.p.A.
Quality Assurance

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# Declaration of Conformity

| | |
|---|---|
| **Manufacturer:** | **A.S.T. S.p.A.** |
| **Pressure Equipment:** | **CONTROL VALVE** |
| **Job:** | **CV2400221** |
| **Type and Size:** | **CV-8407 NPS 1" CLASS 300 RF Port ¼"** |
| **Fluid:** | **Group 1 – Group 2** |
| **Temperature and Pressure:** | **100°C - 40 Bar g** |
| **Qty:** | **1** |
| **Serial Number:** | **2400584** |

**A.S.T. S.p.A. declare that the above-mentioned product has been designed and manufactured according to Customer's specifications, European Pressure Equipment Directive as follows:**

| **PED 2014/68/UE** | | | |
|---|---|---|---|
| **FLUID** | **Group no.** | **1** | **Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |
| ☒ | **Cat. I, II, III** | **Module H** | |
| ☐ | **Cat. IV** | **Module B+D** | |
| ☐ | **Art. 4.3** | | |

**and to ATEX Directive as follows:**

| **ATEX 2014/34/EU** | |
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Construction materials used according to ASTM standard and subjected to Particular Material Appraisal. Alternatively, materials according to European harmonized standards are used.

***Delegate for signature***

Name: Luca Pressato
Title: Quality Assurance Manager
Date: 06/11/2024

*Signature*:

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# Declaration of Conformity

| | |
|---|---|
| **Manufacturer:** | **A.S.T. S.p.A.** |
| **Pressure Equipment:** | **CONTROL VALVE** |
| **Job:** | **CV2400221** |
| **Type and Size:** | **CV-8407 NPS 1" CLASS 300 RF Port ¼"** |
| **Fluid:** | **Group 1 – Group 2** |
| **Temperature and Pressure:** | **100°C - 40 Bar g** |
| **Qty:** | **1** |
| **Serial Number:** | **2400585** |

**A.S.T. S.p.A. declare that the above-mentioned product has been designed and manufactured according to Customer's specifications, European Pressure Equipment Directive as follows:**

| **PED 2014/68/UE** | | | |
|---|---|---|---|
| **FLUID** | **Group no.** | **1** | **Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |
| ☒ | **Cat. I, II, III** | **Module H** | |
| ☐ | **Cat. IV** | **Module B+D** | |
| ☐ | **Art. 4.3** | | |

**and to ATEX Directive as follows:**

| **ATEX 2014/34/EU** | |
|---|---|
| ☒ CE Ex **II 2 G Ex h IIC T6…T1 Gb X** | **Technical file # TEC079 filed at Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |

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Construction materials used according to ASTM standard and subjected to Particular Material Appraisal. Alternatively, materials according to European harmonized standards are used.

***Delegate for signature***

Name: Luca Pressato
Title: Quality Assurance Manager
Date: 06/11/2024

*Signature:*

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# Declaration of Conformity

| | |
|---|---|
| **Manufacturer:** | **A.S.T. S.p.A.** |
| **Pressure Equipment:** | **CONTROL VALVE** |
| **Job:** | **CV2400221** |
| **Type and Size:** | **CV-8407 NPS 1" CLASS 300 RF Port ¼"** |
| **Fluid:** | **Group 1 – Group 2** |
| **Temperature and Pressure:** | **100°C - 40 Bar g** |
| **Qty:** | **1** |
| **Serial Number:** | **2400586** |

**A.S.T. S.p.A. declare that the above-mentioned product has been designed and manufactured according to Customer's specifications, European Pressure Equipment Directive as follows:**

| **PED 2014/68/UE** | | | |
|---|---|---|---|
| **FLUID** | **Group no.** | **1** | **Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |
| ☒ | **Cat. I, II, III** | **Module H** | |
| ☐ | **Cat. IV** | **Module B+D** | |
| ☐ | **Art. 4.3** | | |

**and to ATEX Directive as follows:**

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|---|---|
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The following Codes and Standards are applied, when needed
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Construction materials used according to ASTM standard and subjected to Particular Material Appraisal. Alternatively, materials according to European harmonized standards are used.

***Delegate for signature***

Name: Luca Pressato
Title: Quality Assurance Manager
Date: 06/11/2024

*Signature:*

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# Declaration of Conformity

| | |
|---|---|
| **Manufacturer:** | **A.S.T. S.p.A.** |
| **Pressure Equipment:** | **CONTROL VALVE** |
| **Job:** | **CV2400221** |
| **Type and Size:** | **CV-8407 NPS 1" CLASS 300 RF Port ¼"** |
| **Fluid:** | **Group 1 – Group 2** |
| **Temperature and Pressure:** | **100°C - 40 Bar g** |
| **Qty:** | **1** |
| **Serial Number:** | **2400587** |

**A.S.T. S.p.A. declare that the above-mentioned product has been designed and manufactured according to Customer's specifications, European Pressure Equipment Directive as follows:**

| **PED 2014/68/UE** | | | |
|---|---|---|---|
| **FLUID** | **Group no.** | **1** | **Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |
| ☒ | **Cat. I, II, III** | **Module H** | |
| ☐ | **Cat. IV** | **Module B+D** | |
| ☐ | **Art. 4.3** | | |

**and to ATEX Directive as follows:**

| **ATEX 2014/34/EU** | |
|---|---|
| ☒ CE Ex **II 2 G Ex h IIC T6…T1 Gb X** | **Technical file # TEC079 filed at Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |

The following Codes and Standards are applied, when needed
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Construction materials used according to ASTM standard and subjected to Particular Material Appraisal. Alternatively, materials according to European harmonized standards are used.

***Delegate for signature***

Name: Luca Pressato
Title: Quality Assurance Manager
Date: 06/11/2024

*Signature*:

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Quality Assurance

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F +39 02 9362248
W www.astspa.it

# Declaration of Conformity

| | |
|---|---|
| **Manufacturer:** | **A.S.T. S.p.A.** |
| **Pressure Equipment:** | **CONTROL VALVE** |
| **Job:** | **CV2400221** |
| **Type and Size:** | **CV-8407 NPS 1" CLASS 300 RF Port ¼"** |
| **Fluid:** | **Group 1 – Group 2** |
| **Temperature and Pressure:** | **100°C - 40 Bar g** |
| **Qty:** | **1** |
| **Serial Number:** | **2400588** |

**A.S.T. S.p.A. declare that the above-mentioned product has been designed and manufactured according to Customer's specifications, European Pressure Equipment Directive as follows:**

| **PED 2014/68/UE** | | | |
|---|---|---|---|
| **FLUID** | **Group no.** | **1** | **Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |
| ☒ | **Cat. I, II, III** | **Module H** | |
| ☐ | **Cat. IV** | **Module B+D** | |
| ☐ | **Art. 4.3** | | |

**and to ATEX Directive as follows:**

| **ATEX 2014/34/EU** | |
|---|---|
| ☒ CE Ex **II 2 G Ex h IIC T6…T1 Gb X** | **Technical file # TEC079 filed at Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |

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Construction materials used according to ASTM standard and subjected to Particular Material Appraisal. Alternatively, materials according to European harmonized standards are used.

***Delegate for signature***

Name: Luca Pressato
Title: Quality Assurance Manager
Date: 06/11/2024

*Signature*

A.S.T. S.p.A.
Quality Assurance

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W www.astspa.it

# Declaration of Conformity

| | |
|---|---|
| **Manufacturer:** | **A.S.T. S.p.A.** |
| **Pressure Equipment:** | **CONTROL VALVE** |
| **Job:** | **CV2400221** |
| **Type and Size:** | **CV-8407 NPS 2" CLASS 300 RF Port 1"** |
| **Fluid:** | **Group 1 – Group 2** |
| **Temperature and Pressure:** | **80°C - 40 Bar g** |
| **Qty:** | **1** |
| **Serial Number:** | **2400589** |

**A.S.T. S.p.A. declare that the above-mentioned product has been designed and manufactured according to Customer's specifications, European Pressure Equipment Directive as follows:**

| **PED 2014/68/UE** | | | |
|---|---|---|---|
| **FLUID** | **Group no.** | **1** | **Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |
| ☒ | **Cat. I, II, III** | **Module H** | |
| ☐ | **Cat. IV** | **Module B+D** | |
| ☐ | **Art. 4.3** | | |

**and to ATEX Directive as follows:**

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|---|---|
| ☒ CE Ex **II 2 G Ex h IIC T6…T1 Gb X** | **Technical file # TEC079 filed at Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |

The following Codes and Standards are applied, when needed
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Construction materials used according to ASTM standard and subjected to Particular Material Appraisal. Alternatively, materials according to European harmonized standards are used.

***Delegate for signature***

Name: Luca Pressato
Title: Quality Assurance Manager
Date: 06/11/2024

*Signature*:

A.S.T. S.p.A.
Quality Assurance

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# Declaration of Conformity

| | |
|---|---|
| **Manufacturer:** | **A.S.T. S.p.A.** |
| **Pressure Equipment:** | **CONTROL VALVE** |
| **Job:** | **CV2400221** |
| **Type and Size:** | **CV-8407 NPS 2" CLASS 300 RF Port 1"** |
| **Fluid:** | **Group 1 – Group 2** |
| **Temperature and Pressure:** | **80°C - 40 Bar g** |
| **Qty:** | **1** |
| **Serial Number:** | **2400590** |

**A.S.T. S.p.A. declare that the above-mentioned product has been designed and manufactured according to Customer's specifications, European Pressure Equipment Directive as follows:**

| **PED 2014/68/UE** | | | |
|---|---|---|---|
| **FLUID** | **Group no.** | **1** | **Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |
| ☒ | **Cat. I, II, III** | **Module H** | |
| ☐ | **Cat. IV** | **Module B+D** | |
| ☐ | **Art. 4.3** | | |

**and to ATEX Directive as follows:**

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|---|---|
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Construction materials used according to ASTM standard and subjected to Particular Material Appraisal. Alternatively, materials according to European harmonized standards are used.

***Delegate for signature***

Name: Luca Pressato
Title: Quality Assurance Manager
Date: 06/11/2024

*Signature*:

A.S.T. S.p.A.
Quality Assurance

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# Declaration of Conformity

| | |
|---|---|
| **Manufacturer:** | **A.S.T. S.p.A.** |
| **Pressure Equipment:** | **CONTROL VALVE** |
| **Job:** | **CV2400221** |
| **Type and Size:** | **CV-8407 NPS 2" CLASS 300 RF Port 1"** |
| **Fluid:** | **Group 1 – Group 2** |
| **Temperature and Pressure:** | **80°C - 40 Bar g** |
| **Qty:** | **1** |
| **Serial Number:** | **2400591** |

**A.S.T. S.p.A. declare that the above-mentioned product has been designed and manufactured according to Customer's specifications, European Pressure Equipment Directive as follows:**

| **PED 2014/68/UE** | | | |
|---|---|---|---|
| **FLUID** | **Group no.** | **1** | **Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |
| ☒ | **Cat. I, II, III** | **Module H** | |
| ☐ | **Cat. IV** | **Module B+D** | |
| ☐ | **Art. 4.3** | | |

**and to ATEX Directive as follows:**

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|---|---|
| ☒ CE Ex **II 2 G Ex h IIC T6…T1 Gb X** | **Technical file # TEC079 filed at Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |

The following Codes and Standards are applied, when needed
ASME B1.1, ASME B1.20.1, ASME PTC-25, ASME CA-1, ASME B16.34, ASME B16.5, ASME B16.10, ASME B16.20, ASME B16.21, ASME B16.25, ASME B16.11, ASME Sect. I, ASME Sect. II parts A-B-D, ASME Sect. V, ASME Sect. VIII, ASME BPV code cases, ASME Sect. IX, NB-23, API 6A, API 520, API 521, API 527, API 576, API 598, EN 19, EN 764-7, EN ISO 4126 parts 1-4-7-9-10, EN 1092, EN 1759, EN 12516 part 1 e 2, EN 12627, EN 12760, EN 12952-10, EN 12953-8, EN 13648-1, EN 10204, EN 12266-1, ISO 5208, ISO 15156 parts 1-2-3, ISO 9001, ISO 80079-36, ISO 80079-37, IEC 60079-0 MSS SP-55.

Construction materials used according to ASTM standard and subjected to Particular Material Appraisal. Alternatively, materials according to European harmonized standards are used.

***Delegate for signature***

Name: Luca Pressato
Title: Quality Assurance Manager
Date: 06/11/2024

*Signature*:

A.S.T. S.p.A.
Quality Assurance

**AST S.p.A.**
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F +39 02 9362248
W www.astspa.it

# Declaration of Conformity

| | |
|---|---|
| **Manufacturer:** | **A.S.T. S.p.A.** |
| **Pressure Equipment:** | **CONTROL VALVE** |
| **Job:** | **CV2400221** |
| **Type and Size:** | **CV-8407 NPS 2" CLASS 300 RF Port 1"** |
| **Fluid:** | **Group 1 – Group 2** |
| **Temperature and Pressure:** | **80°C - 40 Bar g** |
| **Qty:** | **1** |
| **Serial Number:** | **2400592** |

**A.S.T. S.p.A. declare that the above-mentioned product has been designed and manufactured according to Customer's specifications, European Pressure Equipment Directive as follows:**

| **PED 2014/68/UE** | | | |
|---|---|---|---|
| **FLUID** | **Group no.** | **1** | **Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |
| ☒ | **Cat. I, II, III** | **Module H** | |
| ☐ | **Cat. IV** | **Module B+D** | |
| ☐ | **Art. 4.3** | | |

**and to ATEX Directive as follows:**

| **ATEX 2014/34/EU** | |
|---|---|
| ☒ CE Ex **II 2 G Ex h IIC T6…T1 Gb X** | **Technical file # TEC079 filed at Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |

The following Codes and Standards are applied, when needed
ASME B1.1, ASME B1.20.1, ASME PTC-25, ASME CA-1, ASME B16.34, ASME B16.5, ASME B16.10, ASME B16.20, ASME B16.21, ASME B16.25, ASME B16.11, ASME Sect. I, ASME Sect. II parts A-B-D, ASME Sect. V, ASME Sect. VIII, ASME BPV code cases, ASME Sect. IX, NB-23, API 6A, API 520, API 521, API 527, API 576, API 598, EN 19, EN 764-7, EN ISO 4126 parts 1-4-7-9-10, EN 1092, EN 1759, EN 12516 part 1 e 2, EN 12627, EN 12760, EN 12952-10, EN 12953-8, EN 13648-1, EN 10204, EN 12266-1, ISO 5208, ISO 15156 parts 1-2-3, ISO 9001, ISO 80079-36, ISO 80079-37, IEC 60079-0 MSS SP-55.

Construction materials used according to ASTM standard and subjected to Particular Material Appraisal. Alternatively, materials according to European harmonized standards are used.

***Delegate for signature***

Name: Luca Pressato
Title: Quality Assurance Manager
Date: 06/11/2024

*Signature:*

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Quality Assurance

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# Declaration of Conformity

| | |
|---|---|
| **Manufacturer:** | **A.S.T. S.p.A.** |
| **Pressure Equipment:** | **CONTROL VALVE** |
| **Job:** | **CV2400221** |
| **Type and Size:** | **CV-8407 NPS 2" CLASS 300 RF Port 1"** |
| **Fluid:** | **Group 1 – Group 2** |
| **Temperature and Pressure:** | **80°C - 40 Bar g** |
| **Qty:** | **1** |
| **Serial Number:** | **2400593** |

**A.S.T. S.p.A. declare that the above-mentioned product has been designed and manufactured according to Customer's specifications, European Pressure Equipment Directive as follows:**

| **PED 2014/68/UE** | | | |
|---|---|---|---|
| **FLUID** | **Group no.** | **1** | **Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |
| ☒ | **Cat. I, II, III** | **Module H** | |
| ☐ | **Cat. IV** | **Module B+D** | |
| ☐ | **Art. 4.3** | | |

**and to ATEX Directive as follows:**

| **ATEX 2014/34/EU** | |
|---|---|
| ☒ CE Ex **II 2 G Ex h IIC T6…T1 Gb X** | **Technical file # TEC079 filed at Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |

The following Codes and Standards are applied, when needed
ASME B1.1, ASME B1.20.1, ASME PTC-25, ASME CA-1, ASME B16.34, ASME B16.5, ASME B16.10, ASME B16.20, ASME B16.21, ASME B16.25, ASME B16.11, ASME Sect. I, ASME Sect. II parts A-B-D, ASME Sect. V, ASME Sect. VIII, ASME BPV code cases, ASME Sect. IX, NB-23, API 6A, API 520, API 521, API 527, API 576, API 598, EN 19, EN 764-7, EN ISO 4126 parts 1-4-7-9-10, EN 1092, EN 1759, EN 12516 part 1 e 2, EN 12627, EN 12760, EN 12952-10, EN 12953-8, EN 13648-1, EN 10204, EN 12266-1, ISO 5208, ISO 15156 parts 1-2-3, ISO 9001, ISO 80079-36, ISO 80079-37, IEC 60079-0 MSS SP-55.

Construction materials used according to ASTM standard and subjected to Particular Material Appraisal. Alternatively, materials according to European harmonized standards are used.

***Delegate for signature***

Name: Luca Pressato
Title: Quality Assurance Manager
Date: 06/11/2024

*Signature:*

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# Declaration of Conformity

| | |
|---|---|
| **Manufacturer:** | **A.S.T. S.p.A.** |
| **Pressure Equipment:** | **CONTROL VALVE** |
| **Job:** | **CV2400221** |
| **Type and Size:** | **CV-8407 NPS 2" CLASS 300 RF Port 1"** |
| **Fluid:** | **Group 1 – Group 2** |
| **Temperature and Pressure:** | **80°C - 40 Bar g** |
| **Qty:** | **1** |
| **Serial Number:** | **2400594** |

**A.S.T. S.p.A. declare that the above-mentioned product has been designed and manufactured according to Customer's specifications, European Pressure Equipment Directive as follows:**

| **PED 2014/68/UE** | | | |
|---|---|---|---|
| **FLUID** | **Group no.** | **1** | **Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |
| ☒ | **Cat. I, II, III** | **Module H** | |
| ☐ | **Cat. IV** | **Module B+D** | |
| ☐ | **Art. 4.3** | | |

**and to ATEX Directive as follows:**

| **ATEX 2014/34/EU** | |
|---|---|
| ☒ CE Ex **II 2 G Ex h IIC T6…T1 Gb X** | **Technical file # TEC079 filed at Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |

The following Codes and Standards are applied, when needed
ASME B1.1, ASME B1.20.1, ASME PTC-25, ASME CA-1, ASME B16.34, ASME B16.5, ASME B16.10, ASME B16.20, ASME B16.21, ASME B16.25, ASME B16.11, ASME Sect. I, ASME Sect. II parts A-B-D, ASME Sect. V, ASME Sect. VIII, ASME BPV code cases, ASME Sect. IX, NB-23, API 6A, API 520, API 521, API 527, API 576, API 598, EN 19, EN 764-7, EN ISO 4126 parts 1-4-7-9-10, EN 1092, EN 1759, EN 12516 part 1 e 2, EN 12627, EN 12760, EN 12952-10, EN 12953-8, EN 13648-1, EN 10204, EN 12266-1, ISO 5208, ISO 15156 parts 1-2-3, ISO 9001, ISO 80079-36, ISO 80079-37, IEC 60079-0 MSS SP-55.

Construction materials used according to ASTM standard and subjected to Particular Material Appraisal. Alternatively, materials according to European harmonized standards are used.

***Delegate for signature***

Name: Luca Pressato
Title: Quality Assurance Manager
Date: 06/11/2024

*Signature*:

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# Declaration of Conformity

| | |
|---|---|
| **Manufacturer:** | **A.S.T. S.p.A.** |
| **Pressure Equipment:** | **CONTROL VALVE** |
| **Job:** | **CV2400221** |
| **Type and Size:** | **CV-8407 NPS 1 ½ ” CLASS 300 RF Port 1”** |
| **Fluid:** | **Group 1 – Group 2** |
| **Temperature and Pressure:** | **100°C - 40 Bar g** |
| **Qty:** | **1** |
| **Serial Number:** | **2400595** |

**A.S.T. S.p.A. declare that the above-mentioned product has been designed and manufactured according to Customer’s specifications, European Pressure Equipment Directive as follows:**

| **PED 2014/68/UE** | | | |
|---|---|---|---|
| **FLUID** | **Group no.** | **1** | **Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |
| ☒ | **Cat. I, II, III** | **Module H** | |
| ☐ | **Cat. IV** | **Module B+D** | |
| ☐ | **Art. 4.3** | | |

**and to ATEX Directive as follows:**

| **ATEX 2014/34/EU** | |
|---|---|
| ☒ CE Ex **II 2 G Ex h IIC T6…T1 Gb X** | **Technical file # TEC079 filed at Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |

The following Codes and Standards are applied, when needed
ASME B1.1, ASME B1.20.1, ASME PTC-25, ASME CA-1, ASME B16.34, ASME B16.5, ASME B16.10, ASME B16.20, ASME B16.21, ASME B16.25, ASME B16.11, ASME Sect. I, ASME Sect. II parts A-B-D, ASME Sect. V, ASME Sect. VIII, ASME BPV code cases, ASME Sect. IX, NB-23, API 6A, API 520, API 521, API 527, API 576, API 598, EN 19, EN 764-7, EN ISO 4126 parts 1-4-7-9-10, EN 1092, EN 1759, EN 12516 part 1 e 2, EN 12627, EN 12760, EN 12952-10, EN 12953-8, EN 13648-1, EN 10204, EN 12266-1, ISO 5208, ISO 15156 parts 1-2-3, ISO 9001, ISO 80079-36, ISO 80079-37, IEC 60079-0 MSS SP-55.

Construction materials used according to ASTM standard and subjected to Particular Material Appraisal. Alternatively, materials according to European harmonized standards are used.

***Delegate for signature***

Name: Luca Pressato
Title: Quality Assurance Manager
Date: 06/11/2024

*Signature*:

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# Declaration of Conformity

| | |
|---|---|
| **Manufacturer:** | **A.S.T. S.p.A.** |
| **Pressure Equipment:** | **CONTROL VALVE** |
| **Job:** | **CV2400221** |
| **Type and Size:** | **CV-8407 NPS 1 ½ ” CLASS 300 RF Port 5/32”** |
| **Fluid:** | **Group 1 – Group 2** |
| **Temperature and Pressure:** | **100°C - 40 Bar g** |
| **Qty:** | **1** |
| **Serial Number:** | **2400596** |

**A.S.T. S.p.A. declare that the above-mentioned product has been designed and manufactured according to Customer’s specifications, European Pressure Equipment Directive as follows:**

| **PED 2014/68/UE** | | | |
|---|---|---|---|
| **FLUID** | **Group no.** | **1** | **Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |
| ☒ | **Cat. I, II, III** | **Module H** | |
| ☐ | **Cat. IV** | **Module B+D** | |
| ☐ | **Art. 4.3** | | |

**and to ATEX Directive as follows:**

| **ATEX 2014/34/EU** | |
|---|---|
| ☒ CE Ex **II 2 G Ex h IIC T6…T1 Gb X** | **Technical file # TEC079 filed at Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |

The following Codes and Standards are applied, when needed
ASME B1.1, ASME B1.20.1, ASME PTC-25, ASME CA-1, ASME B16.34, ASME B16.5, ASME B16.10, ASME B16.20, ASME B16.21, ASME B16.25, ASME B16.11, ASME Sect. I, ASME Sect. II parts A-B-D, ASME Sect. V, ASME Sect. VIII, ASME BPV code cases, ASME Sect. IX, NB-23, API 6A, API 520, API 521, API 527, API 576, API 598, EN 19, EN 764-7, EN ISO 4126 parts 1-4-7-9-10, EN 1092, EN 1759, EN 12516 part 1 e 2, EN 12627, EN 12760, EN 12952-10, EN 12953-8, EN 13648-1, EN 10204, EN 12266-1, ISO 5208, ISO 15156 parts 1-2-3, ISO 9001, ISO 80079-36, ISO 80079-37, IEC 60079-0 MSS SP-55.

Construction materials used according to ASTM standard and subjected to Particular Material Appraisal. Alternatively, materials according to European harmonized standards are used.

***Delegate for signature***

Name: Luca Pressato
Title: Quality Assurance Manager
Date: 06/11/2024

*Signature*:

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Quality Assurance

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# Declaration of Conformity

| | |
|---|---|
| **Manufacturer:** | **A.S.T. S.p.A.** |
| **Pressure Equipment:** | **CONTROL VALVE** |
| **Job:** | **CV2400221** |
| **Type and Size:** | **CV-8407 NPS 1" CLASS 150 RF Port 3/8"** |
| **Fluid:** | **Group 1 – Group 2** |
| **Temperature and Pressure:** | **100°C - 10 Bar g** |
| **Qty:** | **1** |
| **Serial Number:** | **2400597** |

**A.S.T. S.p.A. declare that the above-mentioned product has been designed and manufactured according to Customer's specifications, European Pressure Equipment Directive as follows:**

| **PED 2014/68/UE** | | | |
|---|---|---|---|
| **FLUID** | **Group no.** | **1** | **Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |
| ☒ | **Cat. I, II, III** | **Module H** | |
| ☐ | **Cat. IV** | **Module B+D** | |
| ☐ | **Art. 4.3** | | |

**and to ATEX Directive as follows:**

| **ATEX 2014/34/EU** | |
|---|---|
| ☒ CE Ex **II 2 G Ex h IIC T6…T1 Gb X** | **Technical file # TEC079 filed at Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |

The following Codes and Standards are applied, when needed
ASME B1.1, ASME B1.20.1, ASME PTC-25, ASME CA-1, ASME B16.34, ASME B16.5, ASME B16.10, ASME B16.20, ASME B16.21, ASME B16.25, ASME B16.11, ASME Sect. I, ASME Sect. II parts A-B-D, ASME Sect. V, ASME Sect. VIII, ASME BPV code cases, ASME Sect. IX, NB-23, API 6A, API 520, API 521, API 527, API 576, API 598, EN 19, EN 764-7, EN ISO 4126 parts 1-4-7-9-10, EN 1092, EN 1759, EN 12516 part 1 e 2, EN 12627, EN 12760, EN 12952-10, EN 12953-8, EN 13648-1, EN 10204, EN 12266-1, ISO 5208, ISO 15156 parts 1-2-3, ISO 9001, ISO 80079-36, ISO 80079-37, IEC 60079-0 MSS SP-55.

Construction materials used according to ASTM standard and subjected to Particular Material Appraisal. Alternatively, materials according to European harmonized standards are used.

***Delegate for signature***

Name: Luca Pressato
Title: Quality Assurance Manager
Date: 06/11/2024

*Signature*:

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Quality Assurance

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# Declaration of Conformity

| | |
|---|---|
| **Manufacturer:** | **A.S.T. S.p.A.** |
| **Pressure Equipment:** | **CONTROL VALVE** |
| **Job:** | **CV2400221** |
| **Type and Size:** | **CV-8407 NPS 1" CLASS 150 RF Port 3/8"** |
| **Fluid:** | **Group 1 – Group 2** |
| **Temperature and Pressure:** | **100°C - 10 Bar g** |
| **Qty:** | **1** |
| **Serial Number:** | **2400598** |

**A.S.T. S.p.A. declare that the above-mentioned product has been designed and manufactured according to Customer's specifications, European Pressure Equipment Directive as follows:**

| **PED 2014/68/UE** | | | |
|---|---|---|---|
| **FLUID** | **Group no.** | **1** | **Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |
| ☒ | **Cat. I, II, III** | **Module H** | |
| ☐ | **Cat. IV** | **Module B+D** | |
| ☐ | **Art. 4.3** | | |

**and to ATEX Directive as follows:**

| **ATEX 2014/34/EU** | |
|---|---|
| ☒ CE Ex **II 2 G Ex h IIC T6…T1 Gb X** | **Technical file # TEC079 filed at Notified body # 1370**<br>**Bureau Veritas Italia S.p.A.**<br>**Viale Monza 347 - 20126 Milano - Italy** |

The following Codes and Standards are applied, when needed
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Construction materials used according to ASTM standard and subjected to Particular Material Appraisal. Alternatively, materials according to European harmonized standards are used.

***Delegate for signature***

Name: Luca Pressato
Title: Quality Assurance Manager
Date: 06/11/2024

*Signature*:

A.S.T. S.p.A.
Quality Assurance