



Marine & Offshore

Certificate number: 14034/D0 BV  
File number: ACM 135/2630/01 and 02  
Product code: 2161H

*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*  
**DK-LOK CORPORATION**  
Gimhae (Gyeongnam) - KOREA (REPUBLIC OF)

*for the type of product*  
**PIPE FITTINGS**  
Dk-Lok tube fittings and Bite Type tube fittings

**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 Marine & Offshore 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: 18 May 2025**

**For Bureau Veritas Marine & Offshore,**  
At BV PUSAN, on 18 May 2020,  
Chang-Uk HONG



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 Marine & Offshore. 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 available on the internet site [www.veristar.com](http://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 Marine & Offshore 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.

## THE SCHEDULE OF APPROVAL

### 1. PRODUCT DESCRIPTION

#### **Dk-Lok tube fittings and Bite Type tube fittings**

##### 1.1 Models

- The construction of Dk-Lok tube fittings consists of a body, a nut, a front ferrule and a back ferrule
- The construction of Bite Type tube fittings consists of a body, a sleeve and a nut

##### 1.2 Rating

Range depending on tube wall-thickness per the manufacturer's catalogue.

#### **- Dk-Lok tube fittings made of stainless steel (imperial tubing)**

|                             |       |       |       |       |      |       |      |      |      |      |        |        |      |
|-----------------------------|-------|-------|-------|-------|------|-------|------|------|------|------|--------|--------|------|
| Tube O.D. (inches)          | 1/8"  | 3/16" | 1/4"  | 5/16" | 3/8" | 1/2"  | 5/8" | 3/4" | 7/8" | 1"   | 1-1/4" | 1-1/2" | 2"   |
| Max. working pressure (psi) | 10,90 | 10,20 | 10,20 | 8,00  | 6,50 | 6,700 | 6,00 | 5,80 | 4,80 | 4,70 | 4,90   | 4,90   | 3,60 |

#### **- Dk-Lok tube fittings made of stainless steel (metric tubing)**

|                             |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Tube O.D. (mm)              | 6   | 8   | 10  | 12  | 14  | 15  | 16  | 18  | 20  | 22  | 25  | 28  | 30  | 32  | 38  |
| Max. working pressure (bar) | 710 | 520 | 400 | 470 | 430 | 400 | 370 | 370 | 380 | 340 | 320 | 330 | 310 | 330 | 310 |

#### **- Dk-Lok tube fittings made of brass**

|                             |     |     |     |     |     |     |     |     |     |
|-----------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Tube O.D. (mm)              | 6   | 8   | 10  | 12  | 14  | 16  | 18  | 22  | 25  |
| Max. working pressure (bar) | 293 | 195 | 195 | 159 | 210 | 181 | 159 | 126 | 109 |

#### **- Bite Type tube fittings made of stainless steel**

|                             |      |       |      |       |      |      |      |      |      |     |        |        |     |
|-----------------------------|------|-------|------|-------|------|------|------|------|------|-----|--------|--------|-----|
| Tube O.D. (inches)          | 1/8" | 3/16" | 1/4" | 5/16" | 3/8" | 1/2" | 5/8" | 3/4" | 7/8" | 1"  | 1-1/4" | 1-1/2" | 2"  |
| Max. working pressure (bar) | 766  | 717   | 717  | 562   | 457  | 436  | 422  | 408  | 330  | 330 | 337    | 345    | 253 |

#### **- Bite Type tube fittings made of cast steel**

|                             |      |       |       |       |       |
|-----------------------------|------|-------|-------|-------|-------|
| Tube O.D. (mm)              | 6-15 | 16-22 | 25-28 | 30-38 | 40-50 |
| Max. working pressure (bar) | 500  | 400   | 350   | 250   | 210   |

#### **- Bite Type tube fittings made of brass**

|                             |     |      |       |       |       |
|-----------------------------|-----|------|-------|-------|-------|
| Tube O.D. (mm)              | 4-5 | 6-22 | 25-28 | 30-38 | 40-50 |
| Max. working pressure (bar) | 250 | 210  | 170   | 150   | 120   |

When elastomer seal is used in the fitting, care must be taken according to the manufacturer's recommendations.

|                     |                  |
|---------------------|------------------|
| NBR (eg Perbunan ®) | -40 °C to 100 °C |
| FKM (eg Viton ®)    | -20 °C to 200 °C |
| PTFE (eg Teflon ®)  | -60 °C to 240 °C |

The maximum allowable working pressure at high temperature is to be in accordance with the manufacturer's de-rating factors.

##### 1.3 Materials

| Raw material        | Bar stock body                     | Forged body               | Tubing                                 |
|---------------------|------------------------------------|---------------------------|--|
| Stainless Steel 316 | ASTM A479, ASTM A276, JIS G4303    | ASTM A182,F316,JIS G3214  | ASTM A269,ASTM A213,ASTMA249           |
| Cast steel          | JIS G4051, S20C-S48C               | JIS G4051, S20C-S48C      | ASTM A161, ASTM A179,DIN 2391          |
| Brass               | ASTM B16,ASTM B453,JIS H3250,C3604 | ASTM B124,JIS H3250,C3771 | ASTM B68, ASTM B75, ASTM B88, DIN 1786 |

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

### 2. DOCUMENTS AND DRAWINGS

- Manufacturer's catalogue N° 01-09 "DK-LOK Tube Fittings dated November 2017

- Manufacturer's catalogue N° 02-3 "Bite Type Tube Fittings" dated October 2009

*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

3.1 Qualification tests according to classification societies's program were carried out at the manufacturer's workshop:

- Assembly and leak test, bursting test, vacuum test, pull-out test, pressure pulsation test and vibration test

- Bite type fittings made of stainless steel 316 test reports:

|                       |                           |                     |
|-----------------------|---------------------------|---------------------|
| DK-20000418-053, -055 | DK-20000413-058           | DK-20000327-054     |
| DK-20000414-056       | DK-20000419-057           | DK-010411-002, -003 |
| DK-010523-001         | DK-010601-002, -003, -004 | DK-010511-002       |
| DK-010521-004         | DK-010604-002             | DK-010531-002       |
| DK-010608-001         | DK-010511-001             | DK-010430-002       |
| DK-010504-002         | DKQ-010525-001            | DKQ-010518-003      |

- Dk-Lok fittings made of stainless steel 316 test reports: DK-20000418-047, -048, -049, -050, -051, -052.

- Bite type fittings made of cast steel S45C test reports:

|                |               |   |
|----------------|---------------|---|
| DKQ-010608-002 | DK-010411-001 | DKQ-010518-004                          |
| DK-010523-002  | DK-010601-001 | DK-010511-003                           |
| DK-010521-003  | DK-010604-001 | DK-010525-002                           |
| DK-010531-001  | DK-010507-002 | DK-20000418-041, -042, -043, -044, -045 |
| DK-010504-001  | DK-010430-001 |   |

- Bite type fittings made of brass test reports:

|                |                |                      |
|----------------|----------------|----------------------|
| DKQ-030708-001 | DK-030707-003  | DKQ-030703-001, -003 |
| DKQ-030711-002 | DKQ-030806-003 | DKQ-030813-003       |
| DKQ-030726-002 | DKQ-030806-001 | DKQ-030813-001       |
| DKQ-030730-001 |                |                      |

- Dk-Lok fittings made of brass test reports:

|                |                |                      |
|----------------|----------------|----------------------|
| DKQ-030711-001 | DKQ-030806-004 | DKQ-030730-002       |
| DKQ-030813-004 | DKQ-030726-001 | DKQ-030707-002, -004 |
| DKQ-030806-002 | DKQ-030813-002 | DKQ-030703-002, -004 |

3.2 No fire endurance test has been performed.

#### 4. APPLICATION / LIMITATION

4.1 May be used on board for services of Class I (OD ≤ 60,3 mm), II (OD ≤ 60,3 mm), & III:

- **Flammable fluids (flash point ≤ 60°C)** - cargo oil (2), crude oil washing (2), vent lines
  - **Inert gas** - water seal/scrubber effluent, main lines (1+2), distributions lines (2)
  - **Flammable fluids (flash point > 60°C)** - cargo oil (2), fuel oil (1), lubricating oil (1), hydraulic oil (1), thermal oil lines (1)
  - **Sea water** - bilge/ballast/cooling water, water/non-water filled fire extinguishing systems, fire main, tank cleaning/non-essential lines
  - **Fresh water** - cooling water, condensate return, non-essential lines
  - **Deck drains (internal)** (3), sanitary drains, scuppers and discharge (overboard)
  - **Sounding and venting** - water tanks/dry spaces, oil tanks (flash point > 60°C) (1)
  - **Miscellaneous** - service air (non-essential), brine, steam, starting/control air, CO2 system
- (1)- Not inside machinery spaces of category A or accommodation spaces. May be accepted in other machinery space provided the joints are located in easily visible and accessible positions.
- (2)- Only in pump rooms and open decks
- (3)- Only above bulkhead deck of passenger ships and freeboard deck of cargo ships.

4.2 The wall thickness of tubes is to be in accordance with BUREAU VERITAS Rules.

4.3 The selection of pipes, fittings and seals must be compatible with the fluid to be conveyed and the maximum working temperature according to the manufacturer's recommendations.

4.4 The Dk-Lok and bite type fittings made of brass are not accepted where pressure pulsation is expected.

4.5 The Dk-Lok and bite type fittings with elastomer seals are not approved within machinery spaces for the use in flammable fluids, sea water and bilge lines. Only approved fire resistant types are accepted.

4.6 Threaded bulkhead unions are not to be used on watertight bulkheads.

4.7 In case of welded tube is used for manufacturing of fittings, the welded tubes are to be type approved by the Society.

4.8 Assembly instructions given by the manufacturer are to be complied with.

4.9 In all cases, the associated pipes are to be suitably supported and anchored.

#### 5. PRODUCTION SURVEY REQUIREMENTS

5.1 The products are to be supplied by **DK-LOK CORPORATION** in compliance with the type described in this certificate and in compliance with the requirements stated on the front page of this certificate.

5.2 This type of product is within the category HBV of Bureau Veritas Rule Note NR320 and as such does not require a BV product certificate.

5.3 **DK-LOK CORPORATION** has to make the necessary arrangements to have its works recognized by BUREAU VERITAS in compliance with the requirements of NR 320 for HBV products.

5.4 For information, **DK-LOK CORPORATION** has declared to Bureau Veritas the following production site(s):

**DK-LOK CORPORATION**  
**Golden root-ro 129 beon-gil, 7**  
**Juchon-myeon, Gimhae (Gyeongnam)**  
**KOREA (REPUBLIC OF)**

**6. MARKING OF PRODUCT**

The product shall be marked with at least:

- Manufacturer' name or logo
- Pipe size
- Material

**7. OTHERS**

It is **DK-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.

*This certificate supersedes the Type Approval Certificate No. 14034/C0 BV issued by the Society.*

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