



TYPE APPROVAL CERTIFICATE

Certificate No:
TAP0000087
Revision No:
3

This is to certify:

That the Pipe Couplings, Bite and Compression Type

with type designation(s)
DK DIN Bite Type - Tube Fitting

Issued to
DK-Lok Corporation
Gimhae-si, Gyeongsangnam-do, Republic of Korea

is found to comply with
DNVGL-OS-D101 – Marine and machinery systems and equipment, Edition January 2018
DNV GL rules for classification – Ships Pt.4 Ch.6 Piping systems
DNV GL class programme DNVGL-CP-0185 – Type approval – Mechanical joints

Application :

Product(s) approved by this certificate is/are accepted for installation on vessels classed by DNV.

Temperature range: -60 °C to +400 °C (see cert.)
Max. working press.: Depending on size, see certificate.
Sizes: See certificate

Issued at **Høvik** on **2021-05-21**

for **DNV**

This Certificate is valid until **2025-12-31**.

DNV local station: **Changwon**

Approval Engineer: **Jane Lozanov**

Zeinab Sharifi
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Product description

Bite type tube fittings for DIN2353 LL, L and S series

Fitting materials	Carbon steel	JIS G4051 S20C, S45C
	Brass	CuZn35Ni2(2.0540) DIN 17660
	Stainless steel	X6CrNiMoTi12 (1.4516) EN10028-7 ASTM A479 Type316
Elastomer materials	Buna-N	Nitrile
	Viton	DIN 17660 FKM (VITON)

Application/Limitation

Maximum working pressure and sizes:

Series	Carbon steel		Brass		Stainless steel	
	Size (mm)	Pressure (bar)	Size (mm)	Pressure (bar)	Size (mm)	Pressure (bar)
LL	4 - 12	100	4 - 12	30	4 - 8	100
L	6 - 18	315	6 - 18	94.5	6 - 15	250
	-	-	-	-	18 - 22	160
	22 - 42	160	22 - 42	48	28 - 42	100
S	6 - 14	630	6 - 14	189	6 - 14	630
	16 - 30	400	16 - 30	189	16 - 25	400
	38	315	38	94.5	30-38	315

Maximum working temperature for couplings of the following materials:

Carbon steel	-40 °C to 120 °C
Brass	-60 °C to 175 °C
Stainless steel	-60 °C to 400 °C

In addition, the limitations given by the coupling materials, the maximum working temperatures for couplings with O-rings are limited based on material of the O-rings:

NBR Nitrile rubber	-35 °C to 100 °C
FKM Viton	-25 °C to 200 °C
PTFE Teflon	-60 °C to 240 °C

For couplings of stainless steel at elevated temperatures, the maximum working pressure has to be reduced with the following factors:

Temperature	≤20°C	50 °C	100 °C	150 °C	200 °C	250 °C	300 °C	350 °C	400 °C
Stainless Steel	1	0,95	0,85	0,77	0,71	0,67	0,63	0,6	0,58

Couplings covered by this certificate may be used in piping classes I, II and III in below applications ⁽⁶⁾:

- Flammable fluids (flash point ≤ 60°C)
 - Vent lines ⁽⁴⁾
 - Cargo oil lines ⁽⁴⁾
 - Crude oil washing lines ^{(3) (4)}
- Inert gas
 - Water seal effluent lines
 - Scrubber effluent lines
 - Main Lines ^{(2) (4)}
 - Distribution lines ⁽⁴⁾
- Flammable fluids (flash point > 60°C)
 - Cargo Oil lines ⁽⁴⁾
 - Fuel oil lines ^{(2) (3)}
 - Lubricating oil lines ^{(2) (3)}
 - Hydraulic oil ^{(2) (3)}
 - Thermal oil ^{(2) (3)}
- Fresh water
 - Cooling water system ⁽¹⁾
 - Condensate return ⁽¹⁾
 - Non-essential system
- Sanitary/drains/scuppers
 - Deck drains (internal) ⁽⁵⁾

- Sanitary drains
- Scuppers and discharge (overboard)
- Sounding/vent
 - Water tanks/Dry spaces
 - Oil tanks (f.p. > 60°C) ⁽²⁾ ⁽³⁾
- Miscellaneous
 - Starting/Control air ⁽¹⁾
 - Service air (non-essential)
 - Brine
 - CO2 system ⁽¹⁾
 - Steam

- 1) Inside machinery spaces of category A - only approved fire resistant types
- 2) Not inside machinery spaces of category A or accommodation spaces. May be accepted in other machinery spaces provided the joints are located in easily visible and accessible positions.
- 3) Approved fire resistant types except in cases where such mechanical joints are installed on exposed open decks, as defined in SOLAS II-2/Reg. 9.2.3.3.2.2(10) and not used for fuel oil lines.
- 4) Only in pump rooms and open decks - only approved fire resistant types
- 5) Only above bulkhead deck of passenger ships and freeboard deck of cargo ships.
- 6) Couplings made of material (body or sealing) with melting point less than 925°C shall not be considered fire resistant types.

The approval is only valid when the couplings are assembled with tubing of correct temper and tolerances as recommended by the manufacturer. These couplings should not be used on tubes in cold fabricated (hard temper) conditions.

Couplings covered by this certificate shall not be used in system subject to pressure below atmospheric or vacuum condition.

Type Approval documentation

Manufacturer's product catalogue No.03-2 October 2010, Revision: No.04 November 2013
Manufacturer's test reports: DIN 2353 Bite Type Fitting test reports, dated 21-07-2011
Report TLN25-1108001, TLN25-1108002, TLN25-1108003, dated 2011-08-31
Test reports SS316, carbon steel and brass, dated 2012-09-20, 2012-10-05, 2012-10-16, dated 2012-10-24, 2012-11-02, 2013-01-07, 2013-01-17, 2013-05-30, 2013-06-03, 2013-06-07
Application for DNVGL type approval, dated 2020-09-17
Burst test reports TAJD-201027-001 rev.1, dated 2021-02-25

Tests carried out

Leakage test, repeated assembly test, burst pressure test, pull-out test, vibration test, pressure pulsation test

Marking of product

For traceability to this type approval, each coupling is at least to be marked with:

- Manufacturer's name:
- Type designation
- Size

Periodical assessment

For retention of the Type Approval, a DNV Surveyor shall perform periodical assessment after two years (+/- 90 days) and after 3.5 years (+/- 90 days) to verify that the conditions for the approval are complied with. Reference is made to DNVGL-CP-0338.