Threaded thermowell
Head design: hexagon, milled wrench flats or round with hexagon
Model TW15

Applications

- Chemical industry, process technology, equipment manufacturing
- For high chemical stress
- For high process loads

Special features

- International standard
- Possible thermowell designs: tapered, straight or stepped

Threaded thermowell, design TW15-H

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 TW15 series of threaded thermowells 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	■ Tapered ■ Straight ■ Stepped	
Version		
Design TW15-H	Hexagon	
Design TW15-R	Milled wrench flats	
Design TW15-M	Round with hexagon	
Material (wetted)	■ Stainless steel 316/316L ■ Stainless steel 304/304L ■ A105 ■ Stainless steel 1.4571 ■ Alloy C4 ■ Alloy C276 ■ Alloy 400 ■ Titanium grade 2 ■ Materials per ASTM specifications	
	→ Other materials on request	

Process connection		
Type of process connection	■ ½ NPT male thread ■ ¾ NPT male thread ■ 1 NPT male thread	
	→ Other threads on request	
Connection to thermometer	■ ½ NPT female thread ■ G ½ female thread	
	→ Other threads on request	
Bore size	■ Ø 6.6 mm [0.26 in] ■ Ø 8.5 mm [0.36 in]	
	→ Other bore sizes on request	
Insertion length U	■ 50 mm [1.97] ■ 75 mm [2.95] ■ 100 mm [2.5 in] ■ 150 mm [5.9 in] ■ 200 mm [7.87 in] ■ 350 mm [13.78 in] ■ 400 mm [15.75 in]	■ 6 in [152 mm] ■ 7 in [178 mm] ■ 10 in [254 mm] ■ 13 in [330 mm] ■ 16 in [406 mm]
	→ Weitere Einbaulängen auf Anfrage	
Min. insertion length	Depending on the selected version	
Max. insertion length [1]	800 mm [31.5 in]	
Connection length H	45 mm [1.75 in]	
Min. Connection length	Depending on the selected version	
Max. Connection length	250 mm [10 in]	
Tip thickness	6.4 mm [0.25 in]	
	→ Other tip thicknesses on request	
Suitable stem length l_1 (dial thermometer)		
Connection design S, 4, 4.1, 5, 6.1, 6.2, 6.3 and 7	Parallel thread	l_1 = U + H - 10 mm [0.4 in]
	Tapered thread	l_1= U + H - 2 mm [0.08 in]
Connection design 2	l_1 = U + H - 30 mm [1.2 in]	

1) Longer insertion lengths in one-piece design are dependent on the geometry and material, and are possible up to 1575 mm (62 in) on request.
Basically, from an insertion length of 800 mm (31.5 in), a multi-part assembly in accordance with IN 00.16 is carried out, unless otherwise requested.
A wake frequency calculation in accordance with ASME PTC 19.3 TW-2016 requires compliance with the requirements of the above-mentioned standard.

Operating conditions	
Max. process temperature, process pressure	Depending on: ■ Thermowell design - Dimensions - Material ■ Process conditions - Flow rate - Medium density
Wake frequency calculation	The calculation in accordance with ASME PTC 19.3 TW-2016 of individual thermowells minimises the risk of dynamic damage that can be caused by the vortex shedding of a Kármán vortex street (Vortex Induced Vibration; VIV). In addition, the static loads due to lateral flow and the process pressure are calculated depending on the temperature. The calculation can be carried out independently using an online tool or as a WIKA engineered service (subject to charges). → For further information see Technical information IN 00.15 “Wake frequency calculation”.

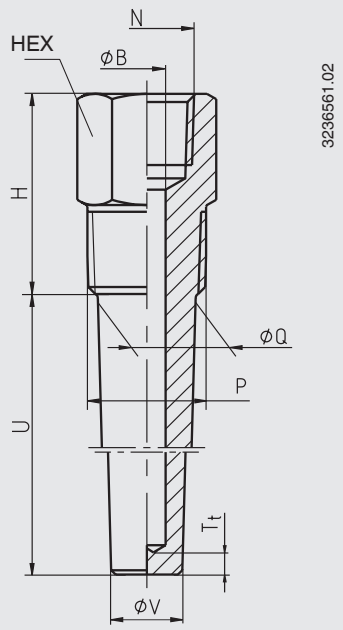
Certificates (option)

Certificates	
Certificates	■ 2.2 test report ■ 3.1 inspection certificate

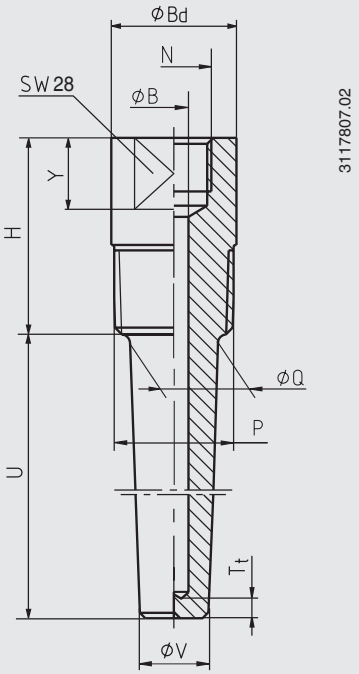
→ Approvals and certificates, see website

Dimensions in mm [in]

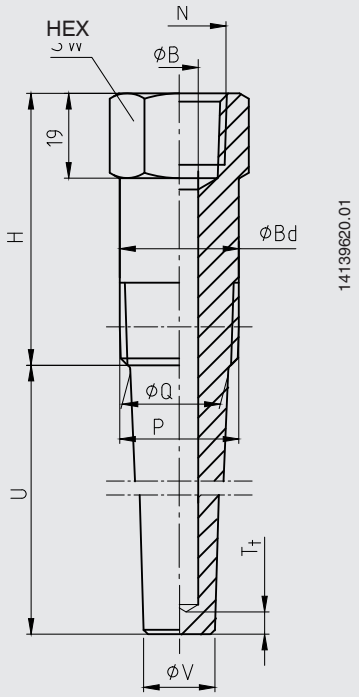
Design TW15-H



Design TW15-R



Design TW15-M



Legend:

P	Process connection
H	Connection length
U [1]	Insertion length
N	Connection to thermometer
SW	Spanner width
Y	Height of wrench flats (20 mm [0.79 in])
Ø B	Bore size
Ø Q	Root diameter
Ø V	Tip diameter
Ø Bd	Bar diameter
T_t	Tip thickness (6.4 mm [0.25 in])

1) The insertion length U is also measured with parallel process connection threads below the thread.

Tapered thermowell form

Process connection	Head design				Dimensions in mm [in]					Weight in kg [lbs]	
	Hexagon or round with hexagon		Round with wrench flats								
	Metric	Imperial	Metric	Imperial	N	Ø Q	Ø V	Ø B	H	U = 2 ½ in	U = 7 ½ in
½ NPT	HEX 27	HEX 1.125	Ø 34 mm with SW 28	Ø 1.375 in with SW 1 ⅛ in	■ ½ NPT ■ G ½ ■ M20 x 1,5	16 [0.625]	13 [0.512]	■ 6.6 [0.260] ■ 8.5 [0.355]	45 [1.772]	0.20 [0.441]	0.36 [0.794]
¾ NPT	HEX 27	HEX 1.125			■ ½ NPT ■ G ½ ■ M20 x 1,5	22 [0.866]	16 [0.625]	■ 6.6 [0.260] ■ 8.5 [0.355]	45 [1.772]	0.31 [0.683]	0.56 [1.235]
1 NPT	HEX 36	HEX 1.375			■ ½ NPT ■ G ½ ■ M20 x 1,5	27 [1.063]	19 [0.750]	■ 6.6 [0.260] ■ 8.5 [0.355]	45 [1.772]	0.50 [1.102]	0.84 [1.852]
G ½ B	HEX 27	HEX 1,125	-	-	■ ½ NPT ■ G ½ ■ M20 x 1,5	16 [0.625]	13 [0.512]	■ 6.6 [0.260] ■ 8.5 [0.355]	45 [1.772]	0.20 [0.441]	0.36 [0.794]
G ¾ B	HEX 32	HEX 1,259	-	-	■ ½ NPT ■ G ½ ■ M20 x 1,5	22 [0.866]	16 [0.625]	■ 6.6 [0.260] ■ 8.5 [0.355]	45 [1.772]	0,35 [0.772]	0,6 [1.323]
M20 x 1,5	HEX 27	HEX 1,125	-	-	■ ½ NPT ■ G ½ ■ M20 x 1,5	16 [0.625]	13 [0.512]	■ 6.6 [0.260] ■ 8.5 [0.355]	45 [1.772]	0,20 [0.441]	0,36 [0.794]
M27 x 2	HEX 32	HEX 1,259	-	-	■ ½ NPT ■ G ½ ■ M20 x 1,5	22 [0.866]	16 [0.625]	■ 6.6 [0.260] ■ 8.5 [0.355]	45 [1.772]	0,35 [0.772]	0,6 [1.323]
½ BSPT	HEX 27	HEX 1,125	-	-	■ ½ NPT ■ G ½ ■ M20 x 1,5	16 [0.625]	13 [0.512]	■ 6.6 [0.260] ■ 8.5 [0.355]	45 [1.772]	0,20 [0.441]	0,36 [0.794]
¾ BSPT	HEX 32	HEX 1,259	-	-	■ ½ NPT ■ G ½ ■ M20 x 1,5	22 [0.866]	16 [0.625]	■ 6.6 [0.260] ■ 8.5 [0.355]	45 [1.772]	0,35 [0.772]	0,6 [1.323]
1 BSPW	HEX 36	HEX 1,375	-	-	■ ½ NPT ■ G ½ ■ M20 x 1,5	27 [1.063]	19 [0.750]	■ 6.6 [0.260] ■ 8.5 [0.355]	45 [1.772]	0,50 [1.102]	0,84 [1.852]
½ BSPP	HEX 27	HEX 1,125	-	-	■ ½ NPT ■ G ½ ■ M20 x 1,5	16 [0.625]	13 [0.512]	■ 6.6 [0.260] ■ 8.5 [0.355]	45 [1.772]	0,20 [0.441]	0,36 [0.794]
¾ BSPP	HEX 36	HEX 1,375	-	-	■ ½ NPT ■ G ½ ■ M20 x 1,5	22 [0.866]	16 [0.625]	■ 6.6 [0.260] ■ 8.5 [0.355]	45 [1.772]	0,50 [1.102]	0,84 [1.852]

Ordering information

Model / Thermowell form / Process connection / Connection to thermometer / Insertion length U / Connection length H / Thermowell material / Bar diameter Ø Bd / Bore diameter Ø B / Root diameter Ø Q / Tip diameter Ø V / Assembly with thermometer / Certificates / Options

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