

Thermowell for lap flanges

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 weld seam
- Possible thermowell designs:
 - 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/protection tube 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/protection tubes, and those with flange connections.

Furthermore, one can differentiate between protection tubes and thermowells. Protection tubes are constructed from a tube, that is closed at the tip by a welded solid tip. Thermowells are manufactured from solid bar stock.

The TW30 series of 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 in the chemical and petrochemical industries and in plant construction.

Specifications

Basic information	
Thermowell form	
Design TW30-A	Tapered
Design TW30-B	Straight
Design TW30-C	Stepped
Material (wetted)	<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 ■ Titanium grade 2 ■ Materials in accordance with ASTM specifications
	Other materials on request

Process connection			
Type of process connection	Clamped between mating flanges		
Connection to thermometer	<ul style="list-style-type: none"> ■ ½ NPT female thread ■ G ½ female thread 		
	Other threads on request		
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]		
	Other connection lengths on request		
Tip thickness	6.4 mm [0.25 in]		
	Other tip thicknesses on request		
Suitable stem lengths I₁ (dial thermometer) with tip thickness 6.4 mm [0.25 in]			
Connection design S, 4 or 5	I ₁ = U + H - 10 mm [0.4 in]		
Connection design 2	I ₁ = U + H - 30 mm [1.2 in]		
Sealing face diameter per ASME B16.5 (raised face RF)			
With DN 1"	51 mm [2.079 in]		
With DN 1 ½"	73 mm [2.874 in]		
With DN 2"	92 mm [3.622 in]		
Sealing face roughness	Design	AARH in µinch	Ra in µm
ASME B16.5	Stock finish	125 ... 250	3.2 ... 6.3
	Smooth finish	< 125	< 3.2

Operating conditions	
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 lap flange ■ Process conditions <ul style="list-style-type: none"> - Flow rate - Medium density
Hydrostatic pressure test	This non-destructive testing 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 associated pressure-temperature table. The TW30 thermowell material used is used as the flange material.
Wake frequency calculation (option)	For critical applications, is recommended as a WIKA engineering service in accordance with ASME PTC 19.3 TW-2016 → For further information, see Technical information IN 00.15 "Wake frequency calculation".

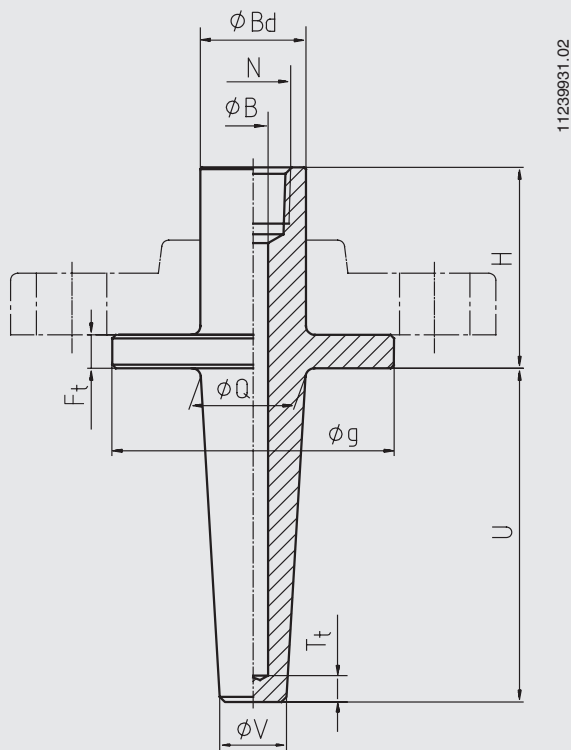
Certificates (option)

Certificates	
Certificates	<ul style="list-style-type: none"> ■ 2.2 test report ■ 3.1 inspection certificate

Approvals and certificates, see website

Dimensions in mm [in]

Design TW30-A



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 Bar diameter
- Ø g Sealing face diameter
- T_t Tip thickness (6.4 mm [0.25 in])
- F_t Sealing face thickness (9.5 mm [0.37 in])

Flange is not included in 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]
	1,500	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]
	1,500	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	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]
	1,500	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]

Ordering information

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

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