Marine & Offshore Division

Certificate number: 45883/A0 BV
File number: ACM 145/2536/2
Product code: 2204I

This certificate is not valid when presented without the full attached schedule composed of 7 sections

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TYPE APPROVAL CERTIFICATE

This certificate is issued to

HY-LOK CORPORATION

BUSAN - KOREA (REPUBLIC OF)

for the type of product

BALL VALVES

115 Series Ball Valves

Requirements:
- BUREAU VERITAS Rules for the Classification of Steel Ships

This certificate is issued to attest that BUREAU VERITAS did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.

This certificate will expire on: 07 Jul 2021

For BUREAU VERITAS,
At BV PUSAN, on 07 Jul 2016,
Chang-uk HONG

BUREAU VERITAS SURVEYORS AT PARIS 1828 PUSAN INTERNATIONAL REGISTER

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION

115 Series Ball Valves

1.1 Design Specifications

Ball valves to DIN Standard with female threaded or tube ends.

Size range DN (mm)	4 up to 25
Max working pressure (bar)	up to 500*
Working temperature range (°C)	-20 up to 100

*The maximum service pressure and the temperature are not to exceed those specified by the manufacturer.

Type	Part N° *	DN (orifice, mm)	PN (bar)
DIN 2353 Light Series Tube (L)			
	BVDT-6L	4	315
	BVDT-8L	6	315
	BVDT-10L	6	315
	BVDT-12L	10	315
	BVDT-15L	13	315
	BVDT-18L	13	315
	BVDT-22L	20	160
	BVDT-28L	25	160
	BVDT-35L	25	160
DIN 2353 Heavy Series Tube (S)			
	BVDT-8S	4	500
	BVDT-10S	6	500
	BVDT-12S	8	500
	BVDT-14S	10	500
	BVDT-16S	13	400
	BVDT-20S	13	400
	BVDT-25S	20	315
	BVDT-30S	25	315
	BVDT-38S	25	315
Female DIN/ISO 228/BSP			
	BVDF-2G	6	500
	BVDF-4G	6	500
	BVDF-6G	10	500
	BVDF-8G	13	500
	BVDF-12G	20	315
	BVDF-16G	25	315
	BVDF-20G	25	315
Female NPT (ANSI/ASME B1.20.1)			
	BVDF-4N	6	500
	BVDF-6N	10	500
	BVDF-8N	13	500
	BVDF-12N	20	315
	BVDF-16N	25	315
	BVDF-20N	25	315

* Fire safety design code added "-FS".

1.2 Seals temperature rating as per manufacturer's specifications

Seals	Temperature rating (°C)
NBR (Buna N)	- 23 up to 121
Viton	- 23 up to 200
EPDM	- 46 up to 149

Ball Seals	Temperature rating (°C)
POM-MoS2	- 30 up to 100
PTFE	- 54 up to 65

1.3 Materials

Body	316 Stainless steel - Carbon steel
Stem	316 Stainless steel - Carbon steel
Ball	316 Stainless steel
Ball Seats	POM-MoS2 - PTFE
Stem & end seals	NBR
Seals	NBR (Buna N) -Viton - EPDM

When other choices of materials are used per manufacturer's recommendations, the BV agreement is to be obtained.

2. DOCUMENTS AND DRAWINGS

- Design document N° 115BV-SCH rev.1 dated 2008 including design plan, data sheet, drawings, calculation sheet and pressure test reports (body and seat) N° 04T-H115BVdated 15/03/2004.

No departure from the above documents shall be made without the prior consent of the Society. The manufacturer must inform the Society of any modification or changes to these documents and drawings.

3. TEST REPORTS

- Fire safety test according to API Standard 607 Ffth Edition, June 2005, report N° FSTR-12A13-01 dated 13/01/2012 (Valve BVDF-16GLFS) witnessed by a LR surveyor.
- Burst test report N° TR-CCS-BV-B01 dated 29/01/2005 at 4 times the max working pressure (BVDT-12L) witnessed by a CCS surveyor.
- Hydraulic test reports N° TR-CCS-BV-H01 (BVDT-12L) dated 29/01/2005, N° TR-CCS-HGT-090310-1 dated 10/03/2009 (BVDT-12L) and N° TA-CCS-115-130206 dated 06/02/2013 (BVDT-12L and BVDT-25S) witnessed by a CCS surveyor.
- Leakage test of the valve body at 1.5 times the max working pressure and seat leakage test at 1.1 times the max working pressure report N° TR-LR-HYLOK115-111215 (BVDF-8N, BVDT-12L, BVDF-16G and BVDT-30S) dated 15/12/2011 witnessed by a LR surveyor.

4. APPLICATION / LIMITATION

4.1 May be used for the following services on board: Hydraulic fluids, compressed air, lubricating and fuel oil systems.
4.2 The valves belong to class I, class II or class III according to the relevant requirements stated in Part C, Chapter 1, Sec 10 of the BUREAU VERITAS Rules. Valves fitted on the ship side and valves under static pressure on fuel oil tanks or lub oil tanks belong to class II.
4.3 The valves body, ball and sealing should be of a suitable type for use with cargoes intended to be carried.
4.4 The approval does not include any operating gear for remote control of the valves.
4.5 The valve is to be installed according to manufacturer's instructions and BUREAU VERITAS Rules.
4.6 Threaded connections are not to be used on flammable oil piping systems.

5. PRODUCTION SURVEY REQUIREMENTS

5.1 The products are to be supplied by **HY-LOK CORPORATION** in compliance with the type and the requirements described in this certificate. This type of product is within the category IBV of BUREAU VERITAS Rule Note NR320.
5.2 BUREAU VERITAS Certificates are required for materials of valve housings of Class I (DN≥ 50) and Class II (DN≥ 100). Materials of valve housings of Class I (DN<50) and Class II (DN<100) and for other parts of Class I and Class II are to be with Work's certificates.
5.3 Each valve housing for class I and class II is to be hydraulically pressure tested to 1.5 times the design pressure. Valves intended to be fitted on the shipside below the load waterline are to be tested by hydraulic pressure not less than 0,5 MPa.

HY-LOK CORPORATION has declared to Bureau Veritas the following production site:

HY-LOK CORPORATION
#1467-1, Songjeong-dong, Gangseo-gu
BUSAN
KOREA (REPUBLIC OF)

6. MARKING OF PRODUCT

The valve is to be permanently marked with at least:
- Manufacturer's name or logo
- Type designation
- Size
- Society's brand as relevant

7. OTHERS

It is **HY-LOK CORPORATION**'s responsibility to inform shipbuilders or their sub-contractors of the proper methods of fitting, use and general maintenance of the approved equipment and the conditions of this approval.

***** END OF CERTIFICATE *****