

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Pipe Couplings, Bite and Compression Type

with type designation(s)

L - Light series: GExxL, GExxL, GExxL, S - Heavy series: GExxS, GExxS

Issued to

Marinetec development(Shanghai) Limited
Shanghai, 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 :

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

Type:	Temperature range:	Max. working press.:	Sizes:
L - Light series: GExxL, GExxL, GExxL	see certificate	500 bar	see certificate
S - Heavy series: GExxS, GExxS	see certificate	630 bar	see certificate

Issued at **Hamburg** on **2021-06-10**

This Certificate is valid until **2026-06-09**.

for **DNV**

DNV local station: **Shanghai**

Approval Engineer: **Ana Cristina Do Carmo Insfran**

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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.

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

Bite Type Pipe Joint according to ISO 8434-1, Light series (L) and Heavy series (S) made of carbon steel (CS) and stainless steel (SS) with metallic sealings.

This type approval includes the tube fittings types: straight fitting, tee fitting, cross fitting, elbow fitting, straight reducer fitting, tee reducer fitting, tube end reducer.

Component	Material designation
Body, Nut	Carbon Steel 45 acc. to GB/T699 C45 (1.0503) acc. to EN10083-2 Stainless Steel: 022Cr19Ni10, 022Cr17Ni12Mo2 acc. to GB/T1220 304L, 316L acc. to ASTM A276
Cutting ring	
Fittings body	
Tubes ^{1,2}	Carbon steel pipe acc. to GB/T17395, ISO 9329, EN10305-4, DIN 1630, DIN 2391 Stainless steel pipe acc. to GB/T11976, ASTM A269, A312, A789

Notes:

¹ Minimum Tube wall thickness acc. to DNV GL Ship Rules Pt.4, Ch.6 - Section 9, Tables 3. Regarding material certificates refer Section 2, Table 3.

² Stainless steel tubes must be cold drawn seamless and heat treated.

Application/Limitation

The Marinetec development (Shanghai) Limited Mechanical joints, series L and series S are type approved for class I, II and III-piping systems. Type of mechanical joint: Compression coupling - Bite type - Fire resistant type according to DNV GL Rules Pt. 4, Ch. 6, Sec. 9 Table 8.

Selection of materials

It shall be noted that the selection of the materials considers the applicable service condition with respect to type of media, flow velocity, media temperature etc. and installation area of the piping system.

In particular, the resistance to corrosion, erosion, oxidation and other deterioration during projected service life are to be taken into account.

Reference is made to Rules Pt.4, Ch.6 – Section 2 – Materials.

Temperature range

Carbon steel: -10°C to +120°C³

Stainless steel: -50°C to +400°C

Pressure reduction factors for stainless steel according to Class Programme – DNVGL CP-0185, Sec. 2 table 1.

Temperature	Stainless Steels
50°C	0.95
100°C	0.85
150°C	0.77
200°C	0.71
250°C	0.67
300°C	0.63
350°C	0.60
400°C	0.58

Notes:

³ For application of carbon steel fittings below -10°C the pre-material is to be normalized.

Size and pressure range¹

Series	DN	Design pressure ² [bar]
L	04 - 06 - 08	500
	10 - 12 - 15	400
	19 - 24 - 30 - 36	250
S	04 - 06 - 08 - 10 - 12	630
	16 - 20 - 25 - 32	420

Notes

¹ Max working pressure of the piping system depend on the selected pipe material and wall thickness

² Individual nominal pressures of the fittings accordance to manufacturer catalogue to be observed.

Type Approval documentation

Tests carried out

Tightness test, repeated assembly test, leakage test, vacuum test, pull-out test, vibration test, pressure impulse test, burst test, fire resistance test.

Marking of product

For traceability to this type approval each mechanical joint is to be marked with:

Component	Scope	Example
Fittings body	Manufacturer trademark	
Compression ring		
Nut		

Periodical assessment

For retention of the Type Approval, a DNV 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.dnv.com>.

Ende of Certificate