



CERTIFICATE NUMBER

DATE

04-BK459446/2-PDA

27 March 2013

ABS TECHNICAL OFFICE

Busan Engineering Services

CERTIFICATE OF DESIGN ASSESSMENT

This is to Certify that a representative of this Bureau did, at the request of
KUK DONG LEVEL CO. - BUSAN

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: **Level Indicator, Tank Level Sensor**

MODEL: **KD-12, KD-12P, KD-30, KD-100R, KD-90, KD-90CSS, KD-MLG, KD-RLG, KD-FLG, KD-TLG**

This Product Design Assessment (PDA) Certificate 04-BK459446/2-PDA, dated 27/Mar/2013 remains valid until 26/Mar/2018 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.

AMERICAN BUREAU OF SHIPPING


Young Ho Kang

Engineer

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 manufacturing process without approval from ABS will result in this certificate becoming null and void. This certificate is governed by the terms and conditions as contained in ABS Rules 1-1-A3/5.9 Terms and Conditions of the Request for Product Type Approval and Agreement (2010).

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MA Certificate No. 11-BK2073538-X

Product: Level Indicator, Tank Level Sensor

Model: KD-12, KD-12P, KD-30, KD-100R, KD-90, KD-90CSS, KD-MLG, KD-RLG, KD-FLG, KD-TLG

Intended Service:

Level Switch & indication for Fuel oil, Diesel oil, Lubricating oil, Fresh water, Sludge, Sewage tanks.

Description:

1. KD-12: Ball Float type level switch (Top / Side mounting, with/without testing device)
2. KD-12P: Bowl type level switch (operating weight : On : 0.08 kg, Off : 0.025 kg)
3. KD-30: Magnet Float type level switch (Top mounting, Reed switch in guide bar)
4. KD-100R: Magnet Float type level transmitter (Top mounting, Reed switch in guide bar)
5. KD-90: Displacement type level switch (Top mounting, with/without float chamber & test device)
6. KD-90CSS: Displacement type level switch (Side mounting, with high/low connection)
7. KD-MLG: Magnet float type level indicators
8. KD-RLG: Reflex type Glass Level Gauge with stop valves at both ends
9. KD-FLG: Flat type Glass Level Gauge
 - 1) A-type: Self-closing valve at lower end and venting pipe at upper end
 - 2) B-type: Self-closing valve at lower end and no valve at upper end
 - 3) C-type: Self-closing valves at both ends
10. KD-TLG: Tubular type Glass Level Gauge (JIS F 7211 type)
 - 1) A-type: Shut-off valve at lower end and venting pipe at upper end
 - 2) B-type: Shut-off valve at lower end and no valve at upper end
 - 3) C-type: Shut-off valves at both ends
11. KD-TLG : Tubular type Glass Level Gauge (JIS F 7212 type)
 - 1) A-type: Self-closing valve at lower end and venting pipe at upper end
 - 2) B-type: Self-closing valve at lower end and no valve at upper end
 - 3) C-type: Self-closing valve at lower end Shut-off valves at upper end

Ratings:

1. KD-12
Design pressure : 7 kg/cm², Design Temperature: 120 deg. C, IP 56, Connection : JIS 5K -65A, 80A, 100A, Switch : 250V/ 3A
 2. KD-12P
Design pressure : 10 kg/cm², Design Temperature: 120 deg. C, IP 56, Connection : Square Flange(PCD :90mm), Switch : 250V/ 3A
 3. KD-30
Design pressure : 10 kg/cm², Design Temperature: 120 deg. C, Connection : JIS 5K -65A, 80A, 100A, JIS 10K-80A, 100A, Reed switch: 150V / 0.25A
 4. KD-100R
Design pressure : 10 kg/cm², Design Temperature: 80 deg. C, Connection : JIS 5K -80A, 100A, Power : DC 24V, Output: 4~20mA
 5. KD-90
Design pressure : 10 kg/cm², Design Temperature: 120 deg. C, IP 56, Connection : JIS 5K -80A, 100A, JIS 10K-80A, 100A, Switch : 250V/ 15A
 6. KD-90CSS
Design pressure : 20 kg/cm², Design Temperature: 250 deg. C, IP 56, Connection : JIS 16K -25A, Switch : 250V, 125V/ 15A
-

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125 V / 15A

7. KD-MLG

Design pressure : 5kg/cm², Design Temperature: -20 to 150 deg. C

8. KD-RLG

Design pressure : 20kg/cm², Design Temperature: 250 deg. C

9. KD-FLG

Design pressure : 5kg/cm², Design Temperature: 150 deg. C

10. KD-TLG

Design pressure : 3kg/cm², Design Temperature: 100 deg. C

Service Restrictions:

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.

Comments:

1. In general, all valves, piping fittings and flanges are to be constructed and tested in accordance with a recognized standard acceptable to this Bureau. Otherwise drawings showing details of construction, materials and design calculations or burst test results are to be submitted for our review.
2. For the level indication of tanks whose boundaries extend to the vessel's shell at or below the deepest load water line and tanks containing flammable liquid (except as indicated in 4-6-4/11.5.2 for hydraulic oil and for small tanks), only KD-MLG & KD-FLG (C-type) can be used.
3. For the level indication of tanks, KD-TLG (JISF 7212) as well as KD-MLG & KD-FLG can be used for small tanks, including those containing hydraulic oil or lubricating oil in accordance with 4-6-4/11.5.2(c) of the Rules.
4. For the level indication of tanks, KD-TLG (JISF 7211 & 7212) including other types shown on above can be used for fresh water tanks whose boundaries do not extend to the vessel's shell.
5. The level switches are not to be installed in hazardous area.

Notes / Drawings / Documentation:

This Product Design Assessment (PDA) is valid only 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.

Term of Validity:

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STANDARDS**ABS Rules:**

2013 Steel Vessel Rules 1-1-4/7.7, 4-6-4/11.5 & 11.7, 4-6-2/5.11, 5.15, 4-4-1/9.7.1(b)

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MA Certificate No. 11-BK2073538-X

National:

NA

International:

JIS F 7211 & 7212

Government Authority:

NA

EUMED:

NA

Others:

NA