

# TYPE APPROVAL CERTIFICATE

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

with type designation(s)

**Cutting ring fittings, standpipe connections, 24° swivel connectors, bulkhead couplings, straight reducers, male connectors, weld connectors, diagnostic equipment and blanking plugs**

Issued to

**Volz Gruppe GmbH  
Deilingen, 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 :****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.****Temperature range: Up to +250°C. Refer to certificate.****Max. working press.: Up to 800bar. Refer to certificate.****Sizes: 4mm up to 42mm**Issued at **Hamburg** on **2019-01-07**This Certificate is valid until **2024-01-06**.for **DNV GL**DNV GL local station: **Augsburg**Approval Engineer: **Andrii Pishchanskyi**

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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

Cutting ring fittings and 24° swivel connectors according to DIN 2353 / ISO 8434-1.

### Cutting rings

- SDR – metallic sealing, single edge cutting ring –24° cone end as per DIN 3861;
- PDR – metallic sealing, double edge cutting ring –24° cone end as per DIN 3861.

### Fittings

This type approval includes the fittings as specified in the Volz Carbon Steel Catalogue "Tube Fittings and Accessories" edition 08/2014. The following couplings are excluded from the certificate:

| Designation | Coupling type                       |
|-------------|-------------------------------------|
| ASKV        | Straight weld coupling for tubes    |
| SKA         | Straight weld nipple for tubes      |
| GMA 3       | Straight test point connector       |
| VKA 3       | Test point                          |
| EMA 3       | Test point                          |
| MAV – MA 3  | Test point pressure gauge connector |
| SMA 3       | Measuring hose                      |

### Materials

| Component                           | Material designation                                                                                                                                                                                | Standard/Specification                               |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|
| Pipe coupling, nut and cutting ring | C15 (1.0401) non alloy steel<br>C22 (1.0402) non alloy steel<br>C35 (1.0501) non alloy steel<br>C45 (1.0503) non alloy steel<br>11SMnPb30 (1.0718) non alloy steel<br>C10C (1.0214) non alloy steel | DIN EN 10277-2, DIN 3859<br>DIN EN 10277-3, DIN 3859 |

### 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.

For selection of the minimum wall thickness for pipes refer to DNVGL RU-SHIP Pt.4 Ch.6 Sec. 9 Tables 3 and 4. Requirements on material certificates are defined in Section 2, Table 3.

Pipe Couplings, Bite and Compression Type are not approved for installation in high pressure fuel injection systems of combustion engines.

Bulkhead connections (type GSV and WSV) are not approved for penetration through tank walls, fire divisions, watertight deck and bulkheads.

## Nominal working pressure (PN)<sup>1,2</sup>

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

### Notes

<sup>1</sup> Individual nominal pressures of the fittings in accordance to Volz Carbon Steel Catalogue "Tube Fittings and Accessories", edition 08/2014 has to be observed.

<sup>2</sup> Max working pressure depends on pipe material and thickness.

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

| Temperature, [°C]      | ≥-20 and ≤120 | 150  | 200  | 250  |
|------------------------|---------------|------|------|------|
| Pressure reduction [-] | 1             | 0.89 | 0.81 | 0.72 |

Temperature range depends on pressurised component and sealing ring materials:

| Material        | Temperature range                 |
|-----------------|-----------------------------------|
| Non-alloy steel | ≥ -20°C <sup>1</sup> and ≤ +250°C |
| FPM             | -25°C up to +200°C                |
| NBR             | -30°C up to +100°C                |
| PTFE            | -60°C up to +100°C                |

### Footnote

<sup>1</sup> Environmental temperature is down to -40°C.

## Selection of materials

It shall be noted that the selection of the materials considers the applicable service conditions 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 considered. Refer to DNVGL Rules Pt.4, Ch.6 – Section 2 – Materials.

The couplings are not approved for gases having an oxygen content exceeding 25% as per DNVGL-CP-0185 Sec.5, 8.

### Pipe couplings with pressure-tight joint on a thread

Pipe coupling where pressure-tight joints are made on the threads with parallel or tapered threads are not approved for piping systems conveying toxic or flammable media or services where fatigue, severe erosion or crevice corrosion is expected to occur as per DNVGL RU-SHIP Pt.4 Ch.6 Sec.9 5.2.6. Pipe coupling is limited to the following applications solely:

1. CO<sub>2</sub> systems inside of protected spaces and CO<sub>2</sub> cylinder rooms;
2. Threaded joints for direct connectors of pipe lengths with tapered thread shall be allowed for:
  - a. Class I, outside diameter not more than 33.7 mm;
  - b. Class II and class III;
3. Threaded joints with parallel thread shall be allowed for class III.

An overview of threaded pipe couplings with limitations due pressure-tight joint on a thread is as follows:

| Designation                   | Coupling type                      |
|-------------------------------|------------------------------------|
| EGV – NPT                     | Straight standpipe connector       |
| GAIV – NPT                    | Straight female connector          |
| GEV – R/M – keg.<br>GEV – NPT | Male stud connector                |
| LEV – R/M – keg.<br>LEV – NPT | Male stud barrel tee               |
| MAV – NPT                     | Pressure gauge connector           |
| MAEV – NPT                    | Pressure gauge connector standpipe |
| TEV – R/M – keg.<br>TEV – NPT | Male stub branch tee               |
| WEV – R/M – keg.<br>WEV – NPT | Male stud elbow                    |
| RI<br>RI – WD                 | Straight reducer                   |

### Type Approval documentation

#### Tests carried out

Tightness test, Burst pressure test, Vacuum test, Pull-out test, Repeated assembly test, Combined vibration and pressure pulsation test, Fire resistance test

## Marking of product

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

| Element      | Marking scope     | Example                                                                                                  |
|--------------|-------------------|----------------------------------------------------------------------------------------------------------|
| Coupling     | Manufacturer sign |  and/or MF              |
| Nut          | Manufacturer sign |  or MF or neutral       |
| Cutting ring | Manufacturer sign | JS or  or MF or neutral |

## Periodical assessment

A condition for retention of the TA certificate in its validity period is that periodical assessments are successfully carried out. Periodical assessments for type approval is required after two years (+/- 90 days) and after 3.5 years (+/- 90 days). The objective of the periodical assessment is to verify that the conditions for the TA 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;
- witness of burst testing on selected sizes from production.

In connection with the renewal assessment, burst pressure tests on test assemblies are to be carried out in the presence of the DNV GL surveyor. The test assemblies shall consist of two pieces of pipe couplings connected with a metallic tube. Selection of joint sizes and quantity of test assemblies is to be determined prior to the assessment. At least one of the test assemblies is to be manufactured in the presence of the surveyor according to the manufacturers specification.