Max. permissible operating pressure

The permissible operating pressure $p_{\text{max, zul}}$ is calculated as follows, considering all environmental conditions:

$$p_{\text{max, zul}} = PN \cdot k_t \cdot k_d$$

- $PN$: theoretic maximum operating pressure according to specification tables
- $k_t$: temperature reduction factor
- $k_d$: dynamic reduction factor

Temperature reduction factor $k_t$

Reduction factors for materials and/or temperatures according to ISO standard 10380 V2012. If the corrugated hose and the braid are not made of the same material, the lowest value must be taken.

To be continued on the next page
Dynamic reduction factor $k_d$
Reduction factors for different types of application.

### Dynamic reduction factor $k_d$

<table>
<thead>
<tr>
<th>Movement</th>
<th>Flow</th>
<th>no vibrations; feeble, slow</th>
<th>vibrations; frequent, constant</th>
<th>strong vibrations; heavy service</th>
</tr>
</thead>
<tbody>
<tr>
<td>static or slow and constant</td>
<td>1</td>
<td>0.8</td>
<td>0.4</td>
<td></td>
</tr>
<tr>
<td>pulsating and variable</td>
<td>0.8</td>
<td>0.63</td>
<td>0.32</td>
<td></td>
</tr>
<tr>
<td>rhythmic and water hammers</td>
<td>0.32</td>
<td>0.2</td>
<td>on demand</td>
<td></td>
</tr>
</tbody>
</table>

**Bend radius**
Radius measured at the longitudinal axis of the metal hose. The ISO standard distinguishes between static bend radius – for single movement (bend test) – and dynamic bend radius – for frequent movement cycles and/or pressure impulses (fatigue test). Falling below the minimum bend radius shortens the life time of the metal hose assembly.

**Life time**
The term life time defines the number of cycles realized until a leakage occurs, the hose changes considerably its external aspect, or a reduction of >50% of the intended bend radius occurs.

**Pressure loss**
Due to the corrugated profile, metal hose assemblies have a higher flow resistance than smooth pipework. Nominal size, medium and flow rate play an important part. At short hose assemblies that pressure loss may be ignored, at longer units however it should be taken into consideration.

**Design and type approval according to ISO standard 10380**

**Burst pressure test**
Test with water at ambient temperature. A straight hose sample with a length of 10 times the nominal size – but not shorter than 500 mm, shall be tested hydraulically until a leakage occurs. The so established burst pressure must not be less than 4 times the permissible nominal pressure PN mentioned in the table.

**Bend test**
Pressure-less test according to the drawing in the margin. The hose sample is to be bend around a template having a diameter defined by the static bend radius. The test consists in 10 cycles (back and forth). Movement frequency: 5 - 25 cycles per minute.

**Fatigue test (U-bend)**
Test with water at ambient temperature. Test pressure according to table (nominal pressure PN). Movement cycle according to the drawing in the margin. The distance between the axis is 2 times the dynamic bend radius according to table. Movement s: 8 times nominal size DN or at least 250 mm. Movement frequency: 5 - 30 cycles per minute. Testing period: 10'000 cycles (back and forth movement) – test interruption at leakage or reduction of the bend radius >50%.

Subject to change 15-07