Thermowell with hub connection
Model TW32

Applications

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

Special features

- Suitable for hub connections of numerous manufacturers
- Solid-machined version without weld seam
- Much smaller size than comparable conventional flanges
- High leakage safety through metal sealing
- Best fatigue strength for wake frequency calculations in accordance with ASME PTC 19.3 TW-2016

Thermowell with hub connection model TW32

Description

The TW32 series of thermowells with hub connection are designed for use with a wide range of electrical and mechanical WIKA thermometers. Their robust design makes them the preferred solution for applications in the petrochemical industry as well as in the oil and gas industry – especially where only limited mounting space is available.

Thermowells assume a central function within temperature measuring locations: They separate the process space from the environment, thus protecting both the operating personnel and the environment and protecting the temperature probe from aggressive media, high pressures and strong flows. At the same time, they enable the replacement of the thermometer during operation.

Due to the wide range of applications, numerous variants are available – differentiated according to design, material, process connection and manufacturing method.

Specifications

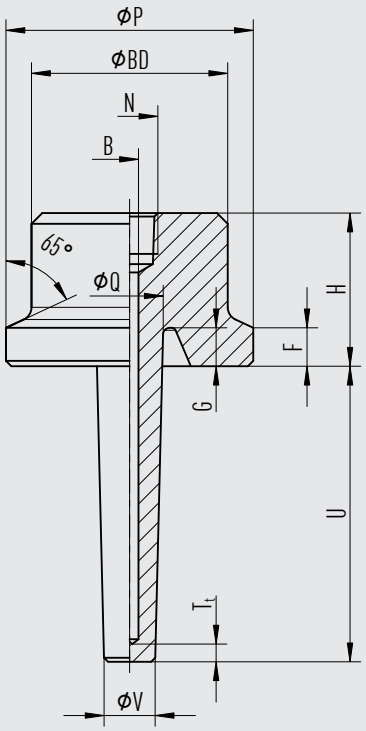
Basic information		
Thermowell form	Tapered, straight	
	→ Other versions on request	
Material (wetted)	■ Stainless steel 316/316L ■ Stainless steel 304/304L ■ A105 ■ Stainless steel 1.4571 ■ Alloy C4 ■ Alloy C276 ■ Alloy 400 ■ Alloy 625 ■ A182 F51 ■ A182 F55	
	→ Other materials on request	

Process connection		
Type of process connection	Hub connection	
Connection to thermometer	■ ½ NPT female thread ■ M20 x 1.5 female thread	
	→ Other threads on request	
Bore Ø	■ 6.6 mm [0.24 in] ■ 8.5 mm [0.36 in] ■ 9.8 mm [0.39 in]	
	→ Other bores on request	
Insertion length U		
Insertion length, minimal	Depending on process connection geometry and design	
Insertion length, maximum [1]	610 mm [24 in]	
Tip thickness	6.4 mm [0.25 in]	
	→ Other tip thicknesses on request	
Suitable stem length l_1 (dial thermometer) with tip thickness 6.4 mm [0.25 in]		
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]	
Coating		
Hardfacing for abrasive process loads with Stellite 6[2]	■ Laser cladding coating thickness 1.6 mm [0.062 in] (standard) ■ Plasma Transfer Arc (PTA) coating thickness 1.6 mm [0.062 in] (standard) up to 3.2 mm [0.125 in] ■ Air Plasma Spraying (APS) coating thickness max. 1.6 mm [0.062 in] ■ High Velocity Oxide Fuel (HVOF) coating thickness 0.5 mm [0.02 in]	
	→ Greater coating thickness and other coating materials on request	

1) Longer insertion lengths in one-piece design are dependent on the geometry and material, and are possible up to 1,575 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.
2) Stellite is a registered trademark of Kennametal Inc., USA.

Operating conditions	
Max. process temperature, process pressure	
Thermowell design	■ Dimensions ■ Material
Process conditions	■ Flow rate ■ Medium density ■ Medium temperature ■ Process pressure
Hydrostatic pressure test	■ External pressure to 650 bar [9,427 psi], 3 min ■ Internal pressure to 1,165 bar [16,897 psi], 3 min
Wake frequency calculation	Calculation of individual thermowells in accordance with ASME PTC 19.3 TW-2016 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”.
Insertion length U_{WFC}	The groove depth G must be added to the insertion length U. $U_{WFC} = U + G$ Example WIKA hub size 2W20 with U = 300 mm: U_{WFC} = 300 mm (11.811") + 17.5 (0.688") = 317.5 mm (12.5")

Tapered thermowell form



WIKA Hub size	Dimensions in mm [in]							
	H	F	G	Ø B	Ø Q	Ø V [1]	Ø Bd	Ø P
1.5W11	54 [2.13]	12.7 [0.5]	14.3 [0.56]	■ 6.6 [0.24] ■ 8.5 [0.36] ■ 9.8 [0.39]	25 [0.98]	19 [0.75]	60.3 [2.38]	79.4 [3.13]
1.5W14	54 [2.13]	11.1 [0.44]	17.5 [0.69]		25 [0.98]	19 [0.75]	60.3 [2.38]	79.4 [3.13]
2W14	51 [2]	11.1 [0.44]	17.5 [0.69]		30 [1.18]	19 [0.75]	73 [2.88]	92 [3.63]
2W20	51 [2]	11.1 [0.44]	17.5 [0.69]		30 [1.18]	19 [0.75]	73 [2.88]	92 [3.63]
WB20	70 [2.75]	15.9 [0.63]	18 [0.71]		30 [1.18]	19 [0.75]	95.3 [3.75]	120.7 [4.75]

1) For thermowell form straight, tip diameter V corresponds to root diameter Q.

WIKA Hub size	Weight in kg [lb]		
	U = 200 mm [7.87 in]	U = 400 mm [15.75]	U = 600 mm [23.62 in]
1.5W11	2.25 [4.9]	3.1 [6.8]	4 [8.8]
1.5W14	2.15 [4.7]	3 [6.6]	3.9 [8.5]
2W14	2.65 [5.8]	3.5 [7.7]	4.4 [9.6]
2W20	2.45 [5.4]	3.3 [7.2]	4.2 [9.2]
WB20	5.44 [11.98]	6.34 [13.9]	7.24 [15.9]

Legend:
H Connection length
U Insertion length
F Facing height
G Groove depth
N Connection to thermometer
Ø B Bore diameter
Ø Q Root diameter
Ø V Tip diameter
Ø Bd Bar diameter
Ø P Sealing face diameter
T_t Tip thickness (6.4 mm [0.25 in])

Hub connections

WIKA hub size	Technically compatible with the following connection types from third-party companies [1]		
	Grayloc, Galperti and G-Lok	Techloc	Destec G-Range
1.5W11	1.5 GR11	1-1/2in/11	G1½-11
1.5W14	1.5 GR14	1-1/2 in/14	G1½-14
2W14	2 GR14	2in/14	G2-14
2W20	2 GR20	2in/20	G2-20
WB20	H20	H20in	-

1) The symbols mentioned are not trademarks of the WIKA Group.

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Test report

Description	
NACE	■ MR01/75 via subsupplier certificate ■ MR01/03 via subsupplier certificate ■ MR01/75 via hardness test ■ MR01/03 via hardness test
Bore centrality	■ X-ray test per DIN EN ISO 17636-1&2 / Assessment per DIN EN ISO 5817 ■ X-ray test per ASME Sec.V. Article 2, Latest ed. / Assessment per ASME B31.3 ■ Ultrasonic test
Tip thickness	■ X-ray test per DIN EN ISO 17636-1 & 2 / Assessment per DIN EN ISO 5817 ■ X-ray test per ASME Sec.V. Article 2, Latest ed. / Assessment per ASME B31.3

→ Further test reports and tests on request

Certificates

Description	
Certificates	■ 2.2 test report per EN 10204 (e.g. state-of-the-art manufacturing, material proof, indication accuracy) ■ 3.1 inspection certificate per EN 10204 (e.g. material proof for wetted metal parts, indication accuracy, calibration certificate) ■ 3.2 inspection certificate

→ For approvals and certificates, see website

Ordering information

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

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