



TYPE APPROVAL CERTIFICATE
No. MAC155312XG

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>	437, 438, 439
<i>Applicant</i>	LESER GMBH & CO KG QMP/ABN DOKU WENDENSTRASSE 133-135, D-20537 HAMBURG GERMANY
<i>Manufacturer</i>	LESER GMBH & CO KG QMP/ABN DOKU
<i>Place of manufacture</i>	ITZEHOERSTRASSE 63-55, D-24594 HOHENWESTEDT GERMANY
<i>Reference standards</i>	RINA RULES FOR THE CLASSIFICATION OF SHIPS

Issued in **HAMBURG** on **January 29, 2013**. *This Certificate is valid until* **January 28, 2018**

RINA
Giuseppe Russo

This certificate consists of this page and 1 enclosure



TYPE APPROVAL CERTIFICATE

No. **MAC155312XG**

Enclosure - Page 1 of 3
437, 438, 439

Reference documents

Type 437

-LESER catalogue : LWN481.01-E-01/01 to 01/20.

-LESER drawings:

- *do 6 (long version)*

assembly : 351.7409

inlet body : 136.4309

outlet body : 123.6209

disc, cpl. : 205.3109

- *do 10 (long version)*

assembly : 351.7509

inlet body : 136.4409

outlet body : 123.6209

disc, cpl. : 205.3309

- *do 10*

assembly : 351.7509

inlet body : 136.4409

outlet body : 123.6709

disc, cpl. : 205.3309

Type 438

-LESER catalogue : LWN481.01-E-02/01 to 02/18.

-LESER drawings:

- *do 10*

assembly : 351.7609

inlet body : 136.4909

outlet body : 123.6109

disc, cpl. : 200.8309

Type 439

-LESER catalogue : LWN481.01-E-03/01 to 03/16.

-LESER drawings:

- *do 10*

assembly : 351.7809

inlet body : 136.4909

outlet body : 123.6609

disc, cpl. : 200.9009

Types 437, 438, 439

-EC type examination (module B) certificate no.:07 202 0111 Z 0008/0/27 dated on 29.06.2010
(for safety valve types 437, 438, 439 and 481);

- Manufacturer's test report no. HAM600226-1 app.1 dated 24.02.2010

-VdTÜV - "Merkblatt" type test approval No: 09-980 dated 09.2009

Materials/Components

- As listed in the above mentioned LESER catalogues and subject to the limitations indicated on the certificate, as appropriate.



TYPE APPROVAL CERTIFICATE

No. **MAC155312XG**

Enclosure - Page 2 of 3

437, 438, 439

Technical characteristics

- Design: Safety relief valves, spring loaded
- Valve size, inlet : 3/8" NPT, 1/2" NPT, 3/4" NPT, 1" NPT, G 3/8", G 1/2", G 3/4", G 1"
outlet: G 1/2", G 3/4", G 1", 1/2" NPT, 3/4" NPT, 1" NPT
- Connection, in/out : Threaded, Flanged
- Pressure and temperature ranges and other technical characteristics:
As listed in the above mentioned LESER catalogues and subject to the limitations indicated on the certificate, as appropriate.

Fields of application

- Pressure vessels and piping systems (excluding boilers, steam generators)
- Steam, liquids and gases (including LPG/LNG services)

Limitations

- The valves are not to be used on piping systems, including pressure vessels, conveying toxic or flammable media or services where fatigue, severe erosion or crevice corrosion is expected to occur.
- The valves with open bonnet lifting devices H3 are not to be used on RINA classed ships.
- The valves with threaded connections of parallel threads, where pressure-tight joints are made on the threads, are allowable ONLY on Class III piping systems/pressure vessels.
- The valve materials are to comply with Part D Chapter 2 of the RINA Rules, depending of the temperature, as appropriate.

Acceptance conditions

- The following flow coefficient **Z**, depending on the ratio **h/do** between the actual lift and the orifice diameter in way of the seat, on the ratio **pao/po** between the absolute pressures downstream and upstream of the valves themselves, is accepted by RINA to determine the discharge capacities of the valves:

Steam and gases

Flow diameter (mm)	Z	h/do	pao/po
(do=6) (type 437)	0.72	≥ 0.183	≤ 0.350
(do=10) (type 437)	0.50	≥ 0.140	≤ 0.300
(do=10) (type 438)	0.40	≥ 0.110	≤ 0.250
(do=10) (type 439)	0.45	≥ 0.110	≤ 0.250



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TYPE APPROVAL CERTIFICATE

No. **MAC155312XG**

Enclosure - Page 3 of 3

437, 438, 439

Liquids

Flow diameter (mm)	Z	h/do
(do=10) (type 437)	0.35	≥ 0.140
(do=10) (type 438)	0.33	≥ 0.110
(do=10) (type 439)	0.37	≥ 0.110

- 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.
- The materials are to be suitable for the intended pressure, temperature and medium discharged.
- The acceptance of the a.m. products on board a ship and other units classed with RINA is subject to the satisfactory outcome of testing as per RINA Rules.

Remarks

- The installation to be in accordance with producer's specification and recommendation.
- This Certificate replaces the previous Type Approval Certificate No. MAC18507CS/001 dated 30/01/2008.

HAMBURG January 29, 2013

