

# TYPE APPROVAL CERTIFICATE

---

## This is to certify:

**That the Pipe Couplings, Bite and Compression Type**

with type designation(s)

**Double ferrule type tube connectors of type E**

Issued to

**Shanghai Emyte Hydraulic Equipment Co., Ltd.**

,

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 :

---

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

**Temperature range:** -40°C up to +120°C

**Max. working press.:** 35 MPa

**Sizes:** 6 mm up to 25 mm

Issued at **Hamburg** on **2023-09-28**

This Certificate is valid until **2028-09-27**.

DNV local unit: **Shanghai**

for **DNV**

Approval Engineer: **Christian Kaemmer**

---

**Sven Klinger**  
**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

Type E is a compression coupling 24° - cone connector as per ISO 8434-1. It consists of two compression ferrules, body and nut. It is filed in category "compression coupling - bite type" as per DNV-RU-SHIP Pt.4 Ch.6 Sec.9 §5.2.1, table 8.

The components and their materials are as follows:

| Component      | Material                                |
|----------------|-----------------------------------------|
| Connector body | 304 <sup>1)</sup><br>316L <sup>2)</sup> |
| Nut            |                                         |
| Front Ferrule  |                                         |
| Back Ferrule   |                                         |

### Note

- 1) The stainless steel grade is not considered suitable for use in:
  - a. Piping systems (e.g. seawater cooling) with flowing and stagnant seawater;
  - b. Seawater atmosphere, i.e. unprotected area subject to seawater spray or green water, e.g. open deck;
- 2) The stainless steel grade is not considered suitable for use in piping systems (e.g. seawater cooling) with stagnant seawater.

## Application/Limitation

Type E is type approved for application in pipe class I, II and III piping systems, as specified in DNV-RU-SHIP Pt.4 Ch.6 Sec.9 §5.2.5 table 10 for compression couplings of fire resistant-type (metallic sealing).

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 DNV-CP-0185 Sec.5 §8.

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

- Minimum wall thickness as per DNV-RU-SHIP Pt.4 Ch.6 Sec. 9 §1.2 Table 2 & 3.
- Material certificates as per DNV-RU-SHIP Pt.4 Ch.6 Sec.2 §1.8. Table 3.
- Assembly instruction as per No. EMT-TZ-20210129.

## Nominal pressure (PN)<sup>1), 2)</sup>

| Series | Tube OD (mm)                            | Nominal pressure |
|--------|-----------------------------------------|------------------|
| E      | 6, 8, 10, 12, 15, 16, 18, 20, 22 and 25 | PN 350           |

### Notes

- 1) Individual nominal pressure of the connectors shall be observed in manufacturer's documentation;
- 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 | ≤120 |
| Stainless steel | 1                | 0,95 | 0,85 | 0,77 |

## 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. The resistance to corrosion, erosion, oxidation and other deterioration during projected service life are to be considered.

### Pipe couplings with pressure-tight joint on a thread

Pipe coupling where pressure-tight joints are made on the threads with parallel or tapered threads are not approved for piping systems conveying toxic or flammable media or services where fatigue, severe erosion or crevice corrosion is expected to occur as per DNV RU-SHIP Pt.4 Ch.6 Sec.9 §5.2.6. Pipe coupling is limited to the following applications solely:

1. CO<sub>2</sub> systems inside of protected spaces and CO<sub>2</sub> cylinder rooms;
2. Threaded joints for direct connectors of pipe lengths with tapered thread shall be allowed for:
  - a. Class I, outside diameter not more than 33.7 mm;
  - b. Class II and class III;
3. Threaded joints with parallel thread shall be allowed for class III.

### Assembly instruction

The assembly instruction as per Product drawing No. EMT-TZ-20210129 is to be observed.

## Type Approval documentation

### Tests carried out

Tests are according to DNV-CP-0185 as follows:

1. Tightness test;
2. Repeated assembly test;
3. Burst pressure test;
4. Pull-out test;
5. Fire resistance test;
6. Vacuum test.

### Marking of product

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

| Element                       | Marking scope                                     | Example           |
|-------------------------------|---------------------------------------------------|-------------------|
| Connector body                | EMT sign,<br>material supplier code               | EMT<br>+316L      |
| Nut                           | EMT sign, size, series,<br>material supplier code | EMT<br>+10+L+316L |
| Front ferrule<br>Back ferrule | EMT sign, size,<br>material supplier code         | EMT<br>+10+71     |

### Periodical assessment

For retention of the Type Approval, a DNV surveyor shall perform periodical assessment as per DNV-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.dnv.com>.