DNV·GL

Certificate No:
TAP000027D

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Pipe Couplings, Bite and Compression Type

with type designation(s)
24° cone connectors of type ST for connection with mechanically reshaped tube ends

Issued to
Dalian Jierui Fluid Control Co., Ltd.
Dalian, 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.

Temperature range:	**-40°C up to 200°C. Refer to certificate.**
Max. working press.:	**up to 630 bar. Refer to certificate.**
Sizes:	**Tube OD from 6 mm up to 42 mm**

Issued at **Hamburg** on **2021-03-09**
This Certificate is valid until **2026-03-08**.
DNV GL local station: **Dalian NB & CMC**

Approval Engineer: **Andrii Pishchanskyi**

for **DNV GL**

Olaf Drews
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.

Product description

Type ST is positive tube fitting system. The mechanically reshaped tube end is positively connected by 24° cone connectors and nut as per ISO 8434-1. It falls into category of compression coupling as per DNVGL-RU-SHIP Pt.4 Ch.6 Sech.9 [5.2.1]. The components and their materials are as follows:

Component	Material
Connector body	45
	316L[1)]
Sealing ring	NBR
	FKM
	EPDM[2)]
Nut	45
	316L[1)]
Mechanically reshaped tube ends	E235
	E355
	316L

Note

1) The stainless-steel grade is not considered suitable for use in piping systems (e.g. seawater cooling) with stagnant seawater.
2) Is not compatible with hydrocarbon media.

Application/Limitation

Type ST are type approved for application in pipe class I, II and III piping systems, as specified in DNVGL-RU-SHIP Pt.4 Ch.6 Sec.9 [5.2.5] for compression couplings of fire resistant type.

Type approval is valid for the positive tube fitting system of type ST with Eaton Walterscheid M-WF385X/BO machine for tube reshaping.

Connection system is not approved for:

- Installation in high pressure fuel injection systems of combustion engines;
- Gases having an oxygen content exceeding 25% as per DNVGL-CP-0185 Sec.5 [8].

For selection of the tubes the following references are to be observed:

- Minimum wall thickness as per DNVGL-RU-SHIP Pt.4 Ch.6 Sec. 9 [1.2];
- Material certificates as per DNVGL-RU-SHIP Pt.4 Ch.6 Sec.2 [1.8.1];
- Assembly instruction No. Q/T-01066-2021.

Nominal pressure (PN)[1), 2)]

Series	Tube OD (mm)	Pressure (bar)
L	6 - 18 22 – 42	315 250
S	6 – 14 16 – 30 38	630 400 315

Notes

1) Individual nominal pressure of the connectors shall be observed in manufacturer's drawings;
2) Max working pressure depend on tube material and thickness.

The maximum working pressure for temperature service is to be reduced by the following reducing factors:

Material	Temperature [°C]				
	≤20	≤50	≤100	≤150	≤200
Carbon steel	1	1	1	0,89	0,81
Stainless steel	1	0,95	0,85	0,77	0,71

Temperature range depending on pressurised components and sealing materials:

Material	Minimum allowable temperature	Maximum allowable temperature
Carbon steel	-20°C[1)]	200°C
Stainless steel	-40°C	200°C
NBR	-25°C	100°C
FKM	-25°C	175°C
EPDM	-20°C	100°C

Note
1) Environmental temperature is down to -40°C.

Selection of materials
The materials to be used in piping systems shall be suitable for the medium and service for which the system is intended as per DNVGL-RU-SHIP Pt.4 Ch.6 Sec.2 [1.1.1]. In particular, the resistance to corrosion, erosion, oxidation and other deterioration during projected service life are to be considered.

Assembly instruction
The assembly instruction No. Q/T-01066-2021 are to be observed.

Type Approval documentation

Tests carried out
Tests are according to DNVGL-CP-0185 Edition March 2016 as follows:
1. Tightness test;
2. Repeated assembly test;
3. Burst pressure test;
4. Pull-out test;
5. Combined vibration and pressure impulse test;
6. Fire resistance test;
7. Vacuum test.

Marking of product

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

Element	Marking scope	Example
Connector body	JIERUI sign, material supplier code	, SU
Nut	JIERUI sign, size, series, material supplier code	, 10, L, SU
Sealing ring	Colour	NBR: black FKM: green EPDM:purple

Periodical assessment

For retention of the Type Approval, a DNV GL Surveyor shall perform periodical assessment as per DNVGL-CP-0338 Sec.4 to verify that the conditions for the Type Approval are complied with. To check the validity of this certificate, please look it up in https://approvalfinder.dnvgl.com.