DNV·GL

Certificate No:
TAP0000087

TYPE APPROVAL CERTIFICATE

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 (ex. DK Tech Corp)
Gimhae-si Gyeongsangnam-do, Republic of Korea

is found to comply with
DNV GL rules for classification – Ships Pt.4 Ch.6 Piping systems
DNVGL-OS-D101 – Marine and machinery systems and equipment, Edition July 2015

Application :

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

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

This Certificate is valid until **2020-12-31**.

Issued at **Høvik** on **2016-04-29**

for **DNV GL**

DNV GL local station: **Changwon**

Approval Engineer: **Simon Ratcliffe**

Marianne Spæren Marveng
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.

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This certificate combines previous certificates P-13832 and P-14789.

Product description

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

Materials:

Fitting materials	Steel	DIN 3859
	Brass	CUZN35NI2 (2.0540) DIN 17660/17672
	Stainless steel	X6CrNiMoTi 17122 (1.4571) DIN17440 ASTM A479 Type316
Elastomer materials	Buna-N	Nitrile
	Viton	DIN 17660 FKM (VITON)

Types and design:

Fitting Type	**Type Designation**
Tube to Tube	NU, NL, NUR, NT,NX, NTR, NBU, NBUW, NBL
Tube to Male Thread	NOM-UM, NMC-R, NMC-G, NMC-M, NMC-MK, NMC-GE, NMC-ME, NMC-N, NLM-R/M
Tube To Female Thread	NFC-G/M
Tube Stud To Female port	NA-GE/ME, NEGE / ME
Tube To Tube (Swivel)	NUE
Weld Fittings	NAS, NASK, NC, NCR
Tube To Tube Stud	NLA, NBTA, NRTA, NEW, NET, NEL, NKOR, NR, NRED
Banjo Fittings	NSLM-G/M, NWH-G/M, NTH-G/M, NSVW-G/M, NSVT-G/M
Gauge Connector	NGC-G, NGE-G, NGA-G
Non Return Valves	NGMA, NEMA NCVU, NCV GE-L/S, NCV ME-L/S, NCV L/S-GE, NCV L/S-ME
Male & Female Adaptors	NHB, NABMF, NHB-GE,NABMF-GE
Plugs and Caps	NVSTI, NVSTI-GED/MED, NP, NCA

Application/Limitation

Maximum working pressure and sizes:

Series	**Steel**		**Brass**		**1.4575 (SS316)**	
	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

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

Temp.	-55 °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

In addition the limitations given by the coupling materials, the maximum working temperatures for couplings with o-rings of the materials:

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

The couplings may be used in systems for flammable fluids, seawater (excl. stainless steel), fresh water, sanitary/drains and sounding/vent lines with the following exceptions for couplings with elastomer materials:

Systems	**Remark**
Flammable fluids (flash point ⩽ 60 ° C)	
Cargo oil lines	Not permitted in pump rooms and open decks
Crude oil washing lines	Not permitted in pump rooms and open decks
Vent lines	Not permitted
Inert gas	
Main lines	Not inside machinery spaces of category A or accommodation spaces. Not permitted in pump rooms and open decks
Distribution lines	Not permitted in pump rooms and open decks
Flammable fluids (flash point > 60 ° C)	
Cargo oil lines	Not permitted in pump rooms and open decks
Fuel oil lines	Not permitted
Lubricating oil lines	Not permitted
Hydraulic oil	Not permitted
Thermal oil	Not permitted
Sea water	
Bilge lines	Not permitted Inside machinery spaces of category A
Fire main and water spray	Not permitted
Foam system	Not permitted
Sprinkler system	Not permitted
Ballast system	Not permitted Inside machinery spaces of category A
Cooling water system	Not permitted Inside machinery spaces of category A
Fresh water	
Cooling water system	Not permitted Inside machinery spaces of category A
Condensate return	Not permitted Inside machinery spaces of category A
Sanitary/drains/scuppers	
Deck drains (internal)	Not permitted Inside machinery spaces of category A
Sounding/vent	
Oil tanks (f.p > 60 °C)	Not permitted

Couplings made of carbon steel are not to be used at temperatures below -10°C unless the material is normalised.

Stainless steel couplings are not permitted in seawater systems.

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.

Type Approval documentation

Tests carried out

Leakage test, repeated assembly test, burst pressure test, pullout test, vibration test, pressure pulsation test, according to DNV TA Programme 5-792.20.

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 GL Surveyor shall perform a survey - every second year and before the expiry date of this certificate to verify that the conditions for the type approval are complied with. The Surveyor shall witness burst testing of samples (from each pressure series) of couplings selected at random from stock or from the running production as a part of this survey.