

**TYPE APPROVAL CERTIFICATE****This is to certify:****That the Safety Valve for Boiler and Pressure Vessel**with type designation(s)  
**526**

Issued to

**LESER GmbH & Co. KG  
HOHENWESTEDT, Germany**

is found to comply with

**Det Norske Veritas' Rules for Classification of Ships Pt.4, Ch.6 "Piping Systems"  
Offshore Standard DNV-OS-D101, Marine and Machinery Systems and Equipment  
Det Norske Veritas' Standards for Certification 2.9 No. 5-794.40****Application :****The safety relief valves may be used for steam, liquids, gases, and LPG services. Only type  
526 - 1 1/2" is approved for LNG service with temperature below -55°C.****K. Orifice D: Steam 3,9 and Gas 2,6 / Orifice E-T: Steam 2,6 and Gas 1,5 (based on test  
factor: results in accordance with ASME section VIII)**This Certificate is valid until **2018-12-31**.Issued at **Høvik** on **2015-07-02**for **DNV GL**DNV GL local station: **Essen**Approval Engineer: **Adel Samiei**

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**Marianne Spæren Marveng  
Head of Section**

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

**Product description**

- Flanged Safety Relief Valves, spring loaded, full nozzle type
- Design (conventional and balanced bellow)

Type 526 (closed and open bonnet)	
Lifting devices	Bolted Cap H1 / Screwed cap H2 Packed lever H4 / Plain lever H3 Lifting device H6
Opening characteristics	Normal (steam/gases/liquids)
Connection inlet/outlet	flanged
Standard pressure rating	Inlet: PN1 up to PN400, (CL150 up to CL2500)

- Material specifications and temperature range

Part/Type	5262	5263	5267	5264
Body	Steel castings for pressure purposes: GP240GH(1.0619) or WCB	Steel castings for pressure purposes 1.0619 - LCB	Steel castings for pressure purposes G17CrMo5-5 (1.7357) or WC6	Steel castings for pressure purposes: GX5CrNiMo19-11-2 (1.4408) or CF8M Castings, Austenitic-Ferritic (Duplex) Stainless Steel: ASME SA-995 Gr. 4A / CD3MN (Duplex)/1.4462 ASME SA-995 Gr. 6A / CD3MWCuN (Super Duplex)
Disc	Stainless Steel: X39CrMo17-1(1.4122) Or MT440			Stainless Steel: X2CrNiMo17-12-2 (1.4404 - 316L)*
	Stainless steels: ASME SA-182 F51 (Duplex) /1.4462 ASME SA-479 S31803 (Duplex) /1.4462 ASME SA-182 F55 (Super Duplex) /1.4501 ASME SA-479 S32760 (Super Duplex) /1.4501		-	Stainless steels: ASME SA-182 F51 (Duplex) /1.4462 ASME SA-479 S31803 (Duplex) /1.4462 ASME SA-182 F55 (Super Duplex) /1.4501 ASME SA-479 S32760 (Super Duplex) /1.4501
Nozzle	Stainless Steel: X2CrNiMo17-12-2 (1.4404 - 316L) or Steel castings for pressure purposes: GX5CrNiMo19-11-2 (1.4408) or CF8M			
	Stainless steels: ASME SA-182 F51 (Duplex) /1.4462 ASME SA-479 S31803 (Duplex) /1.4462 ASME SA-182 F55 (Super Duplex) /1.4501 ASME SA-479 S32760 (Super Duplex) /1.4501		-	Stainless steels: ASME SA-182 F51 (Duplex) /1.4462 ASME SA-479 S31803 (Duplex) /1.4462 ASME SA-182 F55 (Super Duplex) /1.4501 ASME SA-479 S32760 (Super Duplex) /1.4501

\*Stelited

- Valve sizes

d <sub>0</sub> (mm)	14,0 to 161,5
DN	DN25 to 200
ANSI	1" - 8"
Orifice letter	D - T

- Temperature range based on used material:

Material	Min. Temp. °C	Max. Temp. °C
GP 240GH / 1.0619 / WCB	-85	450
1.0619 - LCB	-46	538
GX5CrNiMo19-11-2 / 1.4408 / CF8M	-270	400
ASME SA-995 Gr. 4A / CD3MN (Duplex) / 1.4462	-60	250
ASME SA-995 Gr. 6A / CD3MWCuN (Super Duplex)	-80	316
G17CrMo5-5 / 1.7357 / WC6	-85	550
X2CrNiMo17-12-2 / 1.4404 / 316L	-273	550
ASME SA-182 F51 (Duplex) / 1.4462	-60	250
ASME SA-479 S31803 (Duplex) / 1.4462	-60	250
ASME SA-182 F55 (Super Duplex) / 1.4501	-40	250
ASME SA-479 S32760 (Super Duplex) / 1.4501	-40	250
X39CrMo17-1 / 1.4122 / MT440	-85	550

- Pressure rating will be reduced on higher temperature or lower temperature according to ASME B16.34.
- Sufficient valve capacity is to be calculated for each application acc. to DNV ship rules Pt.4 Ch.6.

## Limitation

Materials to show minimum impact value 27J at test temperature. 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.

## Type Approval documentation

- API Catalog Series 526, Edition May 2013, Doc. No. 0777.5489
- TÜV Type Test Approval No. 12-1082, dated 04/2013
- National Board Testing Laboratory reports dated 10/2011
- Manufacturer's test report HAM600226-1 dated 2010-02-24

## Tests carried out

Cryogenic test

## Production testing and Certification

- All valves shall be tested as below:
  - Hydrostatic test of the valve body at a pressure equal to 1.5 times the design pressure for all valves.
  - Test of set pressure at ambient temperature.
  - Leak test after reset at 90% of each set pressure at room temperature.
- Above tests shall be done in presence of DNV GL surveyor for valves intended for LNG/LPG systems or for valves where DN ≥ 40.
- Documents, signboards etc. which are to accompany each product/delivery:

Job Id: **262.1-002761-4**  
Certificate No: **P-15170**

- Instruction and maintenance manuals
  - Surveyors report
  - DNV product certificate is required for all valves having  $DN \geq 40$ .
- Materials of the valve body intended for LNG/LPG systems are to be delivered with material certificates in accordance with DNV Ship Rules Part 5, Chapter 5 Section 2 Tabel E1. For other systems, material certificates are to be in accordance with DNV Ship rules Pt.4 Ch.6 Sec.2 Table A2.
- All of materials with NV or Work certificate have to be supplied from an approved manufacturer of DNV GL for the type and grade of steel being supplied and for the relevant steelmaking and processing route.

### **Marking of product**

For traceability to this Type Approval the products are to be marked with:

- Manufacturer's name or trade mark
- Design or type designation
- Size
- Set pressure and capacity.

### **Periodical assessment**

For retention of the Type Approval, a DNV GL surveyor shall perform periodical assessment every second year and before the expiry date of this certificate. The scope of the periodical assessment survey, is to verify that the conditions stipulated for the Type Approval is complied with and that no alterations are made to the product design or choice of materials.

The main elements of the certificate retention survey are:

- review of Type Approval documentation
- review of possible changes in design, materials and performance
- ensure traceability between manufacturer's product type marking and Type Approval Certificate.

### **END OF CERTIFICATE**