

Type Approval Certificate

This is to certify that the undernoted product(s) has/have been tested with satisfactory results in accordance with the relevant requirements of the Lloyd's Register Type Approval System.

Manufacturer	Jokwang I.L.I. Co., Ltd.
Address	37, Sanmakgongdanbuk 10-gil, Yangsan-si, Gyeongnam, 50567, Republic of Korea
Type	Safety Valves
Description	Conventional Type(Spring Loaded) Safety Relief Valve(Cryogenic)
Trade Name	JSV-FF100
Application	Marine use for cargo piping systems in ships for carriage of liquefied gases in bulk Marine use for fuel piping systems in ships using Gases as Fuel
Specified Standard	Lloyd's Register's Rules and Regulations for Classification of Ships (July 2021) Lloyd's Register's Rules and Regulations for the Construction and Classification of Ships for the Carriage of Liquefied Gasses of Ships (July 2021) Lloyd's Register's Rules and Regulations for Classification of Ships using Gases or other Low-flashpoint Fuels (July 2021) ASME SEC. VIII : Boiler and Pressure Vessel Code (2019 Edition)

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ISO21013-1 : Cryogenic vessels-Pressure relief accessories for cryogenic service
(2008 Edition)

API standard 527 : Seat Tightness of Pressure Relief Valves (5th Edition, 2020)

Ratings

SEE APPENDIX

Additional Tests

The following tests were carried out on representative samples with satisfactory results:-

- 1) Hydrostatic test
- 2) Ambient function test
- 3) Cryogenic function test
- 4) Flow Capacity Test

Other Conditions

- 1) The materials used in the construction of valves are to be in accordance with Chapter 6 of LR Rules for Ships for Liquefied Gases and Part 5, Chapter 12 of LR Rules and Regulations for the Classification of Ships, as applicable.
- 2) The valves are to be constructed, tested and installed to the LR's attending Surveyor's satisfaction.
- 3) In all cases the materials are to be suitable for their intended service conditions.
- 4) The requirements for design temperatures below -165°C shall be specially agreed with the Flag Administration in accordance with Chapter 6, Table 6.4 of the IGC Code and Section 7.4, Table 7.4 of the IGF Code.

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This certificate is not valid for equipment, the design, ratings or operating parameters of which have been varied from the specimen tested. The manufacturer should notify Lloyd's Register Asia of any modification or changes to the equipment in order to obtain a valid Certificate.

The Design Appraisal Document and its supplementary Type Approval Terms and Conditions form part of this Certificate.

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APPENDIX

RATING	Nominal Size (inlet/outlet)	Nominal Pressure Ratings (inlet/outlet)	Setting Pressure Range (orifice)	Coefficient of discharge, Kd value
	3/4" x 1"	150# RF / 150# RF	0.1 to 1.9 MPa	0.831 (steam/air/gas) 0.615 (liquid)
	1" x 2"			
	1-1/2" x 2"			
	1-1/2" x 3"			
	2" x 3"			
	3" x 4"			
	4" x 6"	0.1 to 1.9 MPa(M,M1,N,N1) 0.1 to 1.44 MPa(P,P1)		
	3/4" x 1"	300# RF / 150(300)# RF	0.1 to 4.96 MPa	
	1" x 2"			
	1-1/2" x 2"			
	1-1/2" x 3"			
	2" x 3"			
3" x 4"	0.1 to 3.95 MPa(J,J1) 0.1 to 4.07 MPa(K,K1)			
4" x 6"	0.1 to 4.11 MPa(L,L1) 0.1 to 4.07 MPa(M,M1) 0.1 to 3.73 MPa(N,N1) 0.1 to 2.59 MPa(P,P1)			

Temperature Range (°C) : -196 to 180

LIMITATION

- 1) Type Approval does not eliminate the need for normal inspection survey procedures required by the Rules and Regulation.
- 2) If the specified standards are amended during the validity of this certificate, the product is to be re-approved prior to it being supplied to vessels to which the amended standards apply.
- 3) (in case of applications other than Marine) The application of this Type Approval Certificate will be limited to the relevant scope of the Specified standards and acceptance thereof by the local authorities.