Protection Tubes for Thermometers

SIKA®
founded 1901
Dr. Siebert & Kühn GmbH & Co. KG

Introduction

We manufacture protection tubes for our industrial-glass thermometers, precision dial thermometers and bi-metal dial thermometers.

Protection tubes are used to protect the thermometer immersion tube from process media and to ensure that temperature measurements can be achieved even in severe conditions. These conditions are caused by high temperatures, high pressure, aggressive media or high flow velocities, as well as by an incoming flow of particles or impurities.

A major advantage of protection tube usage is that the thermometer can be installed and removed without having to drain the process media. The thermometer can be simply replaced during operation.

Fig.1

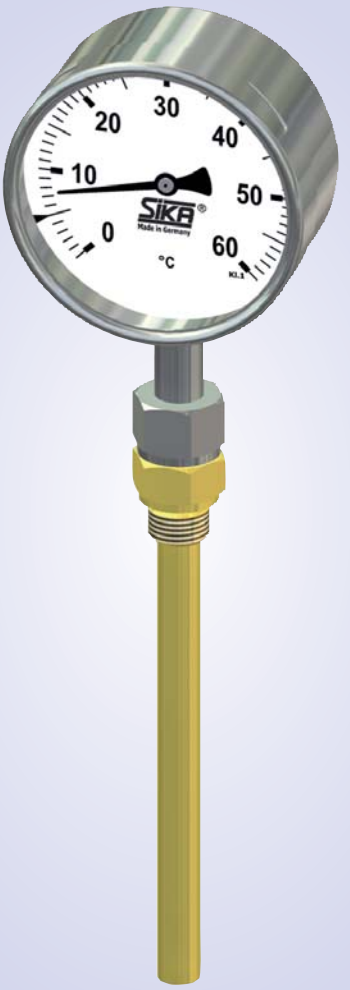


Fig.2

Our extensive protection tube range includes protection tubes made of several pieces being soldered or welded together and protection tubes turned from a single piece. The protection tubes are either screwed or welded into position. We manufacture thermometers with internal or external threads which can also be combined with neck tubes to bridge thicker insulating layers. Protection tubes made of various materials are available. SIKA thermometer protection tubes are based on the DIN standards 43772 and 16179. This results in the various protection tube designs and shapes.

If desired, various test certificates in accordance with EN 10204 can be issued. Please contact us if you require protection tubes which are not available in this catalogue or which deviate from the specified standards.

Materials and Certificates

The order of the following pages relates to the SIKA-specific connection types:

- Protection tubes in accordance with DIN 43772, form 4, 5 and 6 or DIN 16179: For thermometers with an external thread, connection types B, SN and AK.
- Protection tubes in accordance with DIN 43772, form 8 and 9 or DIN 16179 CS: For thermometers with a union nut, connection type Da.
- Weld-in protection tubes in accordance with DIN 43772, form 4: Version to bridge insulating layers. For thermometers with a union nut when using a neck tube or double threaded adapter.

The following table displays the availability of materials for the various types of protection tubes as well as their material numbers and chemical composition. A number of factors that cannot generally be defined can allow or exclude the use of a material. Please understand that we are unable to make binding recommendations for the selection of materials due to reasons of liability.

On request SIKA thermometer protection tubes can be supplied with certificates in accordance with EN 10204-2.1, EN 10204-3.2 or EN 10204-3.1. This service ist subject to charge. Please specify whether you require certificates when ordering!

Fig.3

Table of materials (on stock)

	Brass	Steel		Stainless steel	Special brass	Copper-nickel alloy	Steel	Stainless steel			Special brass
	CW614N CuZn39Pb3 or CW612N CuZn39Pb2	Thread connection: 1.0718 11SMnPb30 tube: 1.0308 E235	1.0718 11SMnPb30	1.4571 X6CrNiMo TI17-12-2	CW702R CuZn20Al2As	CW354H CuNi30Mn1Fe	1.0460 P250GH	1.7335 13CrMo4-5	1.7380 10CrMo9-10	1.5415 16Mo3	CW710R CuZn-35Ni3Mn 2AlPb
SIKA Type											
Ei	● 1)2)	● 1)		● 1)	● 1)	● 1)					
Ea	● 1)2)	● 1)		● 1)	● 1)	● 1)					
Gi	●		● 1)	●	● 1)	● 1)		●			●
Ga	●		● 1)	●	● 1)	● 1)		●			●
CS				●			●	●	●	●	
BS				●			●	●	●	●	
HD				●			●	●	●	●	
HDo				●			●	●	●	●	

1) Only possible with Works Certificate EN 10204-2.1 or -2.2

2) Hexagon CuZn40Pb2 / CuZn20Al2As or CuZn37 brazed

Protection Tubes for Thermometers with External Thread

DIN 43772, Form 4, 5 + 6 and DIN 16179 for Thermometer Connection Types B, SN or AK

Order Example		179.1	45	2	0
Immersion tube					
SIKA Type Ei (Fig. 1)	→	179.1			
SIKA Type Gi (Fig. 2)	→	179.3			
SIKA Type BS 1-3 (Fig. 3, 4 + 5)	→	180.5			

Immersion length l_1	Overall length L	Immersion length U / U_1		Type
Type Ei - tube brazed into socket for non-ferrous materials or welded for steel, to be screwed in				
63	73	45		045
100	110	82		082
160	170	142		142
250	260	232		232
400	410	382		382
Type Gi - made of solid material to be screwed in				
63	73	50		050
100	110	82		082
160	170	142		142
250	260	232		232
400	410	382		382
Type BS - made of solid material weld-in type				
63	73	48	= BS3	048
100	110	73	= BS1	073
160	170	133	= BS1	133
250	260	223	= BS2	223
400	410	373	= BS2	373

Connection thread dimension	
G½	2
M20x1,5	7
G¾	3
M27x2	9

Materials for type		
Ei	Steel, connection thread 1.0718 / tube 1.0308	0
	Brass - CW614N or CW612N	1
Gi	Brass - CW614N or CW612N	1
Ei, Gi, BS	Stainless steel - 1.4571	3
Ei	Special brass - connection thread CW710R / tube CW702R	4
Gi	Special brass - CW710R	15
	Copper-nickel alloy - CW354H	5
	Stainless steel - 1.7335	7
	Stainless steel - 1.7380	8
	Stainless steel - 1.5415	9
BS	Steel - 1.0460	6

Order Example

Select type	e.g. type Ei	= 179.1
Select protection tube imm. length	e.g. for l_1 = 100 mm; U_1 = 82 mm	= 179.1.082
Select connection thread	e.g. G½“	= 179.1.082.2
Select material	e.g. brass	= 179.1.082.2.1

Pictures and Dimensions

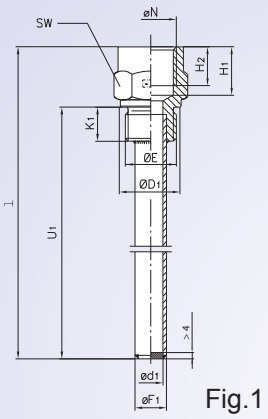


Fig.1

SIKA Type Ei
(DIN 43772, Form 5)

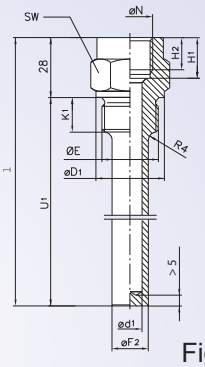


Fig.2

SIKA Type Gi
(DIN 43772, Form 6)

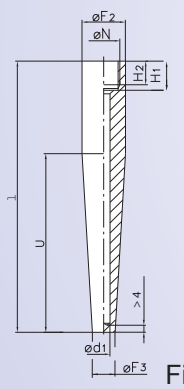


Fig.3

SIKA Type BS1
(DIN 43772, Form 4)

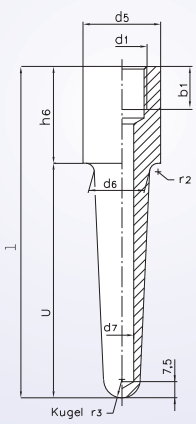


Fig.4

SIKA Type BS2
(DIN 16179, Form BS)

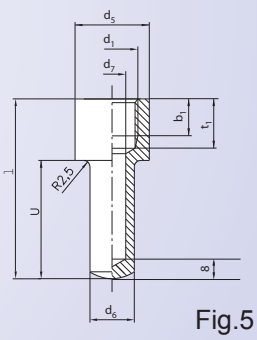


Fig.5

SIKA Type BS3
(SIKA Hausnorm)

Dimensions for Types Ei and BS1

Thread	Code Nr.	D_1	H_2	F_2	F_3	d_1	F_1	F_3	K_1	H_1	SW
G½	2	26	15	26 h7	17	11	14	17	14	19	27
M20x1,5	7										
G¾	3	32	17	32 h11	19	11	14	17	16	22	32
M27x2	9										

Dimensions for Type Gi

Thread	Code Nr.	D_1	H_2	F_2	F_3	d_1	F_1	F_3	K_1	H_1	SW
G½	2	26	15	17	17	11	14	17	14	19	27
M20x1,5	7										
G¾	3	32	17	19	19	11	14	17	16	22	32
M27x2	9										

Dimensions for Type BS2

Thread d_1	Code Nr.	d_5	d_6	d_7	b_1	h_6	r_2	r_3
M20x1,5	7	30 h11	25	11	16	39	2,5	8,5
G½	2							
G¾	3	36 h11	26	11	20	45	4	8,5
M27x2	9							

Dimensions for Type BS3

Thread d_1	Code Nr.	d_5	d_6	d_7	b_1	t_1
G½	2	30 h11	18	11	15 $^{+1}$	20

Protection Tubes for Thermometers with Union Nut

DIN 43772, Form 8,9 and DIN 16179 CS, for Thermometer Connection Type Da

Order Example		179.2	73	2	0
Immersion tube					
SIKA Type Ea (Fig. 1)	→	179.2			
SIKA Type Ga (Fig. 2)	→	179.4			
SIKA Type CS (Fig. 3)	→	180.5			

Immersion length l_1	Overall length L	Immersion length U_1 / L_2	Type
Type Ea - tube brazed into socket for non-ferrous materials or welded for steel, to be screwed in			
89*/93**	101	73	073
126*/130**	138	110	110
186*/190**	198	170	170
280	288	260	260
430	438	410	410
Type Ga - made of solid material, to be screwed in			
89*/93**	101	73	073
126*/130**	138	110	110
186*/190**	198	170	170
280	288	260	260
430	438	410	410
Type CS - made of solid material, weld-in type			
89*/93**		63	063
126*/130**		100	100
186*/190**		160	160
280		250	250
430		400	400

Connection thread dimension	
G½	2
M20x1,5	7
G¾	3
M27x2	9

Materials for type		
Ea	Steel, connection thread 1.0718 / tube 1.0308	0
	Brass - CW614N or CW612N	1
Ga	Brass - CW614N or CW612N	1
Ea, Ga, CS	Stainless steel - 1.4571	3
Ea	Special brass - connection thread CW710R / tube CW702R	4
Ga	Special brass - CW710R	15
	Copper-nickel alloy - CW354H	5
	Stainless steel - 1.7335	7
	Stainless steel - 1.7380	8
	Stainless steel - 1.5415	9
CS	Steel - 1.0460	6

* with thread G½ or M20 x 1,5 available

** with thread G¾ or M27 x 2 available

Order Example

Select type	e. g. type Ga	= 179.4
Select protection tube imm. length	e.g. for l_1= 186 mm; U_1= 170 mm	= 179.4.170
Select connection thread	e.g. M20x1.5	= 179.4.170.7
Select material	e.g. steel	= 179.4.170.7.0

Pictures and Dimensions

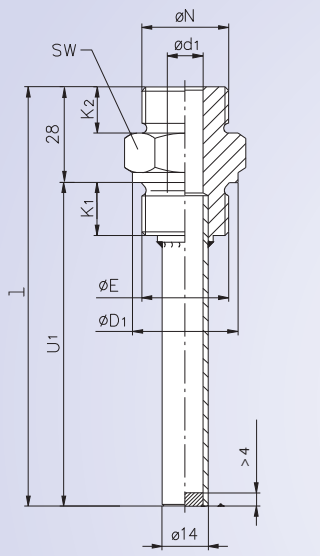


Fig.1

SIKA Type Ea
(DIN 43772, Form 8)

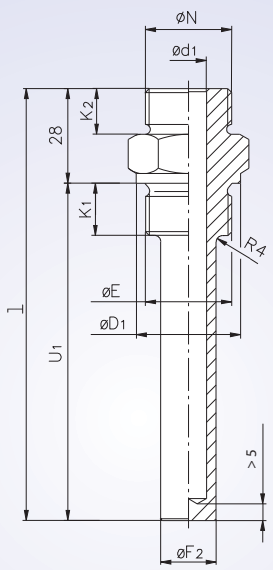


Fig.2

SIKA Type Ga
(DIN 43772, Form 9)

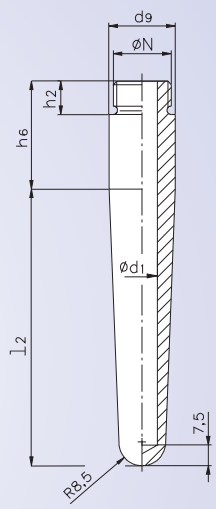


Fig.3

SIKA Type CS
(DIN 16179, Form CS)

Dimensions for Types Ea, Ga and CS

Thread	Code No.	d_1	D_1	F_1	F_2	K_1	K_2	SW	N	d_9	h_2	h_6
G½	2	11	26	14	17	14	12	27	G½	24 h11	12	39
M20 x 1.5	7								M20x1.5	24 h11	12	39
G¾	3		32	14	19	16	14	32	G¾	30 h11	14	45
M27 x 2	9								M27x2	30 h11	14	45

Protection Tubes for Thermometers with Union Nut

DIN 43772, Form 4, for Thermometer Connection Type Dc

The protection tube and the thermometer are either connected with a double threaded adapter (Fig. 2) or with a neck tube (Fig.1). This combination provides the required installation length l1.

The screwed sealing plug (Fig.3) helps to prevent contamination when assembling the protection tube.

Please refer to page 9 for dimensions and details.

Order-Example		180.9	001	0	3
D-protection tube		180.9			
SIKA Type	protection tube length l				
D1	140 =		001	0	
D2	200 =		002	0	
D4	200 =		004	0	
D5	260 =		005	0	
Materials	Stainless steel 1.4571			=	3
	Steel 1.0460			=	6
	Stainless steel 1.7335			=	7
	Stainless steel 1.7380			=	8
	Stainless steel 1.5415			=	9

Immersion lengths (l_1)		
SIKA-Type	**with neck tube**	**with double threaded adapter**
D1	295 mm	155 mm
D2/4	355 mm	215 mm
D5	415 mm	275 mm

Dimensions					
Protec. tube length l	**Imm. length U**	**F_2**	**F_3**	**d_1**	**N**
		D	**D**	**D**	**D**
140 (D1)	65	24h7	12,5	7	M18x1.5
200 (D2)	125	24h7	12,5	7	
200 (D4)	65	24h7	12,5	7	
260 (D5)	125	24h7	12,5	7	

Accessoires

- Neck tube 165 mm, M18x1,5 / M24x1,5, steel, nickel-plated (Fig. 1) Order-No. 165020V
- Double threaded adapter M18x1,5 / M24x1,5, steel, nickel-plated (Fig. 2) Order-No. 00076V
- Plug screw M18x1,5, brass (Fig. 3) Order-No. 000061

Order Example
Combination of D protection tube and thermometer

Protection tube selection

D protection tube = 180.9

Selection of the protection tube length, e.g. 200 mm = 180.9.0020

Selection of the material, e.g. stainless steel 1.4571 = 180.9.0020.3

Combination of thermometer and neck tube

Selection of the neck tube 165 mm = 165020V

Determine the thermometer installation length using the ‚Immersion length' table = l_1 = 355 mm
Select a Dc thermometer from the machine thermometer, precision dial thermometer or bi-metal dial thermometer catalogue, pay attention to the specified installation length l_1.

Combination of thermometer and double threaded adapter

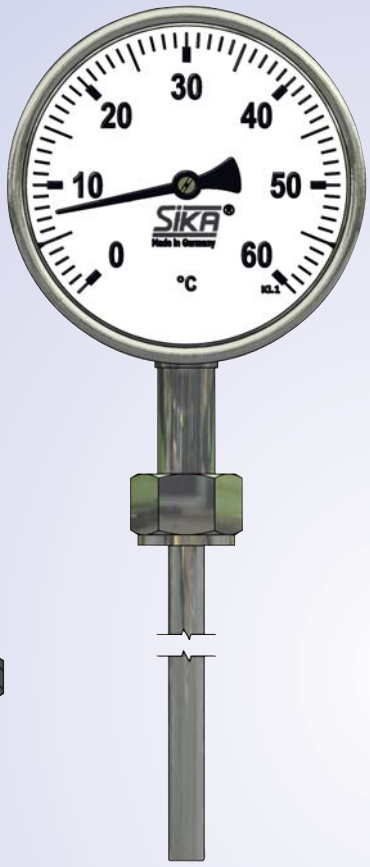
Selection of the double threaded adapter = 00076V

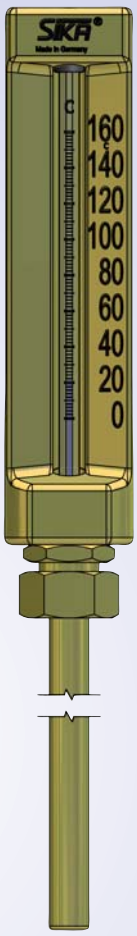
Determine the thermometer installation length using the ‚Installation length' table = l_1 = 215 mm
Select a Dc thermometer from the industrial-glass thermometer, precision dial thermometer or bi-metal dial thermometer catalogue, pay attention to the specified installation length l_1.

Combination of Protection Tube, Neck Tube and Thermometer

SIKA® founded 1901
Dr. Siebert & Kühn GmbH & Co. KG

Pictures according to page 8





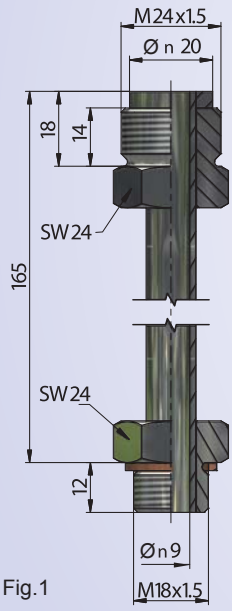


Fig.1

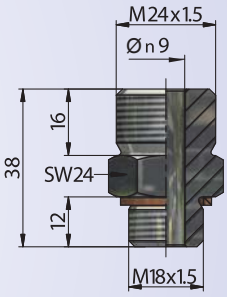


Fig.2

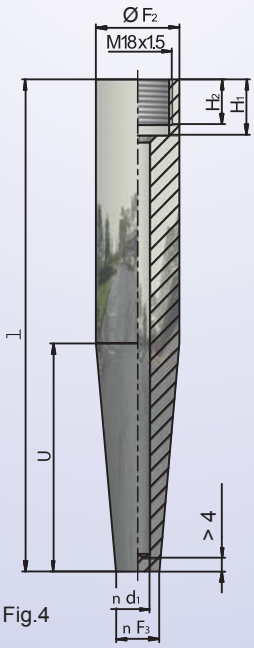


Fig.4

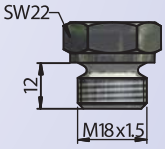


Fig.3

Our Production and Sales Range

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founded 1901
Dr. Siebert & Kühn GmbH & Co. KG

…measurement…control…calibration

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