



Confirmation of Product Type Approval

Please refer to the "Service Restrictions" shown below to determine if Unit Certification is required for this product.

This certificate reflects the information on the product in the ABS Records as of the date and time the certificate is printed.

Pursuant to the Rules of the American Bureau of Shipping (ABS), the manufacturer of the below listed product held a valid Manufacturing Assessment (MA) with expiration date of 01/FEB/2020. The continued validity of the Manufacturing Assessment is dependent on completion of satisfactory audits as required by the ABS Rules.

And; a Product Design Assessment (PDA) valid until 12/MAR/2019 subject to continued compliance with the Rules or standards used in the evaluation of the product.

The above entitle the product to be called Product Type Approved.

The Product Design Assessment is valid for products intended for use on ABS classed vessels, MODUs or facilities which are in existence or under contract for construction on the date of the ABS Rules used to evaluate the Product.

ABS makes no representations regarding Type Approval of the Product for use on vessels, MODUs or facilities built after the date of the ABS Rules used for this evaluation.

Due to wide variety of specifications used in the products ABS has evaluated for Type Approval, it is part of our contract that; whether the standard is an ABS Rule or a non-ABS Rule, the Client has full responsibility for continued compliance with the standard.

Product Name: Valve, Butterfly

Model Name(s): Butterfly valve, Wafer type, Lug type, Double Flange Type

Presented to:

CHANGZHOU LK VALVES CO LTD
EAST EAST ROAD 167
BUILDING 13
CHANGZHOU QISHUYAN ECONOMIC DEVELOPMENT DISTRICT
China

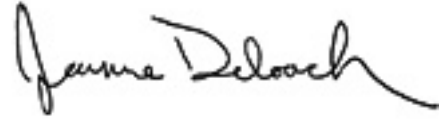
Intended Service: Marine and Offshore Installations

Description: Wafer Type, Product Group 700703, 700903, 701703, 701903, 702703, 702903, 700702, 700902, 701702, 701902, 702702, 702902, 700701, 700901, 701701, 701901, 702701, 702901 Lug Type, Product Group 710703, 710903, 711703, 711903, 712703, 712903, 710702, 710902, 711702, 711902, 712702, 712902, 710701, 710901, 711701, 711901, 712701, 712901, 710700, 710900, 711700, 711900, 712700, 712900 Double Flange Type, Product Group 730702, 730902, 731702, 731902, 732702, 732902, 730701, 730901, 731701, 731901, 732701, 732901 Materials: 1. Body: GGG40 2. Material Lining: NBR/EPDM/FKM 3. Material Disc: AB2/AISI316 4. Material Stem: AISI316/AISI431

Ratings: Wafer Type, Product Group 700703, 700903, 701703, 701903, 702703, 702903, Sizes: DN40-300, Pressure Rating: PN25; Wafer Type, Product Group 700702, 700902, 701702, 701902, 702702, 702902, Sizes: DN40-300, Pressure Rating: PN16; Wafer Type, Product Group 700701, 700901, 701701, 701901, 702701, 702901, Sizes: DN200-600, Pressure Rating: PN10; Lug Type, Product Group 710703, 710903, 711703, 711903, 712703, 712903, Sizes: DN40-300, Pressure Rating: PN25; Lug Type, Product Group 710702, 710902, 711702, 711902, 712702, 712902, Sizes: DN40-300, Pressure Rating: PN16; Lug Type, Product Group 710701, 710901, 711701, 711901, 712701, 712901, Sizes: DN200-800,

	<p>Pressure Rating: PN10; Lug Type, Product Group 710700, 710900, 711700, 711900, 712700, 712900, Sizes: DN700-800, Pressure Rating: PN6; Double Flange Type, Product Group 730702, 730902, 731702, 731902. 732702, 732902, Sizes: DN40-300, Pressure Rating: PN16; Double Flange Type, Product Group 730702, 730902, 731702, 731902, 732702, 732902, Sizes: DN350-500, Pressure Rating: PN16; Double Flange Type, Product Group 730701, 730901, 731701, 731901, 732701, 732901, Sizes: DN200-500, Pressure Rating: PN10.</p>
Service Restrictions:	<p>1) Unit Certification is not required for this product. If the manufacturer or purchaser request an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards and tolerances, must be clearly defined. 2) As per section 4-6-2/9.13.2(ii) of the Steel Vessels Rules, wafer-type butterfly valves are not acceptable as shell valves. Butterfly valves with lugs, however, may be accepted. The connection arrangement for shell valves is to ensure that the valve remains in position should the inboard piping be removed. 3) As per section 4-6-2/7.3.2 of the Steel Vessels Rules, all valves intended for installation on shipside shell at or below the deepest load waterline, including those at the sea chests, are to be hydrostatically tested in the presence of an ABS Surveyor, before installation, to a pressure of at least 5 bar. 4) As per section 4-6-2/5.11.3(d) of the Steel Vessels Rules, all valves of classes I and II piping systems having nominal diameters exceeding 50 mm are to have flanged or welded ends. 5) The valves have not been subjected to a fire test. 6) Vessel's specific piping plans are to be submitted for verification of the suitability of the materials for the specific piping system.</p>
Comments:	<p>1. The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product. 2. All valves are to bear permanent identification, such as manufacturer's name or trademark, standard of compliance, material identity, pressure rating, etc., as required by the standard of compliance or the manufacturer's specification. Such markings may be cast or forged integral with, stamped on, or securely affixed by nameplate on the component, and are to serve as a permanent means of identification of the component throughout its service life.</p>
Notes / Documentation:	<p>Drawing No. 34530, Butterfly Valve DN150 Lug, Revision: A. Drawing No. 34530, Butterfly Valve DN150 Lug, Revision: D. Drawing No. 34531, Butterfly Valve DN150 Wafer, Revision: A. Drawing No. 34531, Butterfly Valve DN150 Wafer, Revision: C. Drawing No. 34532, Butterfly Valve - Double Flange, Revision: A. Drawing No. 34570, Configuration Chart Butterfly. Drawing No. 5-794.40, Burst Pressure Test of Valve Bodies for LK Valves Butterfly Valves. Drawing No. FORM01, Type of Request - ABS Type Approval Application. Drawing No. GB 1883576-X, Certificate of Manufacturing Assessment. Drawing No. NX1781924-X1, Certificate of Manufacturing Assessment. Butterfly Valve Data Sheets</p>
Term of Validity:	<p>This Product Design Assessment (PDA) Certificate 14-PR1144379-1-PDA-DUP, dated 16/Feb/2016 remains valid until 12/Mar/2019 or until the Rules or specifications used in the assessment are revised (whichever occurs first). This PDA is intended for a product to be installed on an ABS classed vessel, MODU or facility which is in existence or under contract for construction on the date of the ABS Rules or specifications used to evaluate the Product. Use of the Product on an ABS classed vessel, MODU or facility which is contracted after the validity date of the ABS Rules and specifications used to evaluate the Product, will require re-evaluation of the PDA. Use of the Product for non ABS classed vessels, MODUs or facilities is to be to an agreement between the manufacturer and intended client.</p>
ABS Rules:	<p>The Rules for Condition of Classification, Part 1- 2014 Steel Vessels Rules 1-1-4/7.7, 1-1-A3, 1-1-A4, which cover the following: 2014 Steel Vessels Rules 4-6-2/5.11 2014 Steel Vessels Rules Under 90 Meters in Length 4-4-2/11 2014 Offshore Support Vessels Rules 4-6-2/5.11 The Rules for Condition of Classification, Part 1 - 2014 Offshore Units and Structures 1-1-4/9.7, 1-1-A2, 1-1-A3, which cover the following: 2014 Mobile Offshore Drilling Units Rules 4-2-2/9</p>
National Standards: International Standards: Government Authority: EUMED: Others:	<p>EN558, series 20 (face to face), ISO 5211 (top flange)</p>

Model Certificate	Model Certificate No	Issue Date	Expiry Date
PDA-DUP	14-PR1144379-1-PDA-DUP	16/FEB/2016	12/MAR/2019



ABS Programs

ABS has used due diligence in the preparation of this certificate and it represents the information on the product in the ABS Records as of the date and time the certificate was printed. Type Approval requires Drawing Assessment, Prototype Testing and assessment of the manufacturer's quality assurance and quality control arrangements. Limited circumstances may allow only Prototype Testing to satisfy Type Approval. The approvals of Drawings and Products remain valid as long as the ABS Rule, to which they were assessed, remains valid. ABS cautions manufacturers to review and maintain compliance with all other specifications to which the product may have been assessed. Further, unless it is specifically indicated in the description of the product; Type Approval does not necessarily waive witnessed inspection or survey procedures (where otherwise required) for products to be used in a vessel, MODU or facility intended to be ABS classed or that is presently in class with ABS. Questions regarding the validity of ABS Rules or the need for supplemental testing or inspection of such products should, in all cases, be addressed to ABS.