

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Pipe Couplings, Bite and Compression Type**with type designation(s)
SO

Issued to

SERTO AG
Frauenfeld Schweiz, Switzerland

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.****The pipe couplings are type approved for application in pipe class I, II and III-piping systems, as listed in DNV GL Ship Rules Pt. 4, Ch. 6, Sec. 1 and 9.****Temperature range:** -55°C to 300°C
Max. working press.: 40 to 250 bar / size dependent
Sizes: 2 mm to 28 mmThis Certificate is valid until **2022-01-08**.Issued at **Hamburg** on **2017-01-09**DNV GL local station: **Augsburg**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.

Product description

Type: Compression type pipe coupling consisting of basic component, compression ferrule, connecting nut. Metallic sealing. When the union is tightened, the compression ferrule is deformed by the inside taper of the nut, necking the tube slightly without notching it.

Material:

Basic component, compression ferrule, connecting nut:

Stainless steel No: 1.4571/ X6CrNiMoTi17-12-2, acc. to DIN EN 10216-5.

Tubes:

Seamless cold-drawn stainless steel pipes acc. to DIN EN 10216-5/ EN ISO 1127.

Sizes: 2 mm to 28 mm.

Application/Limitation

Compression Ferrule and respective Pipe Couling Components	Tube OD [mm]	Nominal Pressure PN
SO 50001-2	2	250
SO 50001-3	3	250
SO 50001-4	4	250
SO 50001-5	5	250
SO 50001-6	6	200
SO 50001-8	8	200
SO 50001-10	10	160
SO 50001-12	12	160
SO 50001-15	15	100
SO 50001-18	18	100
SO 50001-22	22	64
SO 50001-28	28	40

Pressure reduction factors:

For service temperatures above 50 °C the pressure reduction factors as follows are to be observed:

- -55°C to +50°C 1,0
- +50°C to +100°C 0,95
- +100°C to +150°C 0,85
- +150°C to +200°C 0,77
- +200°C to +250°C 0,71
- +250°C to +300°C 0,67

Pipe couplings with pipe thread that seal on the thread are limited in the application.
Pipe couplings with parallel thread are not approved for pipe class I and II and 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.

Pipe couplings made of stainless steel 1.4571 are not permitted in seawater systems.
For the assembly and the installation of the joints manufacturer's instructions are to be observed.

A tube grade suitable for cold bending and flaring is to be used.

The wall thickness of the tubes is to be in accordance with current DNVGL-rules.

Panel Mount Union (Bulkhead tube couplings) of type SO 51521, SO 51521 RED, SO 51524, SO 51524 RED, SO 52721 are not approved through tank walls, fire divisions, watertight deck and bulkheads.

Type Approval documentation

Tests carried out

Leakage test, Repeated assembly test, Burst test, Vacuum test, Impulse/Vibration test.
Retention Burst test.

Marking of product

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

- Manufacturer's trade mark
- Type designation
- Size

Periodical assessment

For retention of the type approval certificate periodical assessments shall be carried out at production places by local DNVGL Surveyor.

Prior to the expiry date of this certificate a renewal assessment is to be carried out to verify that the conditions for the type approval are complied with and to witness burst pressure testing on select sizes. The objective of the periodical assessment is to verify that the design and production conditions for the type approval have not been altered.

Main scope of the assessment:

- verification of the production and quality control system
- review of quality control documentation of recent deliveries
- review of drawings in production to verify any design changes which may have an impact on data specified in the type approval certificate, performance and range of application
- verification of the product marking.

End of certificate