

- For male thread
- For union nut, type Da / type Dc
- For plain immersion tubes



PROTECTION TUBES →

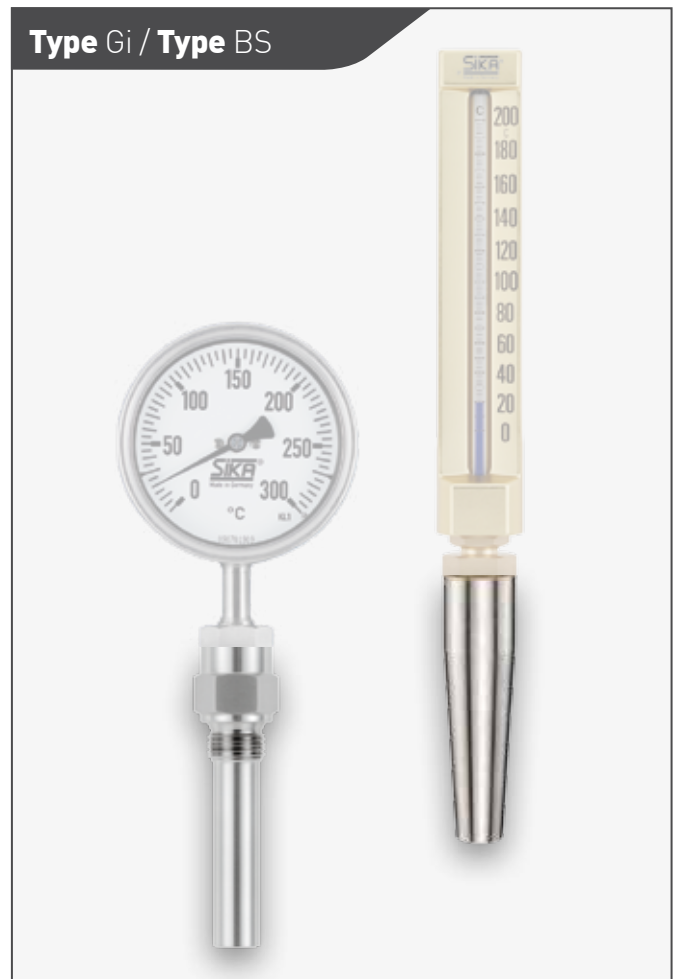


## Reliable and certain

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.



Our 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 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.

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 is subject to charge. Please specify whether you require certificates when ordering.

Tabel of materials (on stock)					
	Brass	Steel		Stainless steel	Special brass
	CW617N	Thread connection: 1.0718 tube: 1.0308 E235	1.0718	1.4571 X6CrNiMo TI17-12-2	CW702R
Type	1	0	2	3	4
Ei	✓1)2)	✓1)		✓1)	✓1)
Ea	✓1)2)	✓1)		✓1)	✓1)
Gi	✓		✓1)	✓	✓1)
Ga	✓		✓1)	✓	✓1)
CS				✓	
BS				✓	
HD				✓	
HDo				✓	

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

2) Hexagon CW617N, tube CW702R or CW508L

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

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

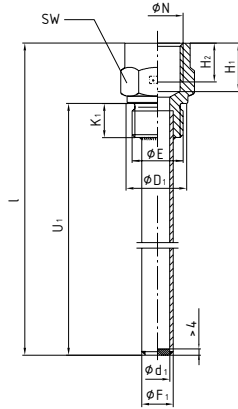
	Copper-nickel alloy	Steel	Stainless steel			Special brass
	CW354H CuNi30Mn1Fe	1.0460 P250GH	1.7335 13CrMo4-5	1.7380 10CrMo9-10	1.5415 16Mo3	CW710R
	5	6	7	8	9	15
	✓1)					
	✓1)					
	✓1)		✓			✓
	✓1)		✓			✓
		✓	✓	✓	✓	
		✓	✓	✓	✓	
		✓	✓	✓	✓	
		✓	✓	✓	✓	

# For thermometers with male thread

## Types Ei, Gi, BS1, BS2 and BS3

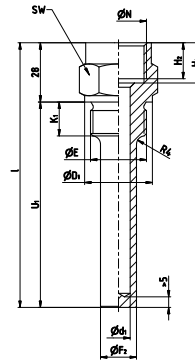
**Type Ei**  
(DIN 43772, Form 5)

Fig. 1



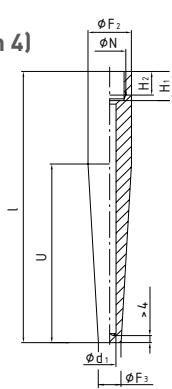
**Type Gi**  
(DIN 43772, Form 6)

Fig. 2



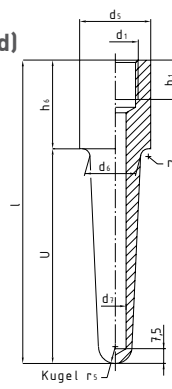
**Type BS1**  
(DIN 43772, Form 4)

Fig. 3



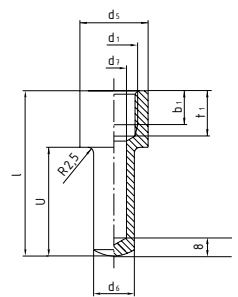
**Type BS2**  
(SIKA factory standard)

Fig. 4



**Type BS3**  
(SIKA factory standard)

Fig. 5



### Dimensions [mm] for types Ei and BS1

Thread E / N	Code No.	D <sub>1</sub>	H <sub>2</sub>	F <sub>2</sub>	F <sub>3</sub>	d <sub>1</sub>	F <sub>1</sub>	K <sub>1</sub>	H <sub>1</sub>	SW
G½	2	26	15	26	17	11	14	14	19	27
M20 x 1.5	7			h7						
G¾	3	32	17	32	17	11	14	16	22	32
M27 x 2	9			h11						

### Dimensions [mm] for types Gi

Thread E / N	Code No.	D <sub>1</sub>	H <sub>2</sub>	F <sub>2</sub>	d <sub>1</sub>	K <sub>1</sub>	H <sub>1</sub>	SW
G½	2	26	15	17	11	14	19	27
M20 x 1.5	7							
G¾	3	32	17	19	11	16	22	32
M27 x 2	9							

### Dimensions [mm] for types BS2

Thread d <sub>1</sub>	Code No.	d <sub>5</sub>	d <sub>6</sub>	d <sub>7</sub>	b <sub>1</sub>	h <sub>6</sub>	r <sub>2</sub>	r <sub>3</sub>
G½	2	30	25	11	16	39	2,5	8,5
M20 x 1.5	7	h11						
G¾	3	36	26	11	20	45	4	8,5
M27 x 2	9	h11						

### Dimensions [mm] for types BS3

Thread d <sub>1</sub>	Code No.	d <sub>5</sub>	d <sub>6</sub>	d <sub>7</sub>	b <sub>1</sub>	t <sub>1</sub>
G½	2	30 h11	18	11	15 + 1	20

## Order code

Order example					179.1	045	2	0
<b>Immersion tube</b>								
Type Ei (Fig. 1)					179.1			
Type Gi (Fig. 2)					179.3			
Type BS 1-3 (Fig. 3, 4 + 5)					180.5			
Immersion length l1	Overall length L	Immersion length U / U1		Code				
<b>Type Ei - tube brazed into socket for non-ferrous materials or welded for steel, to be screwed in</b>								
63 mm	73 mm	45 mm		045				
100 mm	110 mm	82 mm		082				
160 mm	170 mm	142 mm		142				
250 mm	260 mm	232 mm		232				
400 mm	410 mm	382 mm		382				
<b>Type Gi - made of solid material to be screwed in</b>								
63 mm	78 mm	50 mm		050				
100 mm	110 mm	82 mm		082				
160 mm	170 mm	142 mm		142				
250 mm	260 mm	232 mm		232				
400 mm	410 mm	382 mm		382				
<b>Type BS - made of solid material weld-in type</b>								
63 mm	73 mm	48 mm	= BS3	048				
100 mm	110 mm	73 mm	= BS1	073				
160 mm	170 mm	133 mm	= BS1	133				
250 mm	260 mm	223 mm	= BS2	223				
400 mm	410 mm	373 mm	= BS2	373				
<b>Connection thread dimension E / N</b>								
G½							2	
M20 x 1.5							7	
G¾							3	
M27 x 2							9	
<b>Materials for type</b>								
Ei	Steel, connection thread 1.0718 / tube 1.0308			0				
	Brass - Hexagon CW617N, tube CW702R or CW508L			1				
Gi	Brass - CW617N			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				



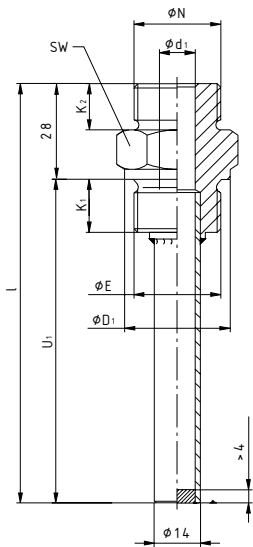
DIN 43772, Form 4, 5 + 6 and SIKA factory standard  
for thermometer connection type B, SN or AK.

# For thermometers with union nut, type Da

## Types Ea, Ga and CS

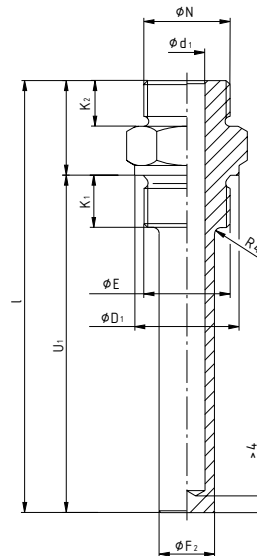
**Type Ea**  
(DIN 43772, Form 8)

Fig. 1



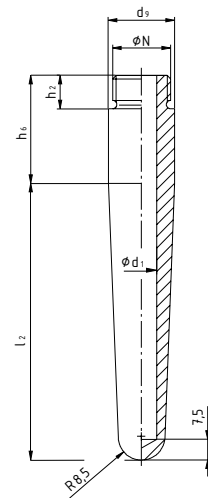
**Type Ga**  
(DIN 43772, Form 9)

Fig. 2



**Type CS**  
(SIKA factory standard)

Fig. 3



**Dimensions [mm] for types Ea, Ga and CS**

Thread E / N	Code No.	d <sub>1</sub>	D <sub>1</sub>	F <sub>1</sub>	F <sub>2</sub>	K <sub>1</sub>	K <sub>2</sub>	SW	N	d <sub>2</sub>	h <sub>2</sub>	h <sub>1</sub>
G½	2	11	25	14	17	14	12	27	G½	24	12	39
										h <sub>11</sub>		
M20 x 1.5	7								M20 x 1.5	24		
										h <sub>11</sub>		
G¾	3		32	14	19	16	14	32	G¾	30	14	45
										h <sub>11</sub>		
M27 x 2	9								M27 x 2	30		
										h <sub>11</sub>		



## Order code

Order example				179.2	073	2	0
<b>Immersion tube</b>							
Type Ea (Fig. 1)				179.2			
Type Ga (Fig. 2)				179.4			
Type CS (Fig. 3)				180.6			
Immersion length l <sub>1</sub>	Overall length l	Immersion length U / L <sub>2</sub>	Code				
<b>Type Ea – tube brazed into socket for non-ferrous materials or welded for steel, to be screwed in</b>							
89 mm* / 93 mm**	101 mm	73 mm	073				
126 mm* / 130 mm**	138 mm	110 mm	110				
186 mm* / 190 mm**	198 mm	170 mm	170				
280 mm* / 276 mm**	288 mm	260 mm	260				
430 mm* / 426 mm**	438 mm	410 mm	410				
<b>Type Ga – made of solid material, to be screwed in</b>							
89 mm* / 93 mm**	101 mm	73 mm	073				
126 mm* / 130 mm**	138 mm	110 mm	110				
186 mm* / 190 mm**	198 mm	170 mm	170				
280 mm* / 276 mm**	288 mm	260 mm	260				
430 mm* / 426 mm**	438 mm	410 mm	410				
<b>Type CS – made of solid material, weld-in type</b>							
89 mm* / 93 mm**		63 mm	063				
126 mm* / 130 mm**		100 mm	100				
186 mm* / 190 mm**		160 mm	160				
280 mm* / 276 mm**		250 mm	250				
430 mm* / 426 mm**		400 mm	400				
<b>Connection thread dimension E / N</b>							
G½						2	
M20 x 1.5						7	
G¾						3	
M27 x 2						9	
<b>Material for type</b>							
Ea	Steel, connection thread 1.0718 / tube 1.0308						0
	Brass - Hexagon CW617N, tube CW702R or CW508L						1
Ga	Brass - CW617N						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



DIN 43772, Form 8, 9 and SIKA factory standard for thermometer connection type Da.

# For thermometers with union nut, type Dc

## Types D1, D2, D4 and D5

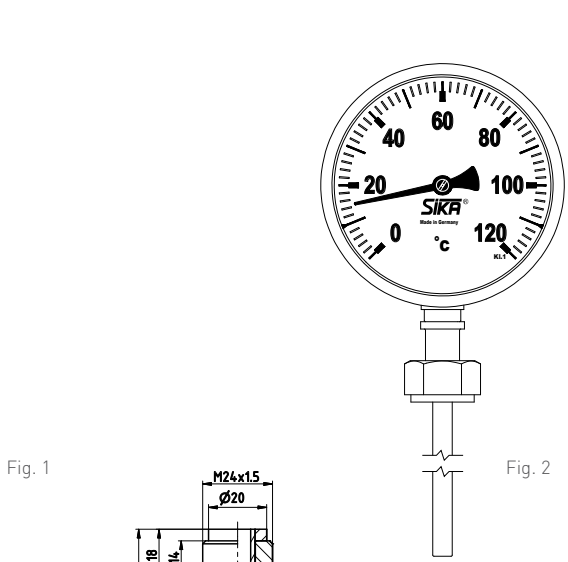


Fig. 1

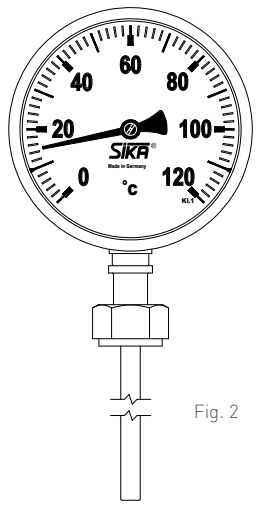


Fig. 2

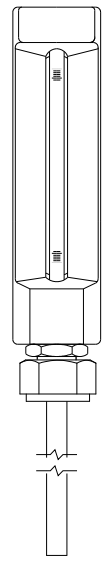


Fig. 3

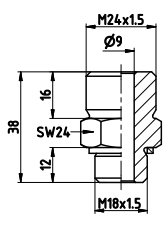


Fig. 4

The protection tube (Fig. 2) and the thermometer are either connected with a double threaded adapter (Fig. 3) or with a neck tube (Fig. 1). This combination provides the required installation length  $l_1$ . The screwed sealing plug (Fig. 4) helps to prevent contamination when assembling the protection tube.

Immersion lengths ( $l_1$ ) [mm]		
Type	With neck tube	With double threaded adapter
D1	295	155
D2/4	355	215
D5	415	275

### Accessories

- Neck tube 165 mm, M18 x 1.5 / M24 x 1.5, steel, nickel-plated (Fig. 1) Order-No. 165020V
- Double threaded adapter M18 x 1.5 / M24 x 1.5, steel, nickel-plated (Fig. 2) Order-No. 00076V
- Plug screw M18 x 1.5, brass (Fig. 3) Order-No. 000061

Dimensions [mm]					
Protoc. tube length $l$	Imm. length $U$	$F_2$	$F_3$	$d_1$	$N$
		D	D	D	D
140 (D1)	65	24 h 7	12,5	7	M18 x 1.5
200 (D2)	125	24 h 7	12,5	7	
200 (D4)	65	24 h 7	12,5	7	
260 (D5)	125	24 h 7	12,5	7	



DIN 43772, Form 4, for thermometer connection type Dc.

## Order code

Order example		180.9	001	0	3
<b>Protection tube type</b>					
D-protection tube		180.9			
<b>Type</b>	<b>Protection tube length l</b>				
D1	140 mm		001	0	
D2	200 mm		002	0	
D4	200 mm		004	0	
D5	260 mm		005	0	
<b>Materials</b>					
Stainless steel 1.4571					3
Steel 1.0460					6
Stainless steel 1.7335					7
Stainless steel 1.7380					8
Stainless steel 1.5415					9

### Order example combination of protection tube type and thermometer

#### Protection tube selection

Protection tube type D = 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  
 Select a thermometer with connection type Dc from the industrial thermometer or dial thermometer chapter. Pay attention to the specified installation length  $l_1$ . =  $l_1 = 355$  mm

#### Combination of thermometer and double threaded adapter

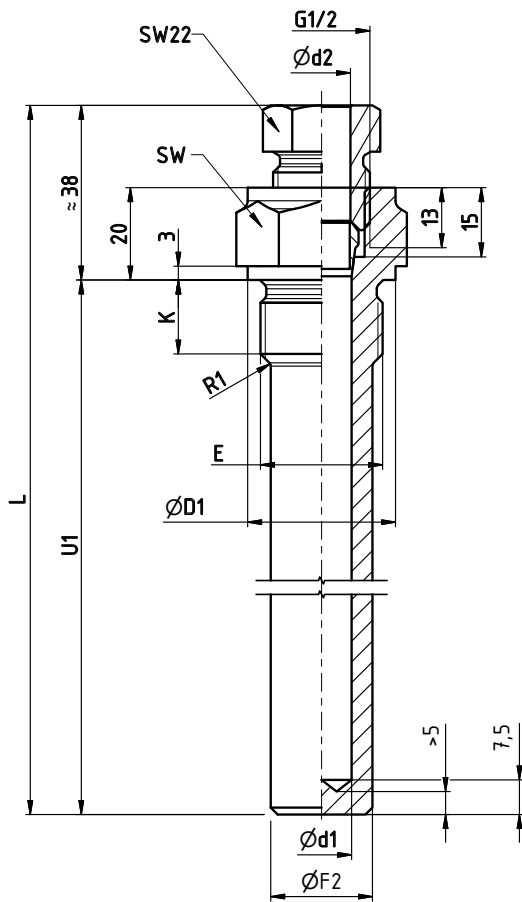
Selection of the double threaded adapter = 00076V  
 Determine the thermometer installation length using the 'Installation length' table  
 Select a thermometer with connection type Dc from the industrial thermometer or dial thermometer chapter. Pay attention to the specified installation length  $l_1$ . =  $l_1 = 215$  mm

# For thermometers with plain immersion tube

## Type ZVFG

Type ZVFG conduits are solid-material conduits for use with our diesel engine dial thermometers and diesel engine dial remote reading thermometers. They are especially suited for use in the exhaust gas area on large marine engines.

In contrast to conventional conduits, in this version a compression-type fitting is integrated. That means the combination is made with a diesel engine dial remote reading thermometer with a plain immersion tube (our connection type A). The integration of the compression-type fitting in the conduit produces optimum stability which creates the conditions needed to make the dial thermometer durable.



Dimensions [mm]						
E	d1	F2	D1	K	d2	SW
G¾ B	13	22	32	16	12.5	32
G¾ B	14	22	32	16	13.5	32
G½ B	11	18	26	14	10.5	27
G½ B	13	18	26	14	12.5	27

## Order code

Order example	ZVFG	001	2	3	4	M
<b>Protection tube version</b>						
Type ZVFG	ZVFG					
<b>Protection tube length U<sub>1</sub></b>						
100 mm		100				
135 mm		135				
160 mm		160				
200 mm		200				
250 mm		250				
300 mm		300				
<b>Connection thread</b>						
G½*			2			
G¾			3			
<b>Material</b>						
Stainless steel 1.4301				3		
<b>For immersion tube diameter</b>						
Ø 10 mm					3	
Ø 12 mm					4	
Ø 13 mm					6	
<b>Thread version</b>						
Male						M

\* Only for immersion tube diameter 10 mm