DNV·GL

Certificate No:
TAP000021Z

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Tube Fittings

with type designation(s)
FORM Type 1C; 1C9; AC; XC 1CB-WD; 1CM-WD.

Issued to
Shanghai Emyte Hydraulic Equipment Co., Ltd.
,

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 :

Products approved by this certificate are accepted for installation on all vessels classed by DNV GL.

Temperature range:	**-40°C up to +120°C**
Max. working press.:	**25 MPa / 250 bar**
Sizes:	**6 mm up to 42 mm**

Issued at **Hamburg** on **2020-03-04**
This Certificate is valid until **2025-03-03**.
DNV GL local station: **Shanghai**

Approval Engineer: **Christian Kaemmer**

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.

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Product description

The FORM type tube fittings are tube fitting systems consisting of a mechanically reshaped tube end, nut and tube fittings/pipe couplings with structural form of 24° and a shaping machine.
FORM type tube fittings are sealed by an elastomeric seal.

Sizes and pressure range:

304 / 316L	
Pipe O.D. [mm]	**PN**
6, 8, 10, 12, 15	25 MPa / 250 bar
18, 22	16 MPa / 160 bar
28, 35, 42	10 MPa / 100 bar

Materials:

Component	**Material designation and standards**
Nut, Pipe-Coupling	304 / 316L

Minimum tube wall thickness acc. to DNV GL Ship-Rules Pt.4, Ch.6 Section 9 – 1, Table 3 is to be observed. Regarding material certificates Section 2, Table 3 Material certificates is to be observed.

This type approval includes the tube fittings types: Straight fitting, right angle fitting, tee fitting, cross fitting, end straight fitting.

Application/Limitation

The FORM type tube fittings are type approved for application in pipe class I, II and III-piping systems, as specified in DNV GL Ship Rules Pt. 4, Ch. 6, Sec. 9,
Table 8 and 9 - Compression couplings – Flared type - Fire resistant type.

In general compression couplings are not approved for application in high pressure fuel injection systems of combustion engines.

Pipe connectors, where pressure tight joints are made on the threads, are limited in the application as follows:

- Pipe connectors with parallel thread are not approved for pipe class I and II.
- Tapered or parallel thread is not approved for toxic or flammable media or services where fatigue, severe erosion or crevice corrosion is expected to occur.
- Refer to DNVGL Rules, Pt.4, Ch.6 – Section 9 – 5.2.6.

The stainless steel materials 304L & 316L are not approved for application in sea water systems or unprotected installation on the open deck.

It shall be noted that the selection of the materials considers the intended service condition and installation area of the piping system. In particular, the resistance to corrosion, erosion, oxidation and other deterioration which may occur during intended service life.
Reference is made to DNVGL Rules Pt.4, Ch.6 – Section 2 – Materials.

Max. working pressure of the piping system depends on selected pipe material, pipe wall thickness and individual PN of selected tube fittings.

Temperature range
The temperature range for the fittings are limited by the soft elastomeric seal and the fitting material.

Materials	
304; 316L, Flouro Rubber 80	-40ºC up to +120ºC

Assembling and Installation
For the assembling and installation the instructions of the manufacturer are to be observed.

Type Approval documentation

Tests carried out

Marking of product

Component	**Marking**
Tube fitting-body	Trade mark, Type Designation, Material

Periodical assessment
For retention of the Type Approval, a DNV GL Surveyor shall perform periodical assessment after two years (+/- 90 days) and after 3.5 years (+/- 90 days) to verify that the conditions for the Type Approval are complied with. Refer to DNVGL-CP-0338, Sec.4.