DNV·GL

Certificate No:
TAP00000N1

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Pipe Couplings, Bite and Compression Type

with type designation(s)
L-series, S-series

Issued to
EAGLE Fluid Technology (Jiaxing) Co., Ltd.
Jiaxing, China

is found to comply with
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 all vessels classed by DNV GL.

Type:	Temperature range:	Max. working press.:	Sizes:
L-series	**-60 to 200 °C**	**100 to 250 bar, depending on size (see certificate)**	**Tube OD: 6 to 42 mm (see certificate)**
S-series	**-60 to 200 °C**	**250 to 630 bar, depending on size (see certificate)**	**Tube OD: 6 to 38 mm (see certificate)**

This Certificate is valid until **2022-01-23**.

Issued at **Høvik** on **2017-01-24**
DNV GL local station: **Shanghai** for **DNV GL**

Approval Engineer: **Maheshraja Venkatesan**

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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Job Id:
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Product description

24° tube fittings according to ISO8434–1 & 4:

- L-series
- S-series

Designation	Description
C-EL	Tee joint with movable nut
C-ET	Tee joint with movable nut
C-TV	Tee joint
C-ESV	Weld-on straight fitting
C-GV	Straight fitting
C-EGE	End straight fitting with movable nut
C-GE	End straight fitting
C-WV	Right-angle fitting
C-EW	Right-angle fitting with movable nut

Material of construction:

- Body : Stainless steel ASTM A276 type 316L
- O-ring : NBR/ FPM/ PTFE/ SS316L

Application/Limitation

Maximum working pressure:

Series	Pipe OD (mm)	Max Working Press.
Light, L	6, 8, 10, 12 & 15	250 bar
	18 & 22	160bar
	28, 35 & 42	100 bar
Heavy, S	6, 8, 10, 12 & 14	630 bar
	16, 20 & 25	400 bar
	30 & 38	250 bar

Temperature range for non-metallic materials used:

NBR : -25 °C to 100 °C
FPM : -20 °C to 200 °C
PTFE : -60 °C to 190 °C

For stainless steel couplings at elevated temperatures, the maximum working pressure has to be reduced in accordance with pressure reduction factors as per Table-1 under Sec. 2 of DNV GL-CP-0185.

Couplings covered by this certificate are approved to be used in all piping classes in below applcations:

1) Flammable fluids (flash point ≤ 60°C)
   - Cargo oil lines (2)
   - Crude oil washing lines (2)
   - Vent lines
2) Inert gas
   - Water seal effluent lines
   - Scrubber effluent lines
   - Main lines (1) (2)
   - Distributions lines (2)
3) Flammable fluids (flash point > 60°C)
   - Cargo oil lines (2)
   - Fuel oil lines (1)
   - Lubricating oil lines (1)
   - Hydraulic oil (1)
   - Thermal oil (1)
4) Sea water (4)
   - Bilge lines

- Water filled fire extinguishing systems, e.g. sprinkler systems
- Non water filled fire extinguishing systems, e.g. foam, drencher systems
- Fire main (not permanently filled)
- Ballast system
- Cooling water system
- Tank cleaning services
- Non-essential systems

5) Fresh water
   - Cooling water system
   - Condensate return
   - Non-essential system
6) Sanitary/drains/scuppers
   - Deck drains (internal) (3)
   - Sanitary drains
   - Scuppers and discharge (overboard)
7) Sounding/vent
   - Water tanks/Dry spaces
   - Oil tanks (f.p.> 60°C) (1)
8) Miscellaneous
   - Starting/Control air
   - Service air (non-essential)
   - Brine
   - CO2 system
   - Steam

(1) 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.

(2) Only in pump rooms and open decks

(3) Only above bulkhead deck of passenger ships and freeboard deck of cargo ships.

(4) In seawater applications, used material shall be properly protected. Surface preparation and coating shall be approved by society. Stainless steel type 316L shall not be considered as seawater resistant material.

For installation in vessels with class notation of "tankers for liquefied gas", couplings covered by this certificate shall only be used for accessory lines and instrumentation lines with external diameters of 25 mm or less. Reference is made to DNV GL ship rules Pt.5 Ch.7 Sec.5 [8.2.1].

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

Type Approval documentation

Tests carried out

Tightness, Repeated Assembly, Burst, Pull-out, Vibration, Pressure impulse & Fire resistance

Marking of product

For traceability to this type approval the couplings are marked:

- Manufacture's name or trade mark
- Type designation
- Maximum working pressure
- Size

Periodical assessment

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For retention of the Type Approval, DNV GL Surveyor shall perform a periodical assessment every second year, to verify that the conditions for the type approval are complied with and to witness burst tests on elbows and tees for selection of sizes.