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# Contact Dial Thermometer

- Temperature controller with indication for panel mounting or self-supporting
- Class 1.5
- Protection IP53 max.
- Housing sizes: 60mm dia., 80mm dia. and 100mm dia.  
 Bezel sizes: 72 x 72 mm and 96 x 96 mm

## Brief description

Contact dial thermometers are universal instruments with indication for temperature measurement, control and monitoring.

The volume change with temperature of a liquid-filled system, or the change of pressure with temperature inside a gas-filled system, is converted by a Bourdon tube into a rotation of the pointer without transmission gearing. The movement of the pointer spindle operates a microswitch through a lever system.



Type 608520/2380

## Technical data

<b>Housing or bezel</b>	stainless steel (1.4301)
<b>Enclosure protection</b>	IP51 to EN 60 529 (IP53 with extra code 401)
<b>Window</b>	PMMA (plexiglass)
<b>Chassis</b>	aluminium (3.2582.05)
<b>Scale</b>	white, black lettering
<b>Accuracy class</b>	Class 1.5 similar to EN 13 190
<b>Capillary reinforcement</b>	for instruments with capillary: on housing and temperature probe
<b>Setpoint adjustment</b>	by setting knob on window
<b>Indication correction</b>	at the rear
<b>Limit temperatures</b>	for transport and storage -30°C to +70°C (for indication range -40 to +40°C up to 50°C; -30 to +50°C up to 60°C)
<b>Nominal position (NL)</b>	unrestricted

	liquid-filled	gas-filled
<b>Measuring system</b>	indication range (AB) ≤350°C	indication range (AB) ≥ 400°C
<b>Time constant</b> t <sub>0.632</sub>	approx. 12 sec, measured in water bath, with a 6 mm dia. copper probe	approx. 4 sec, measured in oil bath, with a 10 mm dia. stainless steel probe
<b>Ambient temperature effect</b>	in % of indication range (referred to the deviation from the reference value +23°C)	
<b>on housing</b>	0.15% of indication range per °C change in ambient temperature	0.05% of indication range per °C change in ambient temperature
<b>on capillary (per m)</b>	0.03% of indication range per °C change in ambient temperature	no effect
	higher ambient temperature – higher temperature indication – lower switching point	

	standard	extra code (TZ) 651	extra code (TZ) 650
<b>Electrical contact</b>	single-pole microswitch with mechanically operated changeover contact		
<b>contact type</b>			
<b>contact rating</b>	230V AC +10/-15%, 48 – 63Hz, p.f. = 1 (0.6)		
	5 (1.5) A	3 (1) A	10 (3) A
<b>switching differential</b>	approx. 1.5% of indication range		1.5 to 3% of indication range
<b>switching point accuracy</b>	± 0.5% of indication range referred to the switch-off point with rising temperature		
<b>switching reliability</b>	To ensure maximum switching reliability, we recommend a minimum voltage of 24 V and a minimum current of 20 mA		

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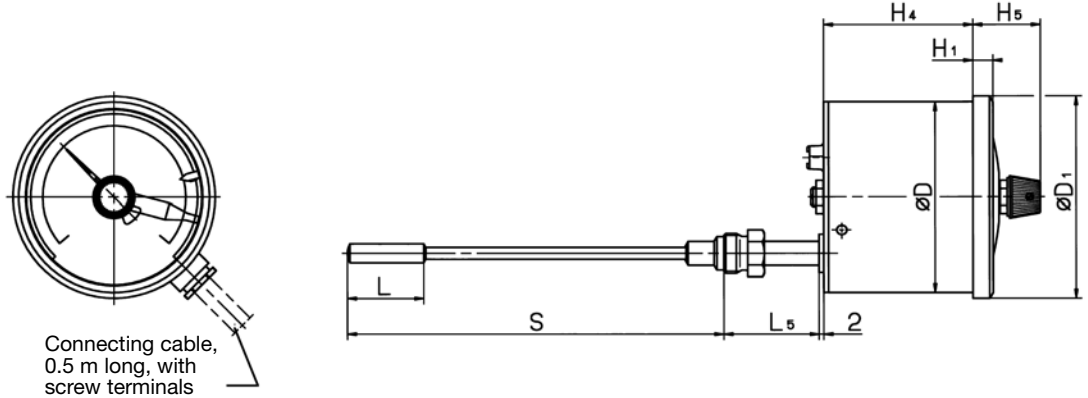
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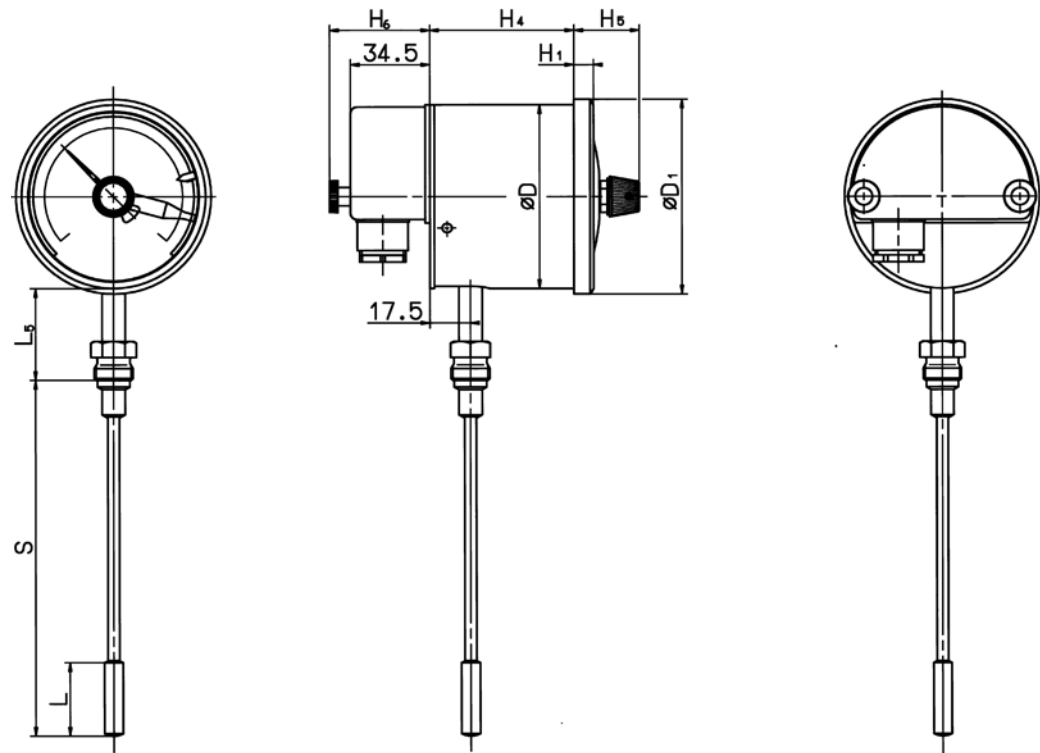
	standard	Styles 02 and 22	Styles 10, 23 and TZ 426	Housing 60mm dia.
<b>Electrical connection</b>	screw terminals, conductor cross-section up to 2.5 mm <sup>2</sup>	connecting cable 0.5 m with screw terminals	cover with cable gland, suitable for cable diameters from 6.5 to 13 mm	cover with cable gland, suitable for cable diameters from 8 to 10 mm

**Dimensions**

Types: 608520/0280  
 608520/0210



Types: 608520/1080  
 608520/1010



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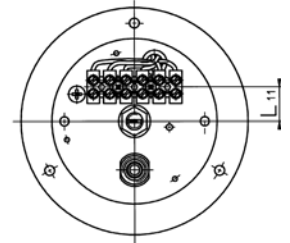
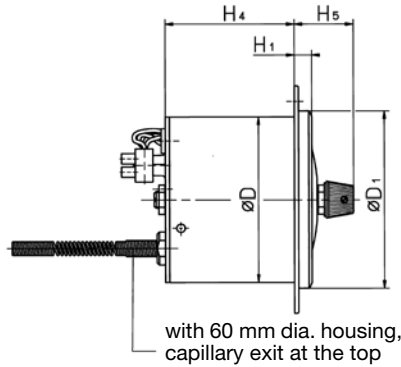
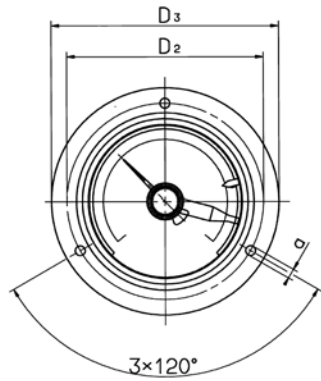
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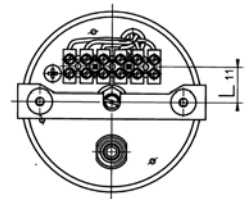
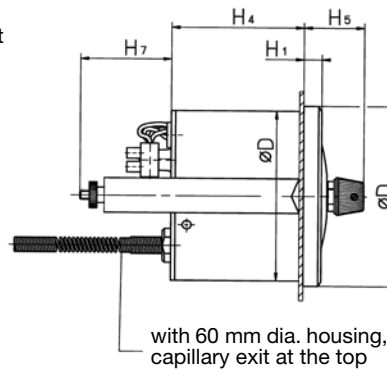
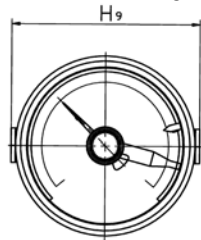
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 608520/2080  
 608520/2010



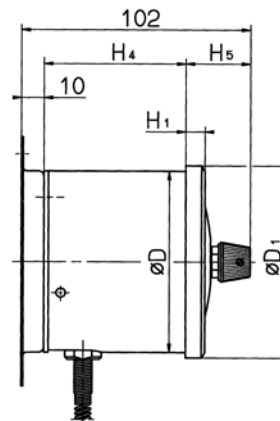
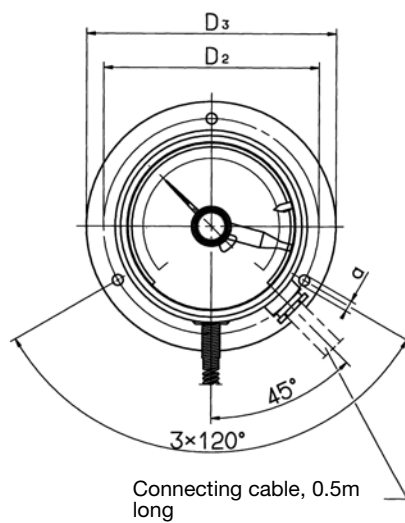
Panel cut-out on housing  
 60 mm dia. =  $62^{+0.5}_0$  mm  
 80 mm dia. =  $82^{+0.5}_0$  mm  
 100 mm dia. =  $102^{+0.5}_0$  mm

Types: 608520/2160  
 608520/2180  
 608520/2110

Width of mounting bracket



Types: 608520/2280  
 608520/2210



Panel cut-out for bezel  
 72 x 72 mm =  $62^{+0.5}_0$  mm dia.  
 96 x 96 mm =  $82^{+0.5}_0$  mm dia. or  
 96 x 96 mm = 92 x  $92^{+0.5}_0$  mm (TZ 460)

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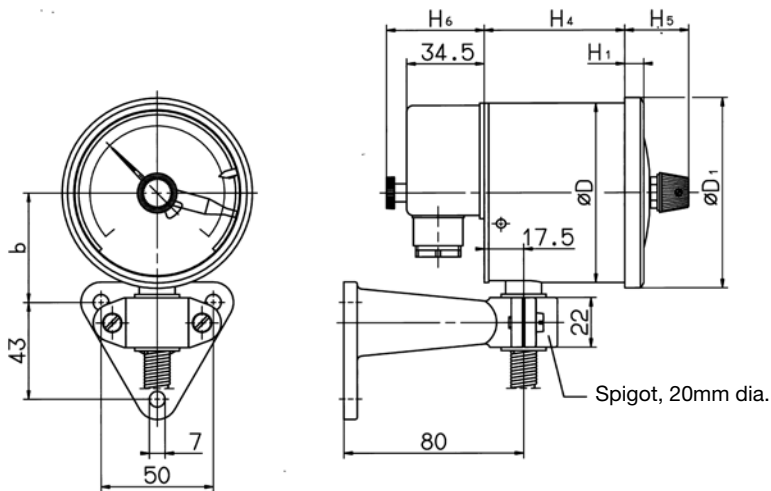
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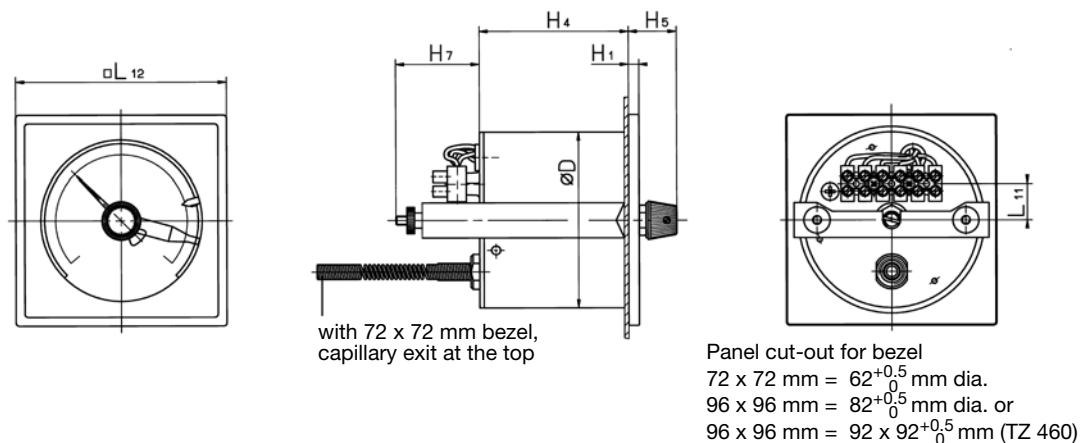


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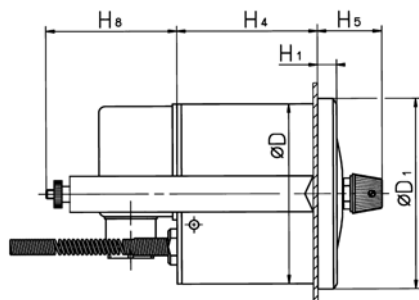
Types: 608520/2380  
 608520/2310



Types: 608520/2572  
 608520/2596



Extra code 426



Housing	H <sub>1</sub>	H <sub>4</sub>	H <sub>5</sub>	H <sub>6</sub>	H <sub>7</sub>	H <sub>8</sub>	H <sub>9</sub>	D	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	a	b	L <sub>5</sub>	L <sub>11</sub>	L <sub>12</sub>
Ø 60	7.5	62.5	27.5	34	27	55	69	60	65	75	85	3.6	—	40*	—	—
Ø 80	8.5		28.5	43.5	44	59	89	80	85	95	110	4.8	49		16.5	—
Ø 100			25	59	109	100	106	116	132	—	59		—		—	
□ 72	5	68	—	—	27	55	—	60	—	—	—	—	—	—	—	□ 72
□ 96			—	—	—	44	59	—	80	—	—	—	—	—	—	16.5

\* with probe mounting TA 02 L<sub>5</sub> = ≤69mm  
 with probe mountings TA 22 and TA 31 L<sub>5</sub> = 48mm

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## Order details

### Contact dial thermometer Class 1.5, Type 608520

Order code	(1) Basic type	
608520	Mechanical contact dial thermometer Class 1.5	
<b>(2) Basic type extension</b>		
0280	Style: 02; housing size: 80 mm dia.	
0210	Style: 02; housing size: 100 mm dia.	
1080	Style: 10; housing size: 80 mm dia.	
1010	Style: 10; housing size: 100 mm dia.	
2060	Style: 20; housing size: 60 mm dia.	
2080	Style: 20; housing size: 80 mm dia.	
2010	Style: 20; housing size: 100 mm dia.	
2160	Style: 21; housing size: 60 mm dia.	
2180	Style: 21; housing size: 80 mm dia.	
2110	Style: 21; housing size: 100 mm dia.	
2280	Style: 22; housing size: 80 mm dia.	
2210	Style: 22; housing size: 100 mm dia.	
2380	Style: 23; housing size: 80 mm dia.	
2310	Style: 23; housing size: 100 mm dia.	
2572	Style: 25; housing size: 72 x 72 mm	
2596	Style: 25; housing size: 96 x 96 mm	
<b>(3) Indication range (AB)</b>		
469	-40 to + 40°C; measuring range -30 to + 30°C, accuracy 1.5°C	
566	-30 to + 50°C; measuring range -20 to + 40°C, accuracy 1.5°C	
643	-20 to +120°C; measuring range 0 to +100°C, accuracy 3.0°C	
807	0 to + 60°C; measuring range +10 to + 50°C, accuracy 1.5°C	
810	0 to + 80°C; measuring range +10 to + 70°C, accuracy 1.5°C	
814	0 to +100°C; measuring range +10 to + 90°C, accuracy 1.5°C	
818	0 to +120°C; measuring range +20 to +100°C, accuracy 3.0°C	
826	0 to +160°C; measuring range +20 to +140°C, accuracy 3.0°C	
832	0 to +200°C; measuring range +20 to +180°C, accuracy 3.0°C	
834	0 to +250°C; measuring range +30 to +220°C, accuracy 4.0°C	
926	+50 to +250°C; measuring range +70 to +230°C, accuracy 3.0°C	
840	0 to +300°C; measuring range +30 to +270°C, accuracy 6.0°C	
927	+50 to +300°C; measuring range +80 to +270°C, accuracy 4.0°C	
843	0 to +350°C; measuring range +50 to +300°C, accuracy 6.0°C	
932	+50 to +350°C; measuring range +80 to +320°C, accuracy 6.0°C	
848	0 to +400°C; measuring range +50 to +350°C, accuracy 6.0°C	
851	0 to +450°C; measuring range +50 to +400°C, accuracy 6.0°C	
854	0 to +500°C; measuring range +50 to +450°C, accuracy 8.0°C	
858	0 to +600°C; measuring range +100 to +500°C, accuracy 10.0°C	

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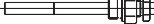




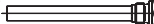



## Order details

### Contact dial thermometer Class 1.5, Type 608520

#### Order code

<b>(4) Capillary type (FL)<sup>1</sup></b>	
00	none (with rigid connection)
02	FL02 copper capillary with copper braiding, approx. 2.5 mm dia. (up to +300°C top of indication range)
11	FL11 copper capillary with PE sleeve, approx. 3.5 mm dia. (up to +120°C top of indication range)
17	FL17 stainless steel capillary, 1.5 mm dia.
21	FL21 copper capillary, 1.0 mm dia. (up to +300°C top of indication range)

<b>(5) Capillary length<sup>1</sup></b>	
0	none (with rigid connection)
1000	1000 mm
2000	2000 mm
3000	3000 mm
4000	4000 mm
5000	5000 mm
...	special length (details in plain text: in 1000 mm steps, up to 10000 mm length)

<b>(6) Process connection (PA)<sup>1</sup></b>		
750	TF 01; temperature probe with stepped support tube	
752	TF 11; temperature probe without support tube	
843	TA 02; immersion tube with union nut and loose nipple <sup>2</sup>	
161	TA 03; immersion tube with loose union nut	
847	TA 06; sliding clamp fitting on support tube <sup>2</sup>	
311	TA 20; immersion tube with loose nipple and shoulder <sup>2</sup>	
872	TA 21; immersion tube with loose plug and conical seal	
873	TA 22; immersion tube with loose plug, conical seal and loose nipple <sup>2</sup>	
401	TA 23; immersion tube with plug and spring clip	
913	SH 07; screw-in pocket, assembled, with clamping clip and fixing screw <sup>2</sup>	
820	SH 09; weld-in pocket, assembled, with clamping clip and fixing screw (not with FL21 - welding shoulder with steel 1.4515)	
876	SH10; screw-in pocket, assembled <sup>2</sup>	
871	SH11; screw-in pocket, assembled <sup>2</sup>	

<b>(7) Diameter of process connection (PA)<sup>1</sup></b>	
6	Ø 6 mm
8	Ø 8 mm
10	Ø 10 mm
11	Ø 11 mm
12	Ø 12 mm

<b>(8) Type of thread for process connection (PA)<sup>1</sup></b>	
000	no thread (with TF 01 and TF 11)
103	thread G <sup>3</sup> / <sub>8</sub>
104	thread G <sup>1</sup> / <sub>2</sub>
105	thread G <sup>3</sup> / <sub>4</sub>
114	thread M 10 x 1 (only with TA 23 and SH 11)

<b>(9) Material of probe / support tube<sup>1</sup></b>	
26	stainless steel (CrNi, 1.4571)
96	copper (Cu) / brass (CuZn) (up to 200°C)
95	stainless steel (CrNi, 1.4571) — probe / brass (CuZn) — support tube (above 250°C)

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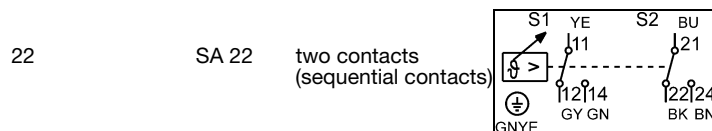
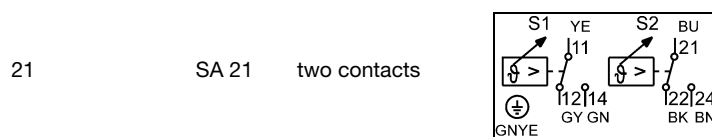
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## Order details

### Contact dial thermometer Class 1.5, Type 608520

Order code	(9) Material of probe / support tube <sup>1</sup>
26	stainless steel (CrNi, 1.4571)
96	copper (Cu) / brass (CuZn) (up to 200°C)
95	stainless steel (CrNi, 1.4571) — probe / brass (CuZn) — support tube (above 250°C)
(10) Material of process connection (PA) <sup>1</sup>	
00	none (TF01 and TF11 only)
01	steel (St)
26	stainless steel (CrNi, 1.4571)
46	brass (CuZn)
(11) Fitting length of process connection (PA) <sup>1</sup> (dimension EL or S)	
0	minimum fitting length TF 11 (active probe dimension)
50	50 mm
100	100 mm
150	150 mm
200	200 mm
...	special length (details in plain text — in 50 mm steps)
(12) Switch output (SA)	



(13) Extra codes (TZ)	
000	no extra code
430	peak-reading pointer
426	cover to protect the terminal against accidental contact and splashing water (standard on styles 10 and 23; not with styles 22; not in conjunction with TZ 460)
650	microswitch 10 (3) A (230 V AC/DC +10/-15%, 48 — 63 Hz, p.f. = 1 (0.6))
410	metal bezel, bezel ring or flange ring, black
518	stop for min. or max. setpoint limit, factory-set
460	housing centered for 92 x 92 mm panel cut-out (basic type extension 2596 only)
477	setpoint adjustment protected by screw cap, adjustment by screwdriver
401	IP53 protection to EN 60529, includes TZ 426 and TZ 477 (not for housing dia. 60 mm and bezel 72 x 72 mm; not with style 02 and 22)
522	customized scale
651	microswitch 3 (1) A (230 V AC/DC +10/-15%, 48 — 63 Hz, p.f. = 1 (0.6))

special versions on request!

Order code	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
608520	608520	...	...	..	....	...	..	...	..	..	...	..	..

Order example
608520 / 2010 - 818 - 21 - 2000 - 750 - 8 - 000 - 26 - 00 - 100 - 000 <sup>3</sup> / 000 <sup>3</sup>

<sup>1</sup> see Data Sheet 60.8730 for description and features

<sup>2</sup> screw-in spigot to DIN 3852 Form A

<sup>3</sup> List extra codes in sequence, separated by commas.