

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Pipe Couplings, Bite and Compression Type

with type designation(s)

XV, DMO, AOVN ED, AOVN ED, XAH, XAOH, NVR, NVR ED, NVM ED, AVR, AVR ED, AVM ED, XVR, XVR ED, XVM, XVM ED, XSV,see Page 2.

Issued to

HANSA-FLEX AG
Bremen, Germany

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.

Temperature range: (see cert.)

Max. working press.: up to 630 bar (see cert.)

Sizes: Tube O.D. 6 to 40 mm

Issued at **Hamburg** on **2017-07-03**

This Certificate is valid until **2021-07-19**.

DNV GL local station: **Bremerhaven**

for **DNV GL**

Approval Engineer: **Peter Gierhan**

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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.



Product description

Compression Couplings 24°, L-and S-Series, made of Steel according to DIN2353 / ISO8434-4

Materials

Pipes

Carbon steel: E235 according to DIN EN 10305-4

Pipe tolerances according to EN 10305-4

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

Sealing

NBR, FPM, PTFE

Nuts and fittings

Carbon Steel: C15, C22, C35, St.37-0, St.37-2 and 9SMnPb28K acc. to DIN 3859

DIN 2353 / ISO 8434-1

Materials according to other equivalent or higher standards may be used.

XV - Straight fitting DMO - Fitting, double nut AOVM ED - Screw-in fitting AOVR ED - Screw-in-fitting XAH - Reducing fitting XAOH - Reducing fitting NVR - Screw-in socket NVR ED - Screw-in socket NVM ED - Screw-in socket AVR - Screw-in fitting AVR ED - Screw-in fitting AVM ED - Screw-in fitting XVR - Screw-in fitting XVR ED - Screw-in fitting XVM - Screw-in fitting XVM ED - Screw-in fitting XSV - Bulkhead fitting XGAR - Screw-on fitting XGAM - Screw-on fitting RIK - Reducing adapter, short RIK ED - Reducing adapter, short RIL - Reducing adapter, long RIL ED - Reducing adapter, long	XVEWO 45 - Fitting, angle 45° XW - Fitting, angle 90° XVEWO - Fitting, angle 90° XVEW - Fitting, angle 90° XWR - Screw-in fitting, angle 90° XWM - Screw-in fitting, angle 90° XEWOM - Screw-in fitting, angle 90° XSW - Bulkhead fitting, angle 90° XT - Fitting, T shaped XVETO - Fitting, T shaped XRT - T shaped reducing fitting XVEL - Fitting, L shaped XVELO - Fitting, L shaped XK - Fitting, cross shaped XSA - Welded on fitting SA DKOR - Welded on sealing cone SA DKOL - Welded on sealing cone VLM/VSM - Blanking nut XVHL/XVHS - Blanking socket VHR 90 ED - Blanking screw with hexagon socket VHM 90 ED - Blanking screw with hexagon socket UEM - Union nut SRD - Cutting ring
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Remarks

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.

Application/Limitation

The pipe coupling system is type approved for application in pipe class I, II and III-piping systems, fire resistant type, as listed in DNV GL Ship Rules Pt. 4, Ch. 6, Sec. 9 Table 12 & 13 / Bite-type. Regarding limitations refer to page 3.

Size and pressure range

Product Line	Tube O.D. (mm)	PN
L	6 - 18	315
	22 - 42	160
S	6 - 12	630
	16 - 30	400
	38	315

Temperature range

Metallic material	Temperature range
Carbon steel	-20°C to +120°C, (-40°C ambient)
Sealing material	
NBR	-35°C to +100°C
FPM	-25°C to +200°C
PTFE	-55°C to +200°C

For application of carbon steel fittings below -20°C the pre- material is to be normalized. The maximum service temperature (M.A.W.T.) arise out of the tube fitting and sealing material combination.

Example M.A.W.T.:

Carbon steel fitting (normalized) with NBR sealing, -20°C up to +100°C.

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

Temperature	100°C	150°C	200°C
Carbon Steel, unalloyed	1,00	0,89	0.81

Remarks

For selection of the pipes and pipe couplings the applicable specific service conditions in view of service temperature, media and installation location are to be observed. Refer to instructions of the "HANSA FLEX Technical Informations" and DNV GL Rules Pt.4, Ch.6, in particular Section 2 - Materials and Section 9.

Job Id: **262.1-023009-2**
Certificate No: **TAP00000X3**

Type Approval documentation

Type Tests carried out

Visual inspection, Pressure test, Burst pressure test, Leakage test, Repeated assembly, Pull out, Vacuum, Fire resistant and Combined pressure impulse and Vibration test.

Marking of product

Element	Marking
Coupling, fitting	HF / Logo
Nut	HF / Logo
Cutting ring	HF / Logo

Periodical assessment

For retention of the Type Approval, a DNVGL 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:

The main scope of the periodical assessment will normally include:

- verification of the TA applicant's production and quality system w.r.t. consistent production of the type approved products at the TA applicant's own premises and at other companies that are given the responsibility for manufacturing of the products
- review of the TA documentation and that this is still used as basis for the production
- review of possible changes to the design, the material and the performance of the product
- verification of the product marking
- witness of burst testing on selected sizes from production.

END OF CERTIFICATE