Thermowell with flange (fabricated)
Tantalum cover or wetted parts special material
Model TW40 (version TW40-E, TW40-D)

Applications

- Chemical industry, process technology, equipment manufacturing
- For high chemical demands
- For low and medium process loads

Special features

- Good price/performance ratio
- Wetted parts made of special material
- Non-wetted parts (flange, connection components) from stainless steel
- Version TW40-D: Thermowell welded to one unit
  Version TW40-E: Tantalum cover exchangeable

Description

Each thermowell is an important component of any temperature measuring location. It is used to separate the process from the surrounding area, thus protecting the environment and operating personnel and keeps aggressive media, high pressures and flow rates from the temperature probe itself and thereby enables the thermometer to be exchanged during operation.

Based on the almost limitless application possibilities, there are a large number of variants, such as thermowell designs or materials. The type of process connection and the basic method of manufacture are important design differentiation criteria. A basic differentiation can be made between threaded and weld-in thermowells, and those with flange connections.

Furthermore, one can differentiate between fabricated and solid-machined thermowells. Fabricated thermowells are constructed from a tube, that is closed at the tip by a welded solid tip. Solid-machined thermowells are manufactured from solid bar stock.

The TW40 series of fabricated thermowells with flange connection are suitable for use with numerous electrical and mechanical thermometers from WIKA.

Due to their special design on the basis of DIN 43772, these thermowells, through their use of highly corrosion-resistant materials, are suitable for use for low and medium mechanical process-side loading in the chemical industry, process technology and equipment manufacturing.
Standard version

Thermowell material of wetted parts
Hastelloy C4 (2.4610), Hastelloy C276 (2.4819), Monel 400 (2.4360), titanium grade 2 (3.7035) 1), tantalum

Flange disc
per EN 1092-1 with sealing face form B1
per DIN 2527 with sealing face form C per DIN 2526
per ASME B16.5 with sealing face form RF
(smooth sealing face with tantalum)

Nominal width
per EN 1092-1, DIN 2527: DN 25, DN 40, DN 50
per ASME: 1", 1 ½", 2"

Pressure rating
per EN 1092-1, DIN 2527: PN 16 ... 40
per ASME: 150 lbs, 300 lbs, 600 lbs

Connection to thermometer
M24 x 1.5 rotatable or G ½, ½ NPT female

Pipe
Ø 13.7 x 2.2 mm

Bore size
Ø 9.3 mm

Tantalum cover, bore size
12 x 0.4 mm for bore size 7 mm
16 x 0.4 mm for bore size 9 mm
13 x 0.4 mm for bore size 6.1 mm

Insertion length \( U_1 \)
To customer specification

Overall length \( L \)
Insertion length \( U_1 \) + 80 mm

Max. process temperature, process pressure
Depending on
- Thermowell design
  - Dimensions
  - Material
  - Flange pressure rating
- Process conditions
  - Flow rate
  - Medium density

Options
- Other dimensions and materials
- Female thread
- Quality certificates

For further information, see Technical information IN 00.15 “Strength calculation for thermowells”.

1) For titanium grade 2 (3.7035) material, the flange with its connection components is designed to be a loose pressure flange.
2) For versions with tantalum cover, the insertion length \( U_1 \) will be longer by up to 3 mm.
Dimensions in mm

Legend:

- L: Overall length
- M: Neck tube length (min. 60 mm)
- N: Connection to thermometer
- U₁: Insertion length
- Ød₁: Bore size
- ØF₁: Thermowell outer diameter
- ØFₜ: Outer diameter of tantalum cover
- S: Wall thickness
- S₁: Tip thickness

Option: Female thread
### Model TW40-D

#### Dimensions in mm

<table>
<thead>
<tr>
<th>N</th>
<th>Ø F₁</th>
<th>S</th>
<th>S₁</th>
<th>M</th>
<th>Flange DN 25</th>
<th>Flange PN 16 ... 40</th>
</tr>
</thead>
<tbody>
<tr>
<td>M24 x 1.5</td>
<td>13.7</td>
<td>2.2</td>
<td>3.5</td>
<td>80</td>
<td>U₁ = 100 mm</td>
<td>U₁ = 500 mm</td>
</tr>
<tr>
<td>G ½</td>
<td>13.7</td>
<td>2.2</td>
<td>3.5</td>
<td>80</td>
<td>1.50</td>
<td>1.90</td>
</tr>
<tr>
<td>½ NPT</td>
<td>13.7</td>
<td>2.2</td>
<td>3.5</td>
<td>80</td>
<td>1.50</td>
<td>1.90</td>
</tr>
</tbody>
</table>

#### Additional weight with other flanges

<table>
<thead>
<tr>
<th>DN</th>
<th>PN</th>
<th>Weight in kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>PN 16 ... 40</td>
<td>+0.76 kg</td>
</tr>
<tr>
<td>50</td>
<td>PN 16 ... 40</td>
<td>+1.63 kg</td>
</tr>
<tr>
<td>1&quot;</td>
<td>150 lbs</td>
<td>-0.46 kg</td>
</tr>
<tr>
<td></td>
<td>300 lbs</td>
<td>+0.04 kg</td>
</tr>
<tr>
<td></td>
<td>600 lbs</td>
<td>+0.22 kg</td>
</tr>
<tr>
<td>1 ½&quot;</td>
<td>150 lbs</td>
<td>+0.22 kg</td>
</tr>
<tr>
<td></td>
<td>300 lbs</td>
<td>+1.34 kg</td>
</tr>
<tr>
<td></td>
<td>600 lbs</td>
<td>+1.85 kg</td>
</tr>
</tbody>
</table>

### Model TW40-D-M5 (tantalum)

#### Dimensions in mm

<table>
<thead>
<tr>
<th>N</th>
<th>Ø F₁</th>
<th>Ø d₁</th>
<th>Ø F₁ x S</th>
<th>S₁</th>
<th>M</th>
</tr>
</thead>
<tbody>
<tr>
<td>M24 x 1.5</td>
<td>12 x 0.4</td>
<td>7</td>
<td>11 x 2</td>
<td>2.5</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>16 x 0.4</td>
<td>9</td>
<td>15 x 3</td>
<td>3.5</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>13 x 0.4</td>
<td>6.1</td>
<td>12 x 2.5</td>
<td>5</td>
<td>82</td>
</tr>
</tbody>
</table>

### Suitable stem lengths (dial thermometers)

<table>
<thead>
<tr>
<th>Connection type</th>
<th>Stem length l₁</th>
</tr>
</thead>
<tbody>
<tr>
<td>S, 3, 4 or 5</td>
<td>l₁ = L - 10 mm [0.4 in] or l₁ = U₁ + M - 10 mm [0.4 in]</td>
</tr>
<tr>
<td>2</td>
<td>l₁ = L - 30 mm [1.2 in] or l₁ = U₁ + M - 30 mm [1.2 in]</td>
</tr>
</tbody>
</table>

### Sealing face roughness

<table>
<thead>
<tr>
<th>Flange standard</th>
<th>AARH in µinch</th>
<th>Ra in µm</th>
<th>Rz in µm</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASME B16.5</td>
<td>Stock finish</td>
<td>125 ... 250</td>
<td>3.2 ... 6.3</td>
</tr>
<tr>
<td></td>
<td>Smooth finish</td>
<td>&lt; 125</td>
<td>&lt; 3.2</td>
</tr>
<tr>
<td>EN 1092-1</td>
<td>Form B1</td>
<td>-</td>
<td>3.2 ... 12.5</td>
</tr>
<tr>
<td></td>
<td>Form B2</td>
<td>-</td>
<td>0.8 ... 3.2</td>
</tr>
<tr>
<td>DIN 2527</td>
<td>Form C</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Form E</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
Ordering information
Model / Thermowell form / Pipe dimensions / Nominal width DN / Pressure rating PN / Sealing face / Connection to thermometer / Insertion length U₁ / Overall length L / Thermowell material / Assembly with thermometer / Certificates / Options