

# Flange mounting component, welded (solid-machined) According to 2014/68/EU PED Model TW10-V

WIKA data sheet SP 95.10

## Applications

- Assemblies with pressure accessories for pipelines and vessels, used as components for temperature measuring locations
- Petrochemical industry, on-/offshore, plant construction
- For high process loads
- For high chemical demands

## Special features

- Risk analysis in accordance with pressure equipment directive (PED)
- External hydrostatic testing in accordance with the requirements of the pressure equipment directive
- Dye penetrant testing of all weld seams
- Static and dynamic investigation of the component



Flange mounting component, model TW10-V

## Description

Each flange mounting component is an important part of any temperature measuring point. 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 sensor 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 different designs of the flange welded assembly or materials. The type of process connection and the basic method of manufacture are important design differentiation criteria.

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

The TW10-V series of solid-machined flange mounting components with flange connection are suitable for use with numerous electrical and mechanical thermometers from WIKA.

Due to the design proven over many years, this international design component is the first choice for use in the chemical and petrochemical industries and in plant construction.

## Specifications

Flange mounting component (solid-machined), model TW10-V	
<b>Versions</b>	<ul style="list-style-type: none"> <li>■ Design TW10-V-F: full penetration weld version</li> <li>■ Design TW10-V-P: with double weld seam (weld seam strength a = 3 mm)</li> <li>■ Design TW10-V-R: with double weld seam (weld seam strength a = 6 mm)</li> <li>■ Design TW10-V-S: no directly wetted welded joints</li> <li>■ Design TW10-V-B: additional weld seam on the process side (sealing joint)</li> </ul>
<b>Materials</b>	<ul style="list-style-type: none"> <li>■ Stainless steel 1.4571</li> <li>■ Stainless steel 1.4404</li> <li>■ A105</li> <li>■ Hastelloy C4 (2.4610)</li> <li>■ Hastelloy C276 (2.4819)</li> <li>■ Monel 400 (2.4360)</li> <li>■ Titanium grade 2 (3.7035) <sup>1)</sup></li> </ul> <p>Option:</p> <ul style="list-style-type: none"> <li>■ Tantalum sheet for wetted parts</li> </ul> <p>Other materials on request</p>
<b>Flange &gt; DN 25 / 1"</b>	<ul style="list-style-type: none"> <li>■ ASME B16.5</li> <li>■ EN 1092-1</li> <li>■ DIN 2527</li> </ul> <p>Other flanges on request</p>
<b>Connection to thermometer</b>	<ul style="list-style-type: none"> <li>■ ½ NPT female</li> <li>■ G ½ female</li> <li>■ M20 x 1.5</li> </ul> <p>Other dimensions on request</p>
<b>Bore size B</b>	<ul style="list-style-type: none"> <li>■ 6.2 mm [0.244 in]</li> <li>■ 6.6 mm [0.260 in]</li> <li>■ 7.0 mm [0.276 in]</li> <li>■ 8.2 mm [0.323 in]</li> <li>■ 8.5 mm [0.355 in]</li> <li>■ 9.0 mm [0.354 in]</li> <li>■ 9.8 mm [0.385 in]</li> <li>■ 10.2 mm [0.402 in]</li> <li>■ 12.2 mm [0.480 in]</li> </ul>
<b>Insertion length U</b>	13 ... 1,575 mm [0.5 ... 62 in]
<b>Connection length H</b>	<ul style="list-style-type: none"> <li>■ 57 mm [2.25 in]</li> <li>■ 83 mm [3.25 in]</li> </ul> <p>Others on request</p>
<b>Coating</b>	
Hardfacing for abrasive process loads with Stellite® 6	<ul style="list-style-type: none"> <li>■ High Velocity Oxide Fuel (HVOF) Layer thickness 0.5 mm [0.02 in]</li> <li>■ Plasma Transfer Arc (PTA) Layer thickness 1.6 mm [0.062 in] (standard) up to 3.2 mm [0.125 in]</li> <li>■ Laser cladding Layer thickness 1.6 mm [0.062 in] (standard) Higher layer thickness on request</li> <li>■ Air Plasma Spraying (APS) Layer thickness max. 1.6 mm [0.062 in]</li> </ul>
Corrosion protection for high chemical loads	<ul style="list-style-type: none"> <li>■ PFA Layer thickness min. 0.4 mm [0.015 in] (standard) or min. 0.6 mm [0.024 in] (special design)</li> <li>■ ECTFE (Halar®) Layer thickness min. 0.6 mm [0.024 in]</li> </ul> <p>Other resistant coatings on request</p>

## Flange mounting component (solid-machined), model TW10-V

### Calculation of the flange mounting component

The strength of the weld seam and static and also dynamic loading

Required process data are:

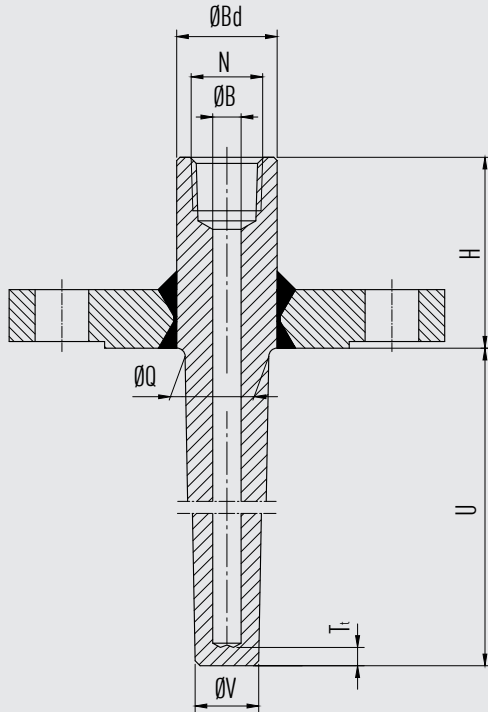
- Temperature
- Pressure
- Density
- Flow rate

1) For titanium grade 2 material in a washer disc construction, the blind flange is designed to be a removable.

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Halar® ECTFE is a registered trademark of the company Solvay Solexis.

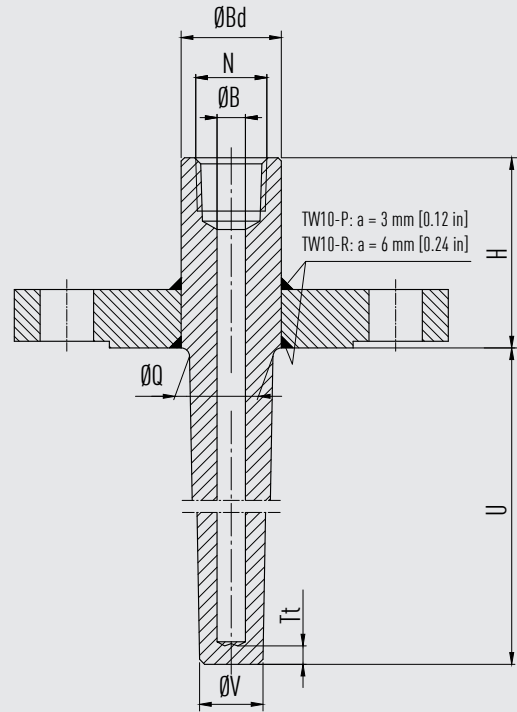
# Dimensions in mm [in]

**Design TW10-V-F**



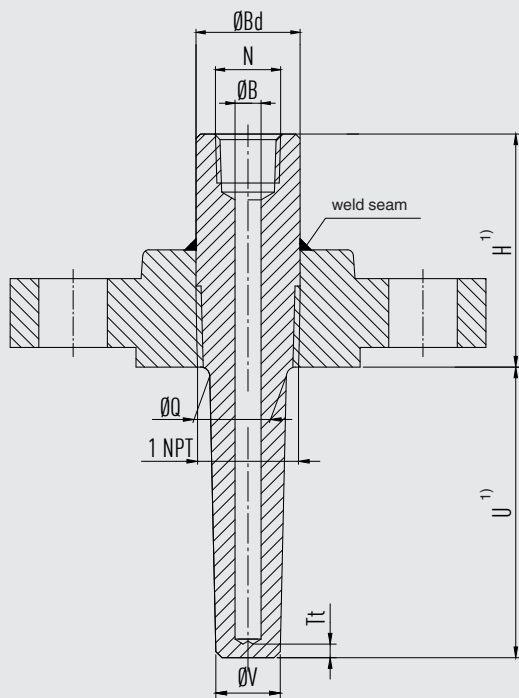
3111923.01

**Design TW10-V-P, TW10-V-R**



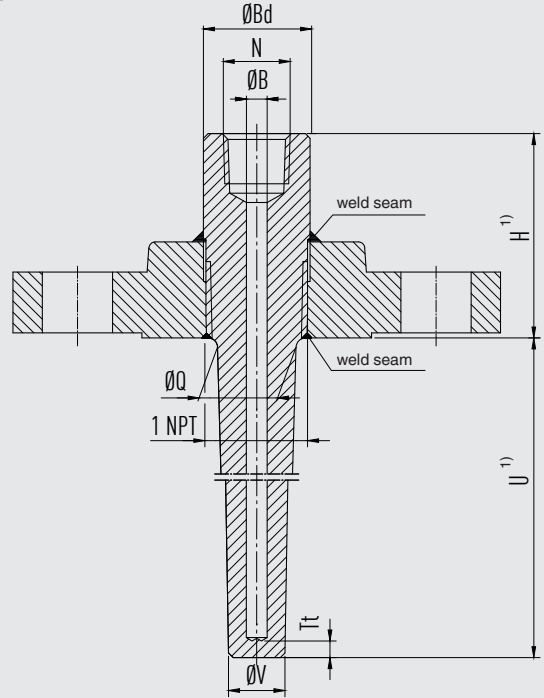
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**Design TW10-V-S**



14365057.01

**Design TW10-V-B**



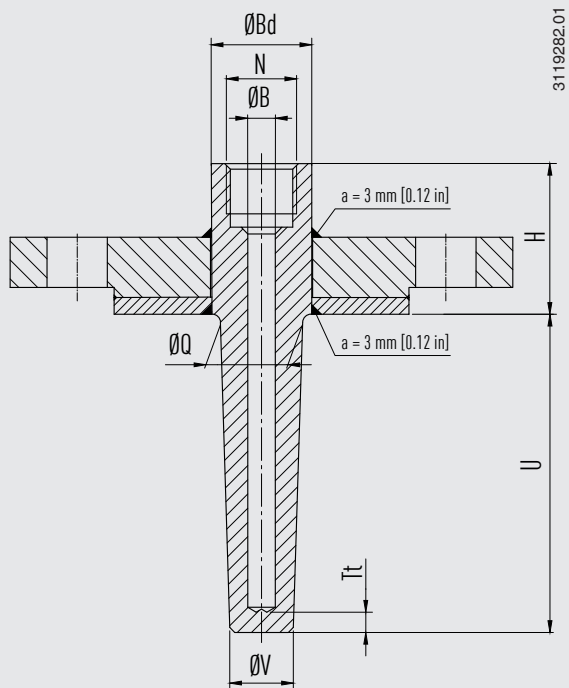
14365203.01

**Legend:**

- |     |                           |      |                                  |
|-----|---------------------------|------|----------------------------------|
| H   | Connection length         | Ø Q  | Root diameter                    |
| U   | Insertion length          | Ø V  | Tip diameter                     |
| N   | Connection to thermometer | Ø Bd | Bar diameter                     |
| Ø B | Bore size                 | Tt   | Tip thickness (6.4 mm [0.25 in]) |

1) For technical reasons around the 1 NPT thread, the connection length, H, and also the insertion length, U, can move with a tolerance of ±5 mm to the specified nominal dimension. A flush connection of the thread with the flange sealing face can therefore not be guaranteed.

### Design TW10-V-P in washer disc construction



#### Legend:

- H Connection length
- U Insertion length
- N Connection to thermometer
- $\varnothing B$  Bore size
- $\varnothing Q$  Root diameter
- $\varnothing V$  Tip diameter
- $\varnothing B_d$  Bar diameter
- $T_t$  Tip thickness (6.4 mm [0.25 in])

## ASME flanges, tapered form

DN	PN in lbs	Dimensions in mm [in]				Weight in kg [lbs] (approx.)		
		H	Ø Q	Ø V	Ø Bd	U = 4"	U = 13"	U = 22"
1 ½"	150	approx. 57 [2 ¼]	25 [1.000]	19 [0.750]	30 [1.181]	1.8 [3.968]	2.4 [5.291]	3.0 [6.613]
	300	approx. 57 [2 ¼]	25 [1.000]	19 [0.750]	30 [1.181]	3.3 [7.275]	3.9 [8.598]	4.5 [9.920]
	600	approx. 57 [2 ¼]	25 [1.000]	19 [0.750]	30 [1.181]	4.0 [8.818]	4.7 [10.361]	5.3 [11.684]
	1,500	approx. 83 [3 ¼]	25 [1.000]	19 [0.750]	30 [1.181]	6.4 [14.109]	7.1 [15.652]	7.7 [16.975]
	2,500	approx. 83 [3 ¼]	25 [1.000]	19 [0.750]	30 [1.181]	12.0 [26.455]	12.6 [27.778]	13.3 [29.321]
2"	150	approx. 57 [2 ¼]	25 [1.000]	19 [0.750]	30 [1.181]	2.5 [5.511]	3.1 [6.834]	3.7 [8.157]
	300	approx. 57 [2 ¼]	25 [1.000]	19 [0.750]	30 [1.181]	3.7 [8.157]	4.3 [9.479]	4.9 [10.802]
	600	approx. 57 [2 ¼]	25 [1.000]	19 [0.750]	30 [1.181]	4.2 [9.259]	4.9 [10.802]	5.5 [12.125]
	1,500	approx. 83 [3 ¼]	25 [1.000]	19 [0.750]	30 [1.181]	11.0 [24.250]	11.6 [25.573]	12.3 [27.116]
	2,500	approx. 108 [4 ¼]	25 [1.000]	19 [0.750]	30 [1.181]	17.0 [37.478]	17.6 [38.801]	18.3 [40.344]

## EN and DIN flanges, tapered form - only for design TW10-V-P and TW10-V-R

(only for welding version with weld seam, a = 3 or 6 mm on both sides)

DN	PN in bar	Dimensions in mm [in]				Weight in kg [lbs] (approx.)	
		H	Ø Q	Ø V	Ø Bd	U = 160 mm	U = 500 mm
40	40	45 [1.771]	25 [1.000]	19 [0.750]	30 [1.181]	3.1 [6.834]	4.0 [8.818]
	63/64	45 [1.771]	25 [1.000]	19 [0.750]	30 [1.181]	4.8 [10.582]	5.7 [12.566]
	100	45 [1.771]	25 [1.000]	19 [0.750]	30 [1.181]	4.8 [10.582]	5.7 [12.566]
50	40	45 [1.771]	25 [1.000]	19 [0.750]	30 [1.181]	3.9 [8.598]	4.8 [10.582]
	63/64	45 [1.771]	25 [1.000]	19 [0.750]	30 [1.181]	5.2 [11.464]	6.1 [13.448]
	100	45 [1.771]	25 [1.000]	19 [0.750]	30 [1.181]	6.6 [14.550]	7.5 [16.534]
80	40	60 [2.362]	25 [1.000]	19 [0.750]	30 [1.181]	6.6 [14.550]	7.5 [16.534]
	63/64	60 [2.362]	25 [1.000]	19 [0.750]	30 [1.181]	7.6 [16.755]	8.5 [18.739]
	100	60 [2.362]	25 [1.000]	19 [0.750]	30 [1.181]	10.2 [22.487]	11.1 [24.471]
100	40	60 [2.362]	25 [1.000]	19 [0.750]	30 [1.181]	8.3 [18.298]	9.2 [20.282]
	63/64	60 [2.362]	25 [1.000]	19 [0.750]	30 [1.181]	10.9 [24.030]	11.8 [26.014]
	100	60 [2.362]	25 [1.000]	19 [0.750]	30 [1.181]	15.0 [33.069]	15.9 [35.053]

## Suitable stem lengths (dial thermometers)

Connection type	Stem length $l_1$
S, 4, 5	$l_1 = U + H - 10 \text{ mm [0.4 in]}$
2	$l_1 = U + H - 30 \text{ mm [1.2 in]}$


## Sealing face roughness

Flange standard		AARH in $\mu\text{inch}$	Ra in $\mu\text{m}$	Rz in $\mu\text{m}$
ASME B16.5	Stock finish	125 ... 250	3.2 ... 6.3	-
	Smooth finish	< 125	< 3.2	-
	RTJ	< 63	< 1.6	-
	Tongue/groove	< 125	< 3.2	-
EN 1092-1	Form B1	-	3.2 ... 12.5	12.5 ... 50
	Form B2	-	0.8 ... 3.2	3.2 ... 12.5
DIN 2527	Form C	-	-	40 ... 160
	Form E	-	-	< 16

## Examples for coatings



## Approvals

Logo	Description	Country
	<b>EU declaration of conformity</b> Pressure equipment directive 2014/68/EU	European Union

Approvals and certificates, see website

### Ordering information

Model / Flange mounting component form / Material / Flange material / Head diameter / Connection to the thermometer / Bore  $\varnothing$  B / Nominal diameter DN / Pressure rating PN / Sealing face / Wall thickness of flange nozzle / Insertion length U / Connection length H / Coating / Assembly with thermometer / Certificates / Options

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