

# Precision Dial Thermometer



# SIKA-Precision-Dial-Thermometer

This range of instruments includes indicating and controlling thermometers using the gas expansion principle.

The measuring principle relies on the fact that a non toxic gas expands with increasing temperature. The resulting increase of pressure in a closed system produces a pointer deflection directly proportional to the change in temperature.

SIKA precision dial thermometers with gas filling are produced in accordance with DIN EN 13190 class 1.

Gas filled instruments have a minimum bulb diameter of 6 mm subject of course to the length of immersion.

Exact measuring results obtained by a ambient temperature between -25 and +60°C.

SIKA precision dial thermometers cover the ranges between -60 and + 600°C.

We reserve the right to alter specifications in the course of further product development and improvement.

## Table of contents

	Page
<b>Installation and operating instructions</b> . . . . .	<b>3</b>
 <b>SIKA dial thermometers, filled with environment friendly gas</b>	
Type series 301-307 B . . . . .	4
Type series 301-307 Da . . . . .	6
Type series 301-307 Dc . . . . .	8
Type series 310 WH/DN - 320 TA/DN - 330 TE/DN . . . . .	10
Type series 310 WH/Da - 320 TA/Da - 330 TE/Da . . . . .	12
Type series 310 WH/Dc - 320 TA/Dc - 330 TE/Dc . . . . .	14
 <b>Contact facilities</b> . . . . .	 16-18
 <b>Protecting tubes</b> . . . . .	 19-21

# Installation and operating instructions

## Installation location and installation

### VIBRATION

Vibration acting on the thermometer case will impair the function and service life of the instrument. The thermometer must be mounted free of vibration wherever possible. If mounting in a vibration-free location is not possible, an instrument which is designed to be resistant to vibration owing to its design (e.g. by glycerine filling) must be used.

### ATMOSPHERE

Standard dial thermometers are manufactured to offer IP 54 protection. Please check the specification sheets which follow to ensure that the thermometer is fit for its duty.

### AMBIENT TEMPERATURE

The best results of measuring are obtained by a ambient temperature of 20°C for the case and the capillary line. Our thermometers are covered for a ambient temperature between -25 and +60°C.

## Measuring Range

When fitting, please ensure that the measuring range of the thermometer is such that the operating temperature selected lies in the lower two thirds of the scale.

## Storage temperature

If it is intended to store the instrument for a long period, ensure that the thermometer is stored at an ambient temperature within the measuring range. The storage location should be dry and free of dust.

## Installing the capillary

When laying the capillary line, ensure that it is not routed past low-temperature areas or heat sources. It must be protected against damage of all kinds. The minimum bending radius is 30 mm. Kinking or blockage will cause failure of the instrument.

If the measuring bulb is to be installed in a vibrating body, several coils must be formed in the capillary between the bulb and the last fixed point. A check should also be made that no harmful influence can damage the capillary along its length.

## Immersion tube installation

The entire length of the temperature sensor must be immersed in the medium to be measured. If using protective tubes, the heat transfer resistance between the outer wall of the sensor and the inside wall of the protective tube can be reduced by filling the cavity with a heat transfer medium.

## Electrical connection of contact thermometers

The contact facility must be connected as shown on the circuit diagram attached with adhesive to the thermometer. The connection may be by flying lead or built-in socket, dependent upon the instrument version (note VDE regulations or other applicable national regulations!).

## Ambient temperature compensation

By pointer adjustment or adjusting device at the rear or side, dependent upon version.

# SIKA-Precision dial thermometer, gas filled system

## Type series 301-307 B

with fixed male thread for local temperature indication

class 1: DIN EN 13190  
 Indicating ranges: -60 up to +600°C (Special ranges on request)  
 Case: case with bayonet ring and steel bezel, st.st. 1.4301  
 Type of protection: IP 54  
 Indication correcting facility: By adjustable pointer or adjusting screw  
 Accuracy: Limits of error in accordance with DIN EN 13190

Order code (example))	301	1	1	40	063	2	2	3
Thermometer mounting:								
Vertical	301							
Axial	302							
90° to rear	303							
90° to right	304							
90° to left	305							
135° to rear	306							
universally adjustable	307							
Case, nominal diameter d1 :								
63 mm filled <sup>1)</sup> A	dry	1						
80 mm B		2						
100 mm C		3						
160 mm D		4						
Case material:								
Stainless steel 1.4301			2					
Indicating ranges: *								
-60 +40°C = 64	0 +80°C = 08				0 +250°C = 25			
-40 +40°C = 44	0 +100°C = 10				0 +300°C = 30			
-30 +30°C = 33	0 +120°C = 12				0 +400°C = 40			
-30 +50°C = 35	0 +160°C = 16				0 +500°C = 50			
0 +60°C = 06	0 +200°C = 20				0 +600°C = 60			
Immersion tube immersed lengths dimension l <sub>1</sub> mm:								
63 mm =					063			
100 mm =					100			
160 mm =					160			
250 mm =					250			
400 mm =					400			
The immersion tubes are available with the following diameters d2: 6mm, 8mm, 10mm, 12mm, 14mm. Please state the required dia when ordering! We supply 10 mm dia as standard.								
Immersion tube type								
Fixed male thread	Type B					2		
Threaded connection d <sub>G</sub> :								
G ½ A SW 27							2	
G ¾ A SW 32							3	
G 1 A SW 41							4	
M 20x1,5 SW 27							7	
M 27x2 SW 32							9	
Material for immersion tube and thread:								
tube 1.4571 / thread 1.4571								3

### Additional features:

<sup>1)</sup>Casing filled with glycerine or silicon oil (vibration resistance), protection IP 65, Contact facilities see page 16-18.

\* Also available with double division celsius and Fahrenheit (C+F)

Protecting tubes for weld-in or screwing in accordance DIN 43722 form 4, 5, 6 - see page 19.



Type 301

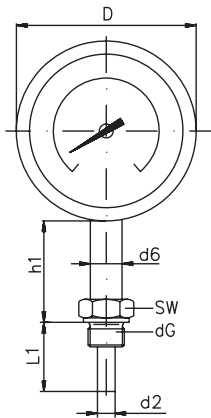


Type 302

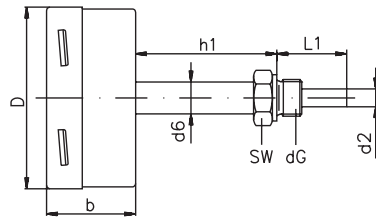


Type 307

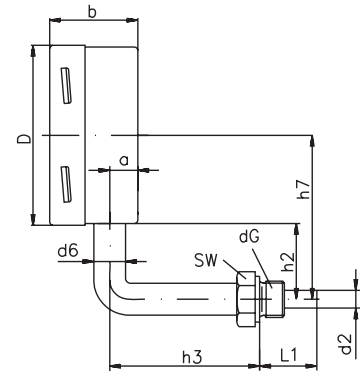
**Type 301 B**



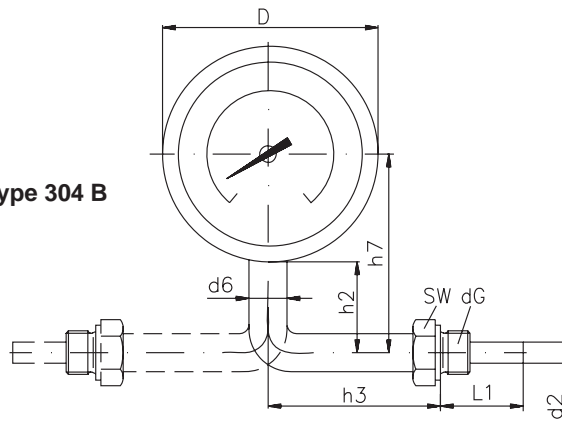
**Type 302 B**



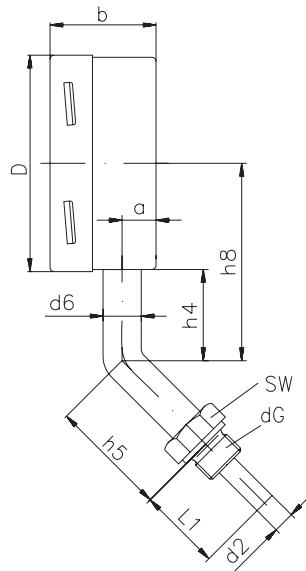
**Type 303 B**



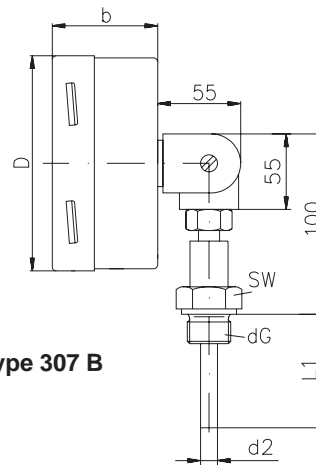
**Type 305 B / Type 304 B**



**Type 306 B**



**Type 307 B**



Dimensions (mm)												
Dia	a	b	D	d <sub>6</sub>	h*	h <sub>1</sub> *	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub>	h <sub>5</sub>	h <sub>7</sub>	h <sub>8</sub>
63	16	41	64	12	40	40	70	60	70	45	100	90
80	13	44	81	12	60	60	85	120	70	120	125	110
100	16	55	101	12	60	60	85	120	70	120	134,5	119,5
160	16	50	161	12	60	60	85	120	70	120	164,5	149,5

Size of thread	
AF	d <sub>G</sub>
27	G 1/2 A
32	G 3/4 A
41	G 1 A
27	M 20x1,5
32	M 27x2

\* 80 mm up to indicating ranges ≥ 500°C and sensor length ≥ 120°C, smaller sensors and special orderings on request.

We reserve the right to alter specifications in the course of further product development and improvement

## Precision dial thermometer, gas filled system

**Type series 301-307 Da** with union nut G 1/2 - G 3/4 - M 20x1,5 - M 27x2

for local temperature indication

Class 1:	DIN EN 13190
Indicating ranges:	-60 up to +600°C (special ranges on request)
Case:	Case with bayonet ring and steel bezel, st.st.1.4301
Type of protection:	IP 54
Indication correcting facility:	By adjustable pointer or adjusting screw
Accuracy:	Limits of error in accordance with DIN EN 13190

Order code (example)	301	1	1	40	093	3	2	1
Thermometer mounting:								
Vertical	301							
Axial	302							
90° to rear	303							
90° to right	304							
90° to left	305							
135° to rear	306							
Universally adjustable	307							
Case, nominal diameter d1 :								
63 mm filled <sup>1)</sup> A dry		1						
80 mm B		2						
100 mm C		3						
160 mm D		4						
Case material:								
Stainless steel 1.4301			2					
Indicating ranges: *								
-60 +40°C = 64	0 +80°C = 08	0 +250°C = 25						
-40 +40°C = 44	0 +100°C = 10	0 +300°C = 30						
-30 +30°C = 33	0 +120°C = 12	0 +400°C = 40						
-30 +50°C = 35	0 +160°C = 16	0 +500°C = 50						
0 +60°C = 06	0 +200°C = 20	0 +600°C = 60						
Immersion tube immersed lengths dimension l <sub>1</sub> :								
for union nut:								
G 1/2 or M 20x1,5								
89 mm = 089								
126 mm = 126								
186 mm = 186								
276 mm = 276								
426 mm = 426								
We supply 10mm dia as standard. The immersion tubes are available with d2: 6mm, 8mm or 12mm.								
Immersion tube type:								
Union nut Typ Da						3		
Threaded connection d <sub>G</sub> :								
G 1/2 A SW 27							2	
G 3/4 A SW 32							3	
M 20x1,5 SW 27							7	
M 27x2 SW 32							9	
Material for immersion tube and union nut:								
tube 1.4571 / thread 1.4571								3

### Additional features:

<sup>1)</sup>Casing filled with glycerine or silicon oil (vibration resistance), protection IP 65, Contact facilities see page 16-18.

\* Also available with double division celsius and Fahrenheit (C+F)

Protecting tubes for weld-in or screwing in accordance DIN 43722 form 8, 9 und DIN 16179 CS (old version)- see page 20.



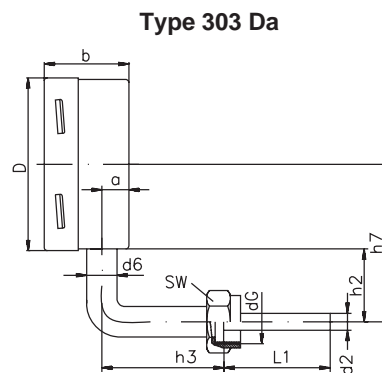
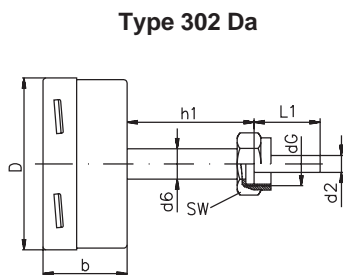
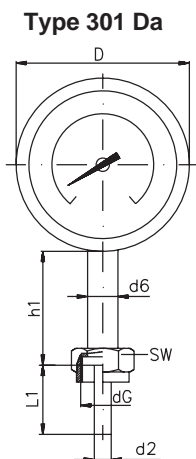
**Type 301**



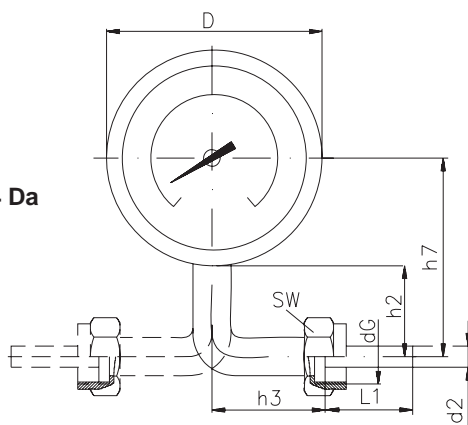
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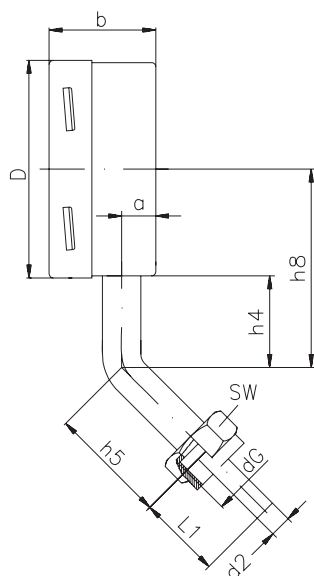
**Type 307**



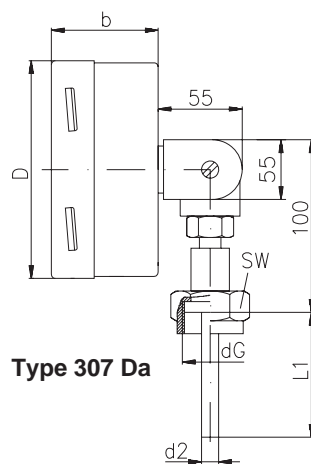
**Type 305 Da / Type 304 Da**



**Type 306 Da**



**Type 307 Da**



Dimensions (mm)												
Dia	a	b	D	d <sub>6</sub>	h*	h <sub>1</sub> *	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub>	h <sub>5</sub>	h <sub>7</sub>	h <sub>8</sub>
63	16	41	64	12	40	40	70	60	70	45	100	90
80	13	44	81	12	60	60	85	120	70	120	125	110
100	16	55	101	12	60	60	85	120	70	120	134,5	119,5
160	16	50	161	12	60	60	85	120	70	120	164,5	149,5

Size of thread	
AF	d <sub>G</sub>
27	G 1/2
32	G 3/4
27	M 20x1,5
32	M 27x2

\* 80 mm up to indicating ranges  $\geq 500^{\circ}\text{C}$  and sensor length  $\geq 120^{\circ}\text{C}$ , smaller sensors and special orderings on request.

We reserve the right to alter specifications in the course of further product development and improvement.

## Precision dial thermometer, gasfilled system

**Type series 301-307 Dc** with union nut M 24x1,5  
for local temperature indication, for protecting tubes DIN 43772  
form 4

Class 1: DIN EN 13190  
Indicating ranges: -60 up to +600°C (special ranges on request)  
Case: case with bayonet ring and steel bezel, st.st. 1.4301  
Type of protection: IP 54  
Indication correcting facility: By adjustable pointer or adjusting screw  
Accuracy: Limits of error in accordance with DIN EN 13190

Order code (example)	301	1	1	40	215	5	8	1
Thermometer mounting:								
Vertical	301							
Axial	302							
90° to rear	303							
90° to right	304							
90° to left	305							
135° to rear	306							
Universally adjustable	307							
Case, nominal diameter d1 :								
63 mm filled <sup>1)</sup> A dry		1						
80 mm B		2						
100 mm C		3						
160 mm D		4						
Case material								
Stainless steel 1.4301			2					
Indicating ranges: *								
-60 +40°C = 64	0 +80°C = 08	0 +250°C = 25						
-40 +40°C = 44	0 +100°C = 10	0 +300°C = 30						
-30 +30°C = 33	0 +120°C = 12	0 +400°C = 40						
-30 +50°C = 35	0 +160°C = 16	0 +500°C = 50						
0 +60°C = 06	0 +200°C = 20	0 +600°C = 60						
Immersion tube immersed lengths dimension l <sub>1</sub> :								
155 <sup>1)</sup> mm				155				
215 <sup>1)</sup> mm				215				
275 <sup>1)</sup> mm				275				
295 <sup>2)</sup> mm				295				
355 <sup>2)</sup> mm				355				
415 <sup>2)</sup> mm				415				
Immersion tube diameter d <sub>2</sub> 6 mm.								
<sup>1)</sup> for protection tubes DIN 43763 form D with double threaded-nipple M 18x1,5 / M 24x1,5								
<sup>2)</sup> for protection tubes DIN 43763 form D with neck 165 mm								
Immersion tube type:								
Union nut Typ Dc						5		
Threaded connection d <sub>G</sub> :								
M 24x1,5 SW 32							8	
Material for immersion tube and thread								
tube 1.4571 / thread 1.4571								3

### Additional features:

<sup>1)</sup> Casing filled with glycerine or silicon oil (vibration resistance), protection IP 65,  
Contact facilities see page 16-18.

\* Also available with double division celsius and Fahrenheit (C+F)

Protecting tubes for weld-in in accordance DIN 43722 form 4- see page 21.



Type 301

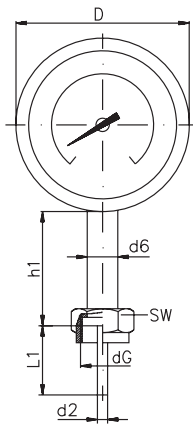


Type 302

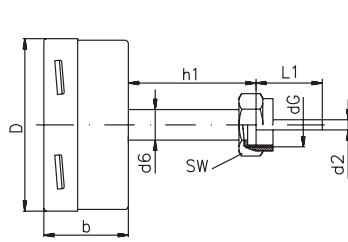


Type 307

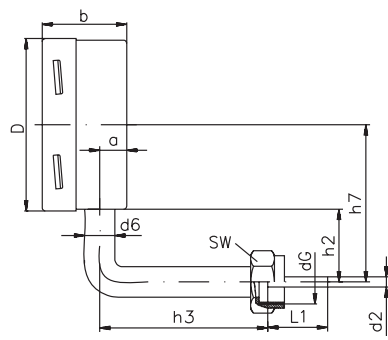
**Type 301 Dc**



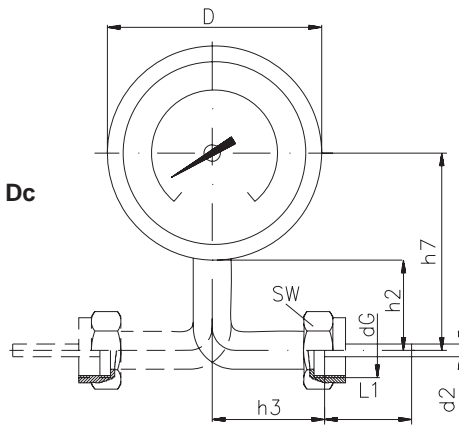
**Type 302 Dc**



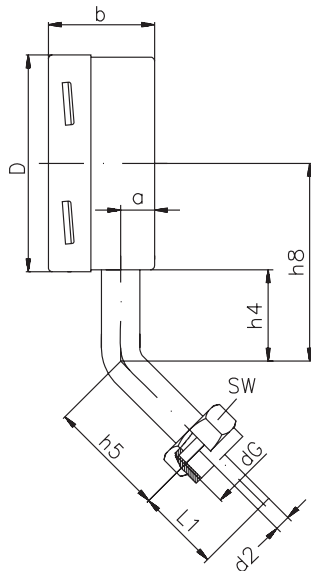
**Type 303 Dc**



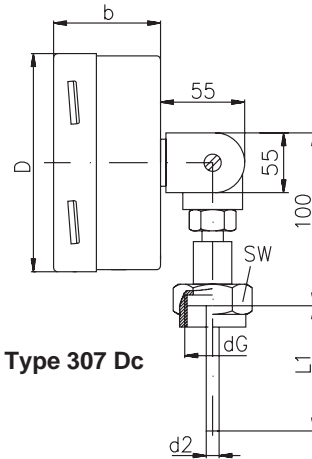
**Type 305 Dc / Type 304 Dc**



**Type 306 Dc**



**Type 307 Dc**



Dimensions (mm)												
Dia	a	b	D	d <sub>6</sub>	h*	h <sub>1</sub> *	h <sub>2</sub>	h <sub>3</sub>	h <sub>4</sub>	h <sub>5</sub>	h <sub>7</sub>	h <sub>8</sub>
63	16	41	64	12	40	40	70	60	70	45	100	90
80	13	44	81	12	60	60	85	120	70	120	125	110
100	16	55	101	12	60	60	85	120	70	120	134,5	119,5
160	16	50	161	12	60	60	85	120	70	120	164,5	149,5

Size of thread	
AF	d <sub>G</sub>
32	M 24x1,5

\* 80 mm up to indicating ranges  $\geq 500^{\circ}\text{C}$  and sensor length  $\geq 120^{\circ}\text{C}$ , smaller sensors and special orderings on request.

We reserve the right to alter specifications in the course of further product development and improvement.

## SIKA precision dial thermometer, gasfilled system

### Type series 310 WH/DN - 320 TA/DN - 330 TE/DN

with union nut and double threaded nipple G ½ A - G ¾ A - M 20x1,5 - M 27x2  
(also available with adjustable clamp screwing.../AK))

Class 1:	DIN EN 13190
Indicating ranges:	-60 up to +600°C (special ranges on request)
Case:	case with bayonet ring and steel bezel, st.st. 1.4301
Type of protection:	IP 54
Indication correcting facility:	By adjustable pointer or adjusting screw
Accuracy:	Limits of error in accordance with DIN EN 13190

Order code (example)	310	1	1	40	063	4	2	1
Thermometer mounting: 310 WH with wall bracket	310							
320 TA with rear flange	320							
330 TE with front flange	330							
Case, nominal diameter d1 in mm :								
63 mm filled <sup>1)</sup> A dry		1						
80 mm B		2						
100 mm C		3						
160 mm D		4						
Case material: St. steel 1.4301			2					
Indicating ranges: *								
-60 +40°C = 64	0 +80°C = 08	0 +250°C = 25						
-40 +40°C = 44	0 +100°C = 10	0 +300°C = 30						
-30 +30°C = 33	0 +120°C = 12	0 +400°C = 40						
-30 +50°C = 35	0 +160°C = 16	0 +500°C = 50						
0 +60°C = 06	0 +200°C = 20	0 +600°C = 60						
Immersion tube immersed lengths dimension l <sub>1</sub> mm:								
63 mm				063				
100 mm				100				
160 mm				160				
250 mm				250				
400 mm				400				
We supply 10 mm dia as standard. The immersion tubes are available with the following diameters d2: 6mm, 8mm or 12mm.								
Immersion tube type:								
Union nut and double threaded nipple		Typ DN				4		
Adjustable clamp screwing		Typ AK				9		
Threaded connection d <sub>G</sub> :								
G ½ A SW 27							2	
G ¾ A SW 32							3	
M 20x1,5 SW 27							7	
M 27x2 SW 32							9	
Material for immersion tube, union nut and double threaded nipple								
Tube 1.4571 / union nut and double threaded nipple stainless steel 1.4571								3
Material for immersion tube and adjustable clamp screwing								
Tube 1.4571 / adjustable clamp screwing stainless steel 1.4571								3

#### Additional features:

<sup>1)</sup>Casing filled with glycerine oil or silicone oil (vibration resistance), protection IP 65, contact facilities see page 16-18

Capillary: stainless steel 1.4571<sup>2)</sup>, stainless steel with spiral protecting 1.4301<sup>2)</sup> stainless steel 1.4571 in plastic sheath<sup>2)</sup>

\* Also available with double indicating range °C and °F

<sup>2)</sup> Please state the required capillary material and length when ordering.

Protecting tubes for weld-in or screwing in accordance DIN 43772 form 4, 5, 6 see page 19



Type 310 WH

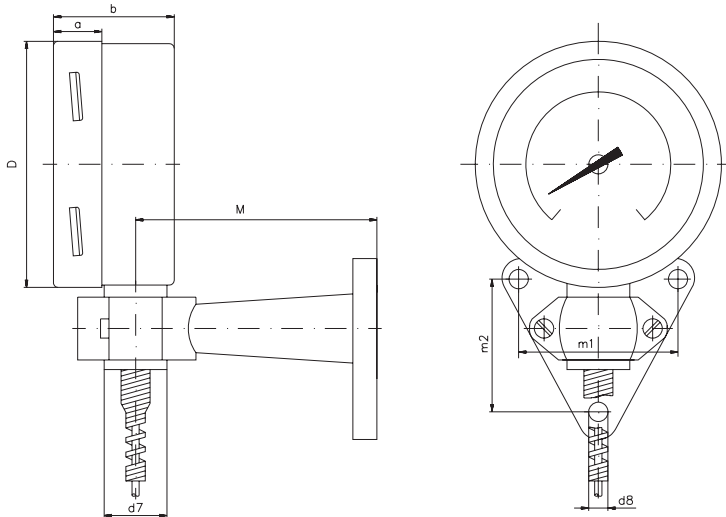


Type 320 TA

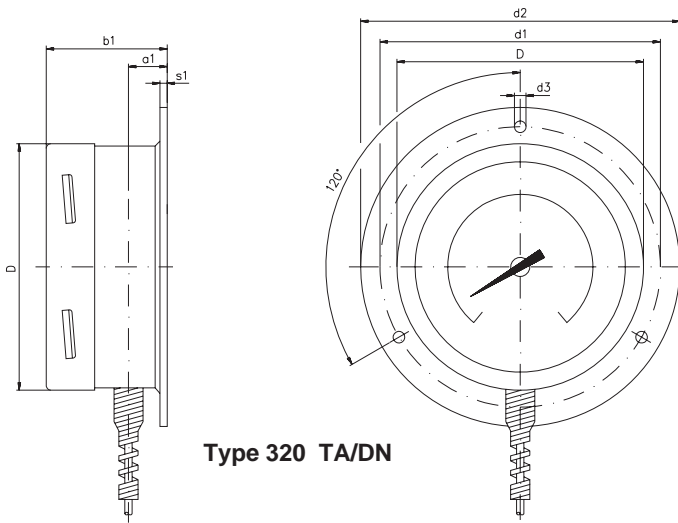
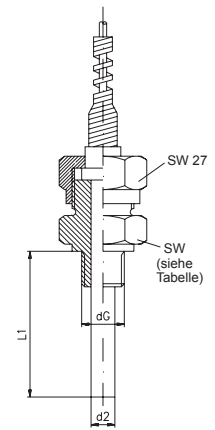


Type 330 TE

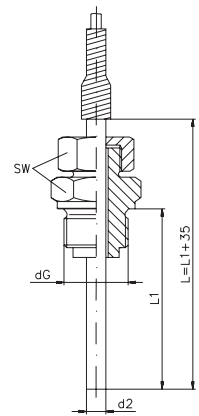
### Type 310 WH/DN



### Immersion tube type DN

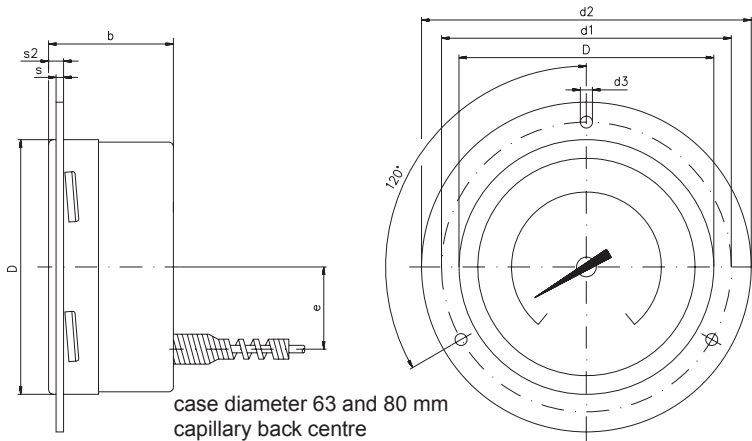


### Immersion tube type AK



### Type 320 TA/DN

### Type 330 TE/DN



Size of thread	
AF	d G
27	G <sup>1</sup> / <sub>2</sub> A
32	G <sup>3</sup> / <sub>4</sub> A
27	M 20x1,5
32	M 27x2

We reserve the right for technical modifications.

Dimensions (mm)																	
Dia	a	a <sub>1</sub>	b	b <sub>1</sub>	D	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	e	s	s <sub>1</sub>	s <sub>2</sub>	d <sub>7</sub>	d <sub>8</sub>	m <sub>1</sub>	m <sub>2</sub>	M
63	16	18	41	44,5	64	75	85	3,7	–	2	6	5	26	7	65	56	100
80	13	15	49	51	81	95	110	3,7	–	2	6	5					
100	16	19,5	55	59	101	116	132	4,8	36	2	6	6					
160	16	19,5	50	54	161	178	196	5,8	53	2	6	6					

## SIKA Precision dial thermometer, gasfilled system

### Type series 310 WH/Da - 320 TA/Da - 330 TE/Da

with union nut G 1/2 - G 3/4 - M 20x1,5 - M 27x2

Class 1:	DIN EN 13190
Indicating range:	-60 bis +600°C (special ranges on request)
Case:	case with bayonet ring and steel bezel, st.st. 1.4301
Type of protection:	IP 54
Indication correcting facility:	By adjustable pointer or adjusting screw
Accuracy:	Limits of error in accordance with DIN EN 13190

Order code (example)	310	1	1	40	093	3	2	1
Thermometer mounting:								
310 WH with wall bracket	310							
320 TA with rear flange	320							
330 TE with front flange	330							
Case, nominal diameter d1:								
63 mm filled <sup>1)</sup> A	dry	1						
80 mm B		2						
100 mm C		3						
160 mm D		4						
Case material:								
Stainless steel 1.4301			2					
Indicating ranges: *								
-60 +40°C = 64	0 +80°C = 08	0 +250°C = 25						
-40 +40°C = 44	0 +100°C = 10	0 +300°C = 30						
-30 +30°C = 33	0 +120°C = 12	0 +400°C = 40						
-30 +50°C = 35	0 +160°C = 16	0 +500°C = 50						
0 +60°C = 06	0 +200°C = 20	0 +600°C = 60						
Immersion tube immersed lengths dimension l <sub>1</sub> :								
for union nut:								
G 1/2 or M 20x1,5								
89 mm = 089								
126 mm = 126								
186 mm = 186								
276 mm = 276								
426 mm = 426								
Immersion tube diameter d <sub>2</sub> standard 10 mm.								
On request with Ø 6 mm, 8 mm or 12 mm available.								
Immersion tube type:								
Union nut		Typ Da				3		
Threaded connection d <sub>G</sub> :								
G 1/2 A SW 27							2	
G 3/4 A SW 32							3	
M 20x1,5 SW 27							7	
M 27x2 SW 32							9	
Material for immersion tube and union nut:								
tube 1.4571 / union nut 1.4305								3

#### Additional features:

<sup>1)</sup>Casing filled with glycerine oil or silicone oil (vibration resistance), protection IP 65, contact facilities see page 16-18

Capillary: stainless steel 1.4571<sup>2)</sup>, stainless steel with spiral protecting 1.4301<sup>2)</sup> stainless steel 1.4571 in plastic sheath<sup>2)</sup>

\* Also available with double indicating range °C and °F

<sup>2)</sup> Please state the required capillary material and length when ordering.

Protecting tubes for weld-in or screwing in accordance DIN 43772 form 8, 9 and DIN 16179 CS (old version) see page 20



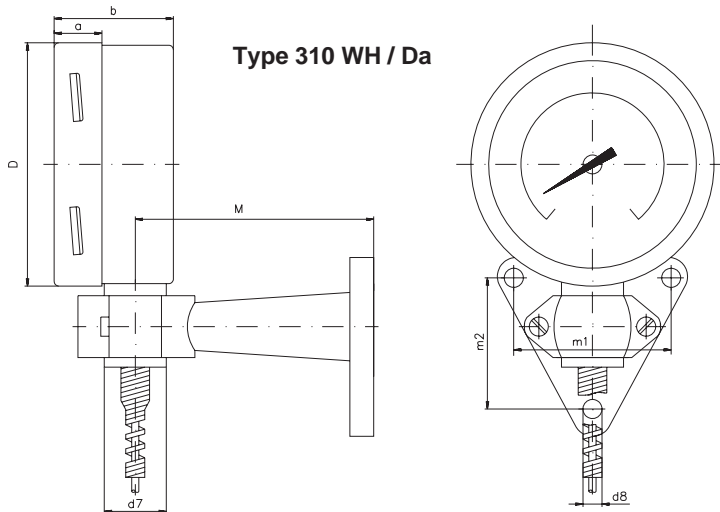
Type 310 WH



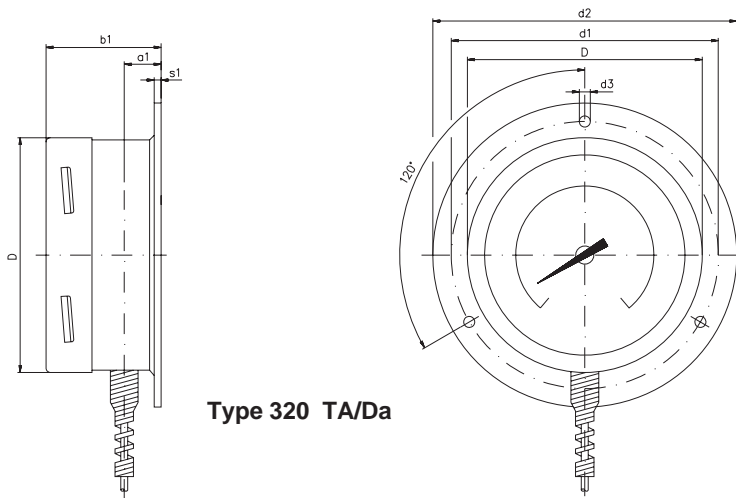
Type 320 TA



Type 330 TE

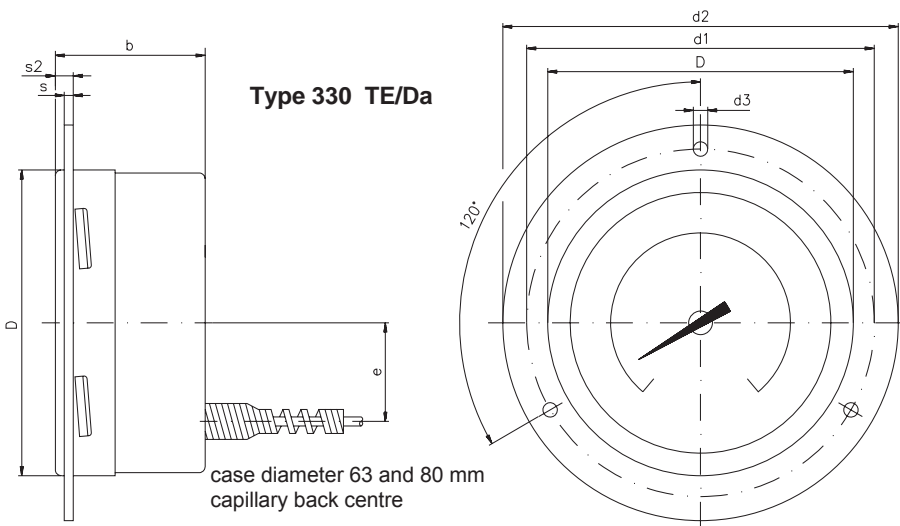
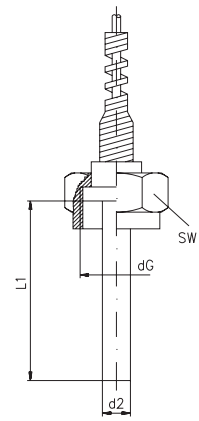


Type 310 WH / Da



Type 320 TA/Da

Immersion tube type Da



Type 330 TE/Da

case diameter 63 and 80 mm  
capillary back centre

Size of thread	
SW	d <sub>G</sub>
27	G <sup>1</sup> / <sub>2</sub>
32	G <sup>3</sup> / <sub>4</sub>
27	M 20x1,5
32	M 27x2

We reserve the right for technical modifications.

Dimensions (mm)																		
Dia	a	a <sub>1</sub>	b	b <sub>1</sub>	D	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	e	s	s <sub>1</sub>	s <sub>2</sub>	d <sub>7</sub>	d <sub>8</sub>	m <sub>1</sub>	m <sub>2</sub>	M	
63	16	18	41	44,5	64	75	85	3,7	-	2	6	5	26	7	65	56	100	
80	13	15	49	51	81	95	110	3,7	-	2	6	5						
100	16	19,5	55	59	101	116	132	4,8	36	2	6	6						
160	16	19,5	50	54	161	178	196	5,8	53	2	6	6						

## SIKA Precision dial thermometer, gasfilled system

### Type series 310 WH/Dc - 320 TA/Dc - 330 TE/Dc

with union nut M 24x1,5, for protecting tube weld-in type DIN 43772 Form 4

Class 1:	DIN EN 13190
Indicating ranges:	-60 bis +600°C (special ranges on request)
Case:	case with bayonet ring and steel bezel, st.st. 1.4301
Type of protection:	IP 54
Indication correcting facility:	By adjustable pointer or adjusting screw
Accuracy:	Limits of error in accordance with DIN EN 13190

Order code (example)	310	1	1	40	215	5	8	1
Thermometer mounting: 310 WH with wall bracket	310							
320 TA with rear flange	320							
330 TE with front flange	330							
Case, nominal diameter d1 in mm :								
63 mm filled <sup>1)</sup> A	dry	1						
80 mm B		2						
100 mm C		3						
160 mm D		4						
Case material: Stainless steel 1.4301			2					
Indicating ranges: *								
-60 +40°C = 64	0 +80°C = 08	0 +250°C = 25						
-40 +40°C = 44	0 +100°C = 10	0 +300°C = 30						
-30 +30°C = 33	0 +120°C = 12	0 +400°C = 40						
-30 +50°C = 35	0 +160°C = 16	0 +500°C = 50						
0 +60°C = 06	0 +200°C = 20	0 +600°C = 60						
Immersion tube immersed lengths dimension l <sub>1</sub> mm:								
155 <sup>2)</sup> mm =				155				
215 <sup>2)</sup> mm				215				
275 <sup>2)</sup> mm				275				
295 <sup>3)</sup> mm				295				
355 <sup>3)</sup> mm				355				
415 <sup>3)</sup> mm				415				
Immersion tube diameter d <sub>2</sub> 6 mm.								
<sup>2)</sup> for immersion tube acc.to DIN 43772 form 4 with connection nipple M18x1,5 /M24x1,5								
<sup>3)</sup> for immersion tube acc.to DIN 43772 form 4 with neck tube 165 mm								
Immersion tube type:								
Union nut	Typ Dc					5		
Threaded connection d <sub>G</sub> :								
M 24x1,5 SW 32							8	
Material for immersion tube and union nut:								
Tube 1.4571 / union nut 1.4305								3

#### Additional features:

<sup>1)</sup>Casing filled with glycerine oil or silicone oil (vibration resistance), protection IP 65, contact facilities see page 16-18

Capillary: stainless steel 1.4571\*\*, stainless steel with spiral protecting 1.4301\*\*  
stainless steel 1.4571 in plastic sheath\*\*

\* Also available with double indicating range °C and °F

\*\* Please state the required capillary material and length when ordering.

Protecting tubes for weld-in or screwing in accordance DIN 43772 form see page 21



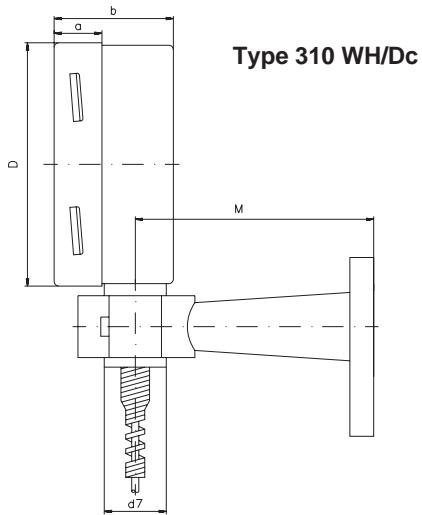
Type 310 WH



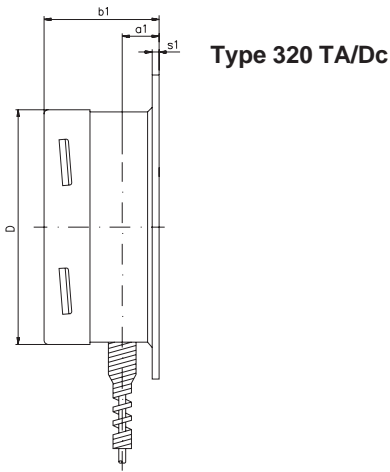
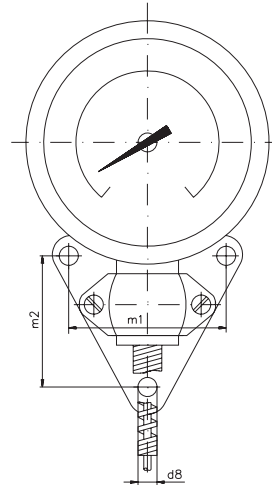
Type 320 TA



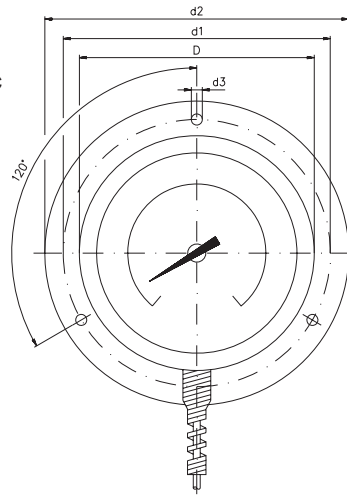
Type 330 TE



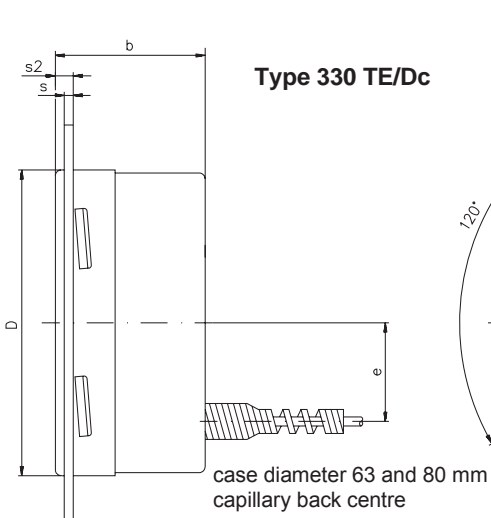
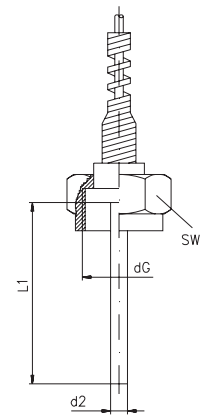
Type 310 WH/Dc



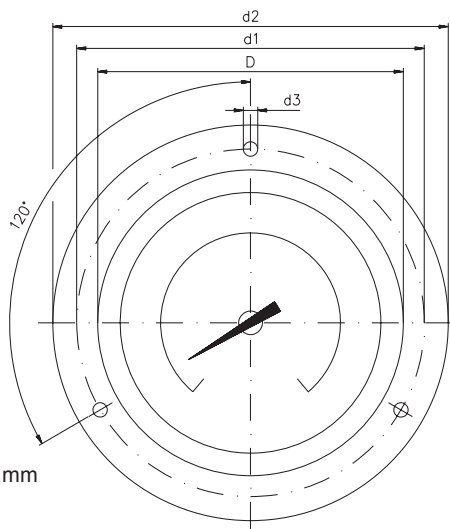
Type 320 TA/Dc



Immersion tube type Dc



Type 330 TE/Dc



case diameter 63 and 80 mm  
capillary back centre

Size of thread	
AF	d G
27	G <sup>1</sup> / <sub>2</sub>
32	G <sup>3</sup> / <sub>4</sub>
27	M 20x1,5
32	M 27x2

We reserve the right for technical modifications

Dimensions (mm)																		
Dia	a	a <sub>1</sub>	b	b <sub>1</sub>	D	d <sub>1</sub>	d <sub>2</sub>	d <sub>3</sub>	e	s	s <sub>1</sub>	s <sub>2</sub>	d <sub>7</sub>	d <sub>8</sub>	m <sub>1</sub>	m <sub>2</sub>	M	
63	16	18	41	44,5	64	75	85	3,7	-	2	6	5	26	7	65	56	100	
80	13	15	49	51	81	95	110	3,7	-	2	6	5						
100	16	19,5	55	59	101	116	132	4,8	36	2	6	6						
160	16	19,5	50	54	161	178	196	5,8	53	2	6	6						

## Contact devices

Dial thermometers with contact devices are supplied with housing diameters of 100 mm and 160 mm.

Types:                    1. Standard contact type S  
                              2. Magnet contact type M  
                              3. Inductive contact type I

Front screen:           Makrolan, with waterproofed adjusting lock and removable key.

Type of protection:    IP 54

**1. Standard contact:**            Operating voltage:            max. 250 V (DC/AC);  
    Switching capacity:            max. 10 W / 18 VA  
    Switching current:            max. 0,7 A (resistive load)

Dial thermometers with standard contacts are used where a high contact load is not required and the appliances are not exposed to any severe vibrations. Opening and closing the contacts take place without delay at the set limit value. For this type of contact case filled with stabilizing liquid is not possible.

**2. Magnet contact:**            Operating voltage:            max. 250 V (DC/AC)<sup>4)</sup>  
    Switching capacity:            max. 30 W / 50 VA<sup>4)</sup>  
    Switching current:            max. 1 A (resistive load)

Dial thermometers with magnet spring contacts can be used under virtually all working conditions. The contacts are largely insensitive to vibration. Since, with this design, the magnetic force acts during the switching operation, this generally results in no chatter. We recommend that a relay also be used if a high control accuracy is required.

## Switching functions

Circuit diagram <sup>2)</sup>	type with no. <sup>1)</sup>		Switching functions Clockwise pointer movement <sup>3)</sup>
	Standard contact	Magnet spring contact	
	S 1	M 1	Contact closes when limit value exceeded
	S 2	M 2	Contact opens when limit value exceeded
	S 12	M 12	1. Contact closes when ... 2. Contact opens when ... ... limit value exceeded
	S 21	M 21	1. Contact opens when ... 2. Contact closes when ... ... limit value exceeded
	S 11	M 11	1. Contact and 2. Contact close when limit value exceeded
	S 22	M 22	1. Contact and 2. Contact open when limit value exceeded



<sup>1)</sup> When ordering, please indicate the appropriate number (e.g. S 12 etc.)

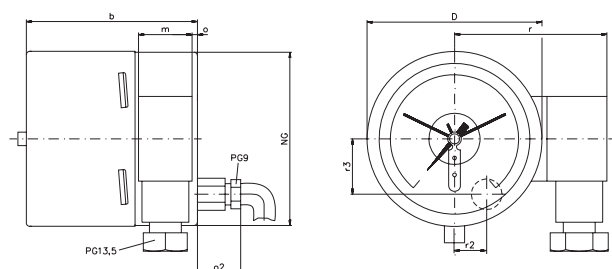
<sup>2)</sup> The contact ends or terminals are logically marked. Earth wires are always marked green/yellow.

<sup>3)</sup> The switching function is reversed when the pointer moves in an anticlockwise direction.

<sup>4)</sup> With oil filling: max. 220 V DC/AC and 20 W / 20 VA

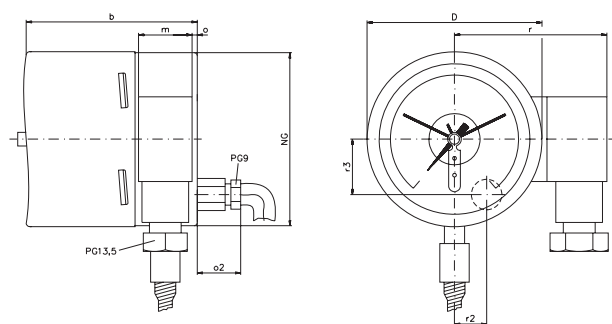
# Dimensions of casing and electrical connection for contact devices

Type series 301 - 307

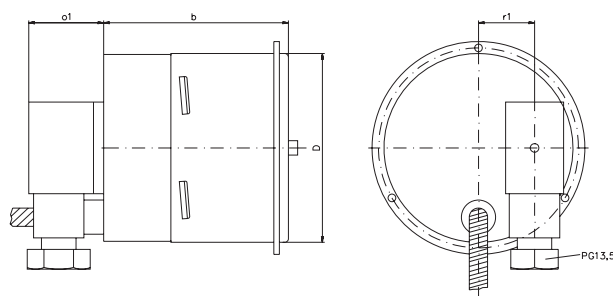


Dimensions (mm)								
Dia	b	D	m	o	o2	r	r2	r3
100	98,5	101	31	3	25	88	23	32
160	105	161	31	3,25	25	119	36	50

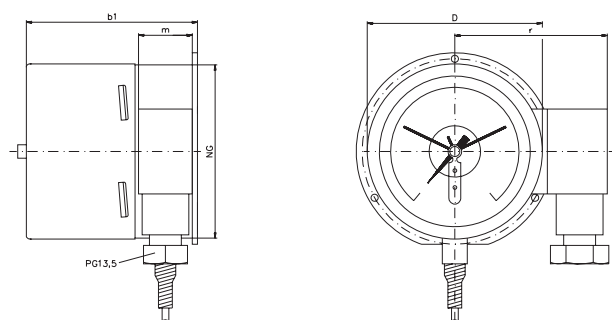
Type: 310



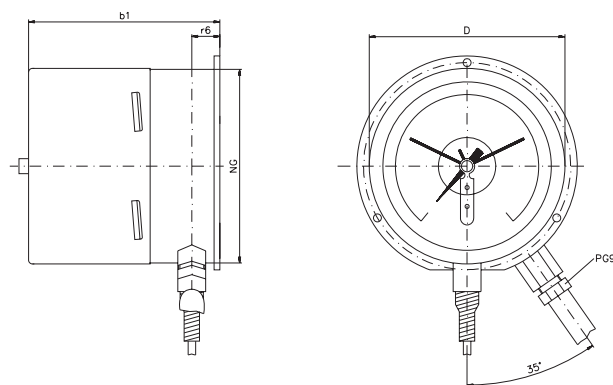
Type: 330



Type: 320 (cable terminal)



Type: 320 (cable)



Dimensions (mm)												
Dia	b	b1	D	m	o	o1	o2	r	r1	r2	r3	r6
100	98,5	102	101	31	3	40	25	88	30	23	32	14,5
160	105	109	161	31	3,25	40	25	119	55	36	50	14,5

# Protecting tubes

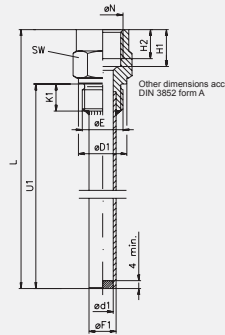
## Protecting tubes DIN 43772, form 4, 5 and 6

for SIKA-Thermometers

immersion tube type "B", "DN", "AK"

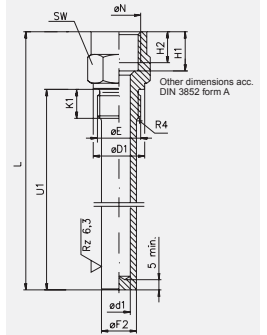
Ordering no. (example):	179.1	082	2	0
Protective tube type				
DIN form 5 = SIKA Type Ei	179.1			
DIN form 6 = SIKA Type Gi	179.3			
DIN form 4 = SIKA Type BS	180.5			
Immersion length $l_1$ in mm of the matching immersion tube		immersion tube length dimension U1/U in mm		
100 Type Ei (Fig. 1)		82 =	082	
160 two-part, threaded connection		142 =	142	
250 brazed to pipe (non-ferrous metal)		232 =	232	
400 (PN 16) or welded (steel) (PN 35), 382 = for screwing in		382 =	382	
100 Type Gi (Fig. 2)		82 =	082	
160 turned from solid stock		142 =	142	
250 for screwing in (PN 100)		232 =	232	
400		382 =	382 <sup>1)</sup>	
100 Type BS (Fig. 3)		73	073	
160 turned from solid stock		133	133	
250 for welding in for high		223	223 <sup>1)</sup>	
400 pressure		373	373 <sup>1)</sup>	
Threaded connection	G 1/2 A			2
	M 20 x 1,5			7
d1:	G 3/4 A			3
	M 27 x 2			9
Materials for types	Ei: Precision steel or 2.0401 - Cu Zn39Pb3 (MS 58) or 2.0402 - Cu Zn40Pb2			0
	Gi: Tube SoMs 76 or Ms 63 brazed 2.0401 - CuZn39Pb3 (MS 58) or 2.0402 - CuZn40Pb2			1
	Gi: 1.0718 - MSUnPb30+C			1
	Ei, Gi or BS: 1.4571 - X6CrNiMoTi 17122			2
	Ei: Hex.nut 2.0540 - CuZn35Ni2 (SoMs 59)			3
	Gi: Tube 2.0460 - CuZn20Al2 (SoMs 76)			4
	Gi: 2.0540 - CuZn35Ni2 (SoMs 59)			15
	2.0882 - CuNi30Fe			5
	1.7335 - 13CrMo44			7
	1.7380 - 10CrMo910			8
	1.5415 - 15Mo3			9
	BS: 1.0460 - C 22.8			6

Type Ei = DIN form 5



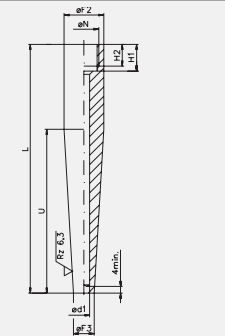
Code no. 179.1

Type Gi = DIN form 6



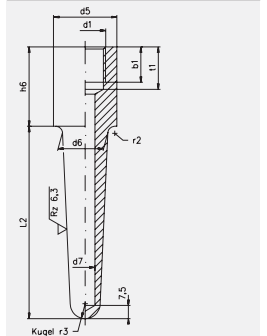
Code no. 179.1

Type BS = DIN form 4



Code no. 180.5

DIN 16179 form BS



Code no. 180.5

Dimension table, form 4, 5, 6

Thread E/N	Code no.	D1	H2	F2 *	F2 **	d1	F1	F3	K1	H1	SW4
G 1/2	2	26	15	26 h7	17	11	14	17	14	19	27
M 20 x 1,5	7										
G 3/4	3	32	17	32 h11	19	11	14	17	16	22	32
M 27 x 2	9										

\* for form 4

\*\* for form 6

Dimension table DIN 16179, form BS (Fig. 4)

Thread d1	Code no.	d5 h11	d6	d7	b1 h11	h6	r2	r3
M 20 x 1,5	7	30	25	11	16	39	2,5	8,5
G 1/2	2							
G 3/4	3	36	26	11	20	45	4	8,5
M 27 x 2	9							

<sup>1)</sup> acc. DIN 16179 BS (old version)

<sup>2)</sup> Alloy material with inspection test certificate possible

We reserve the right for technical modifications.

# Protecting tubes DIN 43772 form 8, 9 and DIN 16179 CS (old version)

for SIKA-Thermometers with immersion tube type "Da"

Ordering no. (example):	179.2	071	2	0
Protective tube version	Type Ea Type Ga Type CS	179.2 179.4 180.6		
Immersion length $l_1$ in mm of the matching immersion tube type "Da"		immersion tube length dimension $l_2$ in mm		
89		73 =	073	
126 G 1/2 Type Ea (Fig. 1)		110 =	110	
186 three-part, threaded connection		170 =	170	
93 brazed to pipe (non-ferrous metal)		73 =	073	
130 (PN 16) or welded (steel) (PN 35),		110 =	110	
190 G 3/4 for screwing in		170 =	170	
280		260 =	260	
430		410 =	410	
89		73 =	073	
126		110 =	110	
186 Type Ga (Fig. 2)		170 =	170	
93 turned from solid stock,		73 =	073	
130 for screwing in (PN 100)		110 =	110	
190		170 =	170	
280		260 =	260	
430		410 =	410	
89		63 =	063	
126		100 =	100	
186 Type "CS" (Fig. 3)		160 =	160	
93 turned from solid stock,		63 =	063	
130 for welding in for		100 =	100	
190 high pressure		160 =	160	
280		250 =	250	
430		400 =	400	
Threaded connection $d_1$ :	G 1/2 M 20 x 1,5 G 3/4 M 27 x 2		2 7 3 9	
Materials <sup>2)</sup> Ea <sup>1)</sup> : for type	Precision steel		0	
	2.0401 - Cu Zn39Pb3 (MS 58) or 2.0402 - Cu Zn40Pb2		1	
Ga:	tube SoMs 76 or Ms 63 brazed		1	
	2.0401 - Cu Zn39Pb3 (MS 58) or 2.0402 - Cu Zn40Pb2		2	
Ga:	1.0718 - 11SMnPb30+C		3	
Ea, Ga, CS:	1.4571 - X6CrNiMoTi 17122		4	
Ea:	Hex nut 2.0540 - CuZn35Ni2 (SoMs 59)		15	
	tube 2.0460 - CuZn20Al2 (SoMs 76)		5	
Ga:	2.0540 - CuZn35Ni2 (SoMs 59)		7	
	2.0882 - CuNi30Fe		6	
CS:	1.7335 - 13CrMo44		8	
CS:	1.0460 - C 22.8		7	
CS:	1.7380 - 10CrMo910		8	
CS:	1.5415 - 15Mo3		9	

<sup>1)</sup> Hex nut 2.0401-CuZn39Pb3 or 2.0402-CuZn40Pb2, tube SoMs 76 or Ms 63 brazed

<sup>2)</sup> Alloy material with inspection test certificate possible

## Dimension table form 8 = type Ea, form 9 = type Ga | form CS

Thread	Code no.	$d_1$	$D_1$	$F_1$	$F_2$	$K_1$	$K_2$	SW	$d_1$	$d_7$	$d_9$ $h_{11}$	$h_2$	$h_6$
G 1/2	2	11	26	14	17	14	12	27	G 1/2	11	24	12	39
M20x1,5	7								M20x1,5				
G 3/4	3	11	32	14	19	16	14	32	G 3/4	11	30	14	45
M27x2	9								M27x2				

### DIN form 8 = Type Ea

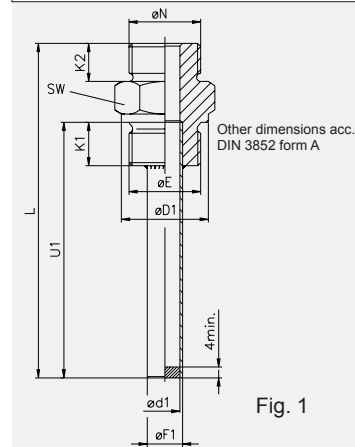


Fig. 1

Code no. 179.2

### DIN form 9 = Type Ga

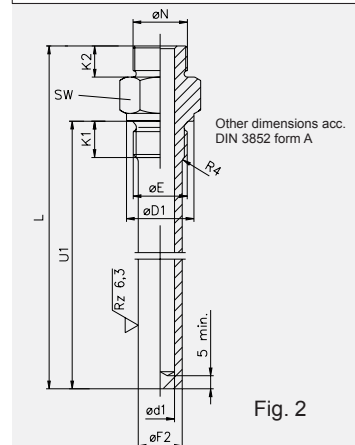
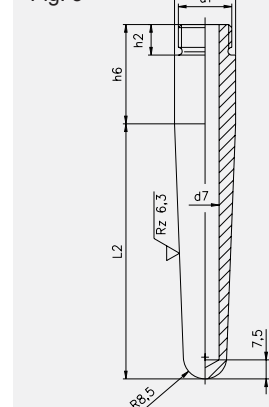


Fig. 2

Code no. 179.4

### DIN 16179 (old) = Type CS

Fig. 3



Code no. 180.6

### Immersion tube length form 8,9

$L \pm 1$	$U_1 \pm 1$	$G + 1$
101	73	46
138	110	133
198	170	193
288	260	283
438	410	433

## Protection tubes for welding in DIN 43772 Form 4

for SIKA-Thermometers immersion tube type "Dc"

connection with union nut M24x1,5

<b>Ordering no. (example):</b>	<b>180.9</b>	<b>001</b>	<b>0</b>	<b>3</b>
Protecting tube for welding in without screwing form 4 =	180.9			
Form	Protective tube length			
D 1	140 mm	001	0	
D 2	200 mm	002	0	
D 4	200 mm	004	0	
D 5	260 mm	005	0	
Materials	1.4571 - X6CrNiMoTi 17122			3
	1.0460 - C 22.8			6
	1.7335 - 13CrMo44			7
	1.7380 - 10CrMo910			8
	1.5415 - 15Mo3			9

Protective tube length L	Immersion length V	F <sub>2</sub>	F <sub>3</sub>	d1	N
140	65	24h7	12,5	7	M18x1,5
200	125	24h7	12,5	7	
200	65	24h7	12,5	7	
260	125	24h7	12,5	7	

### Options:

Fig. 2: with screw plug M18x1,5, MS Code-No. 000061

Fig. 3: with double-threaded nipple M18x1,5 / M24x1,5, steel, Code-No. 00076V

Fig. 4: with neck tube 165 mm, M18x1,5 / M24x1,5, steel, Code-No. 165020V

**Ordering example:** Protecting tube for welding in form 4, material 1.4571, with screw plug M18x1,5 MS = Code-No. 180.9.001.03 + 000061

See pages 8 and 14 for SIKA thermometers "Dc" suitable for these protecting tubes.

The immersed length (dimension l<sub>3</sub>) of the thermometers types "Dc" are as follows:

Form	with neck tube	with double threaded nipple
D 1	295 mm	155 mm
D 2 / D 4	355 mm	215 mm
D 5	415 mm	275 mm

We reserve the right for technical modifications.

Fig. 1

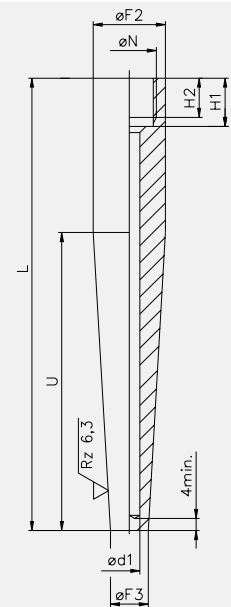


Fig. 2

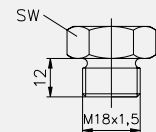


Fig. 3

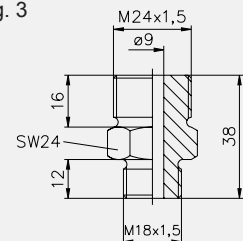
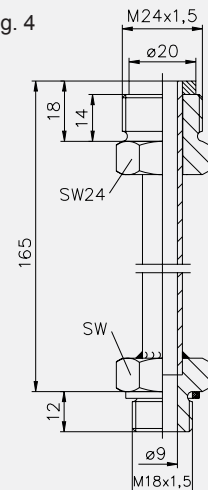


Fig. 4



# Our Production and Sales Range



Flow Measurement Equipment



Axial Turbine Flow Sensor



Flow Switches



Pressure Gauges and Pressure Sensors



Industrial Thermometers



Electronic Digital Thermometer, Dial Thermometer



Measuring Instruments



Temperature Sensors



Calibrators, DKD-Laboratory

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