

# Gas-Actuated Thermometers, Rigid Stem

Crimped-on ring case stainless steel

**TSchg**  
**TSchgG**

## Standard Versions

Information on selection and metrological features (temperature-resistance, among others) and temperature ranges / smallest subdivision / error limits can be found in model overview 8000.

### Measuring Unit

With nitrogen filling  
(inert gas, physiologically safe)

### Accuracy (EN 13 190)

Class 1

### Case

With polished crimped-on ring, 1.4301 (304 stainless steel)

### Case Protection Type (EN 60 529 / IEC 529)

IP 65

### Case Filling

For model TSchgG: silicone oil

### Nominal Case Sizes

63, 80, 100, 160 mm (2½", 3", 4", 6")

### Case Configuration

Connection temperature sensor (stem): rigid connection with neck tube

Stem position: vertical bottom position,  
optional: with angle (**w**, **wst**, **wl**, **wr**) or  
centre back position (**rm**),  
see page 2

Mounting device: without,  
optional: for centre back connection (**rm**),  
back flange for surface  
mounting (**Rh**),  
see page 2

### Temperature Ranges (EN 13 190)

Spans from 80 K to 600 K

### Temperature Sensor (Stem)

Made of stainless steel 1.4571 (316 L),  
max. static operating pressure: 25 bar

Stem models: A1, A3, A4, A4.1, A5 or A6

Stem-Ø dF: 8, 10 or 12 mm

Stem length L resp. L1: Lmin resp. L1min up to max. 2.50 m

Please consider the minimum stem length depending on the active length (La) and stem model, see page 3.

### Window

Instrument glass

### Movement

Brass/German silver

### Dial

Aluminium white, scaling black

### Pointer

Aluminium black

### Indication Adjustment (± 6%)

From the outside via screw



## Ordering Information, Standard Temperature Ranges, Options

See page 4

## Special Versions and further Options among others

- Other stem models, e.g.
  - without bent tube, see data sheet 8299.1
  - with connection for food / biotechnical / pharmaceutical industry, see data sheet 8299.3
  - contact stems for temperature measurement on the outside of cases and pipe barrels up to 300 °C, see data sheet 8299.4
- Other stem-Ø, connection threads and materials upon request
- Other temperature ranges and / or special scales, e.g. dual scale °C/°F, coloured fields or ranges, dial inscriptions, etc.
- Case parts stainless steel 316 L (1.4404) upon request
- Model TSchg for ambient temperatures to -60 °C;  
Model TSchgG for ambient temperatures to -40 °C;  
to -60 °C NCS 100 and 160
- Position of the connection radial at 3 o'clock, 9 o'clock, 12 o'clock, others upon request or other than vertical installation (90°)
- GOST-version for Russia, Ukraine, Kazakhstan

## Thermowells

See DS 8.8110 ff.



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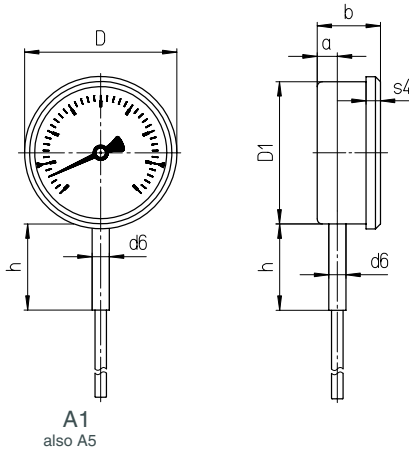
**8202**

02/14

# Stem Position / Case Configurations, Code Letters, Dimensional Data and Weights

## Vertical Bottom Stem Position

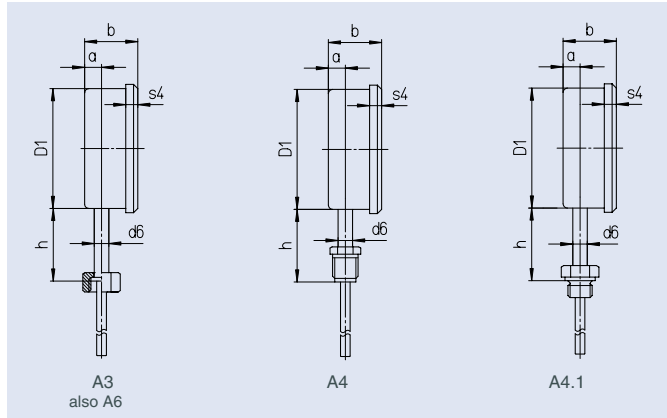
no additional code letter



A1  
also A5

## Further Stem Models

(demonstrated as example: vertical bottom stem position)



## Vertical Bottom Stem Position with Angle

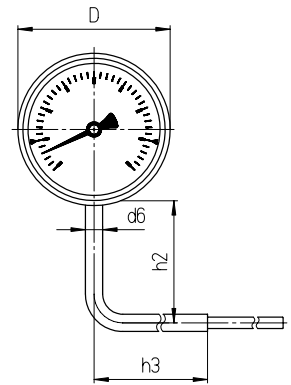
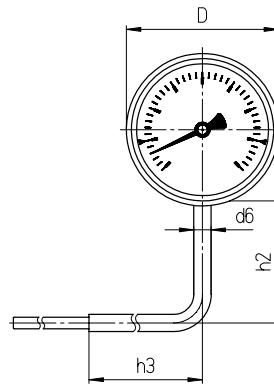
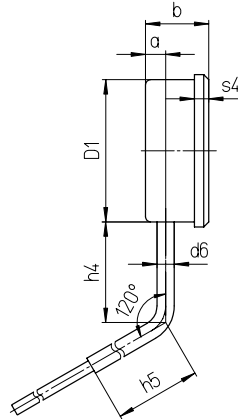
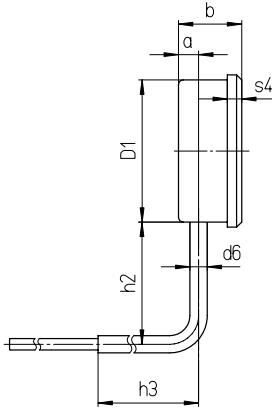
with angle:

90° angled to the back,  
code letter w

obtuse-angled to the back,  
code letters wst

right-angled to the left,  
code letters wl

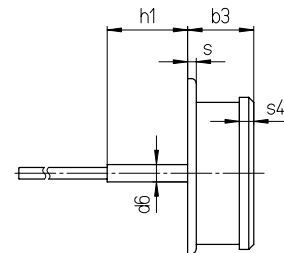
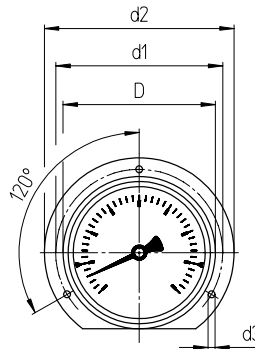
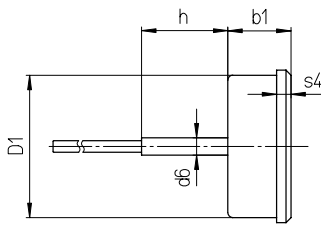
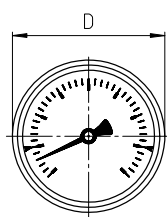
right-angled to the right,  
code letters wr



## Centre Back Stem Position

code letters rm

with back flange for surface mounting (back flange), except NCS 80  
code letters rmRh



## Dimensional Data (mm / inches) and Weights (kg / lb)

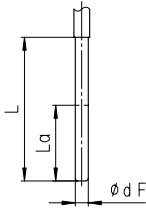
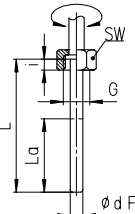
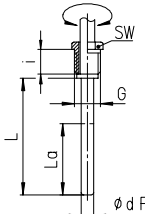
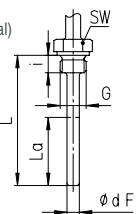
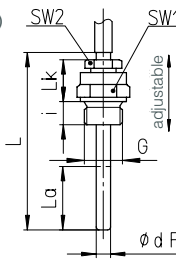
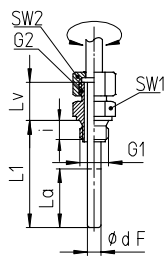
NCS	a	b	b1	b3	D	D1	d1	d2	d3	d6	h <sup>1)</sup>	h1 <sup>1)</sup>	h2	h3	h4	h5	s	s4	approx. Weight <sup>2)</sup>	
																			TSchg	TSchgG
63	12	39	39	42	67	62	75	85	3.6	12	60	57	85	120	70	120	5	8	0.23	0.30
2½"	.47	1.54	1.54	1.65	2.63	2.44	2.95	3.35	.14	.47	2.36	2.24	3.35	4.72	2.76	4.72	0.2	.31	0.50	0.66
80	15	42	42	-	86	79	95	110	4.8	12	60	-	85	120	70	120	-	8	0.32	0.46
3"	.59	1.65	1.65	-	3.39	3.11	3.74	4.33	.18	.47	2.36	-	3.35	4.72	2.76	4.72	-	.31	0.70	1.01
100	15	43	43	46.5	106	99	116	132	4.8	12	60	57	85 <sup>3)</sup>	120	70 <sup>3)</sup>	120	6	10	0.43	0.63
4"	.59	1.70	1.70	1.83	4.17	3.9	4.57	5.2	.18	.47	2.36	2.24	3.35	4.72	2.76	4.72	.24	.40	0.95	1.39
160	15	51	51	54	167	159	178	196	5.8	12	60	-	109	120	70	120	-	11	0.75	1.46
6"	.59	2.01	2.01	2.13	6.57	6.26	7.01	7.72	.22	.47	2.36	-	4.29	4.72	2.76	4.72	-	.43	1.65	3.22

<sup>1)</sup> Temperature range > 500 °C and above: +20 mm (0.79")

<sup>2)</sup> The indications serve as example and relate to versions with stem A1, Ø 10 mm (0.4"), length 200 mm (8").

<sup>3)</sup> With TSChgG: h2 = 109 mm (4.29"), h4 = 94 mm (3.7")

# Stem Models

Stem Models																																																																																							
<b>Process connection:</b>		<b>without screw fitting, plain stem</b>																																																																																					
<b>Stem model:</b>		<b>A1</b>																																																																																					
<b>Form according to DIN 13 190:</b>		Form 1																																																																																					
<b>Stem material:</b>		1.4571																																																																																					
<b>Stem-Ø dF:</b>		8, 10, 12																																																																																					
<b>Order length:</b>		L																																																																																					
<b>Data sheet</b> (suitable thermowell models):		8.8140 (SK1), 8.8141 (SK2)																																																																																					
																																																																																							
<b>Process connection:</b>		<b>Union nut</b>			<b>Male thread, turnable</b>			<b>Male thread, rigid</b>																																																																															
<b>Stem model:</b>		<b>A3</b>			<b>A4</b>			<b>A4.1</b>																																																																															
<b>Form according to DIN 13 190:</b>		Form 5			Form 4			Form 6 (thread cylindrical) Form 7 (thread conical)																																																																															
<b>Stem material:</b>		1.4571			1.4571			1.4571																																																																															
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<b>Data sheet</b> (suitable thermowell models):		8.8111 (SF4.1), 8.8113 (SF4.1F) 8.8130 (SF8), 8.8131 (SF9)			8.8110 (SF4), 8.8112 (SF4F) 8.8120 (SF5), 8.8121 (SF6+SF7)			8.8110 (SF4), 8.8112 (SF4F) 8.8120 (SF5), 8.8121 (SF6+SF7)																																																																															
																																																																																							
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<b>Process connection:</b>		<b>Male thread / Compression fitting</b>				<b>Male thread, turnable / Double male adapter</b>																																																																																	
<b>Stem model:</b>		<b>A5</b>				<b>A6</b>																																																																																	
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<b>Minimum Stem Length, Active Length and Maximum realisable Stem Length</b>																																																																																							
			up to max. 500 °C			500 °C and above			The minimum length Lmin/L1min of the stem is the smallest possible stem length depending on the active length La (temperature-sensitive part) and the stem model.																																																																														
<b>Stem model:</b>		<b>Length:</b>	<b>Stem-Ø dF:</b>			<b>Stem-Ø dF:</b>																																																																																	
<b>all models</b>		La	12 10 8			12 10 8			The active length La of the stem (temperature-sensitive part) has to immerse completely into the medium, in order to obtain a measuring result that corresponds to the accuracy class.																																																																														
<b>A1 A3 A4</b>		Lmin	35 45 75			75 105 165																																																																																	
<b>A4.1</b>		Lmin	55 65 95			95 125 185			The maximum realisable stem length is 2.50 m. Greater lengths can be obtained with a capillary line, e.g. with special stems A3.2, A4.2 and A4.3 (data sheet 8299.1) or basic models TFCh with capillary line to stem, data sheet 8221.																																																																														
			G ½ B, M 18x1.5, M 20x1.5			49 59 89																																																																																	
			G ¾ B			51 61 91																																																																																	
<b>A5</b>		Lmin	54 64 94			94 124 184																																																																																	
			½" NPT, ¾" NPT			54 64 94																																																																																	
<b>A6</b>		L1min	90 100 130			130 160 220																																																																																	
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			G ¾ B, M24x1.5, M27x2			51 61 91																																																																																	
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<b>others</b>			upon request			upon request																																																																																	

## Ordering Information with Indication and Temperature Ranges, Options

Basic Model:	Gas-actuated Thermometers, Rigid Connection to Stem		TSchg	
<b>Case filling:</b>	without		no code letters	
	silicone oil		<b>G</b>	
<b>Nominal case sizes:</b>	case-Ø 63, 80, 100, 160 mm (2½", 3", 4", 6")		<b>63, 80, 100, 160</b>	
<b>Stem position / Case configuration:</b>	vertical bottom position		no code letters	
	90° angled to the back		<b>w</b>	
	obtuse-angled to the back		<b>wst</b>	
	right-angled to the left		<b>wl</b>	
	right-angled to the right		<b>wr</b>	
	centre back connection		<b>rm</b>	
	centre back connection, with back flange for surface mounting		<b>rmRh</b>	
<b>Temperature ranges:</b>	scale:	Δ T (K):		
	0 – 80 °C	80		
	0 – 100 °C	100	e.g. <b>0 – 100 °C</b>	
	0 – 120 °C	120		
	0 – 160 °C	160		
	0 – 200 °C	200		
	0 – 250 °C	250		
	0 – 300 °C	300		
	0 – 400 °C	400		
	0 – 500 °C	500		
	0 – 600 °C	600		
	-100 / +100 °C	200		
	-50 / +50 °C	100		
	-40 / +40 °C	80		
	-40 / +60 °C	100		
	-30 / +50 °C	80	e.g. <b>-30 / +50 °C</b>	
	-20 / +60 °C	80		
	-20 / +80 °C	100		
+50 / +300 °C	250			
+50 / +400 °C	350			
+100 / +500 °C	400			
<b>Stem:</b>	without screw fitting, plain stem		<b>A1</b>	
	union nut		<b>A3</b>	
	male thread, turnable		<b>A4</b>	
	male thread, rigid		<b>A4.1</b>	
	male thread / compression fitting		<b>A5</b>	
	male thread, turnable / double male adapter		<b>A6</b>	
<b>Stem-Ø dF:</b>	8, 10 or 12 mm		<b>dF 8, 10, 12</b>	
<b>Stem length:</b>	L resp. L1 in mm	e.g.	<b>L = 100 mm</b>	
<b>Process connection:</b>	see page 3	e.g.	<b>G ½ B</b>	
<b>Options:</b>	red mark	on the dial		
	plastic clip	red or green, external on crimped-on ring for NCS 80, 100 and 160		
	window	tempered safety glass for NCS 80, 100 and 160		
		acrylic glass (PMMA) for NCS 80 and 100		
		polycarbonate (PC) NCS 63, 80 and 100		
	movement stainless steel			
	case ventilation no. 22 for outdoor installation			
	case polished			
	Version:	dial marking with respective symbol		<i>(order at present still in cleartext)</i>
	German Lloyd or Russian Sea Register			
	<b>TSchg 100</b>	copy of the certificate upon request		
	<b>TSchgG 63, 80, 100</b>			
measuring point marking	stainless steel plate 12 mm x 55 mm (0.47" x 2.17") with wire mounting or sticker on case coverage			

### Example:

TSchg 80 w, 0 – 100 °C, A5, dF 10, L = 100 mm, G ½ B

### Special Versions: Please describe your requirements in cleartext