



TYPE APPROVAL CERTIFICATE
No. MAC127415XG/002

This is to certify that the product identified below is in compliance with the regulations herewith specified.

<i>Description</i>	SAFETY VALVES
<i>Type</i>	431 - 433
<i>Applicant</i>	LESER GMBH & CO KG TECHNICAL DEPARTMENT WENDENSTRASSE 133-135 D-20537 HAMBURG GERMANY
<i>Manufacturer</i>	LESER GMBH & CO KG
<i>Place of manufacture</i>	ITZEHOER STRASSE 63-65 24594 HOHENWESTEDT GERMANY
<i>Reference standards</i>	RINA RULES FOR THE CLASSIFICATION OF SHIPS

Issued in **Hamburg** on **August 18, 2015**. *This Certificate is valid until* **August 17, 2020**

RINA Services S.p.A.
Giuseppe Russo

This certificate consists of this page and 1 enclosure



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Reference documents

- High Performance Catalog 1 Series 433, edition August 2014 Doc. No 0777.5646.
 - TÜV-"Merkblatt" type test approval No.: 13-577 dated 10/2013
 - EC type-examination certificate No.: 07 202 0111 Z 0008/0/06 Rev.1
 - Type Test with Cryogenic media: Test Report HAM 600226-1 dated 24.02.2010
 - TÜV Nord Design Examination Report No STK1P0598001
- | | | | |
|--------------|--------|----------------|-------------|
| - Valve size | DN 15 | Drawing number | 350.0109-02 |
| - Valve size | DN 20 | Drawing number | 350 02 09 |
| - Valve size | DN 25 | Drawing number | 350 03 09 |
| - Valve size | DN 32 | Drawing number | 350 04 09 |
| - Valve size | DN 40 | Drawing number | 350 05 09 |
| - Valve size | DN 50 | Drawing number | 350 06 09 |
| - Valve size | DN 65 | Drawing number | 350 07 09 |
| - Valve size | DN 80 | Drawing number | 350 08 09 |
| - Valve size | DN 100 | Drawing number | 350 09 09 |
| - Valve size | DN 125 | Drawing number | 350 10 09 |
| - Valve size | DN 150 | Drawing number | 350 11 09 |

Materials/Components

Body material:

Type 4331/4311	GG-25	0.6025 (see "limitations" on the certificate)
Type 4315/4335	GGG-40.3	0.7043 / 60-40-18
Type 4312/4332	GP 240 GH	1.0619 / WCB
Type 4334	GX5CrNiMo19-11-2	1.4408 / CF8M

Other parts:

Seat	X2CrNiMo17-12-2	1.4404 / 316L
Disc	X39CrMo17-1	1.4122 / MT440
	X2CrNiMo17-12-2	1.4404 / 316L
Guide	X14CrMoS17/C35/GGG-40	1.4104/1.0501/0.7040
Bonnet	GGG-40 (GGG-40-3/GP 240 GH)	0.7040 (0.7043/1.0619 - 60-40-18/WCB)
	GX5CrNiMo19-11-2	1.4408 / CF8M
	X2CrNiMo17-12-2	1.4404 / 316L
	X6CrNiMoTi17-12-2	1.4571 / 316Ti

Technical characteristics

- Sizes: DN 15, 20, 25, 32, 40, 50, 65, 80, 100, 125 and 150.
- Temperature range:
 - 0°C to +220°C for GG-25 (0.6025) (see "limitations" on the certificate)
 - 0°C to +350°C for GGG-40.3 (0.7043 / 60-40-18)
 - 85°C to +450°C for GP 240 GH (1.0619 / WCB) *
 - 196°C to + 400°C for GX5CrNiMo19-11-2 (1.4408 / CF8M)*
- For other characteristics: as listed in the a.m. catalogues, as appropriate.

Note:

Notwithstanding the above, if the temperature range indicated on the table 2 of the a.m. type test report TÜV Nord No.SV13-577 document No. BP SIVE 0577 is different from the temperature range referred above for the materials marked with (*), in such a case, the said range and associated pressure/valve size indicated therein is to be appropriately considered in the selection of the correct application for the valve.

Fields of application

Steam, liquids and gases (including LPG/LNG services).



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Limitations

- The valves with gastight cap type H2 are not approved for use on steam boilers.
- The valves with open bonnet lifting devices H3 are not to be used on RINA classed ships, only valves with closed bonnet type are permitted.
- The valve size DN15 is not accepted for the use on steam boilers.
- The valves in grey cast iron (GG-25) are subject to the limited applications, due to design pressure/temperature and medium discharged, which are to fully comply with the pertinent RINA Rule requirements.
- Valve materials are to have minimum impact test value of 27J at test pressure. For design temperatures below 0°C the impact test is to be performed at 5°C below the design temperature or -20°C, whichever is lower.
- Liquified gases: Special consideration to be given to safety valves intended for gas carrier service below -165°C.

Acceptance conditions

- The flow coefficient is accepted by RINA to determine the discharge capacity of the valves as indicated on Table 2 VdTÜV type test approval no 13-577 document No BP SIVE 0577.
In particular, in the case of valves intended for boilers, the relevant discharge capacities are to be calculated according to the formula contained in Paragraph 2.3.2 of Part C Chapter 1 Section 3 of the RINA Rules using the above mentioned value of Z and the ratio $d/h = 4$.
- The valves are to be equipped with the springs foreseen by the Leser specifications for the intended set pressure.
- The actual lifts are those corresponding to the above accepted values, as indicated in your a.m. catalogue.
- The materials are to be suitable for the intended pressure, temperature and medium discharged.
- For ships where IGF Code is applicable Approval will be given case by case.

Remarks

- The installation to be in accordance with manufacturer's specification and recommendation.
- This Certificate annuls and replaces the previous Type Approval Certificate No. MAC122309CS.

Hamburg August 18, 2015

