



TYPE APPROVAL CERTIFICATE

Certificate No:
TAP00000T4
Revision No:
1

This is to certify:

That the Pipe Couplings, Bite and Compression Type

with type designation(s)
DK-LOK tube fittings

Issued to

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

is found to comply with

DNV rules for classification – Ships Pt.4 Ch.6 Piping systems
DNV class programme DNV-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: -20°C to +200°C
Max. working press.: 248 bar to 480 bar (see certificate)
Sizes: 1/4" to 2" (see certificate)

Issued at **Høvik** on **2022-01-24**

for **DNV**

This Certificate is valid until **2026-12-30**.

DNV local station: **Gimhae Station**

Approval Engineer: **Andreas Hansen**

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

Pipe couplings. Double bite type.

Type	Description	Type	Description	Type	Description
DU	Union	DAF	Female Adapter	DTRM	Male Run Tee
DT	Union Tee	DUBA	AN Bulkhead Union	DCF	Female Connector
DMC-N	Male Connector	DCW	Male Pipe Weld Connector	DCBF	Bulkhead Female Connector
DMC-G	Male Conn. for Bonded Seal	DCSW	Tube Socket Weld Connector	DTRF	Female Run Tee
DMCB-N	Bulkhead Male Connector	DP	Plug	DR	Reducer
DLBM	45° Male Elbow	DN	Nut	DAM	Male Adapter
DTBM	Male Branch Tee	DFB	Back Ferrule	DUA	AN Union
DCF-GG	Gauge Connector	DUR	Reducing Union	DAA	AN Adapter
DLF	Female Elbow	DUB	Bulkhead Union	DLW	Male Pipe Weld Elbow
DTBF	Female Branch Tee	DMC-R	Male Connector	DLSW	Tube Socket Weld Elbow
DAB	Bulkhead Adapter	DMC-GB	Male Conn. for Metal Seal	DC	Cap
DL	Union Elbow	DLM	Male Elbow	DFF	Front Ferrule

Materials:

Body	Carbon steel: Barstock: ASTM A675-GR.70, JIS G4051-S45C Forgings: ASTM A181-C.70, JIS G4051-S45C	Stainless steel: Barstock: ASTM A479, ASTM A276, KS D3706, JIS-G4303 Forging: ASTM A182, ASTM F316, JIS-G3214, KS D4115
O-ring	NBR for Brass and Carbon steel fittings FKM for Stainless Steel fittings	

Manufacturing location:

DK-Lok Corporation 7, Golden Root-Ro,
 129 Beongil, Junchon-myeon Gimhae-si, 50969
 Republic of Korea

Application/Limitation

Couplings covered by this certificate may be installed in piping system classes I, II & III in below applications:

<ul style="list-style-type: none"> • Flammable fluids (flash point ≤ 60°C) <ul style="list-style-type: none"> - Vent lines ⁽¹⁾ • Inert gas <ul style="list-style-type: none"> - Water seal effluent lines - Scrubber effluent lines • Flammable fluids (flash point > 60°C) <ul style="list-style-type: none"> - Fuel oil lines ^{(1) (2)} - Lubricating oil lines ^{(1) (2)} - Hydraulic oil ^{(1) (2)} - Thermal oil ^{(1) (2)} • Sea water⁽⁵⁾ <ul style="list-style-type: none"> - Bilge lines ⁽³⁾ - Water filled fire extinguishing systems, e.g. sprinkler systems ⁽¹⁾ - Non water filled fire extinguishing systems, e.g. foam, drencher systems ⁽¹⁾ - Fire main (not permanently filled) ⁽¹⁾ - Ballast system ⁽³⁾ - Cooling water system ⁽³⁾ - Tank cleaning services - Non-essential systems 	<ul style="list-style-type: none"> • Fresh water <ul style="list-style-type: none"> - Cooling water system ⁽³⁾ - Condensate return ⁽³⁾ - Non-essential system • Sanitary/drains/scuppers <ul style="list-style-type: none"> - Deck drains (internal) ⁽⁴⁾ Sanitary drains Scuppers and discharge (overboard) • Sounding/vent <ul style="list-style-type: none"> - Water tanks/Dry spaces - Oil tanks (f.p. > 60°C) ^{(1) (2)} • Miscellaneous <ul style="list-style-type: none"> - Starting/Control air ⁽³⁾ - Service air (non-essential) - Brine - CO2 system ⁽³⁾ - Steam
<p>⁽¹⁾ 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.</p>	

- (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) Not inside machinery spaces of category A
- (4) Only above bulkhead deck of passenger ships and freeboard deck of cargo ships.
- (5) Material in contact with seawater shall be properly protected. Surface preparation and coating shall be approved by society. Traditional stainless steel grades (304, 304L, 316, 316L) shall not be considered as seawater resistant material.

Maximum allowable working pressure defined at 20°C:

For tube O.D size:		Max. allowable pressure [bar]	For tube O.D size:		Max. allowable pressure [bar]
Imperial	Metric		Imperial	Metric	
1/4	6	480	7/8	22	324
5/16	8	480	1	25	324
3/8	10	480	1 1/4	28	324
1/2	12	445	1 1/2	28	248
5/8	16	445	2	38	248
3/4	20	350			

The maximum allowable pressure shall be reduced at elevated temperatures according to DNV-CP-0185 Sec.2 Table 1.

The temperature range is limited by sealing material as below:

- NBR: -20°C to +100°C
- FKM: -20°C to + 100°C

The approval is only valid when the couplings are assembled with tubing of correct temper and tolerances as recommended by the manufacturer.

Couplings covered by this certificate shall not be installed in systems subject to pressure below atmospheric or vacuum conditions.

Type Approval documentation

- Manufacturer's catalogue No.01-7 March 2016
- Test reports: DK-20000419-053,4,5,6,7 dated 2000-04-21 witnessed by DNV surveyor dated 2000-04-21 (5/16", 1/2", 3/4")
- Test reports DK-011010-001 & 002 dated 2001-10-10 / DK-011016-001 & 002 dated 2001-10-16 / DK-011013-001 & 002 dated 2001-10-13 / DK-011022-001 & 002 dated 2001-10-22 witnessed by DNV surveyor
- Dk Tech burst test reports DKQ-050105-001, DKQ-070216-001, DKQ-081120-001/-002 & reports dated 2001-10-10 witnessed by DNV surveyor
- Burst test report number TAJD-16201-002 dated 2016-12-01
- Burst test report number TAJD-2111-001, witnessed by DNV surveyor, dated 2021-11-24

Tests carried out

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

Marking of product

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

- Manufacturer's name or trademark
- 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 DNV-CP-0338.