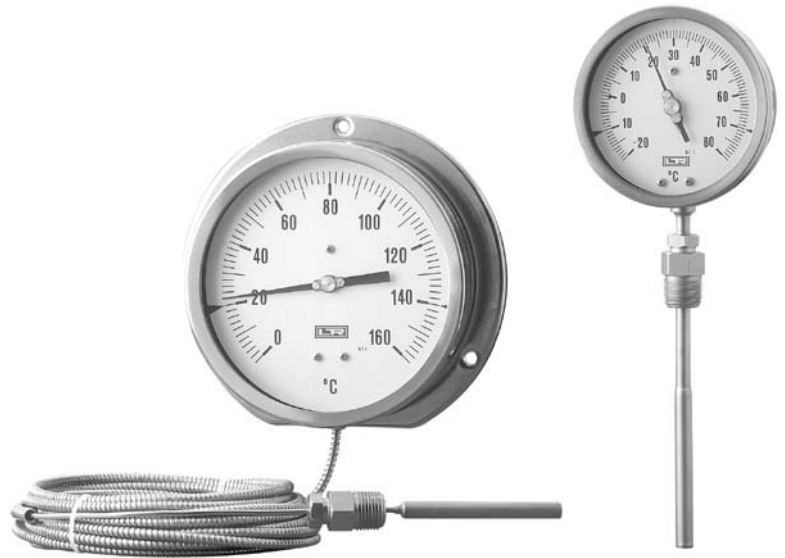


# Inert Gas filled Thermometers

## all stainless steel construction

### Type 06.TG8 - DS 100-150

06.TG8



These instruments are designed for use in food, beverage, pharmaceutical, cryogenics, chemical and petrochemical processing industries, and in conventional and nuclear power plants. They are built to resist the most severe operating conditions created by the ambient environment and the process medium. An Argonarc welded case/bulb and capillary strengthens the whole construction. A leak tight fit is ensured if the instrument is filled with a dampening fluid to prevent damage due to vibration.

### Functional and constructive characteristics.

**Measuring range:** the scale range has been marked by two "▼" stamped on the dial. They represent the temperature span recommended for the use of instruments as per DIN 16203.

**Accuracy:**  $\pm 1,0\%$  of full scale range.

**Ambient temperature:**  $-25...+65$  °C.

**Working pressure:** 25 bar (without thermowell).

**Over temperature limit:** 25% of full scale range for temperature  $-400$  °C; max  $600$  °C.

**Protection degree:** IP 55 as per IEC 529.

**Operation principles:** inert gas filled expansion system.

**Process connection:** AISI 316 st.st..

**Bulb:** AISI 316 st.st.  $\varnothing 11,5-9,5-8$  mm.

**Capillary:** AISI 304 st.st.  $\varnothing 2,5$  mm.

**Elastic element:** AISI 304 st.st. spiral shaped.

**Welding:** AISI 316 TIG.

**Case:** AISI 304 st.st.

**Ring:** AISI 304 st.st., bayonet lock.

**Window:** glass, 4 mm thick.

**Movement:** stainless steel.

**Dial:** aluminium, white with black markings.

**Special dials:** ranges different from standards, or custom artwork, available on request.

**Pointer:** micrometer adjustable.

**Gasket:** in EPDM.

**Internal compensation device:** by a bimetallic linkage.

### ENVIRONMENTALLY FRIENDLY

The inert gas used by LEITENBERGER (nitrogen or helium) does not create any danger for the measuring process or atmosphere, in the unlikely event of failure. This is the positive answer of LEITENBERGER to the pollution question, replacing previously used dangerous and toxic filling medium such as mercury, toluene, ethylene, freon which greatly contaminate the environment. Our environmentally friendly instruments are very reliable and compared with previous types give a better performance. They measure temperatures within a range of  $-200^{\circ}$  to  $+600^{\circ}$  C with a fast reading response and high accuracy.

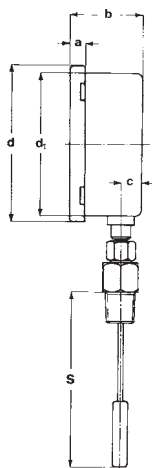
### OPERATION PRINCIPLES

Changes in the measured temperature create a change of pressure within the measuring system. The bourdon tube which is connected to the movement reacts to the change in pressure and its displacement is transmitted to the pointer via the movement. Ambient temperature changes which may affect the instrument accuracy are automatically compensated by a bimetallic link mounted inside the case.

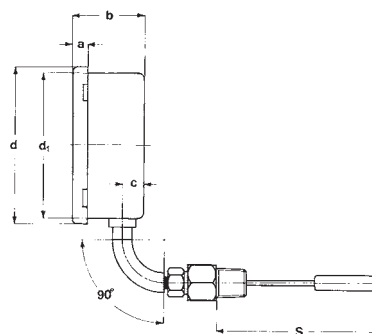
inert gas filled thermometers  
all stainless steel construction  
Type 06.TG8 - DS 100-150

# 06.TG8

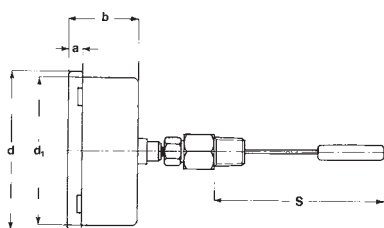
## DIRECT STEM: TYPES AND DIMENSIONS (mm.)



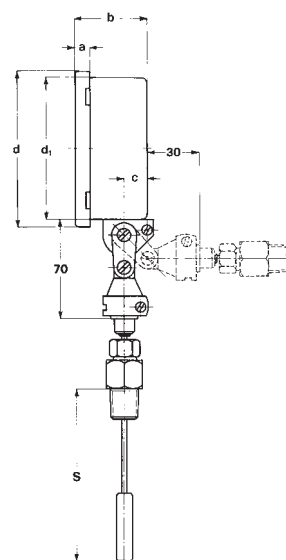
TYPE 1 - Bottom



TYPE 3 - 90° angle



TYPE 4 - Back



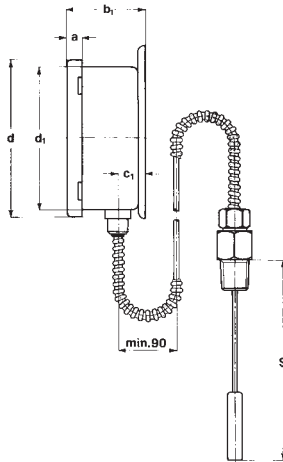
TYPE 9 - Every angle

DS	a	b	c	d	d <sub>1</sub>
100	14,5	50,5	15,5	112	101
150	16,5	53,5	15,5	166	150

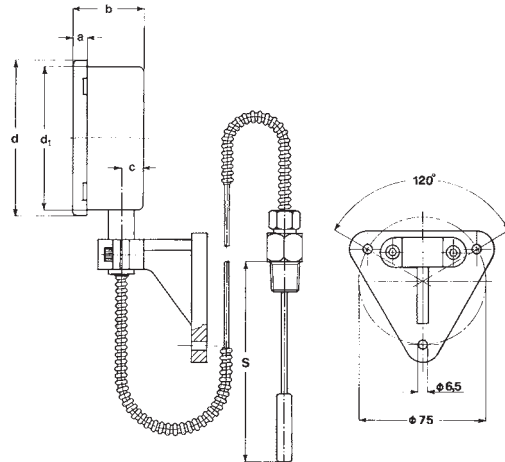
inert gas filled thermometers  
all stainless steel construction  
Type TG8 - DS 100-150

06.TG8

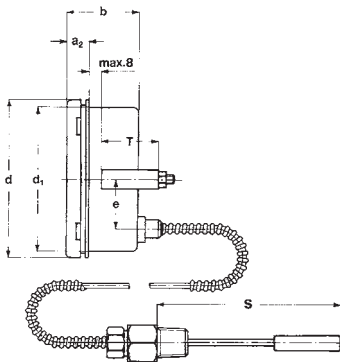
REMOTE READINGS: TYPES AND DIMENSIONS (mm.)



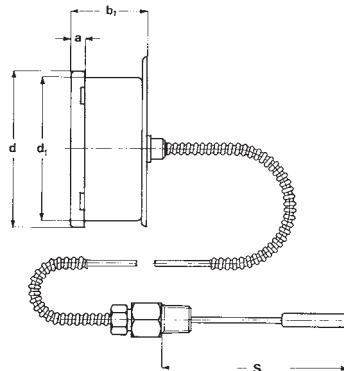
**TYPE 5**  
Back flange for surface  
mounting.



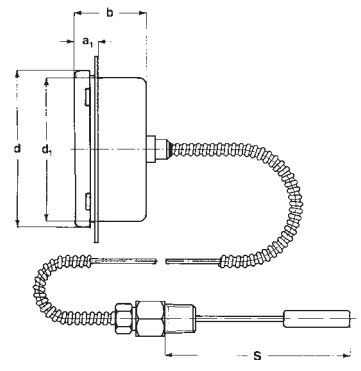
**TYPE 6**  
Wall mounting



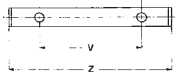
**TYPE 7**  
U-clamp for flush  
mounting.



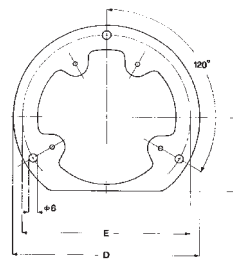
**TYPE 8**  
Back flange for surface  
mounting.



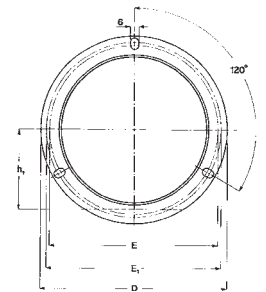
**TYPE 0**  
Front flange for flush  
mounting.



U-clamp for type 7



Flange for types 5 e 8



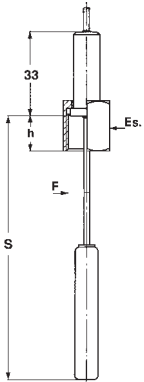
Flange for types 0

DS	A	B	a	a <sub>1</sub>	a <sub>2</sub>	b	b <sub>1</sub>	c	c <sub>1</sub>	d	d <sub>1</sub>	D	E	E <sub>1</sub>	e	h	h <sub>1</sub>	T	V	Z
100	69	60	14,5	21	20	50,5	54,5	15,5	19,5	112	101	130	116	118	34,5	52		41,5	70	112
150	96	60	16,5	21	20	53,5	57,5	15,5	19,5	166	150	190	175		34,5	85	85	45	106	155

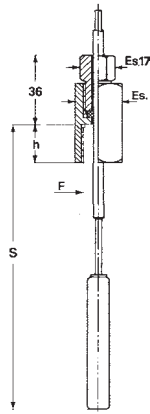
inert gas filled thermometers  
all stainless steel construction  
Type 06.TG8 - DS 100-150

06.TG8

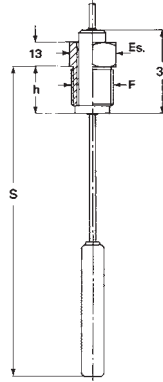
## PROCESS CONNECTION: TYPES AND DIMENSIONS (mm.)



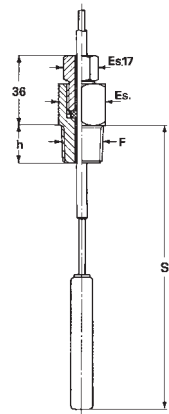
**TYPE 8**  
Female swivel nut.



**TYPE 7**  
Sliding female swivel nut.



**TYPE 5**  
Male swivel nut.



**TYPE 9**  
Sliding male swivel nut.

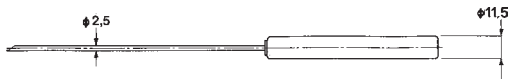
F	CODE	Es	h
1/2" BSP	41F	24	13
3/4" BSP	51F	30	14

F	CODE	Es	h
1/2" NPT	43F	24	18
3/4" NPT	53F	30	18

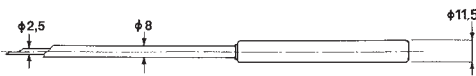
F	CODE	Es	h
1/2" BSP	41M	22	18
3/4" BSP	51M	27	20

F	CODE	Es	h
1/2" BSP	41M	22	14
1/2" NPT	43M	22	17
3/4" BSP	51M	27	16
3/4" NPT	53M	27	17

## BULBS: TYPES AND DIMENSIONS (mm.)



**TYPE 1**  
With flexible extension  $\phi$  2,5 mm.



**TYPE 2**  
With rigid extension  $\phi$  8 mm. ("S" max = 1000 mm.)  
For direct stem and dimension "S"  $\geq$  500 mm. to be ordered with option "S32"

## MINIMUM LENGTH "B"

$\phi$ BULB	CODE	Capillary - 15 mt.	Capillary 16...30 mt.
11,5 mm	B00	60	87
9,5 mm	B01	87	127
8 mm	B02	118	167

"S" min. = "B" + 25 mm.

## CAPILLARY: TYPES AND DIMENSIONS - Maximum length 30 mt



**TYPE L1** - Capillary AISI 304 st.st.  
**TYPE L3** - Capillary AISI 316 st.st.



**TYPE L5** - Capillary AISI 304 st.st. covered with zinc plated steel armour PVC coated  
**TYPE L6** - Capillary AISI 304 st.st. covered with AISI 304 st.st. armour PVC coated  
**TYPE L8** - Capillary AISI 316 st.st. covered with AISI 316 st.st. armour  
**TYPE L9** - Capillary AISI 304 st.st. covered with AISI 304 st.st. armour

inert gas filled thermometers  
all stainless steel construction  
Type 06.TG8 - DS 100-150

## SCALE RANGES

- "❖" = to be ordered with optional "S32"

"❖❖" = to be ordered with optional "T03"

TAB. 1

°C	
-200...100	❖
-200...50	❖
-120...40	❖
-80...40	❖
-50...50	
-40...80	
-40...60	
-40...40	
-30...50	
-20...40	
-20...60	
-20...80	
-20...120	
0...60	
0...80	
0...100	
0...120	
0...160	
0...200	
0...250	
0...300	
0...400	
0...500	❖
0...600	❖
50...450	❖
100...500	❖

TAB. 2

°F	
-320...200	❖
-320...100	❖
-200...100	❖
-100...100	
-40...180	
-20...120	
0...200	
0...250	
50...300	
50...400	
50...550	
100...800	
200...700	❖
200...1000	❖
400...1200	❖

TAB. 3

Outer °C	Inner °F	
-40...60	-40...140	
-40...100	-40...200	
0...60	32...140	
0...100	32...200	
0...120	32...250	
0...150	32...300	
0...200	32...40	
0...300	32...570	
0...400	32...750	
0...500	32...900	
100...500	200...900	❖
0...600	32...1100	❖
200...600	400...1200	❖

## OPTIONS - "E" = DS 100; "G" = DS 150.

DESCRIPTION	CODE	TG8
Inductive and mechanical electric contacts (1)	---	E G
Bulb ø 9,5 mm.	B01	E G
Bulb ø 8 mm.	B02	E G
Case and ring AISI 316 stainless steel	C40	E G
Maximum pointer IP 55	L22	E G
Suitable for glycerine filling	P00	E G
Suitable for silicone filling (2)	P01	E G
Glycerine filling (for direct stem max 250 °C)	R10	E G
Silicone filling (for direct stem max 250 °C) (2)	R11	E G
High temperature calibration	S32	E G
Tropicalization	T01	E G
Low temperature calibration - -80°C	T03	E G
Stainless steel label	T25	E G
Plexiglas window	T31	E G
Safety glass window	T32	E G

(1) Codes, descriptions and wiring on catalogue sheet MN14.

(2) Gaskets: silicone rubber.



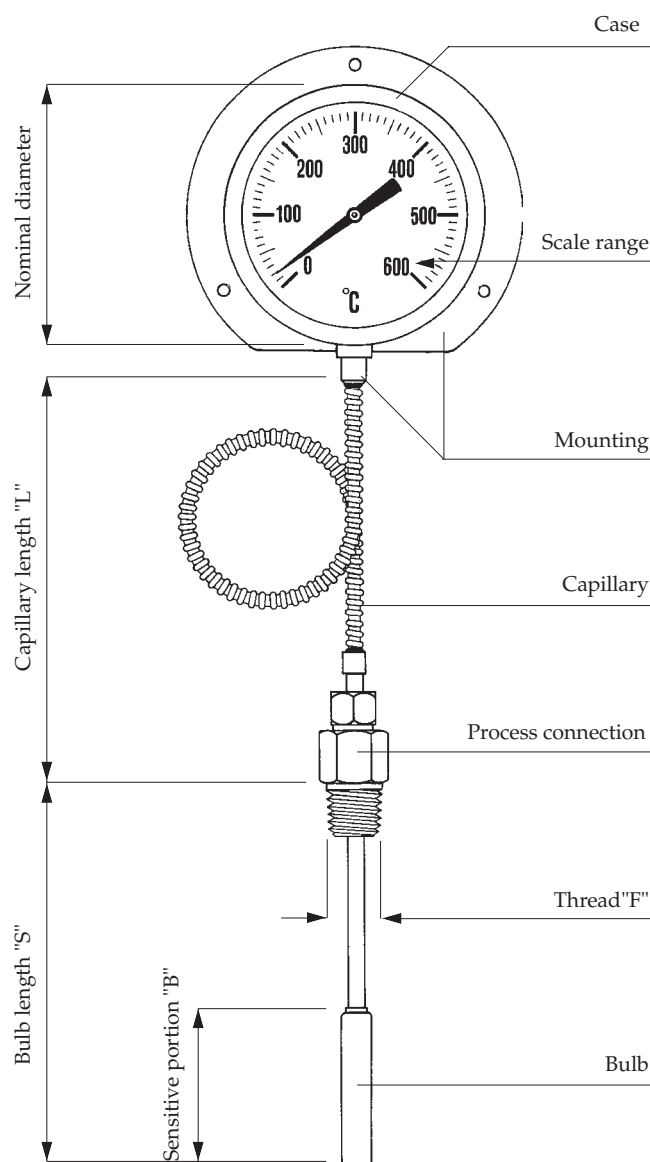
inert gas filled thermometers

all stainless steel construction

Type 06.TG8 - DS 100-150

## HOW TO ORDER

	CODE & DESCRIPTION
<b>06</b>	06 - Thermometer
<b>TG</b>	TG - inert gas filled thermometers
<b>8</b>	8 - all stainless steel construction
<b>6</b>	1 - bottom 3 - 90° angle 4 - back 5 - back flange for surface mounting 6 - wall mounting 7 - U-Clamp for flush mounting 8 - back flange for surface mounting 9 - every angle 0 - front flange for flush mounting
<b>7</b>	5 - Male swivel nut 7 - Sliding female swivel nut 8 - Female swivel nut 9 - Sliding male swivel nut
<b>E</b>	E - DS 100 G - DS 150
<b>43F</b>	41M - 1/2" BSP male (connection types 5-9) 43M - 1/2" NPT male (connection type 9) 41F - 1/2" BSP female (connection type 8) 43F - 1/2" NPT female (connection type 7) 51M - 3/4" BSP male (connection types 5-9) 53M - 3/4" NPT male (connection type 9) 51F - 3/4" BSP female (connection type 8) 53F - 3/4" NPT female (connection type 7)
<b>S1</b>	S1 - bulb with flexible extension S2 - bulb with rigid extension
<b>200</b>	bulb length mm.
<b>L5S</b>	L1S - AISI 304 st.st. L3S - AISI 316 st.st. Ø 3mm. L5S - st.st. PVC coated L6S - st.st. covered with st.st. armor PVC coated L8S - AISI 316 covered with AISI 316 armor L9S - st.st. covered with st.st. armor
<b>2000</b>	Capillary length mm.
<b>0/100 °C</b>	see ranges table
<b>P00</b>	see options table



REV. 02.E.05/00

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## THERMOWELLS

Must be used on all applications where thermometer bulb is subjected to pressure, corrosive fluid or flow rate.

Thermowells will make thermometer disassemble for calibration or replacement easier as the process will not be disturbed.

## Thermowells available:

- thermowells with thread connection either built up type or machined from bar stock;
- thermowells with flange either built up type or machined from bar stock;
- welding type thermowells.



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 INTERNET-Site: <http://www.leitenberger.de>