

Threaded thermowell (fabricated)

Design per DIN 43772 form 5, 8

Model TW45

WIKA data sheet TW 95.45

Applications

- Chemical industry, process technology, equipment manufacturing
- For low and medium process loads

Special features

- Designs per DIN 43772
- Design TW45-F: Form 5
- Design TW45-G: Form 8

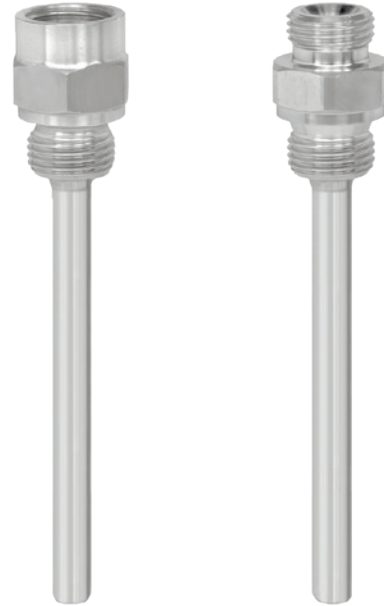


Fig. left: Design TW45-F
Fig. right: Design TW45-G

Description

Each thermowell 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, 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 solid bar stock.

The TW45 series of fabricated ¹⁾ screw-in thermowells are suitable for use with numerous electrical and mechanical thermometers from WIKA.

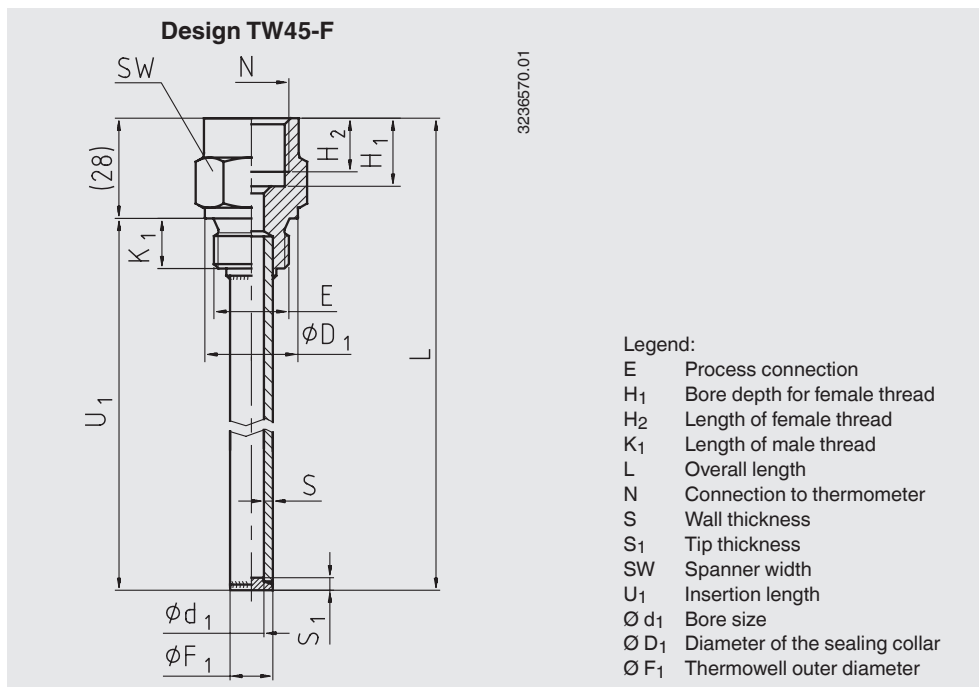
Due to their design to DIN 43772, these thermowells for low and medium process loads are suitable for use in the chemical industry, process technology and equipment manufacturing.

1) With short insertion lengths (copper alloy), solid-machined version available as an option

Specifications

Threaded thermowell (fabricated), model TW45	
Versions	<ul style="list-style-type: none"> ■ Per DIN 43772 ■ Similar to DIN 43772, but with fast response
Thermowell materials	<ul style="list-style-type: none"> ■ Stainless steel 1.4571 ■ Copper alloy
Process connection	<ul style="list-style-type: none"> ■ G ½ B male thread ■ G ¾ B male thread
Connection to thermometer	
Design TW45-F	<ul style="list-style-type: none"> ■ G ½ female thread ■ G ¾ female thread
Design TW45-G	<ul style="list-style-type: none"> ■ G ½ B male thread ■ G ¾ B male thread
Bore size	
Designs per DIN 43772	<ul style="list-style-type: none"> ■ Ø 7 mm [0.28 in] ■ Ø 9 mm [0.35 in] ■ Ø 11 mm [0.43 in]
Designs similar to DIN 43772, but with fast response	<ul style="list-style-type: none"> ■ Ø 6.2 mm [0.24 in] ■ Ø 8.2 mm [0.32 in] ■ Ø 8.5 mm [0.34 in] ■ Ø 10.2 mm [0.4 in]
Insertion length U	
Design TW45-F	<ul style="list-style-type: none"> ■ 82 mm [3.23 in] ■ 142 mm [5.59 in] ■ 182 mm [7.17 in] ■ 232 mm [9.13 in] ■ 382 mm [15.04 in]
Design TW45-G	<ul style="list-style-type: none"> ■ 73 mm [2.87 in] ■ 110 mm [4.33 in] ■ 170 mm [6.69 in] ■ 260 mm [10.24 in] ■ 410 mm [16.14 in]
Overall length L	Insertion length U ₁ + 28 mm [1.1 in]
Max. process temperature, process pressure	160 °C [320 °F] with copper alloy as thermowell material (6 bar [87 psi] stat.)
	Depending on: <ul style="list-style-type: none"> ■ Load diagram DIN 43772 ■ Thermowell design <ul style="list-style-type: none"> - Dimensions - Material ■ Process conditions <ul style="list-style-type: none"> - Flow rate - Medium density
Wake frequency calculation	For critical applications, is recommended in accordance with Dittrich/Klotter as a WIKA engineering service For further information, see Technical information IN 00.15 "Wake frequency calculation".

Dimensions in mm [in]



Material	Dimensions in mm [in]											Weight in kg [lbs]	
	E	N	Ø d ₁	Ø D ₁	Ø F ₁	H ₁	H ₂	K ₁	S	S ₁	SW	U ₁ = 82 mm [3.22 in]	U ₁ = 382 mm [15.04 in]
Stainless steel 1.4571	G ½ B	G ½	7 [0.28]	26 [1.02]	12 [0.47]	19 [0.75]	15 [0.59]	14 [0.55]	2.5 [0.1]	3.5 [0.15]	27 [1.06]	0.15 [0.33]	0.33 [0.73]
	G ½ B	G ½	9 [0.35]	26 [1.02]	14 [0.55]	19 [0.75]	15 [0.59]	14 [0.55]	2.5 [0.1]	3.5 [0.14]	27 [1.06]	0.15 [0.33]	0.36 [0.79]
	G ½ B	G ½	11 [0.43]	26 [1.02]	14 [0.55]	19 [0.75]	15 [0.59]	14 [0.55]	1.5 [0.06]	2.5 [0.1]	27 [1.06]	0.12 [0.26]	0.28 [0.62]
	G ½ B	G ½	6.2 [0.24]	26 [1.02]	8 [0.32]	19 [0.75]	15 [0.59]	14 [0.55]	0.9 [0.04]	1 [0.04]	27 [1.06]	0.12 [0.26]	0.18 [0.4]
	G ½ B	G ½	8.2 [0.32]	26 [1.02]	10 [0.39]	19 [0.75]	15 [0.59]	14 [0.55]	0.9 [0.04]	1 [0.04]	27 [1.06]	0.12 [0.26]	0.18 [0.4]
	G ½ B	G ½	10.2 [0.40]	26 [1.02]	12 [0.47]	19 [0.75]	15 [0.59]	14 [0.55]	0.9 [0.04]	1 [0.04]	27 [1.06]	0.12 [0.26]	0.19 [0.42]
	G ¾ B	G ½	7 [0.28]	32 [1.26]	12 [0.47]	19 [0.75]	15 [0.59]	16 [0.63]	2.5 [0.1]	3.5 [0.14]	32 [1.26]	0.24 [0.53]	0.42 [0.93]
	G ¾ B	G ½	9 [0.35]	32 [1.26]	14 [0.55]	19 [0.75]	15 [0.59]	16 [0.63]	2.5 [0.1]	3.5 [0.14]	32 [1.26]	0.24 [0.53]	0.45 [0.99]
	G ¾ B	G ½	11 [0.43]	32 [1.26]	14 [0.55]	19 [0.75]	15 [0.59]	16 [0.63]	1.5 [0.06]	2.5 [0.1]	32 [1.26]	0.22 [0.49]	0.37 [0.82]
	G ¾ B	G ½	6.2 [0.24]	32 [1.26]	8 [0.32]	19 [0.75]	15 [0.59]	16 [0.63]	0.9 [0.04]	1 [0.04]	32 [1.26]	0.21 [0.46]	0.27 [0.6]
	G ¾ B	G ½	8.2 [0.32]	32 [1.26]	10 [0.39]	19 [0.75]	15 [0.59]	16 [0.63]	0.9 [0.04]	1 [0.04]	32 [1.26]	0.21 [0.46]	0.27 [0.6]
	G ¾ B	G ½	10.2 [0.40]	32 [1.26]	12 [0.47]	19 [0.75]	15 [0.59]	16 [0.63]	0.9 [0.04]	1 [0.04]	32 [1.26]	0.21 [0.46]	0.28 [0.62]
	G ¾ B	G ¾	7 [0.28]	32 [1.26]	12 [0.47]	22 [0.87]	17 [0.67]	16 [0.63]	2.5 [0.1]	3.5 [0.14]	32 [1.26]	0.20 [0.44]	0.38 [0.84]
	G ¾ B	G ¾	9 [0.35]	32 [1.26]	14 [0.55]	22 [0.87]	17 [0.67]	16 [0.63]	2.5 [0.1]	3.5 [0.14]	32 [1.26]	0.20 [0.44]	0.41 [0.9]
	G ¾ B	G ¾	11 [0.43]	32 [1.26]	14 [0.55]	22 [0.87]	17 [0.67]	16 [0.63]	1.5 [0.06]	2.5 [0.1]	32 [1.26]	0.18 [0.4]	0.33 [0.73]

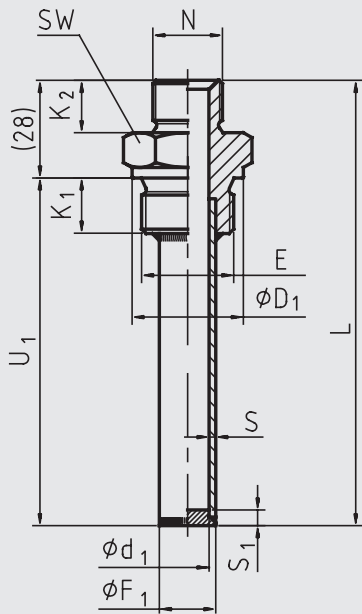
Material	Dimensions in mm [in]											Weight in kg [lbs]	
	E	N	Ø d ₁	Ø D ₁	Ø F ₁	H ₁	H ₂	K ₁	S	S ₁	SW	U ₁ = 82 mm [3.22 in]	U ₁ = 382 mm [15.04 in]
Stainless steel 1.4571	G ¾ B	G ¾	6.2 [0.24]	32 [1.26]	8 [0.32]	22 [0.87]	17 [0.67]	16 [0.63]	0.9 [0.035]	1 [0.04]	32 [1.26]	0.17 [0.37]	0.23 [0.51]
	G ¾ B	G ¾	8.2 [0.32]	32 [1.26]	10 [0.39]	22 [0.87]	17 [0.67]	16 [0.63]	0.9 [0.04]	1 [0.04]	32 [1.26]	0.17 [0.37]	0.23 [0.51]
	G ¾ B	G ¾	10.2 [0.40]	32 [1.26]	12 [0.47]	22 [0.87]	17 [0.67]	16 [0.63]	0.9 [0.04]	1 [0.04]	32 [1.26]	0.17 [0.37]	0.24 [0.53]
Copper alloy	G ½ B	G ½	8.5 [0.34]	26 [1.02]	10 [0.39]	19 [0.75]	15 [0.59]	14 [0.55]	0.75 [0.03]	0.75 [0.03]	27 [1.06]	0.11 [0.24]	0.18 [0.4]
	G ¾ B	G ½	8.5 [0.34]	32 [1.26]	10 [0.39]	19 [0.75]	15 [0.59]	16 [0.63]	0.75 [0.03]	0.75 [0.03]	32 [1.26]	0.23 [0.51]	0.29 [0.64]

Suitable insertion lengths

Type of the thermometer	Connection design	Insertion length I ₁
Mechanical dial thermometers	S ¹⁾ , 4 or 5	I ₁ = L - 10 mm [0.4 in] or I ₁ = U ₁ + 18 mm [0.7 in]
	2	I ₁ = L - 30 mm [1.2 in] or I ₁ = U ₁ - 2 mm [0.1 in]
Machine glass thermometer	E	I ₁ = L - 10 mm [0.4 in] or I ₁ = U ₁ + 18 mm [0.7 in]

1) Not suitable for use with thermowell inner Ø 6.2 mm (tube 8 x 0.9 mm), Ø 8.2 mm (tube 10 x 0.9 mm) and 10.2 mm (tube 12 x 0.9 mm).

Design TW45-G



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Legend:

- E Process connection
- K₁ Length of male thread
- K₂ Length of male thread for thermometer
- L Overall length
- N Connection to thermometer
- S Wall thickness
- S₁ Tip thickness
- SW Spanner width
- U₁ Insertion length
- Ø d₁ Bore size
- Ø D₁ Diameter of the sealing collar
- Ø F₁ Thermowell outer diameter

Material	Dimensions in mm [in]											Weight in kg [lbs]	
	E	N	Ø d ₁	Ø D ₁	Ø F ₁	H ₁	H ₂	K ₁	S	S ₁	SW	U ₁ = 73 mm [2.87 in]	U ₁ = 410 mm [16.14 in]
Stainless steel 1.4571	G ½ B	G ½	7 [0.28]	26 [1.02]	12 [0.47]	19 [0.75]	15 [0.59]	14 [0.55]	2.5 [0.1]	3.5 [0.15]	27 [1.06]	0.14 [0.31]	0.34 [0.75]
	G ½ B	G ½	9 [0.35]	26 [1.02]	14 [0.55]	19 [0.75]	15 [0.59]	14 [0.55]	2.5 [0.1]	3.5 [0.14]	27 [1.06]	0.14 [0.31]	0.37 [0.82]
	G ½ B	G ½	11 [0.43]	26 [1.02]	14 [0.55]	19 [0.75]	15 [0.59]	14 [0.55]	1.5 [0.06]	2.5 [0.1]	27 [1.06]	0.12 [0.26]	0.30 [0.66]
	G ½ B	G ½	6.2 [0.24]	26 [1.02]	8 [0.32]	19 [0.75]	15 [0.59]	14 [0.55]	0.9 [0.04]	1 [0.04]	27 [1.06]	0.13 [0.27]	0.20 [0.44]
	G ½ B	G ½	8.2 [0.32]	26 [1.02]	10 [0.39]	19 [0.75]	15 [0.59]	14 [0.55]	0.9 [0.04]	1 [0.04]	27 [1.06]	0.13 [0.27]	0.20 [0.44]
	G ½ B	G ½	10.2 [0.40]	26 [1.02]	12 [0.47]	19 [0.75]	15 [0.59]	14 [0.55]	0.9 [0.04]	1 [0.04]	27 [1.06]	0.11 [0.24]	0.18 [0.4]
	G ¾ B	G ½	7 [0.28]	32 [1.26]	12 [0.47]	19 [0.75]	15 [0.59]	16 [0.63]	2.5 [0.1]	3.5 [0.14]	32 [1.26]	0.22 [0.49]	0.43 [0.95]
	G ¾ B	G ½	9 [0.35]	32 [1.26]	14 [0.55]	19 [0.75]	15 [0.59]	16 [0.63]	2.5 [0.1]	3.5 [0.14]	32 [1.26]	0.22 [0.49]	0.46 [1.01]
	G ¾ B	G ½	11 [0.43]	32 [1.26]	14 [0.55]	19 [0.75]	15 [0.59]	16 [0.63]	1.5 [0.06]	2.5 [0.1]	32 [1.26]	0.20 [0.44]	0.39 [0.86]
	G ¾ B	G ½	6.2 [0.24]	32 [1.26]	8 [0.32]	19 [0.75]	15 [0.59]	16 [0.63]	0.9 [0.04]	1 [0.04]	32 [1.26]	0.21 [0.46]	0.28 [0.62]
	G ¾ B	G ½	8.2 [0.32]	32 [1.26]	10 [0.39]	19 [0.75]	15 [0.59]	16 [0.63]	0.9 [0.04]	1 [0.04]	32 [1.26]	0.21 [0.46]	0.28 [0.62]
	G ¾ B	G ½	10.2 [0.40]	32 [1.26]	12 [0.47]	19 [0.75]	15 [0.59]	16 [0.63]	0.9 [0.04]	1 [0.04]	32 [1.26]	0.20 [0.44]	0.27 [0.6]

Suitable insertion lengths

Type of the thermometer	Connection design	Process connection of the thermometer	Insertion length l ₁
Mechanical dial thermometers	3	-	l ₁ = L - 12 mm [0.5 in] or l ₁ = U ₁ + 16 mm [0.6 in]
Machine glass thermometer	3	G ½	l ₁ = L - 12 mm [0.5 in] or l ₁ = U ₁ + 16 mm [0.6 in]
		G ¾	l ₁ = L - 8 mm [0.3 in] or l ₁ = U ₁ + 20 mm [0.8 in]

Certificates (option)

- 2.2 test report
- 3.1 inspection certificate

Ordering information

Model / Thermowell form / Thermowell material / Process connection / Connection to thermometer / Insertion length U₁ / Dimension of pipe / Assembly with thermometer / Certificates / Options

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