



Marine & Offshore
Division

Certificate number: 39855/A0 BV

File number: ACM 145/2580/1

Product code: 2205I

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

LK Valves AB

HELSINGBORG - SWEDEN

for the type of product

BUTTERFLY VALVES

Butterfly Valves Double Flange type, Lug type and Wafer type

Requirements:

- BUREAU VERITAS Rules for the Classification of Steel Ships
- BUREAU VERITAS Rules for the Classification of Offshore Units

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: 29 Dec 2019

For BUREAU VERITAS,

At BV GOTHENBURG, on 29 Dec 2014,

Magne MOLLER



This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with BUREAU VERITAS. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply. This certificate is issued within the scope of the General Conditions of BUREAU VERITAS Marine & Offshore Division available on the internet site www.veristar.com. Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against BUREAU VERITAS for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

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BV Mod. Ad.E 530 October 2014

This certificate consists of 3 page(s)

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION

Butterfly Valve double flange type, lug type and wafer type.

Regulating valve with rubber lining i.e. open, close, throttling, in marine application.

1.1 Design Specifications

| Product design | Type | Size (mm) | Pressure Rating | Temperature range |
|--------------------|--|----------------|-----------------------------|---|
| Double flange type | 730701, 730702, 730901, 730902, 731701, 731702, 731901, 731902, 732701, 732702, 732901, 732902 | DN 40 ~ DN 500 | PN 10, PN 16 | NBR: -35°C to 95°C EPDM: -40°C to 110°C FKM/FPM: -30°C to 180°C |
| Lug type | 710700, 710701, 710702, 711700, 711701, 711702, 712700, 712701, 712702, 710900, 710901, 710902, 711900, 711901, 711902, 712900, 712901, 712902, 710703, 710903, 711703, 711903, 712703, 712903 | DN 40 ~ DN 800 | PN 6, PN 10 PN 16, PN 25 | NBR: -35°C to 95°C EPDM: -40°C to 110°C FKM/FPM: -30°C to 180°C |
| Wafer type | 700701, 700702, 701701, 701702, 702701, 702702, 700901, 700902, 701901, 701902, 702901, 702902, 700703, 700903, 701703, 701903, 702703, 702903 | DN 40 ~ DN 600 | PN 10, PN 16 PN 25 | NBR: -35°C to 95°C EPDM: -40°C to 110°C FKM/FPM: -30°C to 180°C |

Options: actuators, gear, lever

1.2 Materials

| Part | Material |
|---------------|---|
| Body | Ductile iron EN-JS1030 (GGG40) |
| Disc | Aluminium bronze CC333G (AB2), Stainless steel 1.4408 (AISI316) |
| Rubber lining | NBR, EPDM, FKM/FPM |
| Bearing | Brass |
| Bushing | Composite |
| End plug | Steel |
| Stem | Stainless steel 1.4436 (AISI316), alt AISI 431 |
| Pin | Duplex stainless steel 1.4462 |

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

2. DOCUMENTS AND DRAWINGS

- Manufacturer's catalogues
- Manufacturing drawing N°34530 Rev.D dated 2011-10-31
- Manufacturing drawing N°34531 Rev.C dated 2011-10-31
- Manufacturing drawing N°34532 Rev.A dated 2013-01-15
- Configuration chart butterfly document N°34570.
- Installation and operation manual Article N°74523 Revision 1

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

- Burst pressure test of valve bodies performed on April 17th 2013, witnessed by a DNV surveyor in LK Changzhou.
- Burst pressure test of valve bodies performed on August 06th 2014, witnessed by a DNV surveyor in LK Changzhou.

4. APPLICATION / LIMITATION

4.1 May be used for the following services on board:

- Air, seawater and fresh water, boiler feedwater condensate, fuel oil, lubricating oil, flammable hydraulic oil, cargo oil, non-flammable hydraulic oil.

4.2 The butterfly valves belong to Class I, Class II and Class III according to the relevant requirements stated in Part C, Ch 1, Sec 10 of BUREAU VERITAS Rules. Valves fitted on the ship side and collision bulkhead belong to Class II.

4.3 The butterfly valve body, disc and sealing shall be suitable for the intended service. In particular the nature of materials, joints included, is to be selected according to the fluid to be conveyed.

4.4 The use of stainless steel is to be restricted as per the Rules.

4.5 The approval does not include any operating gear for remote control of the valves.

4.6 When the butterfly valves are not fitted with flanges their use may be accepted as shipside valves provided that arrangement are made to allow a possible disassembling at sea of the pipes immediately inboard without any risk of flooding.

4.7 The valves are to be installed according to the manufacturer's instructions and Society's Rule requirements.

4.8 Bilge valves will be fitted in association with a non return valve.

5. PRODUCTION SURVEY REQUIREMENTS

5.1 The products are to be supplied by **LK Valves AB** in compliance with the type and the requirements described in this certificate.

5.2 This type of product is within the category IBV of Bureau Veritas Rule Note NR320.

5.3 Bureau Veritas Certificate is required for materials of valve housings of class I (DN \geq 50) or class II (DN \geq 100). Materials of valve housings of class I (DN $<$ 50) or class II (DN $<$ 100) and for other parts are to be with Work's certificates.

5.4 Each valve is to be hydraulically pressure tested to 1.5 times the design pressure.

Places of production

Changzhou LK Valves Co. Ltd

East East road 167

Building 13

213025 Changzhou

Jiansu Prov., CHINA

LK Valves AB

Garnisonsgatan 19

SE-254 66 HELSINGBORG

SWEDEN

6. MARKING OF PRODUCT

The butterfly valves shall be marked with at least:

- Manufacturer's name or trademark
- Type designation
- Size and pressure class
- Maximum design pressure
- Society's brand as relevant

7. OTHERS

This approval is given on the understanding that the manufacturer will accept full responsibility for informing shipbuilders or their sub-contractors of the proper methods of fitting and general maintenance of the products and of the conditions of this approval.

*** END OF CERTIFICATE ***