Type Approval Certificate

[Cryogenic Safety Valve]

Initial Approval	31 May 2021
Manufacturer	Jokwang I.L.I Co., Ltd.
	37 Sanmakgongdanbuk 10-gil, Yangsan-si, Gyeongsangnam-do, 50567, Republic of Korea
Product Description	Type : JSV-FF100
	"See Appendix 1"
Approval Condition	"See Appendix 1"

THIS IS TO CERTIFY that the above-mentioned product has been approved in accordance with the relevant requirement of this Society's Rules and / or of the recognized standards as follows.

Pt.5, Ch.5, Art.123 and Pt.7, Ch.5, Art.513 of the Rules for Classification of Steel Ships.

This Certificate is valid until 30 May 2031

Issued at Busan, Korea on 6 April 2026

This certificate is signed electronically in accordance with IMO FAL.5/Circ.39/Rev.2. Validation and authentication of the certificate can be confirmed from "http://e-cert.krs.co.kr" by using the tracking No(ME26014387545) and certificate No.(BSN02491-VV005).

KOREAN REGISTER

General Manager of Certification of Materials & Components Team

Note : *1. This certificate will be valid subject to complying with the approval conditions described on the certificate and/or on the Rules of this Society.*
2. This certificate will be invalid from the expiry date aforementioned unless the extension or renewal has been granted to the applicant or the manufacturer.
3. Any significant modifications or changes in design or construction to the above product without approval from this Society will render this certificate invalid.
4. Should the specified rules, regulations or standards be amended during the validity of this certificate, the product is to be re-approved by this Society in accordance with the requirements as amended.

Product Description and/or Approval Condition

Date of Issue : 6 April 2026

A. Product Description

1. Product Specification

1) Type : JSV-FF100
2) Materials
   - Body / Bonnet : SA351-CF8M
   - Disc/ Seat : 316SS-st
   - Spring : Chrome Alloy(SWOSC-B, SAE9254), Inconel X-750, 316SS
3) Temp. range (℃) : -196 to +180
4) Applicable Fluid : LNG, LN2, NG, N2, LEG, LPG, Liquefied Gas, LO2, LAr.
5) Kd Factor : 0.831(Steam & Gases), 0.615(Liquid)
6) Size and Pressure ;

Valve Size(Inch) Inlet	Outlet	Nominal Pressure Ratings (inlet/outlet)	Orifice	Design Press. (MPa)	Setting Press. (MPa)	Remark
3/4	1	150#RF / 150#RF	D, D1	1.9	0.1 ~ 1.9	
		300#RF / 150#RF	D, D1	5.1	1.9 ~ 4.96	
1	2	150#RF / 150#RF	D, D1, E, E1	1.9	0.1 ~ 1.9	
		300#RF / 150#RF	D, D1, E, E1	5.1	1.9 ~ 4.96	
1-1/2	2	150#RF / 150#RF	F, F1	1.9	0.1 ~ 1.9	
		300#RF / 150(300)#RF	F, F1	1.9	0.1 ~ 1.9	*
		300#RF / 150(300)#RF	F, F1	5.1	1.9 ~ 4.96	
		150#RF / 150#RF	G, G1, H, H1	1.9	0.1 ~ 1.9	
1-1/2	3	300#RF / 150(300)#RF	G, G1	1.9	0.1 ~ 1.9	*
		300#RF / 150(300)#RF	G, G1	5.1	1.9 ~ 4.96	
		300#RF / 150(300)#RF	H, H1	1.9	0.1 ~ 1.9	*
2	3	150#RF / 150#RF	J, J1	1.9	0.1 ~ 1.9	
		300#RF / 150(300)#RF	J, J1	1.9	0.1 ~ 1.9	*
		300#RF / 150(300)#RF	H, H1	5.1	1.9 ~ 4.96	
		150#RF / 150#RF	K, K1, L, L1	1.9	0.1 ~ 1.9	
3	4	300#RF / 150(300)#RF	J, J1	4.9	1.9 ~ 3.95	
		300#RF / 150(300)#RF	K, K1	5.1	1.9 ~ 4.07	
		300#RF / 150(300)#RF	L, L1	1.9	0.1 ~ 1.9	*
		150#RF / 150#RF	M, M1, N, N1	1.9	0.1 ~ 1.9	
4	6	150#RF / 150#RF	P, P1, P2	1.9	0.1 ~ 1.44	
		300#RF / 150(300)#RF	L, L1	5.1	1.9 ~ 4.11	
		300#RF / 150(300)#RF	M, M1	5.1	1.9 ~ 4.07	
		300#RF / 150(300)#RF	N, N1	5.1	1.9 ~ 3.73	
		300#RF / 150(300)#RF	P, P1, P2	1.9	0.1 ~ 1.44	*
		300#RF / 150(300)#RF	P, P1, P2	3.43	1.9 ~ 2.59	

* Set pressure limited for low-pressure applications where a Class 300 inlet flange is preferred over a Class 150 flange.

2. Approved Drawings and Documents

1) Approved Drawing No. JKS-1621001T Rev.4 dated on 26 February 2026.
2) Approved Drawing No. JKS-1621002T Rev.2 and JKS-1621003T Rev.2 dated on 26 February 2026.

3. Test Reports, etc.

1) Type Approval Test Report of Hydro. ;
   HYD-210304-02 dated on 04 March 2021, HYD-220223-02 dated on 23 February 2022.
2) Type Approval Test Report of Cryogenic Function ;
   TA-210414-01&02 dated on 14 April 2021, TA-210415-01&02 dated on 15 April 2021,
   TA-210416-01&02 dated on 16 April 2021, TA-210420-01&02 dated on 20 April 2021,
   TA-220519-01&02 dated on 19 May 2022, TA-220517-01 dated on 17 May 2022,
   TA-220512-01&02 dated on 12 May 2022, TA-220510-01&02 dated on 10 May 2022.
3) Type Approval Test Report of Ambient Function ;
   TA-210423-01 ~ 08 dated on 23 April 2021, TA-220524-01 ~ 07 dated on 24 May 2022.
4) Type Approval Test Report of Kd factor ;
   NBBI Cert No.89030 & 89041 dated on 18 April 2017.

Product Description and/or Approval Condition

Date of Issue : 6 April 2026

B. Approval Condition

1. Application & Limitation

1) The materials used for valve body as appropriately are to be supplied by the approved manufacturers, and certified by the Society or to be satisfactory to the Surveyor.
2) Gaskets and packings are to be suitable for the condition of use and to have a construction specified in Korean Industrial Standards or equivalent construction thereto.

2. Individual Product Cert. and Drawing Approval Requirement

1) Individual Product Certification is required.
2) In case of cryogenic valve, the minimum average energy for Charpy V-notch impact test should be complied with the relevant requirements of the Rules, Pt.7, Ch.5.
3) The following tests are to be applicable for each size of the valves as individual product certification.
   - Hydrostatic test of the valve body at a pressure equal to 1.5 times the design pressure.
   - In case of cryogenic valve, Cryogenic testing consisting of valve operation and leakage verification for a minimum of 10% of each type and size of valve.
   - Proving testing at ambient temperature consisting of leakage test at a pressure equal to 0.9 times the design pressure.

3. Marking

1) The product is to be permanently marked with manufacturer name and type designation on a suitable position.

4. Others

- N/A

< End of Certificate >