

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Pipe Couplings, Bite and Compression Type**

with type designation(s)

ESV, WV, GSV, TV, GV, WSV, KV, WEV, GEV, TEV, LEV, TRV, EGV, EWV, ETV, ELV, MAV, MAEV, MAVD, EWVD, ETVD, ELVD, EGVD, KORV, REDV, GASV, GAIV, GRV, ETHV and EWHV

Issued to

**Volz Gruppe GmbH
Deilingen, Germany**

is found to comply with

DNV GL rules for classification – Ships**DNV GL class programme DNVGL-CP-0185 – Type approval – Mechanical joints****DNV GL rules for classification – Yachts****DNV GL rules for classification – Offshore units****Application :****Products approved by this certificate are accepted for installation on all vessels classed by DNV GL.****Temperature range: see certificate****Max. working press.: 100 bar up to 800 bar****Sizes: Tube O.D. 4 mm up to 42 mm**This Certificate is valid until **2021-11-09**.Issued at **Hamburg** on **2020-04-21**DNV GL local station: **Augsburg**for **DNV GL**Approval Engineer: **Andrii Pishchanskyi**

**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.

Job Id: **262.1-021812-1**
Certificate No: **TAP00000HU**
Revision No: **1**

Product description

Cutting ring pipe couplings acc. to DIN 2353.

Materials:

Couplings: Stainless steel, X6CrNiMoTi17-12-2, No.1.4571 DIN EN 10088-3
Sealing rings: FPM or PTFE

Coupling types:

ESV	Welding bulkhead	MAV	Manometer coupling
WV	Equal elbow	MAEV	Adjustable manometer coupling
GSV	Threaded bulkhead	MAVD	Adjustable manometer coupling
TV	Equal tee	EWVD	Adjustable W-coupling
GV	Straight coupling	ETVD	Adjustable T-coupling
WSV	Bulkhead elbow	ELVD	Adjustable L-coupling
KV	Equal cross	EGVD	Standpipe adaptor
WEV	Male stud elbow	KORV	Reducing standpipe
GEV	Male stud straight	REDV	Reducing standpipe
TEV	Male stud branch tee	GASV	Straight welding coupling
LEV	Male stud barrel tee	GAINV	Straight female adaptor
TRV	Male stud branch tee	GRV	Straight reducing
EGV	Standpipe adaptor	ETHV	Adjustable T-swivel
EWV	Adjustable barrel tee	EWHV	Adjustable W-swivel
ETV	Adjustable barrel tee		
ELV	Adjustable barrel tee		

Adaptors available with conical or cylindrical thread.

Application/Limitation

The couplings are type approved for application in pipe class I, II and III piping systems, as specified in DNVGL RU-SHIP Pt.4 Ch.6 Sec.9 Table 11 and 12 for compression couplings of fire resistant type.

Normal working pressures defined at 20°C:

Product line	Tube O.D (mm)	Pressure (bar)
LL	4 - 8	100
L	6 - 10	500
L	12 - 18	400
L	22 - 42	250
S	6 - 10	800
S	12 - 16	630
S	20 - 38	420

At elevated temperatures, the maximum pressures are to be reduced according to following:

Temperature, °C	50	100	200	300	400
Reduction, %:	4.5	11	20	29	33

Temperature range depending on sealing ring materials:

FPM (Viton): -25 °C up to 200 °C
PTFE (Teflon): -60 °C up to 200 °C

Coupling series L and S may be used for gases having an oxygen content exceeding 21% at working pressure 250 bar respectively 360 bar.

Job Id: **262.1-021812-1**
Certificate No: **TAP00000HU**
Revision No: **1**

Couplings used for low temperature gas may only be used for accessory lines and instrumentation lines with external diameters of 25 mm and less.

The nominal pressure ratings PN represent the max. allowable working pressure inclusive of pressure peaks.

Threaded bulkhead couplings type GSV and WSV may not be used on watertight bulkheads. Couplings with non-metallic components are not to be used for fire safe applications.

The approval is only valid when the couplings are assembled with tubing of correct temper and tolerances as recommended by the manufacturer.

These couplings are not to be used on tubes in cold fabricated (hard temper) conditions.

The wall thickness and material of the tubes to be in accordance with the current Rules of DNV GL.

The selection of the compression couplings for the corresponding service and the right installation are to be in accordance with the instructions of the manufacturer.

Type Approval documentation

Tests carried out

Leakage test, Burst pressure test, Vacuum test, Pull-out test, Repeated assembly test, Combined Vibration – and Pressure pulsation test, Oxygen shock test, Fire resistance test. DNV GL-Ref.-No.: 13-041297

Marking of product

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

- Manufacturer's trade mark
- Type designation
- Size

Periodical assessment

For retention of the Type Approval, a DNV GL Surveyor shall perform a survey - before the expiry date of this certificate - to verify that the conditions for the type approval are complied with. The Surveyor shall perform the following tasks on samples selected at random from stock or from the running production:

- Verify that the dimensions of the couplings comply with the Type Approved documentation.
- Verify that the material composition complies with the Type Approved documentation.
- Witnessing of burst pressure testing.

END OF CERTIFICATE