CERTIFICATE NUMBER	20-2011579-PDA
EFFECTIVE DATE	22-Jul-2020
EXPIRY DATE	21-Jul-2025
ABS TECHNICAL OFFICE	Houston ESD - Piping

CERTIFICATE OF

Product Design Assessment

This is to certify that a representative of this Bureau did, at the request of

CLA-VAL COMPANY

located at

1701 PLACENTIA AVENUE, COSTA MESA, CA, United States, 92627

assess design plans and data for the below listed product. This assessment is a representation by the Bureau as to the degree of compliance the design exhibits with applicable sections of the Rules. This assessment does not waive unit certification or classification procedures required by ABS Rules for products to be installed in ABS classed vessels or facilities. This certificate, by itself, does not reflect that the product is Type Approved. The scope and limitations of this assessment are detailed on the pages attached to this certificate.

Product **Valve**

Model **50B-4KG1(Globe)**
2050B-4KG1(Angle)
50B-4KG1KOL(Globe)
2050B-4KG1KOL(Angle)
50-49: 50G-49 (Globe)
50A-49 (Angle)
50G-49KX (Globe)
50A-49KX (...

This Product Design Assessment (PDA) Certificate remains valid until 21/Jul/2025 or until the Rules and/or Standards used in the assessment are revised or until there is a design modification warranting design reassessment (whichever occurs first).

Acceptance of product is limited to the "Intended Service" details prescribed in the certificate and as per applicable Rules and Standards.

This Certificate is valid for installation of the listed product on ABS units which exist or are under contract for construction on or previous to the effective date of the ABS Rules and standards applied at the time of PDA issuance. Use of the Product for non-ABS units is subject to agreement between the manufacturer and intended client.

American Bureau Of Shipping

Yongjin Lee,Engineer/Consultant

NOTE: This certificate evidences compliance with one or more of the Rules, Guides, standards or other criteria of ABS or a statutory, industrial or manufacturer's standards. It is issued solely for the use of ABS, its committees, its clients or other authorized entities. Any significant changes to the aforementioned product without approval from ABS will result in this certificate becoming null and void. This certificate is governed by ABS Rules 1-1-A3/5.9 Terms and Conditions of the Request for Product Type Approval and Agreement (2010)

Sensitivity: Internal & Restricted

CLA-VAL COMPANY
1701 PLACENTIA AVENUE
COSTA MESA CA
United States 92627
Telephone: 281-741-4198
Fax: 949-548-9900
Email: kchism@cla-val.com
Web: www.cla-val.com

Tier: 2 - PDA Issued

Product: **Valve**
Model: **50B-4KG1(Globe)**
2050B-4KG1(Angle)
50B-4KG1KOL(Globe)
2050B-4KG1KOL(Angle)
50-49: 50G-49 (Globe)
50A-49 (Angle)
50G-49KX (Globe)
50A-49KX (Angle)
50A-20(Angle) 50G-20 (Globe)

Intended Service:
Marine and Offshore Applications - Seawater and Fire Water Piping System

Description:
The 50A-20(Angle) Pressure Relief Valve, 50G-20 (Globe) Pressure Relief Valve
The Cla-Val Model 50B-4KG1(Globe), 2050B-4KG1(Angle), 50B-4KG1KOL(Globe), and 2050B-4KG1KOL(Angle) Pressure Relief Valves are designed specifically to automatically relieve excess pressure in seawater or fire protection pumping systems.
The 50B-4KG1KOL and 2050B-4KG1KOL valves are designed with a KOL anti-cavitation seat to eliminate the damaging effects of cavitation.
The Model 50-49 Pump Start/Pressure Relief Valve is designed to provide pump and pipeline protection during pump start sequence and pump operation when discharge pressure rises to unsafe levels.
U.L. Listed: Sizes 3", 4", 6", and 8"
F.M. Approved: Sizes 3", 4", 6", and 8"
ULC Listed: Size 10" for models 50B-4 KG1 (Globe) and 2050B-4 KG1 (Angle), Ductile Iron Body ASTM A 536

Optional UL Listed Materials for Seawater and Severe Service Applications:
• Nickel Aluminum Bronze (NAB) - ASTM B148 Alloy C95800 (See Service Restriction 2)
• Monel - QQ-N-288 Comp B - ASTM A494 Grade M30H
• Cast Steel - ASTM A216 Grade WCB
• 316 Stainless Steel - ASTM A743 Grades CF3M and CFM8
• Super Austenitic Stainless Steel - ASTM A351 Grade CK3MCuN (SMO 254)
• Super Duplex Stainless Steel - ASTM A890 Grade 5A (CE3MN)

Materials for Seawater service model: 50A-20 (angle) and 50G-20 (Globe) Pressure Relief Valve
• Nickel Aluminum Bronze (NAB) - ASTM B148 Alloy C95800 (See Service Restriction 2)
• Monel - QQ-N-288 Comp B - ASTM A494 Grade M30H
• Cast Steel - ASTM A216 Grade WCB
• 316 Stainless Steel - ASTM A743 Grade CFM8
• Super Duplex Stainless Steel - ASTM A890 Grade 5A (CE3MN)

Rating:
Pressure:
Class - 175 psi Max (Model 50B-4KG1, 2050B-4KG1, 50-49 in the 8" size)
Class - 300 psi Max (Model 50B-4KG1 and 2050B-4KG1 in the 3", 4" and 6" size; 50B-4KG1KOL, 2050B-4KG1KOL and 50-49 in the 3", 4", 6" and 8" size)

For ULC Listed: Size 10" for models 50B-4 KG1 (Globe) and 2050B-4 KG1 (Angle), Ductile Iron Body ASTM A 536, Pressure Ratings Class 150 - 250 psi Max and for Class 300 - 400 psi Max;
Design Temperature (Water): up to 180 ºF Max;
Adjustment Range: 20-200 psi (150 Class), 100-300 psi (300 Class).

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Tier: 2 - PDA Issued

Valve Capacity: See attached "pdf" CLA-VAL Valves - Product Information.

Service Restriction:
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. Where the valves are used in fire water piping system, materials rendered ineffective by heat are not to be used in the construction of the valves or the closure mechanism unless protected adequately, as per 4-7-3/1.11 of ABS Rules for Building and Classing Marine Vessels 2020. This restriction is applicable to Nickel Aluminum Bronze (NAB) - ASTM B148 Alloy C95800.
3. Models 50A-20 (Angle) are not UL listed valves. Hence, not to be used in services requiring UL Listing.

Comments:
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 the manufacturer's name or trademark, material identify, pressure rating, etc. at which the manufacturer guarantees the valves to meet the requirements of the manufacturer's standards. 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 in accordance with 4-6-1/7.1.3 and 4-6-1/7.1.4 of the Marine Vessel Rules.
3. The pressure relief valve is to be set, sealed and installed in accordance with the manufacturer's instructions.
4. The pilot control loop plays an important role for the valve functions and is to be well protected against all possible mechanical damage on the drilling rig.

Notes/Drawing/Documentation:
Drawing No. 207941, 4", 6", 8" and 10" 50-20 Pressure relief valve for Sea Water Service, Revision: -
Drawing No. 207942, 4", 6", 8" and 10" 50-20 (Angle), Revision: -
Drawing No. E-50-20_Fire, Product Sheet E-50-20 (R-04/2-018), Revision: -
Drawing No. E-50-20_Fire, Product Sheet E-50-20 (R-04/2-018), Revision: -
Drawing No. ULC Test Report 10in 90G-21 (Globe), 90-21 (Angle) 19 August 1998, ULC Test Report, Revision: -
Drawing No. Catalog 50B-4KG1 Globe and 2050B-4KG1 Angle - fire protection Relief Valve; Revision:-
Drawing No. 99500 - 1 1/2" Thru 10" 50B-4KG1/2050B-4KG1 - pressure relief valve 150 LB/300LB Flanges per ANSI 16.42; Rev-P:-
Drawing No. E-50B-4KG1_Bronze, Product Information Sheet, Revision: -
Drawing No. FM Approval Report 50B-4KG1 for Split Case Fire Pumps May1982, FM Report, Revision: -
Drawing No. FM Approval Report 50B-4KG1 for Vertical Shaft Split Case Fire Pumps Oct, FM Report, Revision: -
Drawing No. FM Approval Report for 50B-4KG1 with CRL60 20-200 100-300 Dec2012, FM Report, Revision: -
Drawing No. FM Test Report for 50B-4KG1 with CRL60 Proof Pressure Results Dec2012, FM Report, Revision: -
Drawing No. UL Test Report 50B-4KG 3 to 6in Mar1973, UL Test Report, Revision: -
Drawing No. UL Test Report 8in 50B-4KG Nov1993, UL Test Report, Revision: -
Drawing No. E-50B-4KG1KOL, Product Information Sheet, Revision: -
Drawing No. FM Approval Report for Water Pressure Relief Valves, Model 50B-4KG1KOL and 2050B-4KG1KOL, Revision: -
Drawing No. E 50-49 and 50-49KX, Product Information Sheet, Revision: -

Terms of Validity:
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STANDARDS

ABS Rules:
The Rules for Conditions of Classification, 2020 Marine Vessels Rules 1-1-4/7.7, 1-1-A4, which covers the following:
2020 Rules for Building and classing Marine Vessels: 4-6-2/5.11.

The Rules for Conditions of Classification, Offshore Units and Structures, 2020 Mobile Offshore Units 1-1-4/9.7, 1-1-A2, 1-1-A3, which covers the following:
2020 Rules for Building and classing Mobile Offshore Units: 4-2-2/9.
2020 Rules for Facilities on Offshore Installations 3-8/5.1.1.

National:
2019 NFPA No. 20
2004 UL1478

International:
NA

Government:
NA

EUMED:
NA

OTHERS:
NA