

Thermowell for lap flanges (solid-machined)

Vanstone design

Model TW30

WIKA data sheet TW 95.30

Applications

- Petrochemical industry, on-/offshore, plant construction
- For high process loads

Special features

- Heavy-duty design
- Solid machined version without welding
- Possible thermowell forms:
 - Design TW30-A: tapered
 - Design TW30-B: straight
 - Design TW30-C: stepped
- For lap flanges per ASME B16.5



Thermowell for lap flanges, model TW30

Description

Each thermowell is an important component of any temperature measurement 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 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 barstock.

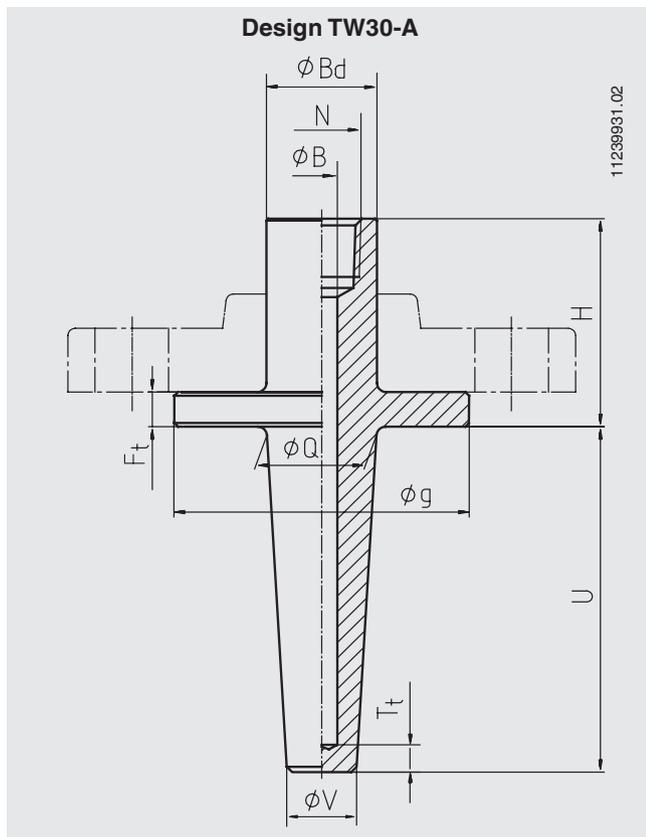
The TW30 series of solid-machined thermowells for lap flanges are suitable for use with numerous electrical and mechanical thermometers from WIKA.

Due to the heavy-duty design, these international design thermowells are the first choice for use the chemical and petrochemical industries and in plant construction.

Specifications

Thermowell for lap flanges (solid-machined), model TW30	
Versions	<ul style="list-style-type: none"> ■ Design TW30-A: tapered ■ Design TW30-B: straight ■ Design TW30-C: stepped
Thermowell materials	<ul style="list-style-type: none"> ■ Stainless steel 316/316L ■ Stainless steel 304/304L ■ A105 ■ Stainless steel 1.4571 ■ Alloy C4 ■ Alloy C276 ■ Alloy 400 ■ Titan Grade 2 ■ Materials per ASTM specifications <p>Other materials on request</p>
Process connection	<ul style="list-style-type: none"> ■ ½ NPT male ■ ¾ NPT male ■ 1 NPT male <p>Other threads on request</p>
Anschluss zum Thermometer	<ul style="list-style-type: none"> ■ ½ NPT female ■ G ½ female <p>Other threads on request</p>
Bore size	<ul style="list-style-type: none"> ■ Ø 6.6 mm [0.260 in] ■ Ø 8.5 mm [0.355 in]
Insertion length U	To customer specification
Connection length H	57 mm [2.244 in] Others on request
Sealing face diameter g	per ASME B16.5 (raised face RF): <ul style="list-style-type: none"> ■ for DN 1": 51 mm [2.079 in] ■ for DN 1 ½": 73 mm [2.874 in] ■ for DN 2": 92 mm [3.622 in]
Max. process temperature, process pressure	Depending on: <ul style="list-style-type: none"> ■ Thermowell design <ul style="list-style-type: none"> - Dimensions - Material - Flange pressure rating of the clamping flange ■ Process conditions <ul style="list-style-type: none"> - Flow rate - Density of medium
Hydrostatic pressure test	<p>This non-destructive test is performed in accordance with ASME B31.3 using the pressure values of the flange standard ASME B16.5, depending on pressure rating, temperature range and material within the corresponding pressure-temperature rating table.</p> <p>As the assumed flange material, the TW30 thermowell material is used.</p>
Wake frequency calculation (option)	<p>Per ASME PTC 19.3 TW-2016 recommended in critical applications as a WIKA engineering service</p> <p>For further information see Technical information IN 00.15 "Wake frequency calculation".</p>

Dimensions in mm [in]



Legend:

- H Connection length
- U Insertion length
- N Connection to thermometer
- Ø B Bore size
- Ø Q Root diameter
- Ø V Tip diameter
- Ø Bd Head diameter
- Ø g Sealing face diameter
- T_t Tip thickness (6.4 mm [0.25 in])
- F_t Facing thickness (9.5 mm [0.37 in])

The flange is not part of the standard scope of delivery

Tapered thermowell form, design TW30-A

Lap flange		Dimensions in mm [in]						Weight in kg [lbs]		
DN	PN in lbs	H	Ø Q	Ø V	Ø B	Ø Bd	Ø g	U = 4 in	U = 13 in	U = 22 in
1"	150	2 ¼ in [approx. 57 mm]	19 [0.750]	16 [0.625]	■ 6.6 [0.260] ■ 8.5 [0.355]	33.4 [1.315]	51 [2.008]	1.1 [2.425]	1.6 [3.527]	2.1 [4.629]
	300	2 ¼ in [approx. 57 mm]	19 [0.750]	16 [0.625]	■ 6.6 [0.260] ■ 8.5 [0.355]	33.4 [1.315]	51 [2.008]	1.1 [2.425]	1.6 [3.527]	2.1 [4.629]
	600	2 ¼ in [approx. 57 mm]	19 [0.750]	16 [0.625]	■ 6.6 [0.260] ■ 8.5 [0.355]	33.4 [1.315]	51 [2.008]	1.1 [2.425]	1.6 [3.527]	2.1 [4.629]
	1500	3 ¼ in [approx. 83 mm]	19 [0.750]	16 [0.625]	■ 6.6 [0.260] ■ 8.5 [0.355]	33.4 [1.315]	51 [2.008]	1.1 [2.425]	1.6 [3.527]	2.1 [4.629]
1 ½"	150	2 ¼ in [approx. 57 mm]	27 [1.063]	19 [0.750]	■ 6.6 [0.260] ■ 8.5 [0.355]	48.3 [1.902]	73 [2.874]	1.8 [3.968]	2.5 [5.512]	3.3 [7.275]
	300	2 ¼ in [approx. 57 mm]	27 [1.063]	19 [0.750]	■ 6.6 [0.260] ■ 8.5 [0.355]	48.3 [1.902]	73 [2.874]	1.8 [3.968]	2.5 [5.512]	3.3 [7.275]
	600	2 ¼ in [approx. 57 mm]	27 [1.063]	19 [0.750]	■ 6.6 [0.260] ■ 8.5 [0.355]	48.3 [1.902]	73 [2.874]	1.8 [3.968]	2.5 [5.512]	3.3 [7.275]
	1500	3 ¼ in [approx. 83 mm]	27 [1.063]	19 [0.750]	■ 6.6 [0.260] ■ 8.5 [0.355]	48.3 [1.902]	73 [2.874]	1.8 [3.968]	2.5 [5.512]	3.3 [7.275]
2"	150	2 ¼ in [approx. 57 mm]	27 [1.063]	19 [0.750]	■ 6.6 [0.260] ■ 8.5 [0.355]	60.3 [2.374]	92 [3.622]	2.7 [5.952]	3.4 [7.496]	4.1 [9.039]
	300	2 ¼ in [approx. 57 mm]	27 [1.063]	19 [0.750]	■ 6.6 [0.260] ■ 8.5 [0.355]	60.3 [2.374]	92 [3.622]	2.7 [5.952]	3.4 [7.496]	4.1 [9.039]
	600	2 ¼ in [approx. 57 mm]	27 [1.063]	19 [0.750]	■ 6.6 [0.260] ■ 8.5 [0.355]	60.3 [2.374]	92 [3.622]	2.7 [5.952]	3.4 [7.496]	4.1 [9.039]
	1500	3 ¼ in [approx. 83 mm]	27 [1.063]	19 [0.750]	■ 6.6 [0.260] ■ 8.5 [0.355]	60.3 [2.374]	92 [3.622]	2.7 [5.952]	3.4 [7.496]	4.1 [9.039]

Suitable stem lengths of mechanical dial thermometers

Connection type	Stem length l_1
S, 4 or 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 μinch	Ra in μm
ASME B16.5	Stock finish	125 ... 250	3.2 ... 6.3
	Smooth finish	< 125	< 3.2

Certificates (option)

- 2.2 test report
- 3.1 inspection certificate

Ordering information

Model / Thermowell form / Thermowell material / Connection to thermometer / Wall thickness of flange nozzle / Bore diameter $\varnothing B$ / Nominal width DN / Pressure rating PN / Insertion length U / Connection length H / Head diameter $\varnothing B_d$ / Root diameter $\varnothing Q$ / Tip diameter $\varnothing V$ / Assembly with thermometer / Certificates / Options

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