

TYPE APPROVAL CERTIFICATE

This is to certify:

that the **Mechanical Joints**

with type designation(s)
Flare Flange

issued to

Shanghai Euroliege Hydraulic Equipment Co., Ltd.
SHANGHAI, China

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: -30°C up to +100°C

Max. working press.: 42 MPa

Sizes: 1/2" up to 5"

Issued at **Hamburg** on **2024-07-17**

This Certificate is valid until **2029-07-16**.

for **DNV**

DNV local unit: **Shanghai**

Approval Engineer: **Christian Kaemmer**

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

The Shanghai EUROLOEGE Hydraulic Equipment "Flare flange" is a non-welded tube fitting system. The by a steel tube forming machine mechanically reshaped tube-ends are connected by a 37° insert-cone and 2 flare flanges.

The system comprises the components: 37° insert-cone with O-rings, flare flanges, hexagonal tightening bolts, nuts.

Scope of type approval

This type-approval certificate includes the following types and sizes:

Type:	Type Designation:	Size:
A / B	Utilizing O-rings on all sealing surfaces	½" up to 5"
C	Bonded seal, inserts are identical	
D	For long straight lines	

The components and their materials are as follows:

Component	Material
Insert-cone (A / B / C)	45#, Q355D, 316L ¹⁾
Nut DIN 934 / Hexagonal bolt DIN 912	Stainless steel, carbon steel
Flare flange acc. to ISO 6162-1 / ISO 6162-2 / ISO 6164	45#, Q355D, 316L ¹⁾
O-ring ISO 3601-1	NBR

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;

Application / Limitation

Flare flange 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, table 10 for compression couplings. It is filed in category "compression coupling - flared type" as per DNV-RU- "Ship", Pt.4, Ch.6 Sec. 9, table 8. For pipe class I and II the outer diameter of the pipe is limited to maximum 60.3 mm / ~ 2". Classified as fire-resistant type for pipe system "wet".

The tube fitting system of type flare flange fitting is type approved by applying a steel tube forming machine from Parker and / or GS-Hydro for shaping the tube-ends.

Connectors are 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.

Service Pressure range

The flare flanges are type approved for the following nominal pressures PN.

Flange-series	DN Dimension [inch]	Tube OD (mm)	Nominal pressure [bar]
ISO 6162-1	1/2", 3/4", 1",	25,30,38	PN 350
	1 1/4", 1 1/2", 2"	42, 50, 60	PN 280
	2 1/2", 3"	73, 90	PN 210
	4", 5"	115, 140	PN 50
ISO 6162-2	1/2", 3/4", 1", 1 1/4", 1 1/2", 2", 2 1/2", 3"	25, 30, 38, 42, 50, 60, 73, 90	PN 420
ISO 6164	1 1/2", 2", 2 1/2"	50, 60, 73	PN 420

Pressure reduction factor:

For service temperatures above 20°C the maximum allowable pressure is to be reduced with the pressure reduction factors:

Temperature [°C]	Stainless steel	Carbon steel
≤ 50 °C:	-5%	0%
≤ 100°C	-15%	0%

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.

Assembly instruction

The assembly instruction as per manufacturer's 37° flare flange installation procedure No. ELQM-T-10 / A and the corresponding operation manual of the steel tube forming machine is to be observed.

Type Approval documentation

Tests carried out

Marking of product

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

Element	Marking scope	Marking scope
Insert-cone	EUROLIEGE-Materials-Size- Nominal wall thickness- Pressure - Heat No.	EUROLIEGE 316L 2" SCH80S 3000PSI Heat No.246F12
Nut Hexagonal bolt	Size-Materials-Strength grade	M8 A4-80-10.9
Flare flange	EUROLIEGE-Materials-Size- Standard-Pressure- Heat No.	EUROLIEGE 316L 2" ISO6162-1 3000PSI Heat No.246F32

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>.