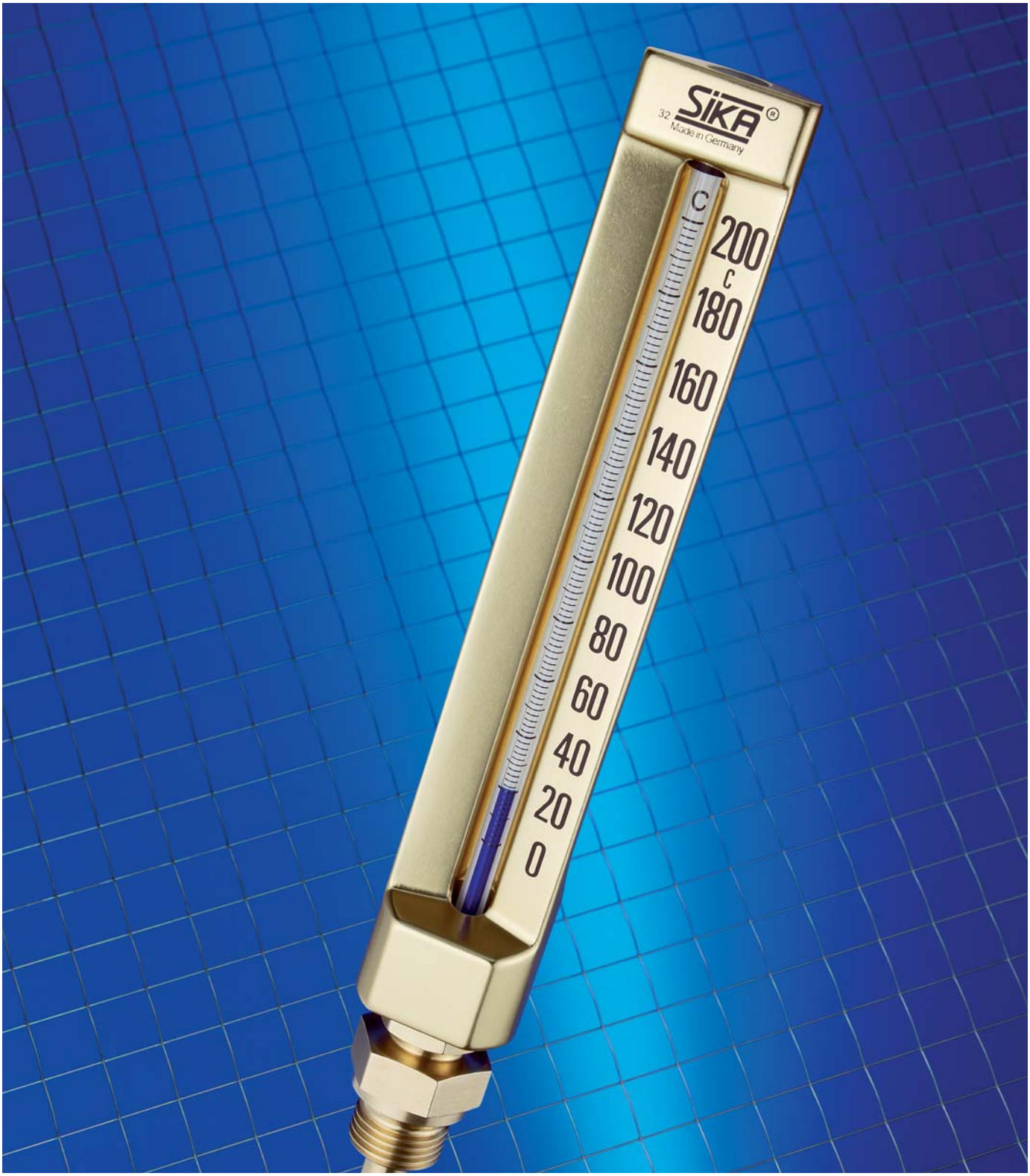
Industrial Thermometers

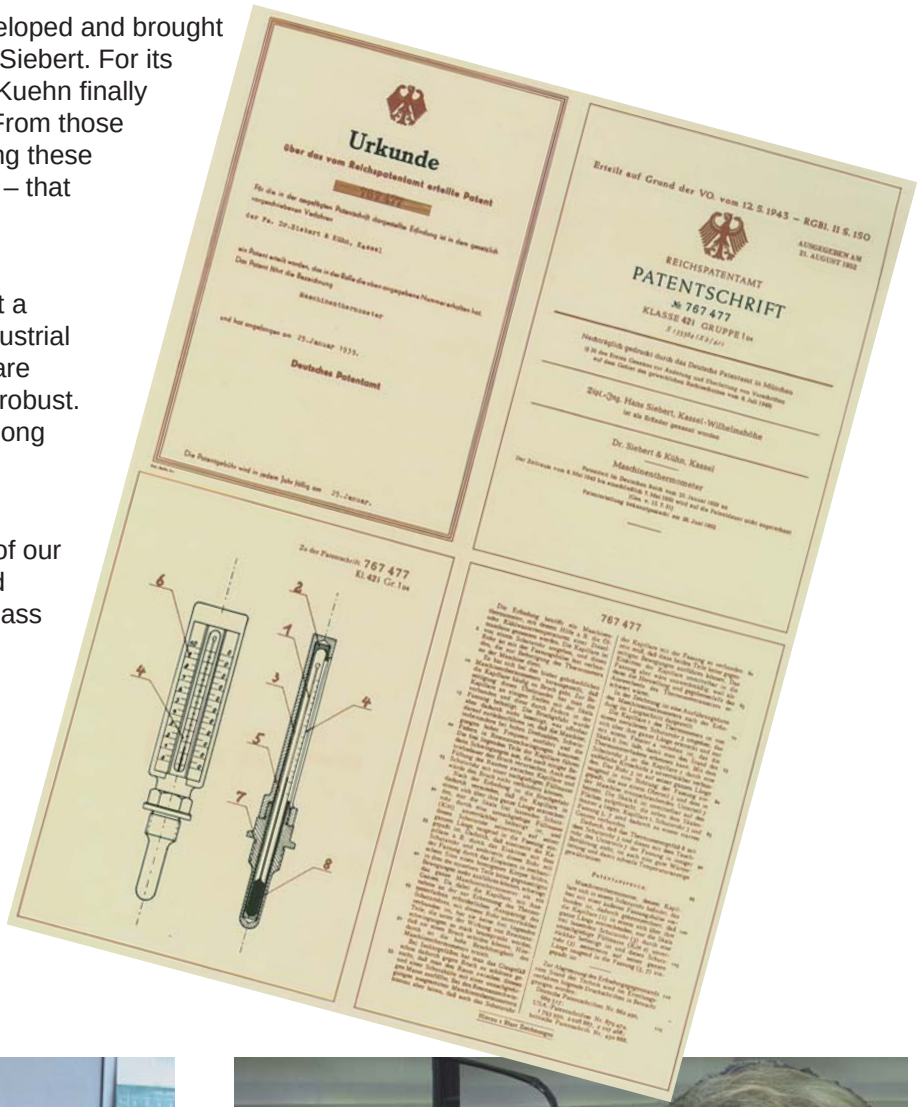
founded 1901
Dr. Siebert & Kühn GmbH & Co. KG



Quality by Tradition

Since 1901 we at SIKA - Dr. Siebert and Kühn have produced precision measuring and control instruments.

The original “SIKA” thermometer was developed and brought to production stage by the engineer Hans Siebert. For its basic mechanical design, Dr. Siebert and Kuehn finally received the patent no. 767477 in 1939. From those early days on, we have been manufacturing these thermometers solely in Kassel/Kaufungen – that is real quality “made in Germany”.


Urkunde

über das vom Reichspatentamt erteilte Patent

767 477

Deutsches Patentamt

PATENTSCHRIFT

№ 767 477

KLASSE 42i GRUPPE 1m

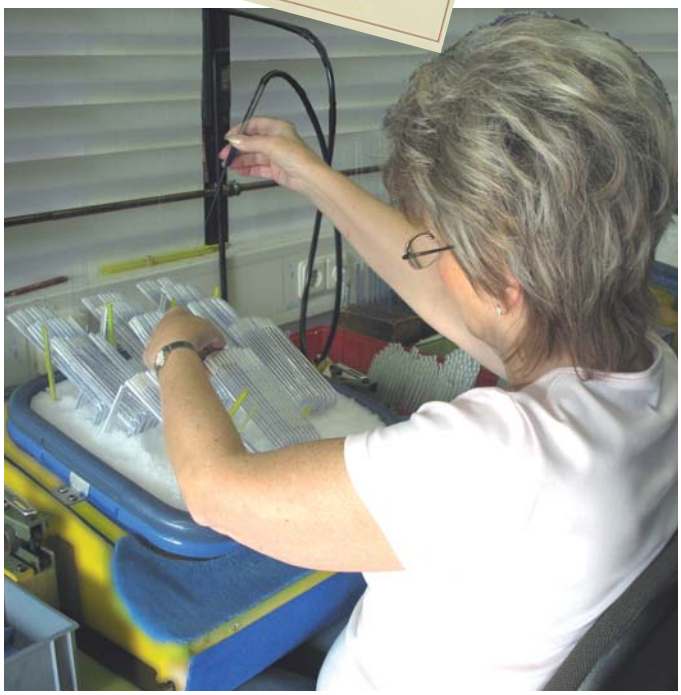
Dr. Siebert & Kühn, Kassel

Maschinenthermometer

767 477

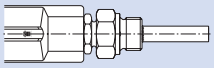
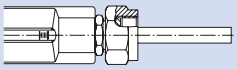
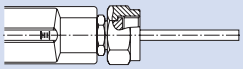
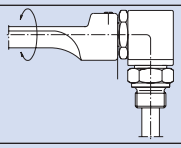
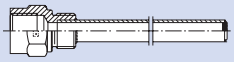
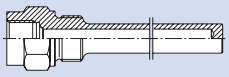
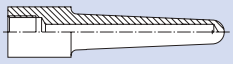
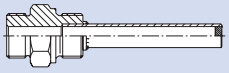
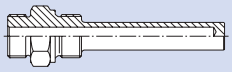
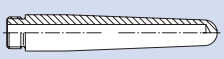
Today, many users worldwide speak about a “SIKA” thermometer when considering industrial glass thermometers. SIKA thermometers are cost-effective, accurate and mechanically robust. They are well known for their exceptional long life durability and highest quality.

Mechanical parts as well as glass inserts of our standard types are produced in automated manufacturing processes. However, the glass inserts of special versions, e. g. high temperature versions are still produced by our glassblowers in traditional handcraft. Thanks to our long-year experience, we are in the position to produce custom versions on request.



Index
According to Types

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

Type of imm. tube	Thermometers Description of immersion tubes according to their connections		Thread	DIN No.	Page
B	Standard type male threaded socket with integral hexagonal nut		G3/8A; M16x1,5; G1/2A; M20x1,5; G3/4A; M27x2	16181B, B1, 16182S, S1 16185B, 16186S, 16189B,B1 16190S, S1, 16191B, B1	5-7
Da	Union nut immersion tube dia. 10 mm		G1/2; G3/4 M20x1,5; M27x2	16181C, 16182C 16185C,16186C, 16189C,C1 16190C, C1, 16191C, C1	8
Dc	Union nut immersion tube dia. 6.5 mm		M24x1,5	16189F	9
Bdr	Special angle type thermometer, casing including scale can be turned by 360 degrees		G1/2; G3/4 M20x1,5; M27x2	—	5–7 and 10
	Tank scooping thermometer, ambient air measu-ring thermometer, special thermometer versions			—	16
	Protecting Tubes				
Ei	Screw-in type for SIKA thermometers type B, made of steel (welded) or brass (brazed)		G1/2; G3/4; M20x1,5; M27x2	43772 Form 5	11
Gi	Same as type Ei, but made of solid steel or brass (for high pressure)		G1/2; G3/4; M20x1,5; M27x2	43772 Form 6	11
BS	Weld-in type for SIKA thermometers type B		Female thread G1/2; G3/4; M20x1,5; M27x2	43772 Form 4	11
Ea	Screw-in type for SIKA thermometers type Da, made of steel (welded) or brass (brazed)		G1/2; G3/4; M20x1,5; M27x2	43772 Form 8	12
Ga	Same as type Ei, but made of solid steel or brass (for high pressure)		G1/2; G3/4; M20x1,5; M27x2	43772 Form 9	12
CS	Weld-in type for SIKA thermometers type Da		Male thread G1/2; G3/4; M20x1,5; M27x2	16179 CS	12
HD	Weld-in type D with extension tube 165 mm, for SIKA thermometers type Dc		Extension tube M24x1,5 / M18x1,5	43772 Form 4	13
HDo	Same as type HD, but without extension tube and with double threaded adapter		Adapter M24x1,5 / M18x1,5	43772 Form 4	13
	Spare Parts				
	Capillaries (glass inserts)				17
	Thermometer casings				18
	Immersion tubes for standard type B				18

Industrial Thermometers

Details of Design

Casing

Aluminum, V-shaped, completely polished, gold-coloured anodized (or silver-coloured upon request). Numerals of reading scale printed on the right side. Printing black-colored for easy readability. Straight types adjustable to any desired viewing position and locked by brass nut, wrench size 22. Angle thermometers (90 degrees) have a grooved adapter piece with locking screw. Advantage: When mounting the thermometer, it is not necessary to turn the casing.

Glass Inserts (Capillaries)

Capillary tube of solid glass, bar-shaped, prismatic (optic enlargement of the column, except for high temperature types), diameter approx. 6 mm, oval opening, with yellow background for mercury and white background for blue fluid column. Scale is deeply burnt in black, thus being absolutely resistant. The main graduations, which correspond with the printing on the casing, are especially clearly outlined.

Capillary Fluid

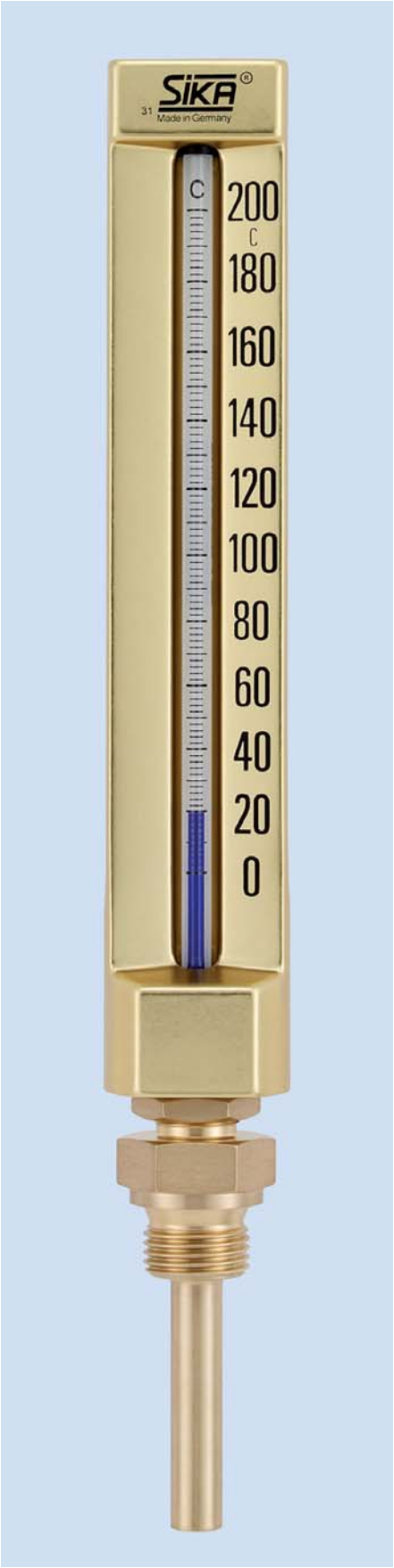
Blue fluid for standard types from -50 to +200 °C and red fluid for -60 °C (code „Fü“). For temperatures of more than +200 °C, only mercury columns (code „Hg“) are possible.

Immersion Tubes

As a standard, manufactured of brass (code „Ms“) for temperatures up to +300 °C, for temperatures of more than +300 °C made of steel (Code „St“). Seawater resistant alloys are available upon request (special brass or copper-nickel alloy). For corrosive alkalis or acids stainless steel is available. With immersion tube type „B“, the diameter is 10 mm, the thickness is 1 mm.

Accuracy

The accuracy of thermometers meets DIN 16195 requirements and, consequently, corresponds with the requirements for local reading thermometers.



SIKA-Thermometers

Casing 200 x 36 mm

DIN 16189 A, B, B1
DIN 16190 S, S1
DIN 16191 B, B1

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

Order-Example	271	2	64	1	1	063	2	1

Thermometer

	Type
straight	271
angle 90°	272
angle 135°	273

Immersion tube type

B =	2
Bdr[1] =	6

Range

-60 +40 °C =	64
-30 +50 °C =	35
0 +60 °C =	06
0 +100 °C =	10
0 +120 °C =	12
0 +160 °C =	16
0 +200 °C =	20
0 +250 °C =	25
0 +300 °C =	30
0 +400 °C =	40
0 +500 °C =	50
0 +600 °C =	60

Scale

Celsius (°C)	1
Celsius + Fahrenheit (°C + °F)	2

Column (Filling)
Blue fluid is the standard for ranges up to +250 °C (red fluid for -60 °C +40 °C)

Fü =	1
HG =	2

Mercury is used above +250 °C

Immersion tube length l_1 in mm

63 =	063
100 =	100
160 =	160
250 =	250
400 =	400

Connection thread

G1/2 / SW27 =	2
G3/4 / SW32 =	3
M20x1,5 / SW27 =	7
M27x2 / SW32 =	9

Immersion tube material

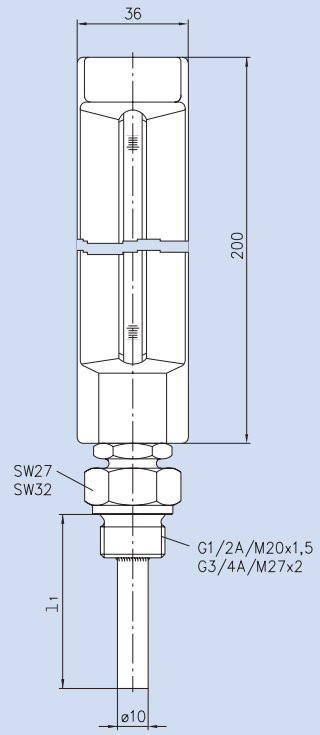
Brass (hex. nut CW614N / tube CW702R or CW508L) brazed, or up to immersion length l_1 = 63, G1/2 available in CW614N. Solid material possible.	1
Steel (hex. nut 1.0718 / tube 1.0308, welded)	2
Stainless steel 1.4571 (hex. nut and tube)	3
Special brass (hex. nut CW710R / tube CW702R)	4
Copper-nickel alloy CW354H (hex. nut and tube)	5

See page 11 for protecting tubes to be screwed in or welded.

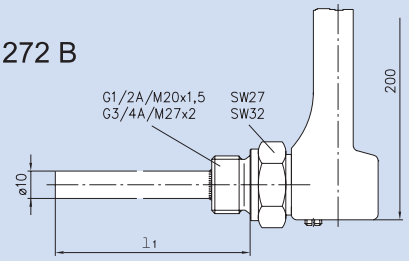
Immersion tubes of all right-angled thermometers are manufactured with a grooved adapter piece on top, which is installed in the casing and kept in its place by a locking screw. Advantage: Immersion tube can be installed independently of thermometer casing.

[1] Bdr: Special type of angle-type thermometer:
See page 10 for description and illustration.

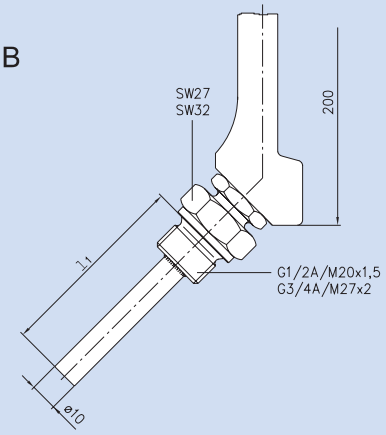
271 B



272 B



273 B



SIKA-Thermometers

Casing 150 x 36 mm

DIN 16185 B
DIN 16186 S

Order-Example	291	2	64	1	1	063	2	1

Thermometer — Type

straight	291
angle 90°	292
angle 135°	293

Immersion tube type

B =	2
Bdr[1] =	6

Range

-60 +40 °C =	64
-30 +50 °C =	35
0 +60 °C =	06
0 +100 °C =	10
0 +120 °C =	12
0 +160 °C =	16
0 +200 °C =	20
0 +250 °C =	25
0 +300 °C =	30
0 +400 °C =	40
0 +500 °C =	50
0 +600 °C =	60

Scale

Celsius (°C)	1
Celsius + Fahrenheit (°C + °F)	2

Column (Filling)
Blue fluid is the standard for ranges

up to +250 °C (red fluid for -60 °C +40 °C) Fü =	1
Mercury is used above +250 °C HG =	2

Immersion tube length
l_1 in mm (including thread)

63 =	063
100 =	100
160 =	160
250 =	250
400 =	400

Connection thread

G1/2 / SW27 =	2
M20x1,5 / SW27 =	7

Immersion tube material

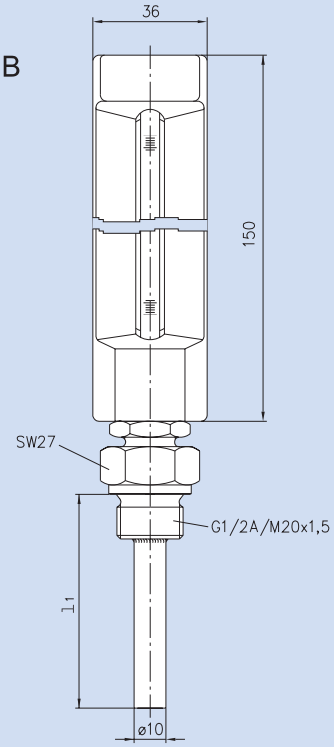
Brass (hex. nut CW614N / tube CW702R or CW508L) brazed, or up to immersion length l_1 = 63, G1/2 available in CW614N. Solid material possible.	1
Steel (hex. nut 1.0718 / tube 1.0308, welded)	2
Stainless steel 1.4571 (hex. nut and tube)	3
Special brass (hex. nut CW710R / tube CW702R)	4
Copper-nickel alloy CW354H (hex. nut and tube)	5

See page 11 for protecting tubes to be screwed in or welded.

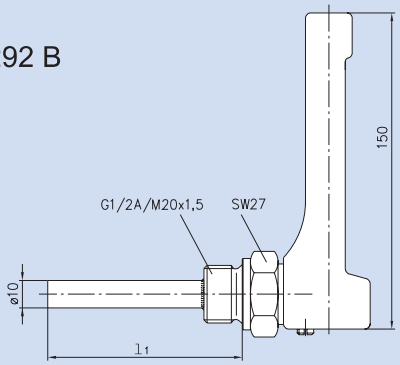
Immersion tubes of all right-angled thermometers are manufactured with a grooved adapter piece on top, which is installed in the casing and kept in its place by a locking screw. Advantage: Immersion tube can be installed independently of thermometer casing.

[1] Bdr: Special type of angle-type thermometer:
See page 10 for description and illustration.

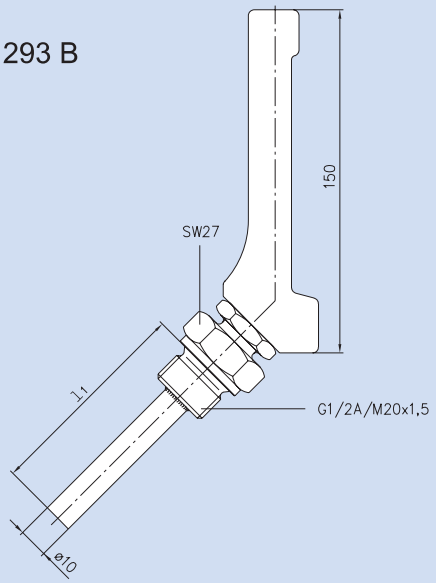
291 B



292 B



293 B



SIKA-Thermometers

Casing 110 x 30 mm

DIN 16181 B, B1
DIN 16182 S, S1

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

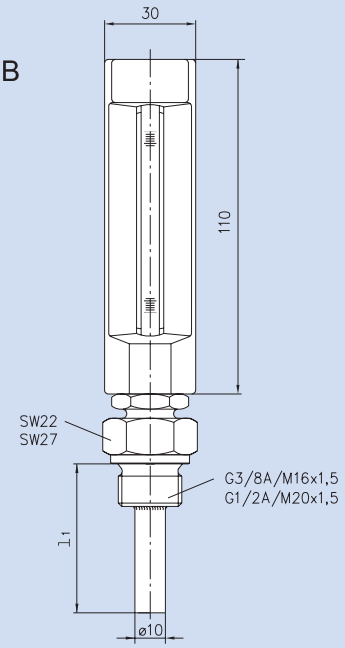
Order-Example	174	2	35	1	1	030	2	1
Thermometer straight angle 90° angle 135°	Type 174 175 176							
Immersion tube type B = Bdr[1] =		2 6						
Range -30 +50 °C = 0 +60 °C = 0 +100 °C = 0 +120 °C = 0 +160 °C = 0 +200 °C =			35 06 10 12 16 20					
Scale Celsius (°C) Celsius + Fahrenheit (°C+ °F)				1 2				
Column (Filling) Blue fluid is standard for ranges up to +200 °C Option: mercury Fü = HG =					1 2			
Immersion tube length l_1 in mm (including thread) 30 = 40 = 63 = 100 = 160 = 250 = 400 =						030 040 063 100 160 250 400		
Connection thread G3/8 / SW22 = G1/2 / SW27 = M16x1,5 / SW22 = M20x1,5 / SW27 =							1 2 5 7	
Immersion tube material Brass (hex. nut CW614N / tube CW702R or CW508L) brazed, or up to immersion length l_1 = 63, G1/2 available in CW614N. Solid material possible. Steel (hex. nut 1.0718 / tube 1.0308, welded) Stainless steel 1.4571 (hex. nut and tube) Special brass (hex. nut CW710R / tube CW702R) Copper-nickel alloy CW354H (hex. nut and tube)								1 2 3 4 5

See page 11 for protecting tubes to be screwed in or welded.

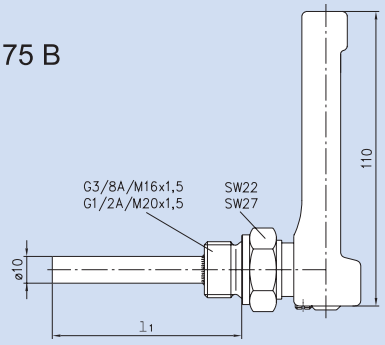
Immersion tubes of all right-angled thermometers are manufactured with a grooved adapter piece on top, which is installed in the casing and kept in its place by a locking screw. Advantage: Immersion tube can be installed independently of thermometer casing.

[1] Bdr: Special type of angle-type thermometer:
See page 10 for description and illustration.

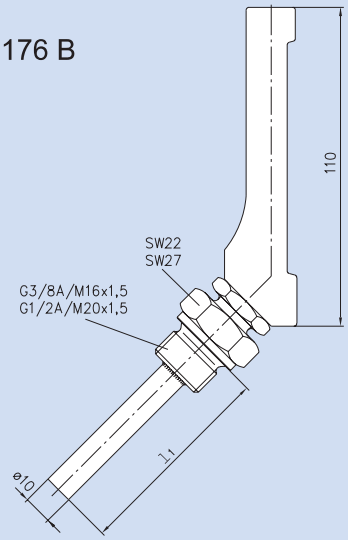
174 B



175 B



176 B



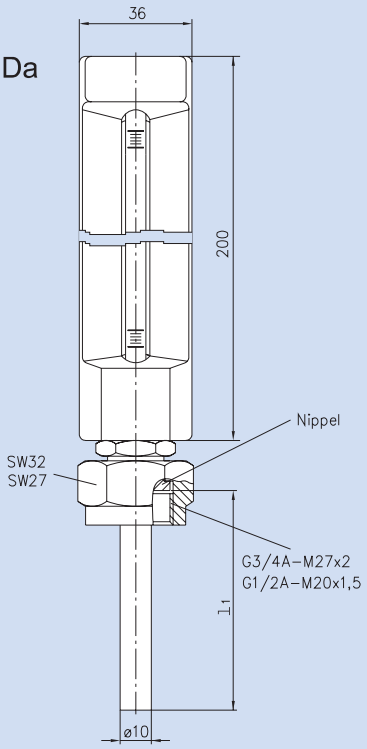
SIKA-Thermometers

Immersion Tube Type Da, Union Nut G1/2 - G3/4 - M20x1,5 - M27x2, Casing 200 x 36 mm

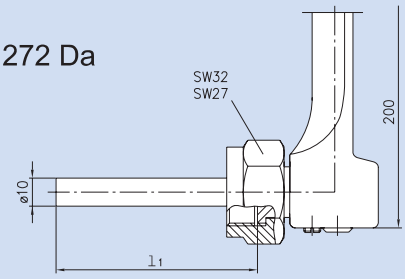
DIN 16189 C, C1
DIN 16190 C, C1; DIN 16191 C, C1

Order-Example	**271**	**3**	**64**	**1**	**1**	**089**	**2**	**A**
Thermometer straight angle 90° angle 135°	Type 271 272 273							
Immersion tube type Da =		3						
Range -60 +40 °C = -30 +50 °C = 0 +60 °C = 0 +100 °C = 0 +120 °C = 0 +160 °C = 0 +200 °C = 0 +300 °C = 0 +400 °C = 0 +500 °C = 0 +600 °C =			64 35 06 10 12 16 20 30 40 50 60					
Scale Celsius (°C) = Celsius + Fahrenheit (°C + °F) =				1 2				
Column (Filling) Blue fluid is standard for ranges up to +250 °C (red fluid for -60 °C +40 °C) Fü = Mercury is used above +250 °C HG =					1 2			
Immersion tube length l_1 in mm[1)] with union nut G1/2, M20x1,5 (SW27) 89 = 126 = 186 = 276 = 426 = with union nut G3/4, M27x2 (SW32) 93 = 130 = 190 = 280 = 430 =						089 126 186 276 426 093 130 190 280 430		
Connection thread (Union nut made of brass) G1/2 = M20x1,5 = G3/4 = M27x2 =							2 7 3 9	
Immersion tube material Standard: up to 300 °C adapter brass CW614N / tube brass beyond 300 °C adapter brass CW614N / tube steel 1.0308 Option: adapter brass CW614N / tube brass CW702R or CW508L adapter and tube stainless steel 1.4571								A B C

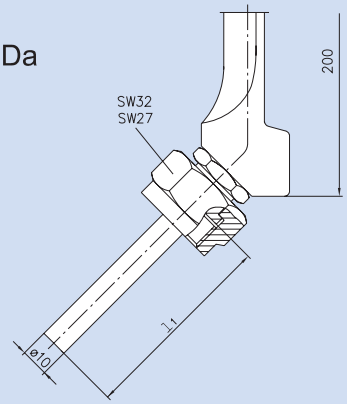
271 Da



272 Da



273 Da



Immersion tubes of all right-angled thermometers are manufactured with a grooved adapter piece on top, which is installed in the casing and kept in its place by a locking screw. Advantage: Immersion tube can be installed independently of thermometer casing.

[1)] Immersion tube lengths match protecting tubes according to DIN 16179; see page 12 as a reference.

SIKA-Thermometers

Immersion Tube Type Dc, Union Nut M24x1,5

Casing 200 x 36 mm

DIN 16189F

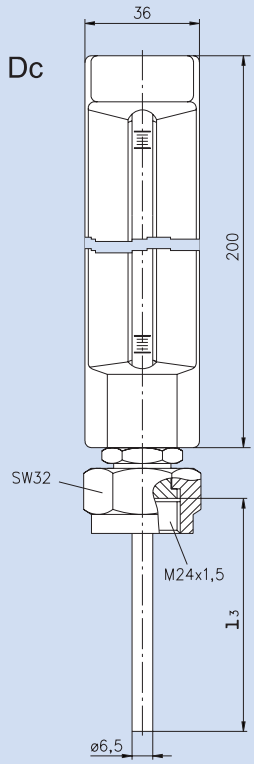
SIKA® founded 1901
Dr. Siebert & Kühn GmbH & Co. KG

Order-Example	**271**	**5**	**64**	**1**	**1**	**155**	**8**	**A**
Thermometer straight / angle 90° / angle 135°	Type 271 / 272 / 273							
Immersion tube type Ø 6,5 mm = Dc		5						
Range -60 +40 °C =			64					
-30 +50 °C =			35					
0 +60 °C =			06					
0 +100 °C =			10					
0 +120 °C =			12					
0 +160 °C =			16					
0 +200 °C =			20					
0 +300 °C =			30					
0 +400 °C =			40					
0 +500 °C =			50					
0 +600 °C =			60					
Scale Celsius (°C)				1				
Celsius + Fahrenheit (°C + °F)				2				
Column (Filling) Blue fluid is standard for ranges up to +250 °C (red fluid for -60 °C +40 °C) Fü =					1			
Mercury is used above +250 °C HG =					2			
Immersion tube lengths l_3 in mm								
Immersion tube lengths match protecting tubes according to DIN 43763D, see page 13. 155 =						155		
215 =						215		
275 =						275		
295 =						295		
355 =						355		
415 =						415		
Connection thread union nut made of brass M24x1,5 =							8	
Immersion tube materials: adapter brass CW614N / tube stainless steel 1.4571								A

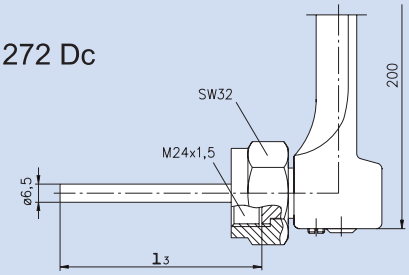
On principle, thermometers of type Dc are supplied with a steel immersion tube of Ø 6,5 mm for the lower part of the capillary, which fits into protecting tubes with 7 mm bore.

Immersion tubes of all right-angled thermometers are manufactured with a grooved adapter piece on top, which is installed in the casing and kept in its place by a locking screw. Advantage: Immersion tube can be installed independently of thermometer casing.

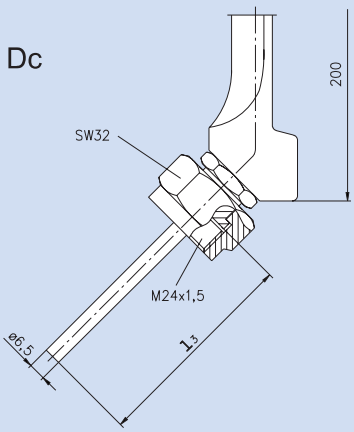
271 Dc



272 Dc



273 Dc



SIKA-Thermometers

Rotatable Angle Type or with seperate Protecting Tubes

Original SIKA thermometer design Bdr permits the casing including insert to be turned by 360 degrees, after installation, so it can be read from any direction. This special SIKA thermometer type will be applied when installation conditions do not permit using a normal angle-type thermometer which is read from the front (Fig. 1 and Fig. 2).
SIKA thermometer (Fig. 3) type B, with separate protecting tube type BS for high pressures, to be welded in.
SIKA thermometer (Fig. 4) type B with separate protecting tube type Gi made of solid material (1 piece), to be screwed in.

Protecting Tubes DIN 43772 Form 4, 5, 6

for SIKA Thermometers with Immersion Tube Type B, to be screwed in

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

Order-Example	179.1	45	2	0

Immersion tube

DIN Form 5	=	SIKA Type Ei =	179.1	
DIN Form 6	=	SIKA Type Gi =	179.3	
DIN Form 4	=	SIKA Type BS=	180.5	

Type Ei (Fig. 1) made of 3 pieces to be screwed in. Tube, brazed into socket for non-ferrous materials or welded for steel.
Immersion length l_1 Type B = protecting tube length U1 [mm]

63	=	①	45	=	045
100	=		82	=	082
160	=		142	=	142
250	=		232	=	232
400	=		382	=	382

Type Gi (Fig. 2) made of solid material (1 piece) to be screwed in
Immersion length l_1 Type B = protecting tube length U1 [mm]

63	=	①	50	=	050
100	=		82	=	082
160	=		142	=	142
250	=		232	=	232
400	=	③	382	=	382

Type BS (Fig. 5) made of solid material (1 piece), weld-in type
Immersion length l_1 Type B = protecting tube length U1/ l_2 [mm]

63	=	①a	48	=	048
100	=		73	=	073
160	=		133	=	133
250	=	②	223	=	223
400	=	③	373	=	373

Connection thread dimension E/N	G1/2	=	2
	M20x1,5	=	7
	G3/4	=	3
	M27x2	=	9

Material for Type:	Ei	steel, connection thread 1.0718 (11SMnPb30) / tube 1.0308 (E235)	= 0
		brass - CW614N (CuZn39Pb3) or CW612N (CuZn39Pb2)	= 1
	Gi	brass - CW614N (CuZn39Pb3) or CW612N (CuZn39Pb2)	= 1
	Ei, Gi, B	stainless steel - 1.4571 (X6CrNiMoTi17-12-2)	= 3
	Ei	special brass - connection thread CW710R (CuZn35Ni3Mn2AlPb) - tube CW702R (CuZn20Al2As)	= 4
	Gi	special brass - CW710R (CuZn35Ni3Mn2AlPb)	= 15
		copper-nickel alloy - CW354H (CuNi30Mn1Fe)	= 5
		stainless steel - 1.7335 (13CrMo4-5)	= 7
		stainless steel - 1.7380 (10CrMo9-10)	= 8
		stainless steel - 1.5415 (16Mo3)	= 9
	BS	heat-treated steel - 1.0460 (P250GH)	= 6

Type Ei = DIN Form 5

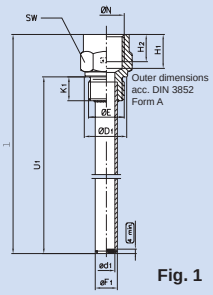


Fig. 1

Code No. 179.1

Type Gi = DIN Form 6

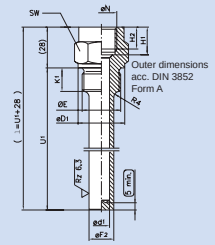


Fig. 2

Code No. 179.3

Type BS = DIN Form 4

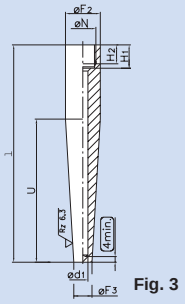


Fig. 3

Code No. 180.5

DIN 16179 Form BS

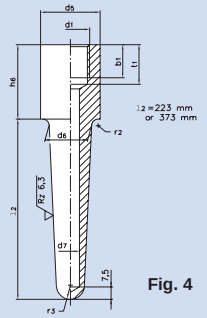


Fig. 4

Code No. 180.5

SIKA Norm BS

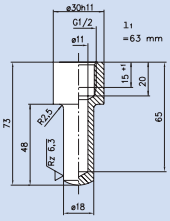


Fig. 5

Code No. 180.5

Dimensions of Form 4, 5 + 6

Thread E/N	Code No.	D_1	H_2	F_2	F_2	d_1	F_1	F_3	K_1	H_1	SW
G1/2	2	26	15	26 h7	17	11	14	17	14	19	27
M20x1,5	7										
G3/4	3	32	17	32 h11	19	11	14	17	16	22	32
M27x2	9										

Dimensions of Form BS (Abb. 4)

Thread d_1	Code No.	d_5 / h11	d_6	d_7	b_1	h_6	r_2	r_3
M20x1,5	7	30	25	11	16	39	2,5	8,5
G1/2	2							
G3/4	3	36	26	11	20	45	4	8,5
M27x2	9							

①+ ①a no DIN-Standard
② according DIN 16179 BS (old version)
③ Alloy materials with certificates possible.
See pages 14 and 15 for pressure loads and works certificates.

Protecting Tubes DIN 43772 Form 8, 9 and DIN 16179 CS

for SIKA Thermometers with Immersion Tube Type Da (connection by union nut)

Order-Example	179.2	073	2	0

Immersion tube

DIN Form 8 =	SIKA Type Ea	=	179.2
DIN Form 9 =	SIKA Type Ga	=	179.4
DIN (old) Form CS =	SIKA Type CS	=	180.6

Type Ea (Fig. 1) made of 3 pieces to be screwed in. Tube brazed into socket for non-ferrous materials or welded for steel.
Immersion length l_1 Type Da = protecting tube length U1 [mm]

89	=	73	=	073
126 G1/2	=	110	=	110
186	=	170	=	170
93	=	73	=	073
130	=	110	=	110
190 G3/4	=	170	=	170
280	=	260	=	260
430	=	410	=	410

Type Ga (Fig. 2) made of solid material (1 piece) to be screwed in
Immersion length l_1 Type Da = protecting tube length U1 [mm]

89	=	73	=	073
126 G1/2	=	110	=	110
186	=	170	=	170
93	=	73	=	073
130	=	110	=	110
190 G3/4	=	170	=	170
280	=	260	=	260
430	=	410	=	410

Type CS (Fig. 3) made of solid material (1 piece) weld-in type
Immersion length l_1 Type Da = protecting tube length l_2 [mm]

89	=	63	=	063
126 G1/2	=	100	=	100
186	=	160	=	160
93	=	63	=	063
130	=	100	=	100
190 G3/4	=	160	=	160
280	=	250	=	250
430	=	400	=	400

Connection thread dimension E/N	G1/2	=	2
	M20x1,5	=	7
	G3/4	=	3
	M27x2	=	9

Materials for Type:	Ea	steel, connection thread 1.0718 (11SMnPb30) / tube 1.0308 (E235)	= 0
		brass - CW614N (CuZn39Pb3) or CW612N (CuZn39Pb2)	= 1
	Ga	brass - CW614N (CuZn39Pb3) or CW612N (CuZn39Pb2)	= 1
	Ea, Ga, CS	stainless steel - 1.4571 (X6CrNiMoTi17-12-2)	= 3
	Ea	special brass - connection thread CW710R (CuZn35Ni3Mn2AlPb) - tube CW702R (CuZn20Al2As)	= 4
	Ga	special brass - CW710R (CuZn35Ni3Mn2AlPb)	= 15
		copper-nickel alloy - CW354H (CuNi30Mn1Fe)	= 5
		stainless steel - 1.7335 (13CrMo4-5)	= 7
		stainless steel - 1.7380 (10CrMo9-10)	= 8
		stainless steel - 1.5415 (16Mo3)	= 9
	CS	heat-treated steel - 1.0460 (P250GH)	= 6

Dimensions of Form 8 = Ea Form 9 = Ga Form CS

Thread E/N	Code No	d_1	D_1	F_1	F_2	K_1	K_2	SW	d_1	d_1	d_9/h11	h_2	h_6
G 1/2	2	11	26	14	17	14	12	27	G1/2	11	24	12	39
M 20 x 1,5	7								M20x1,5	11	24	12	39
G 3/4	3		32	14	19	16	14	32	G3/4	11	30	14	45
M 27 x 2	9								M27x2	11	30	14	45

[1]) Hex. nut 2.0401 - CuZn39Pb3 or 2.0402 - CuZn40Pb2, tube SoMs 76 or Ms 63 brazed.

DIN Form 8 = Type Ea

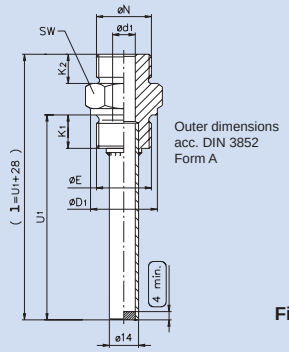


Fig. 1

Code No. 179.2

DIN Form 9 = Type Ga

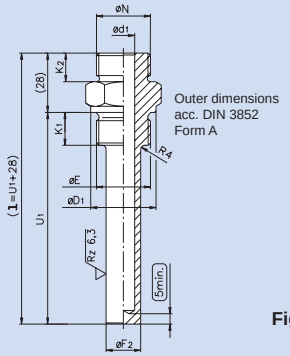


Fig. 2

Code No. 179.4

Type CS = DIN 16179 **(old)**

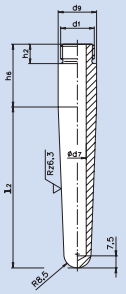


Fig. 2

Code No. 180.6

Dimensions of protecting tube Form 8 + 9

L ± 1	U1 ± 1	G + 1
101	73	46
138	110	133
198	170	193
288	260	283
438	410	433

See pages 14 and 15 for pressure loads and works certificates.

Alloy materials with certificates possible.

Protecting Tubes (Weld-in Type) DIN 43772 Form 4

for SIKA-Thermometers with Immersion Tube Type Dc

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

Order-Example	180.9	001	0	3
Protecting tube to be welded Fig. 1. Form 4 =	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 - X6CrNiMoTi17-12-2 =				3
heat-treated steel 1.0460 - P250GH =				6
stainless steel 1.7335 - 13CrMo4-5 =				7
stainless steel 1.7380 - 10CrMo9-10 =				8
stainless steel 1.5415 - 16Mo3 =				9

Protecting tube length l	Free imm. length U	F_2		F_3		d_1		N	
		D	DS	D	DS	D	DS	D	DS
140 (D1)	65	24h7	18h7	12,5	9	7	3,5	M18x1,5	M14x1,5
200 (D2)	125	24h7	18h7	12,5	9	7	3,5		
200 (D4)	65	24h7	18h7	12,5	9	7	3,5		
260 (D5)	125	24h7	18h7	12,5	9	7	3,5		

Order-Example: Protecting tube length l = 140 mm, material 1.4571
Order no.: 180.9.001.03 S

Accessoires:

Plug screw M18x1,5, brass (Fig. 2) Order-No. 000061
Plug screw M14x1,5, brass Order-No. 0000G1
Double threaded adapter M18x1,5 / M24x1,5, steel (Fig. 3) Order-No. 00076 V
Extension tube 165 mm, M18x1,5 / M24x1,5, steel (Fig. 4) Order-No. 165020V

The immersion lengths (l_3) of the thermometers are as follows:

SIKA-Type	with extension tube	with double threaded adapter
D1	295 mm	155 mm
D2/4	355 mm	215 mm
D5	415 mm	275 mm

Acceptance certificate: EN 10204-3.1 und EN 10204-3.2 available on request.

Type HD

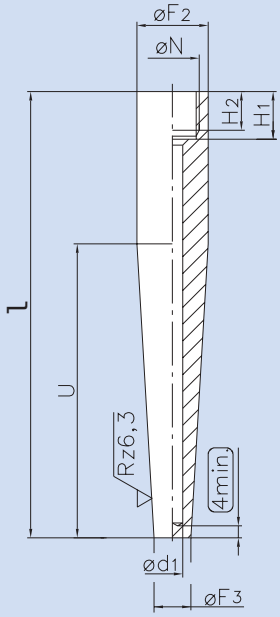


Fig. 1

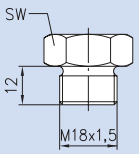


Fig. 2

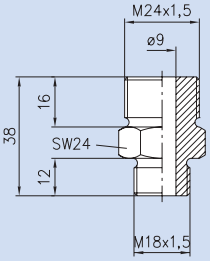


Fig. 3

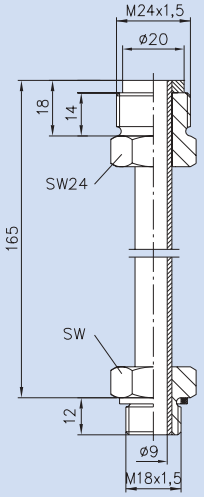


Fig. 4

Table of Materials

The production of SIKA protecting tubes is frequently controlled by the „TÜV Hessen“ (technical inspection service) and meets the requirements of AD/HP O.
Please ask us for protecting tubes made of other materials, with flange connection or PTFE coating, if required.
Upon request, each protecting tube can be tested for pressure or investigated for surface cracks, at extra charge; a certificate EN 10204-3.1 will be supplied.

Table of materials (on stock)											
	Brass	Steel		Stainless steel	Special brass	Copper-nickel alloy	Heat-treated steel	Stainless steel			Special brass
	CW614N CuZn39Pb3 or CW612N CuZn39Pb2	Thread connection: 1.071811SMnPb30 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
Code-No.	**1**	**0**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**15**
Ei	● 1)2)	● 1)		● 1)	● 1)	● 1)					
Ea	● 1)2)	● 1)		● 1)	● 1)	● 1)					
Gi	●		● 1)	●	● 1)	● 1)		●			●
Ga	●		● 1)	●	● 1)	● 1)		●			●
BS				●			●	●	●	●	
CS				●			●	●	●	●	
HD				●			●	●	●	●	
HDo				●			●	●	●	●	

1) Only with Works Certificate EN 10204-2.1 or -2.2 possible. 2) Hexagon CuZn40Pb2 / CuZn20Al2As or CuZn37 brazed.

Select the most suitable material for your application. Please see FNE and VDE because some materials may be precluded from certain application.

Certificates

On request and at extra charge, SIKA protecting tubes can be supplied with following certificates:
EN 10204-2.1 EN 10204-2.2 EN 10204-3.2 EN 10204-3.1


UMSTEMPEL-BESCHEINIGUNG Nr. : 08/001
CERTIFICATE OF MARKING No.:

SIKA-Kom.: 580008
SIKA Pos.: 10 = 2 Stück

Kunde: Thielmann Energietechnik GmbH
Customer: Dormannweg 48
D - 34123 Kassel

Auftr.-Nr.: 5205/17.2170 Datum: 20.11.2007

Wir bestätigen, daß das/die gelieferte (n) Teil (e) Schutzrohr DIN 43772,Form 6, 1.4571, G1/2
U1=82mm, L=110xØ17mm, Bohrung 11mm

Werkstoff: 1.4571 / X6CrNiMoTi17-12-2
aus der Abmessung: Sechskant 27
ausgewiesen durch Abnahmeprüfzeugnis nach EN 10204/3.1
der Firma: Acciaierie Valbruna S.p.A. geschnitten wurden.
Die Stempelung Werkstoff: 1.4571 Schmelzen-Nr.: 244101
Probe-/Los-Nr.: Nummer: 07/142

ist übertragen worden.
Eine Besichtigung auf Oberflächenbeschaffenheit und Maßkontrolle wurde durchgeführt.
Zum Zeichen der ordnungsgemäßen Umstempelung wurde/n das/die Teil (e) mit SIKA 3 versehen:
Die Umstempelung erfolgte mit Zustimmung des TÜV-Hessen GmbH: AISK/34/41286938

SIKA DR. SIEBERT & KÜHN GmbH & Co. KG
Struthweg 7-9
34260 Kaufungen
Tel.: 05605-803-0
Fax: 05605-803-84

Kaufungen, 02.01.2008

Abnahmebeauftragter
Inspector

Rechtsverbindlich sind allein die deutschen Eintragungen


TÜV TECHNISCHE ÜBERWACHUNG HESSEN GMBH

Auftrag-Nr.: Lagerauftrag Prüf-Nr.: ISK 38-08 41770123.13

UMSTEMPELUNGSBESCHEINIGUNG
CERTIFICATE OF MARKING TRANSFER / CERTIFICAT DE REPORT DE MARQUAGE

Pos.	Ursprünglich Abmessung, Werkstoff	Kennzeichnung auf Ausgangsmaterial	Neue Kennzeichnung	Abnahmeprüfzeugnis / Werkszeugnis gemäß EN 10204
	Object, Dimension, Material Objet, Dimension, Matière	Mark, marking on source Marquage de la source	New identification marking Nouveau marquage	Inspection certificate according to EN 10204 Certificat de réception suivant EN 10204
	50 Stück			
	Schutzrohr Form 4 nach DIN 43772 U=82mm, L=200mm D=24mm Bohrung 7mm SIKA-Type D4 1.0460	1.0460 323686 158-158A BGH Q13	1.0460 323686 158-158A 08/039 SIKA 3	EN10204-3.2 TÜV Nord Prüf-Nr.: 8102515091 Freital den 27.06.2006

Kaufungen 17.04.2008

1 Abnahmeprüfzeugnis


TÜV Technische Überwachung Hessen GmbH
Industrie Service
Knorrstraße 36 34121 Kassel
Postfach 20 02 52 34081 Kassel
Telefon: 0561/ 2091-303 Telefax: 0561/ 2091-390

Bericht über die wiederkehrende Überprüfung der Voraussetzungen zur Umstempelung von Erzeugnissen für überwachungsbedürftige Anlagen

Antragsteller:
SIKA-Dr. Siebert & Kühn GmbH & Co. KG Kundennummer: 7318669
Struthweg 7-9
34260 Kaufungen

Antrag vom: 10.09.2007 Verlängerung zur Umstempelvereinbarung
Datum der Überprüfung: 19.09.2007 Prüf-Nr.: ISK/34/41286938
Sachverständiger: Bernd Bierdümpfl

1. Prüfgrundlage
Vereinbarung vom 24.06.05 über die sachgemäße Umstempelung von Werkstoffen und Erzeugnissen für überwachungsbedürftige Anlagen nach dem Geräte- und Produktsicherheitsgesetz (GPSG).

2. Vom Sachverständigen durchgeführte Überprüfungen
2.1 Verantwortliche Werksangehörige.
2.2 Lagerhaltung und Kennzeichnung sowie Werkstoffbescheinigungen der verwendeten Werkstoffe.
2.3 Durchführung der Umstempelungen.
2.4 Dokumentation der Umstempelungen (Aufzeichnungen, Umstempelbescheinigungen).

3. Zusammenfassung und Beurteilung der Überprüfung
Die Überprüfung hat ergeben, daß der Antragsteller weiterhin die Voraussetzungen für die Umstempelung von Erzeugnissen für überwachungsbedürftige Anlagen erfüllt.

4. Gültigkeit
Mit diesem Bericht verlängert sich die Gültigkeit der o. g. Vereinbarung bis 19.09.2008.

Kassel, den 2007.09.19

(Bierdümpfl)
Der Sachverständige

Installation Instructions

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

Installation examples

Type B

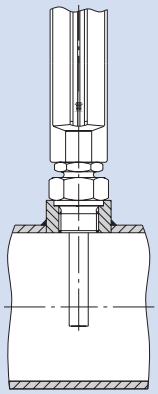


Fig. 1

Type Ga

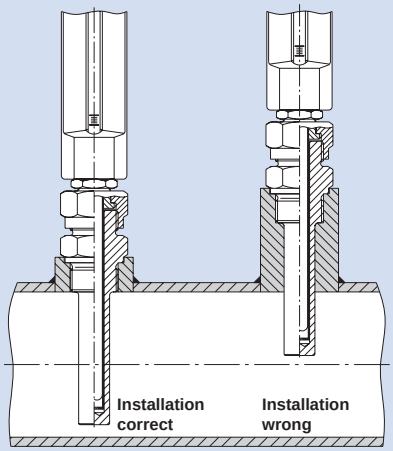


Fig. 2

Type HDo

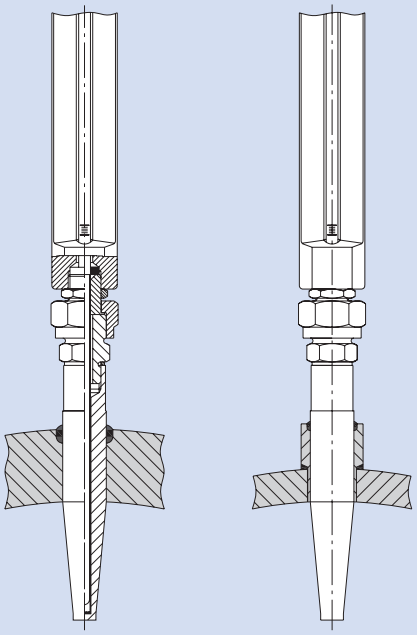


Fig. 3

Use of SIKA thermometers

For installation of SIKA thermometers, please notice that the whole immersion tube should be immersed into the media. In order to achieve precise measurements, choose versions with a minimum immersion tube length of 63 mm. For smaller pipes with inner diameters of up to 75 mm, select an immersion tube length as close to the full diameter of the conduit as possible. For bigger pipes it is good enough to select an immersion length that exceeds 50% of the inner pipe diameter (see fig.1).

SIKA thermometers type B (immersion tube with male thread) are optimised for the measuring over the full immersion length. That means that the complete immersion tube should be immersed into the media (see fig. 1 as a reference). If this is unfeasible at your application, please let us know and ask for a custom version before ordering the thermometer. This matter is especially important for thermometers with short immersion lengths.

Installation of protection tubes

This catalogue contains protection tubes to provide cover for SIKA thermometers from special exposures. High pressure, contaminated liquids with particles or very high temperatures require special protection tubes. Material and shape have to be selected according to the requirements of each particular application. Furthermore, protection tubes allow you to install/de-install thermometers during operation of the application.

The installation of protection tubes follows the same requirements as pointed out before: the protection tube has to be immersed in the media over the full length (see fig. 2). Protection tubes to be welded to an application shall be aligned in a way that the cylindrical part of the tube is not immersed in the media, as shown in figure 3.

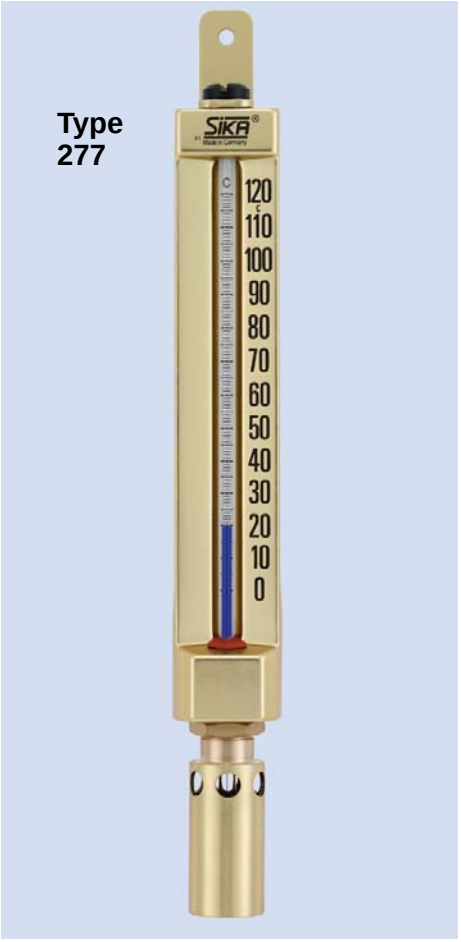
SIKA Thermometers

Special Types

Tank scooping thermometers Type 277

Order Code: 277 0 12 11 000 00

200 x 36 mm with suspension ring on top	with short, perforated reservoir	white-backed, blue liquid	0 +120 °C



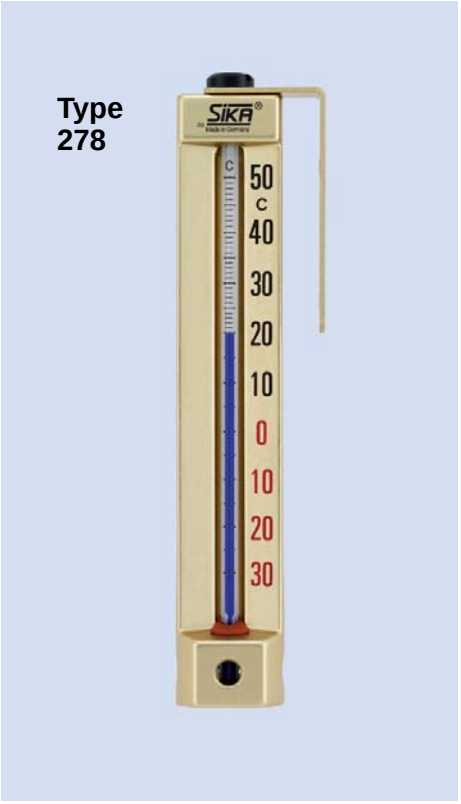
Ambient air thermometers Type 278

Order Code:

-30 +50 °C = 278 0 35 11 000 00

0 +100 °C = 278 0 10 11 000 00

200 x 36 mm with suspension ring on top	no lower part	white-backed, blue liquid	-30 +50 °C 0 +100 °C

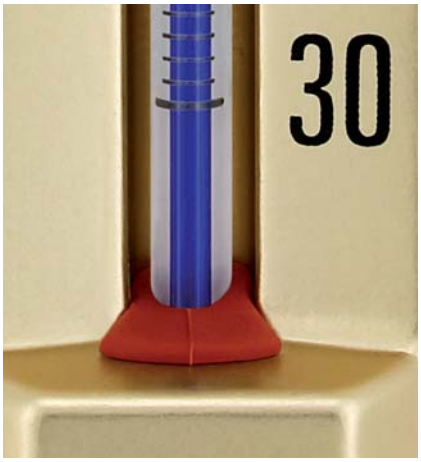


Special types of SIKA thermometers (at extra charge)

- Casing silver-coloured
- Thermometer without any nonferrous metal parts
- Thermometer with two limit indicators which can be adjusted to any interval
- Thermometer with sealing sleeve which prevents moisture from entering into the immersion tube (outdoor installation)

Thermometer with limit indicators

Thermometer with sealing sleeve



Spare Parts

Thermometer Inserts

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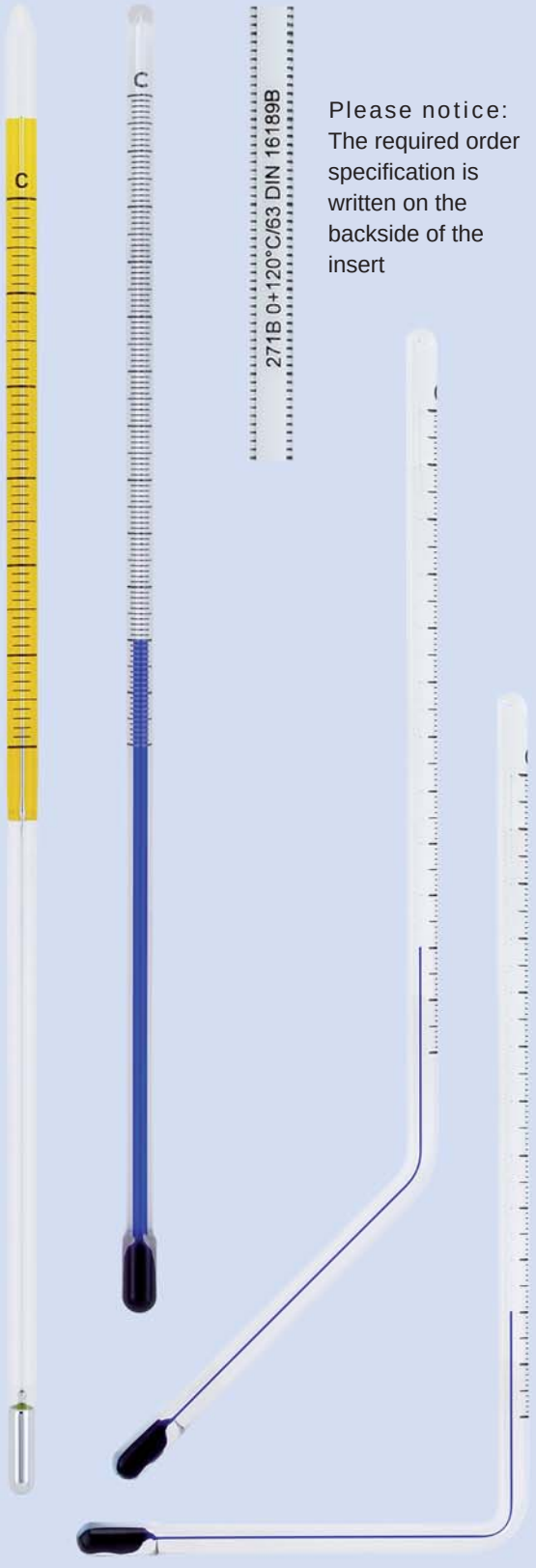
Order-Example	271	2	64	1	1	063
Thermometer straight	Type 174 291 271					
angle 90°	175 292 272					
angle 135°	176 293 273					
for thermometers with solid male thread	B	2				
with union nut	Bdr	6				
	Da	3				
	Dc	5				
Range -60 +40 °C =			64			
-30 +50 °C =			35			
0 +60 °C =			06			
0 +100 °C =			10			
0 +120 °C =			12			
0 +160 °C =			16			
0 +200 °C =			20			
0 +300 °C =			30			
0 +400 °C =			40			
0 +500 °C =			50			
0 +600 °C =			60			
Scale Celsius (°C)				1		
Celsius + Fahrenheit (°C + °F)				2		
Column (Filling) Blue fluid is standard for ranges up to +200 °C (red fluid for -60 °C +40 °C) Fü =					1	
Mercury is used above +200 °C HG =					2	
Immersion length l_1 and l_3 respectively, in mm (according to complete thermometers) for types B (threaded socket with integral hexagonal nut)						30 40 63 100 160 250 400
for types Da with union nut G1/2 or G3/4						89 93 126 130 186 190 276 280 426 430
for types Dc with union nut M24x1,5						155 215 275 295 355 415



Please notice:
The required order specification is written on the backside of the insert

Spare glass inserts include required small mounting parts.

Spare Parts

Casings and Immersion Tubes

Thermometer casings

Order-Example		271	0	64	1
Thermometer		Type			
straight	200 x 36 mm	271	0		
angle 90°	200 x 36 mm	272	0		
angle 135°	200 x 36 mm	273	0		
straight	150 x 36 mm	291	0		
angle 90°	150 x 36 mm	292	0		
angle 135°	150 x 36 mm	293	0		
straight	110 x 30 mm	174	0		
angle 90°	110 x 30 mm	175	0		
angle 135°	110 x 30 mm	176	0		
Range	-60 +40 °C =			64	
	-30 +50 °C =			35	
	0 +60 °C =			06	
	0 +100 °C =			10	
	0 +120 °C =			12	
	0 +160 °C =			16	
	0 +200 °C =			20	
	0 +300 °C =			30	
	0 +400 °C =			40	
	0 +500 °C =			50	
	0 +600 °C =			60	
Scale	Celsius (°C)				1
	Celsius + Fahrenheit (°C + °F)				2

Immersion tubes with threaded socket and integral hexagonal nut, type B

Order-Example		030	2	1	1
Immersion tube length l_1 in mm					
	30 =	030			
	40 =	040			
	63 =	063			
	100 =	100			
	160 =	160			
	250 =	250			
	400 =	400			
Connection thread	G3/8A =		1		
	G1/2A =		2		
	G3/4 A =		3		
	G1A =		4		
	M16x1,5 =		5		
	M20x1,5 =		7		
	M27x2 =		9		
Immersion tube materials					
Brass hex.nut CW614N, tube CW702R or CW508L					
or up to immersion length l1 = 63 only G1/2A					
available in CW614N, solid material possible	= 1				
Steel hex.nut 1.0718 / tube 1.0308	= 2				
Stainless steel 1.4571	= 3				
Special brass hex.nut CW710R, tube CW702R	= 4				
Copper-nickel alloy CW354H	= 5				
Straight type or angle type 135°					1
Angle type 90°					2

Casing

Immersion tube B
for straight or angle type
thermometers 135°

Immersion tube B
for angle type
thermometers 90°

Assembling View

For Original SIKA Thermometer Inserts

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Broken glass inserts or damaged immersion tubes can be exchanged by customers.

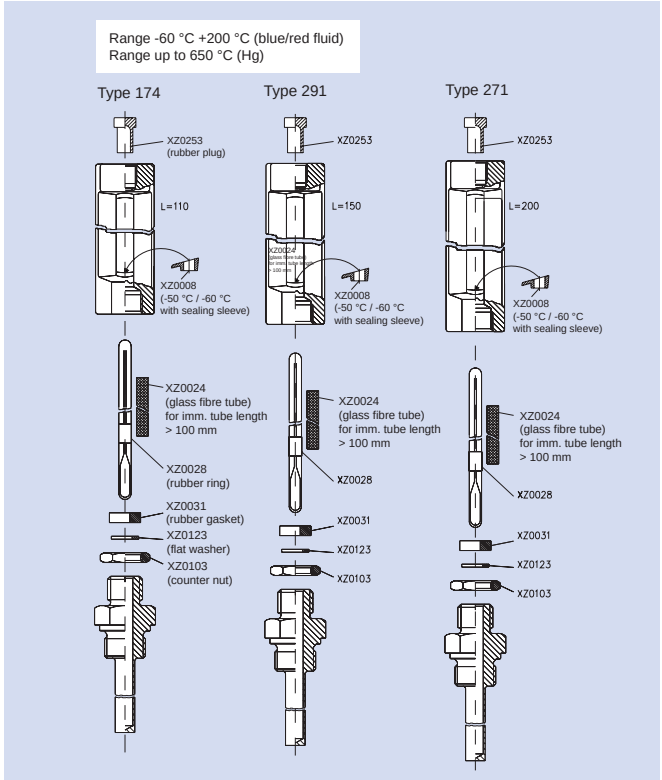
Procedure:

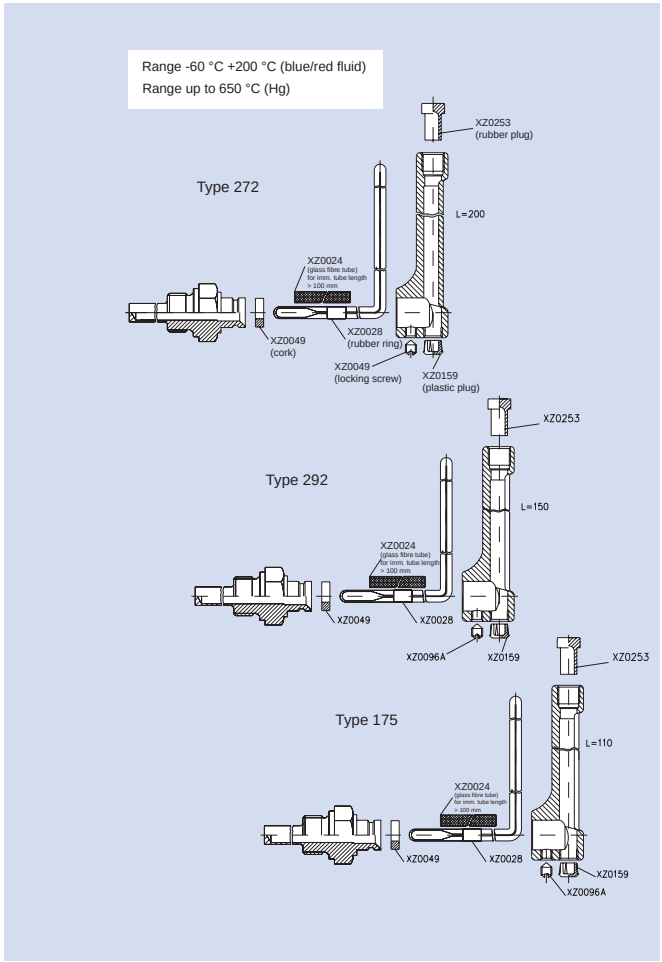
Type 174, 291, 271 (straight)

- Unlock counter nut Z0103 underneath the casing (wrench size: 22), unscrew immersion tube.
- Remove broken glass parts from casing and immersion tube.
- Insert new glass insert into casing and put rubber plug in place.
- Adjust glass insert so that its scale corresponds to the numbers at the casing. Put rubber ring XZ0028 over glass insert.
- Attach immersion tube to casing and lock the counter nut.

Type 175, 292, 272 (angle 90°)

- Unlock locking screw XZ0096A, pull immersion tube out of casing.
- Remove broken glass parts from casing and immersion tube.
- Insert new glass insert into casing and put cork in place (slit shows to top).
- Adjust glass insert so that its scale corresponds to the numbers at the casing. Pull glass fibre tube XZ0024 over glass insert.
- Attach immersion tube to casing and lock the locking screw.





Legend:

Z0024	Glass fibre tube Ø 6
Z0028	Rubber ring 6,5 x 5,5 x 10
Z0031	Rubber gasket 16 x 5 x 5
Z0049	Cork
Z0103	Counter nut M18x1,5
Z0123	Flat washer 14 x 7,4 x 1,5
Z0159	Plastic plug, black
XZ0008	Sealing sleeve
XZ0253	Rubber plug
XZ0096A	Locking screw

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