

Thermowell

For sanitary applications

Model TW61, for orbital welding

WIKA data sheet TW 95.61



Applications

- Sanitary applications
- Food and beverage industry
- Bio and pharmaceutical industry, production of active ingredients
- Paint finishing systems

Special features

- Materials and surface finish quality in accordance with the standards of hygienic designs
- Self-draining
- Minimised dead-space
- For welding (orbital)

Description

The patented thermowell model TW61 (patent applied for, Patent No. DE 102010037994 and US 12 897.080) is used to adapt a model TR21-B or TR22-B resistance thermometer to the process and to protect the sensor from harsh process conditions.

To integrate it into the process, the thermowell is directly orbitally-welded into a pipeline. The connection ends are smooth and prepared for orbital welding.

The measuring insert can be withdrawn together with the connection head. This makes it possible to calibrate the thermometer with the entire measuring chain, on-site, without disconnecting the electrical connections. In addition, this avoids having to open the process, and thus the risk of contamination is minimised.

In combination with a model TR22-B resistance thermometer, the rotatable threaded connection of the connection head or the display can be loosened and turned to the desired orientation.



Thermowell model TW61

Fig. left: G 3/8 thread for model TR21-B

Fig. right: M24 threaded connection for model TR22-B

Options: Sealing combination at neck tube

Specifications

Designs

- Flow-through housing
- Angular housing

Nominal width of pipe

Pipe classes per DIN, ISO and ASME BPE, see dimension tables

Pressure ratings

See table of dimensions

Permissible temperature ranges

- Ambient -40 ... +85 °C
- Medium to be measured -50 ... +250 °C

Materials

- Pipes per DIN 11866 series A (metric) and DIN 11866 series B (ISO)
wetted parts: stainless steel 1.4435
- Pipes to DIN 11866 series C (ASME BPE)
wetted parts: stainless steel 316L
- Special materials on request

Surface roughness of wetted parts

- Pipes to DIN 11866 series A (metric)
Standard: $R_a < 0.8 \mu\text{m}$
Option: $R_a < 0.8 \mu\text{m}$ electropolished
- Pipes to DIN 11866 series B (ISO)
Standard: $R_a < 0.8 \mu\text{m}$
Option: $R_a < 0.8 \mu\text{m}$ electropolished
 $R_a < 0.4 \mu\text{m}$
 $R_a < 0.4 \mu\text{m}$ electropolished
- Pipes to DIN 11866 series C (ASME BPE)
Standard: $R_a < 0.51 \mu\text{m}$ (SF1)
Option: $R_a \leq 0.76 \mu\text{m}$ electropolished (SF3)
 $R_a < 0.38 \mu\text{m}$ electropolished (SF4)

Connection to thermometer

Model TR21-B: G 3/8 male

Model TR22-B: M24 x 1.5 rotatable male nut

Thermowell diameter

$\varnothing d = 4.8 \text{ mm}$

Neck tube length M

For assembly with a resistance thermometer, the neck tube length, M (see tables) is matched to the following insertion lengths

- Model TR21-B to the insertion length (A length) of 60 mm
- Model TR22-B to the measuring insert length of 150 mm and/or insertion length (A length) of 125 mm, suitable for on-site calibration with WIKA dry-well calibrator.
- Further neck tube lengths on request

For the customer, this reduces the stock-holding of measuring inserts, particularly for larger plants, through the use of uniform measuring insert lengths - even for different nominal tube sizes.

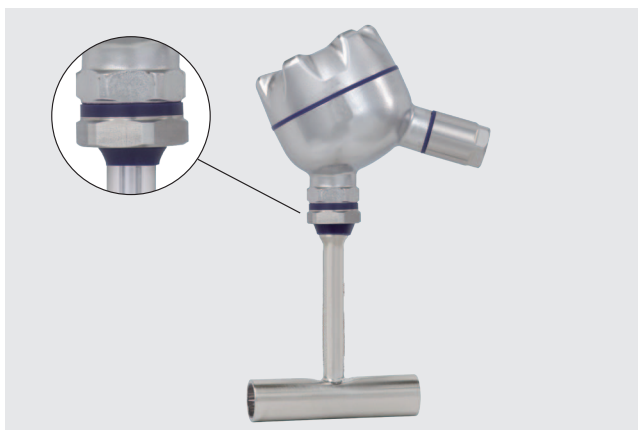
Pipe lengths T_L and L_1 , thermowell insertion length U_1

See table of dimensions

Sealing combination at neck tube (option)

The transition from the connection head for model TR22-B to the thermowell is effected via an optional sealing combination (polyurethane) of flat gasket and wiper. This combination permanently prevents the penetration and depositing of humidity and impurities in this area (IP 68). Additionally, the sealing combination simplifies the cleaning process significantly.

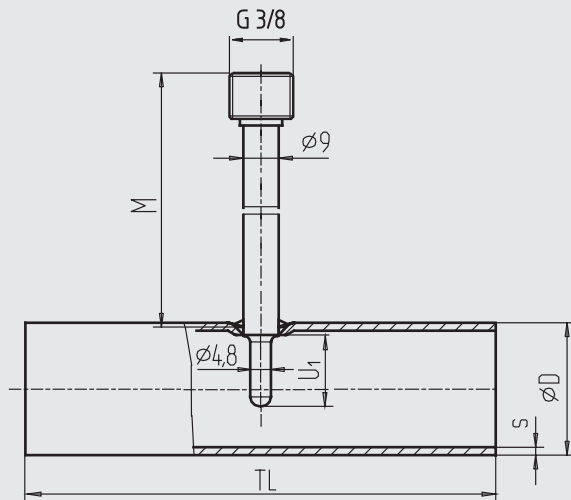
In combination with the patented BVS head (Patent No. GM 000984349) and the hygienic cable gland, an easy to clean and hygienic measuring location results, even in non-wetted areas. The BVS head is designed in such a way that cleaning agents can run off easily and that no residues can accumulate on the case.



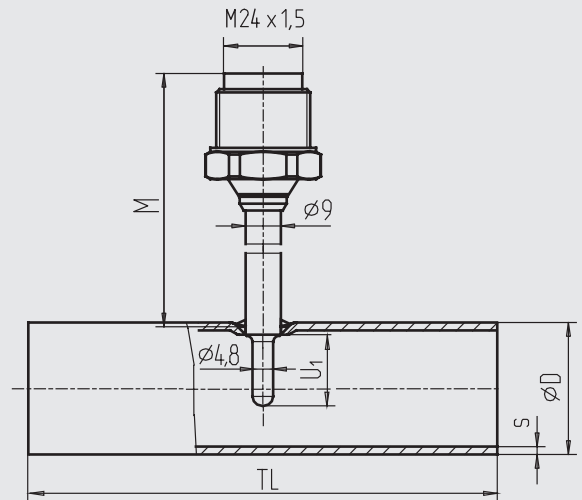
Dimensions in mm

Flow-through housing

G 3/8 thread
for assembly with model TR21-B



M24 connection
for assembly with model TR22-B



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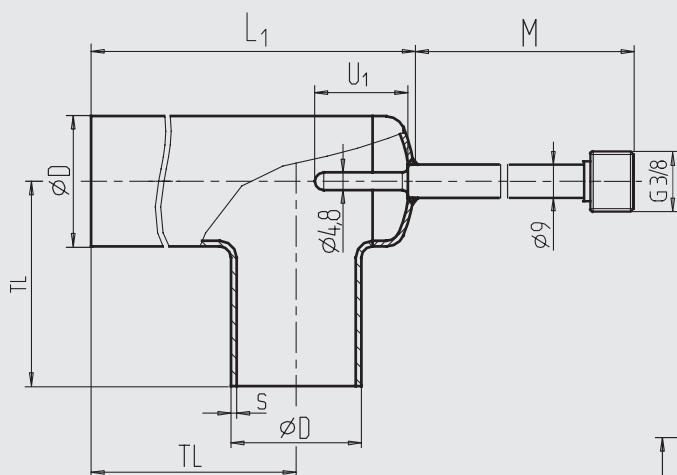
Nominal width of pipe DN / OD	Nominal pressure in bar PN ^{1) 2)}	Outer diameter of pipe ϕD	Pipe wall thickness s	Tube length T_L	Thermowell insertion length U_1	Neck tube length TR21-B M	Neck tube length TR22-B M
DIN 11866 series A or metric							
10	25	13	1.5	70	6	51	129
15	25	19	1.5	70	9	48	126
20	25	23	1.5	80	11	46	124
25	25	29	1.5	100	18	39	117
32	25	35	1.5	110	18	39	117
40	25	41	1.5	120	18	39	117
50	25	53	1.5	160	30	27	105
65	16	70	2.0	210	30	27	105
80	16	85	2.0	260	45	12	90
100	12.5	104	2.0	310	45	12	90
DIN 11866 series B or ISO							
13.5	25	13.5	1.6	64	6	51	129
17.2	25	17.2	1.6	68	9	48	126
21.3	25	21.3	1.6	72	11	46	124
26.9	25	26.9	1.6	110	11	46	124
33.7	25	33.7	2.0	120	18	39	117
42.4	25	42.4	2.0	130	18	39	117
48.3	25	48.3	2.0	130	18	39	117
60.3	25	60.3	2.0	180	30	27	105
76.1	16	76.1	2.0	220	30	27	105
88.9	16	88.9	2.3	260	45	12	90
DIN 11866 series C or ASME BPE							
1/2"	13.8	12.7	1.65	95.2	6	51	129
3/4"	13.8	19.05	1.65	101.6	9	48	126
1"	13.8	25.4	1.65	108.0	11	46	124
1 1/2"	13.8	38.1	1.65	120.6	18	39	117
2"	13.8	50.8	1.65	146.0	18	39	117
2 1/2"	13.8	63.5	1.65	158.8	30	27	105
3"	13.8	76.2	1.65	171.4	30	27	105
4"	13.8	101.6	2.11	209.6	45	12	90

1) Maximum operating temperature 150 °C

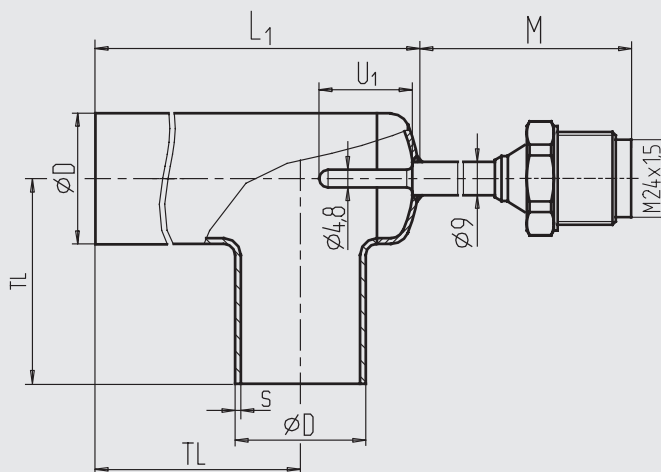
2) All thermowells of this series that are internally pressurised, with a nominal diameter (DN) > 25 mm, are manufactured and tested to Module H of the Pressure Equipment Directive, 97/23/EC.

Angular housing

G 3/8 thread
for assembly with model TR21-B



M24 connection
for assembly with model TR22-B



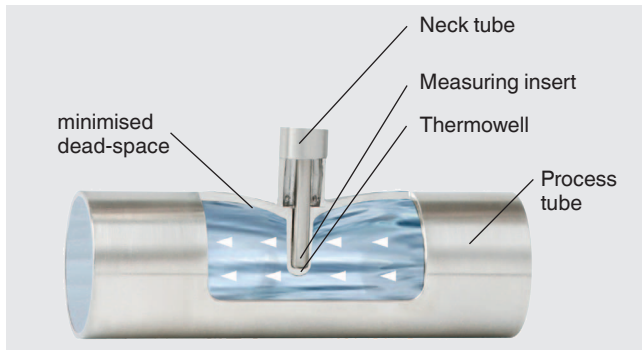
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Nominal width of pipe DN / OD	Nominal pressure in bar PN ^{1) 2)}	Outer diameter of pipe Ø D	Pipe wall thickness s	Tube length TL	Tube length L ₁	Thermowell insertion length U ₁	Neck tube length TR21-B M	Neck tube length TR22-B M
DIN 11866 series A or metric								
10	25	13	1.5	35	55	14	43	121
15	25	19	1.5	35	55	18	39	117
20	25	23	1.5	40	63	18	39	117
25	25	29	1.5	50	77	30	27	105
32	25	35	1.5	55	87	30	27	105
40	25	41	1.5	60	97	30	27	105
50	25	53	1.5	80	126	30	27	105
65	16	70	2.0	105	165	45	12	90
80	16	85	2.0	130	201	45	12	90
100	12.5	104	2.0	155	241	45	12	90
DIN 11866 series B or ISO								
13.5	25	13.5	1.6	32	55	14	43	121
17.2	25	17.2	1.6	34	55	16	41	119
21.3	25	21.3	1.6	36	58	18	39	117
26.9	25	26.9	1.6	55	81	30	27	105
33.7	25	33.7	2.0	60	91	30	27	105
42.4	25	42.4	2.0	65	102	30	27	105
48.3	25	48.3	2.0	65	108	30	27	105
60.3	25	60.3	2.0	90	145	45	12	90
76.1	16	76.1	2.0	110	173	45	12	90
88.9	16	88.9	2.3	130	203	45	12	90
DIN 11866 series C or ASME BPE								
1/2"	13.8	12.7	1.65	47.6	71	14	43	121
3/4"	13.8	19.05	1.65	50.8	71	18	39	117
1"	13.8	25.4	1.65	54.0	79	18	39	117
1 1/2"	13.8	38.1	1.65	60.3	94	30	27	105
2"	13.8	50.8	1.65	73.0	118	30	27	105
2 1/2"	13.8	63.5	1.65	79.4	134	45	12	90
3"	13.8	76.2	1.65	85.7	150	45	12	90
4"	13.8	101.6	2.11	104.8	190	45	12	90

1) Maximum operating temperature 150 °C

2) All thermowells of this series that are internally pressurised, with a nominal diameter (DN) > 25 mm, are manufactured and tested to Module H of the Pressure Equipment Directive, 97/23/EC.

Hygienic design



The patented (patent No. DE 102010037994 and US 12 897.080) hygienic design of the TW61 flow-through housing enables dead-space minimised, invasive temperature measurement and a flexible mounting position through self-draining.

CE conformity

Pressure Equipment Directive

97/23/EC, PS > 200 bar, module H, pressure accessory

For thermowells > DN 25 (1") and for the associated marking on the measuring instrument or thermowell, WIKA confirms conformity with the 97/23/EC Pressure Equipment Directive in accordance with the conformity assessment procedure, module H.

For thermowells with nominal widths of \leq DN 25 (1"), an EC conformity evaluation in accordance with the Pressure Equipment Directive (PED) is not permitted and therefore, they are manufactured without CE marking in line with the applicable sound engineering practice (PED article 3, chapter 3).

Approvals (option)

- 3-A, food, USA

Certificates (option)

- 2.2 test report
- 3.1 inspection certificate
- Hygiene certificates

Certificate	Flow-through housing	Angular housing
3-A (74-06)	yes, for all dimensions	yes, from DIN 11866 series A: DN 32 DIN 11866 series B: DN 33.7 DIN 11866 series C: DN 1 1/2"

Approvals and certificates, see website

Ordering information

Model / Design (pass-through or angular housing) / Nominal width / Material of wetted parts / Connection to thermometer / Certificates / Option further sealing combinations

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