

Type TK

Application

The capillary expansion thermometer TK is used for indicating, monitoring and controlling.

It is used in all industries where temperature and temperature differences shall be registered.

Special fields of application:

- Processing
- Environmental technology
- Heating and ventilating technics
Climatology
- Foodstuff technology

Main features

The remote expansion thermometer disposes of a very rugged and vibration-resistant measuring system due to a construction without motion work.

Further advantages are:

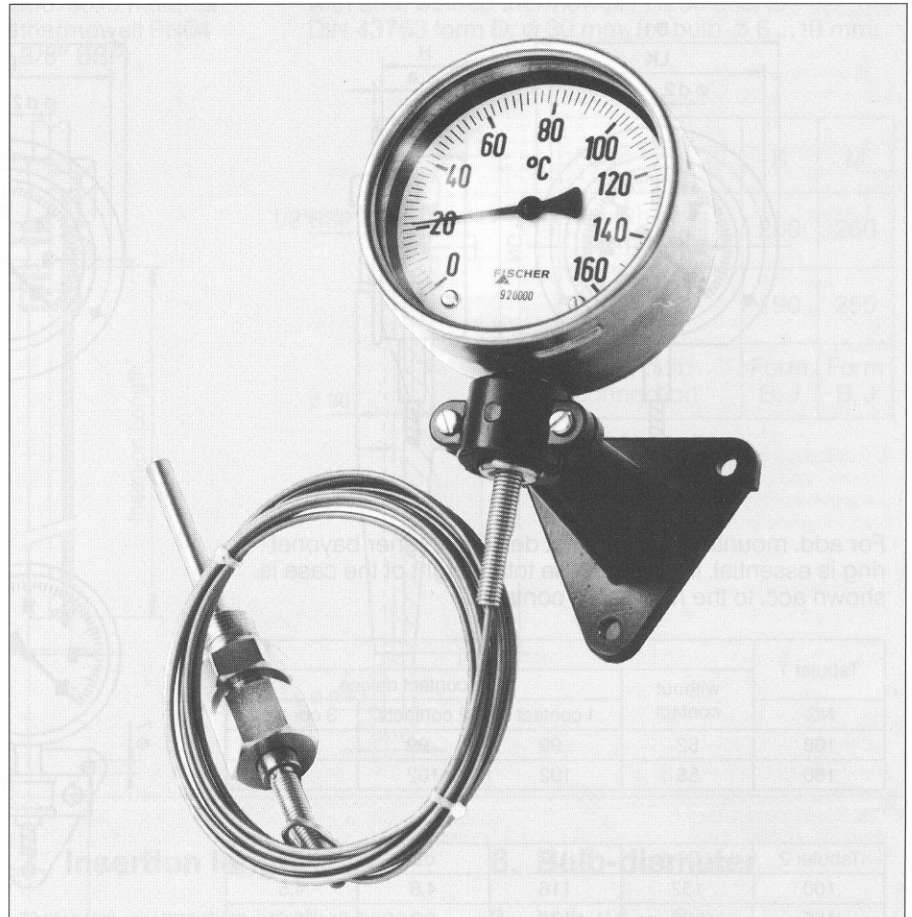
- High accuracy (class 1,0%)
- Very short reaction time
- Remote indication due to capillary between probe and indicator
- Mechanical working
- Ambient temperature compensation and zero point adjustment are standard
- Suitable for equipment of contact devices
- GL-test certificated
- Suitable in combination with Pt100-measuring resistor

Operation

Temperature changes at the pointer of the thermometer cause an expansion of the liquid which is enclosed in the pointer under supply of pressure. A conical spring will be deformed by the repressed expansion liquid and opens itself round the centre axle. The caused turning of the centre axle effects directly the pointer deflection. Pointer deflection 270 degrees.

Technical Data

- Moisture repellent case
- Conical spring measuring system, which acts directly on the pointer
- Vibration resistant
- Accuracy class 1,0%
- Measuring ranges -30° up to 600°C (special ranges up to 800°C).



1. Ranges

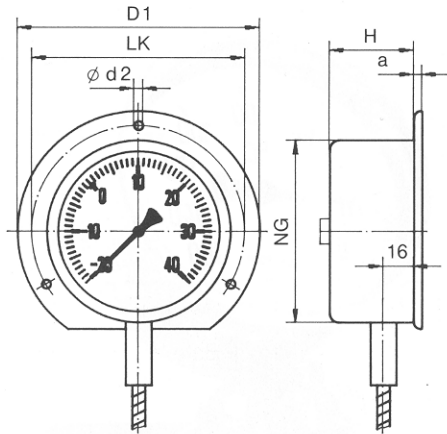
Item	Ranges of temperature	
	[°C]	[°F]
25	-30 ... + 50	
24	-30 ... + 40	
23	-30 ... + 30	
26	-20 ... + 40	
28	-10 ... + 50	
29	0 ... + 40	32 ... 104
30	0 ... + 50	32 ... 122
31	0 ... + 60	32 ... 140
32	0 ... + 80	32 ... 176
40	0 ... +100	32 ... 212
41	0 ... +120	32 ... 248
51	0 ... +160	32 ... 320
60	0 ... +200	32 ... 392
61	0 ... +250	32 ... 482
70	0 ... +300	32 ... 572
80	0 ... +400	32 ... 752
90	0 ... +500	32 ... 932
91	0 ... +600	32 ... 1112
99	Special ranges	

2. Arrangement of bulb / case

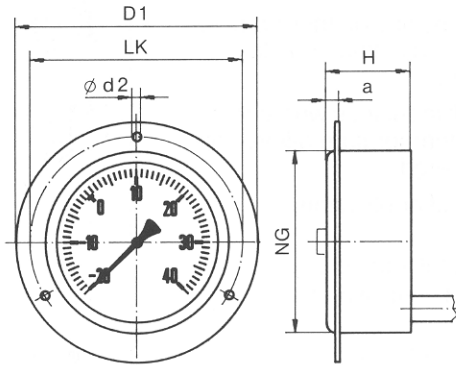
Type		Material		
		Bulb	Capillary	Thread
BM	back flange	316 Ti	316 Ti	Brass
BV	back flange	316 Ti	316 Ti	316 Ti
HM	front flange	316 Ti	316 Ti	Brass
HV	front flange	316 Ti	316 Ti	316 Ti
KM	Collar and wall bracket	316 Ti	316 Ti	Brass
KV	Collar and wall bracket	316 Ti	316 Ti	316 Ti

2. Arrangement of case / bulb

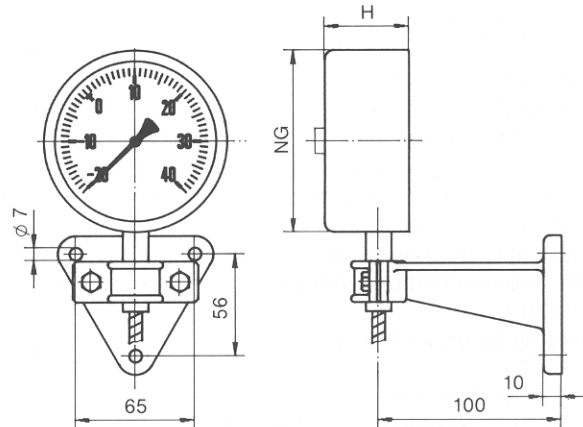
TK...BM...
TK...BV...



TK...HM...
TK...HV...



TK...KM...
TK...KV...



For add. mounting of a contact device a higher bayonet-ring is essential. In tabular 1 the total height of the case is shown acc. to the number of contacts.

Tabular 1	H [mm]			
	without contact	with contact device		
NG		1 contact	2 contacts	3 contacts
100	52	99	99	107
160	55	102	102	110

Tabular 2	D1	LK	d2	a
100	132	116	4,8	4,5
160	192	178	5,8	6

3. Casing types

- 2 Bajonet-type casing NG100 material steel (black painted)
- 3 Bajonet-type casing NG160 material steel (black painted)
- 7 Bajonet-type casing NG100 material stainless steel (304)
- 8 Bajonet-type casing NG160 material stainless steel (304)

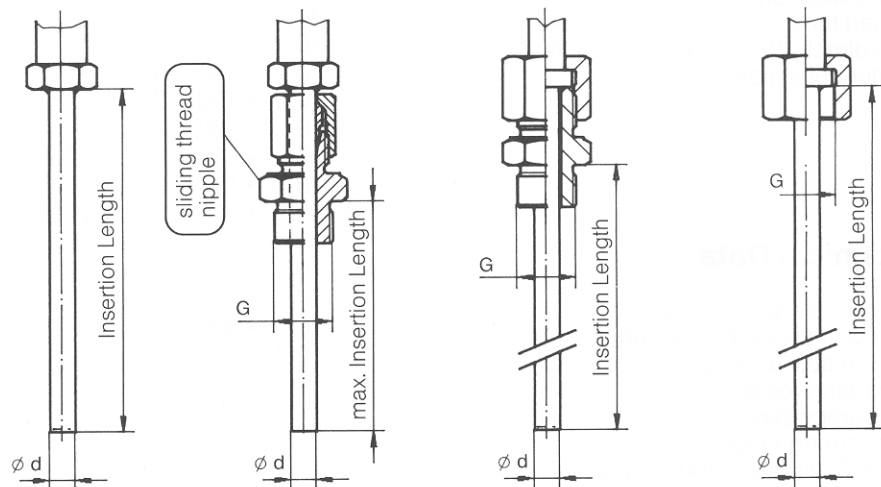
4. Bulb connections

Form A
Plain stem

Form J
As form A, with sliding thread nipple

Form B
Stem with loose coupling nut and double nipple

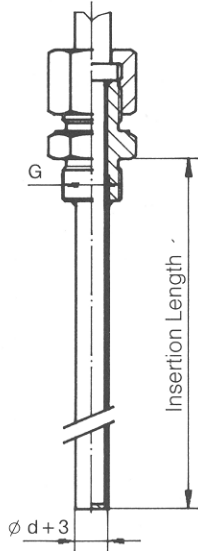
Form C
Stem with loose coupling nut



4. Bulb connections with add. thermowell

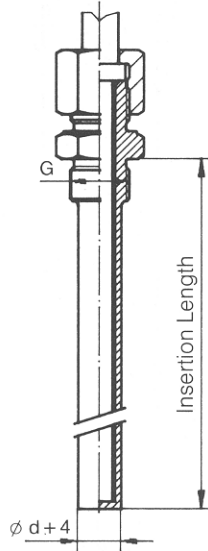
Form E

As bulb connection form C, but with add. screwed thermowell PN25



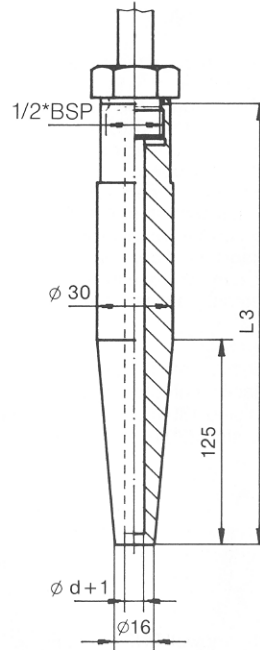
Form F

As bulb connection form C, but with add. solid material screwed thermowell PN64 (not with 3/8" BSP)



Form K and M

As bulb connection form B and J, thread 1/2" BSP, with add. welded thermowell PN250 acc. to DIN 43763 form D, ϕ 30 mm, for bulb- ϕ 6...10 mm.



Form	K	M
Length of thermowell L3	200	260
Insertion length L	190	250
Basic bulb connection	Form B, J	Form B, J

5. Material of add. thermowells

- M** Brass (not form K and M)
- V** Stainless steel (316 Ti)
- S** Steel (only form K and M)
- If bulb connection without add. thermowell

6. Thread

- 2** Thread 1/2" BSP
- 3** Thread 3/4" BSP
- 4** Thread 1" BSP
- 5** Thread 3/8" BSP
- 9** other or without thread (please note in ordering code)

7. Insertion length

A minimum insertion length is essential to get the same temperature for the expansion liquid, which is enclosed in the bulb, as the media which has to be measured. The minimum insertion length is depending on the temperature difference and the bulb-diameter (tabular 2).

- 1** Insertion length L = 60 mm
- 2** Insertion length L = 100 mm
- 3** Insertion length L = 160 mm
- 4** Insertion length L = 250 mm
- 5** Insertion length L = 400 mm
- 9** other or without thread (please note in ordering code)

8. Bulb-diameter

- 2** bulb- $\phi d = 6$ mm
- 3** bulb- $\phi d = 8$ mm
- 4** bulb- $\phi d = 10$ mm
- 5** bulb- $\phi d = 12$ mm
- 6** bulb- $\phi d = 14$ mm

Length of capillary

The length of capillary has to be indicated with ordering. Standard lengths are KL = 1/3/5/7,5/10 m.

Tabular 2

Bulb-diameter	ϕ 6	ϕ 8	ϕ 10	ϕ 12	ϕ 14
Minimum insertion length L [mm]	150	90	70	40	35

Order Nos.

Capillary expansion thermometer Type TK

									0	0		0
--	--	--	--	--	--	--	--	--	---	---	--	---

1. Measuring range

Item of measuring range as page 1 ▷ XX

2. Arrangement of bulb / case

- Indication case with back flange, capillary lead through the case ▷ BM
- downwards, bulb material brass, capillary of copper
- Indication case with back flange, capillary lead through the case ▷ BV
- downwards, bulb and capillary material stainless steel (316 Ti)
- Indication case with front flange, capillary eccentric lead out ▷ HM
- of the case rear, bulb material brass, capillary of copper
- Indication case with front flange, capillary eccentric lead out ▷ HV
- of the case rear, bulb and capillary material stainless steel (316 Ti)
- Indication case with collar and wall bracket, capillary lead through ▷ KM
- the case downwards, bulb material brass, capillary of copper
- Indication case with collar and wall bracket, capillary lead through ▷ KV
- the case downwards, bulb and capillary material stainless steel (316 Ti)

3. Casing types

- Bajonet-type case NG100, material steel (black painted) ▷ 2
- Bajonet-type case NG160, material steel (black painted) ▷ 3
- Bajonet-type case NG100, material stainless steel (304) ▷ 7
- Bajonet-type case NG160, material stainless steel (304) ▷ 8

4. Bulb connections

- Plain stem ▷ A
- Plain stem with sliding thread ▷ J
- Stem with coupling nut and double nipple ▷ B
- Stem with coupling nut ▷ C
- Bulb connections with add. thermowell:
- Stem with coupling nut and add. screwed thermowell PN25 form E ▷ E
- Stem with coupling nut and add. screwed thermowell PN64 form F ▷ F
- Stem with coupling nut, double nipple and add. welded thermowell PN250 form K ▷ K
- Stem with coupling nut, double nipple and add. welded thermowell PN250 form M ▷ M

5. Material of add. thermowell

- Brass (not form K and M) ▷ M
- Stainless steel (316 Ti) ▷ V
- Steel (only form K and M) ▷ S
- If bulb connection without add. thermowell ▷ -

6. Thread

- 1/2" BSP ▷ 2
- 3/4" BSP ▷ 3
- 1" BSP ▷ 4
- 3/8" BSP ▷ 5
- Other or without thread (please state) ▷ 9

7. Insertion Length

- 60 mm ▷ 1
- 100 mm ▷ 2
- 160 mm ▷ 3
- 250 mm ▷ 4
- 400 mm ▷ 5
- Other insertion length (please state) ▷ 9

8. Bulb-diameter

- ∅ 6 ▷ 2
- ∅ 8 ▷ 3
- ∅ 10 ▷ 4
- ∅ 12 ▷ 5
- ∅ 14 ▷ 6

9. Contact expansion thermometer

- Inbuilt contact devices acc. to sep. data sheet ▷ 1
- Inbuilt remote transmitter acc. to sep. data sheet ▷ 2
- Surface mounted contact device acc. to sep. data sheet ▷ 3
- Surface mounted remote transmitter acc. to sep. data sheet ▷ 4

Please state the length of capillary with your ordering.
(Standard length KL = 1/3/5/7,5/10 m)