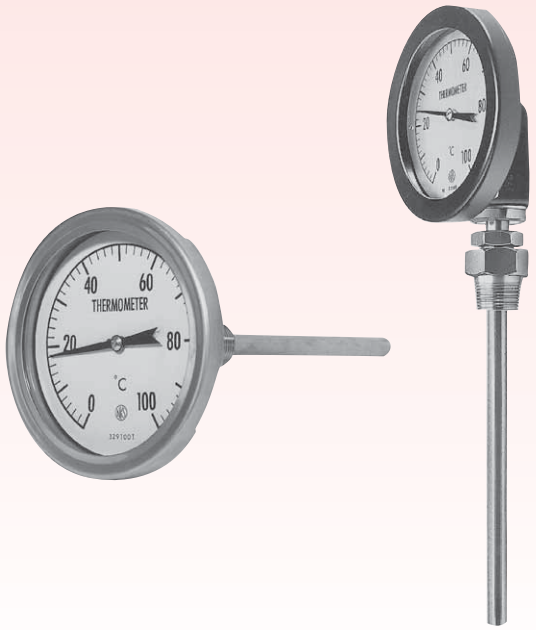
TB・RB
Bimetal Thermometers

Outline

Bimetal thermometers use two metals with different temperature expansion coefficients wound in a helical shape and indicate the temperature by transmitting the deflection of the metal by temperature change to a pointer.



Features

- **Error due to ambient temperature is smaller than that of the filled type.**
- **Since there is no filled liquid, it is safe. (No pollution)**
- **Simple design and reasonable price.**

＊When selecting a thermometer, select one which is normally used within a temperature range of 75% or less. Check to confirm that the material of the wetted parts is appropriate for the gas or liquid to be measured.

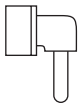
Specifications

Manufacturing temperature range:
-50 ～ 500 ℃

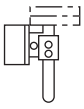
Size:
φ60, φ75, φ100, φ150

Shape:
T type

I type



Tilt capabilities type



V type

Bulb / Connection mounting:
SUS304

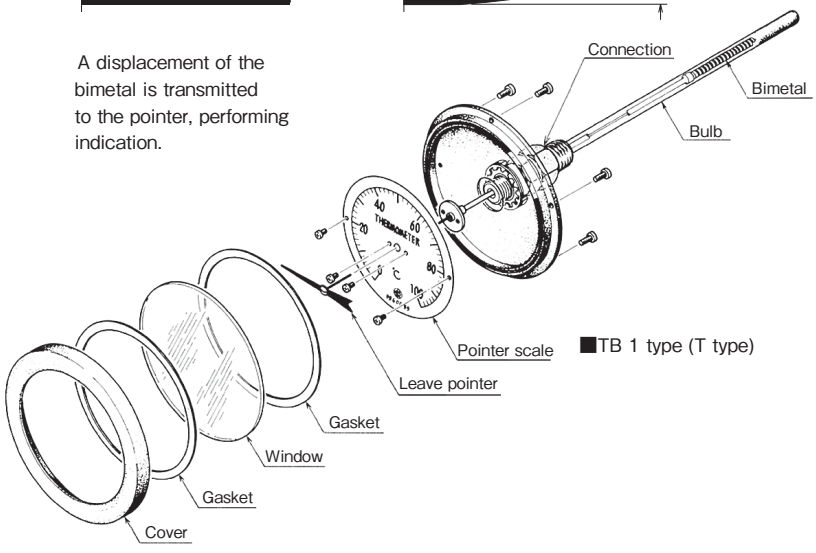
Principle/Construction:

Bimetal for the thermometer Helical

Basic of the bimetal (Cross section)
The initial state

The state after the temperature changed

A displacement of the bimetal is transmitted to the pointer, performing indication.



■TB 1 type (T type)

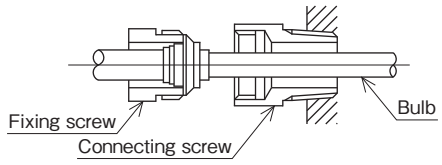
Selection of the specifications of the bimetal thermometers

1. Temperature range (Scale range)

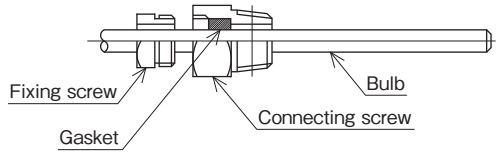
- The upper limit of the normal temperature should be selected temperature range to be 75% or less of the temperature span.
- The instrument itself is active even though the thermometer is not used, including temperature measurement from the time of manufacture.
- When the temperature exceeds the temperature range, it may cause the temperature gauge to break.
  If the gauges will cross the equator or pass through cold regions during shipment, or will be stored in a cold region, careful attention is required.

2. Mounting type of bulb

Union type ・Standard spec.

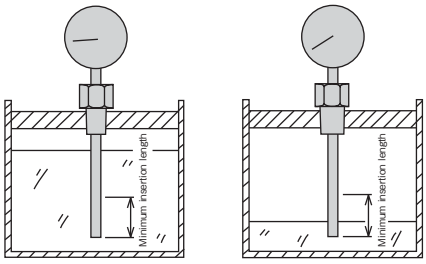
	By tightening the fixing screw, the bulb is fixed to the connecting screws so that its position does not change.	Maximum allowable working pressure of union type is Less than 200g → 2MPa Over 200g → 1MPa (If the pressure is higher than the above, a thermowell should be provided.)

Slide type
- When the bulb position must be adjusted due to changing of the position of the fluid to be measured in a tank or other vessel.
- When themowell is provided or the bulb must be inserted all the way to the bottom.

	By tightening the gasket with fixing screw, bulb can be fixed at any position.	Maximum allowable working pressure of slide type is 0.3MPa (If the pressure is higher than the above, a thermowell should be provided.)

3. Bulb minimum insertion length

- The minimum bulb insertion length is decided according to the type,temperature range and bulb diameter. Decide the bulb length within the range between the minimum insertion length and the maximum insertion length. Make sure that the bulb is inserted into the liquid under measurement up to the screws, flange, or other connecting parts.

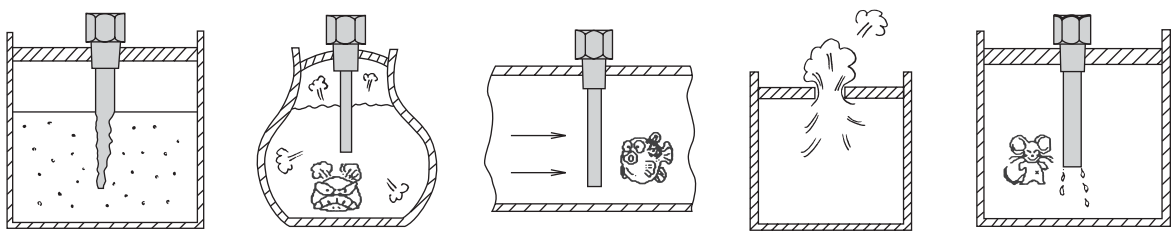


Good　　Bad

4. Thermowell necessary conditions

(1) For corrosive fluids, a thermowell made of a suitable material is necessary.
(2) For high pressure, a thermowell suited to the operating pressure must be used.
(3) When the fluid flows, a thermowell suitable for the flow speed must be used.
(4) When the fluid leaks when the thermometer is removed, a thermowell is convenient for maintenance.
(5) When the liquid in the thermometer leaks from the bulb and is harmful, a thermowell must be used.

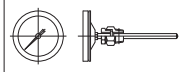
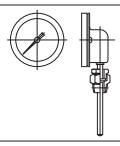
(1) (2) (3) (4) (5)



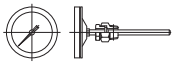
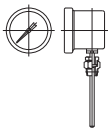
Corrosion　High pressure　Flow　Removing the thermometer　Leakage of sealed in fluid

Bimetal thermometers

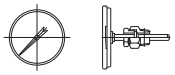
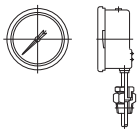
1. Drip-proof bimetal thermometers

Type	Shape	Manufacturing range	Size	Model	Case construction	Page
T type		-50 ～ 50 ℃ ↓ 0 ～ 500 ℃	ϕ 75	TB13	Protection class: equivalent to IP43	36
			ϕ100	TB14		
			ϕ150	TB16		
I type			ϕ 75	TB23		37
			ϕ100	TB24		
			ϕ150	TB26		

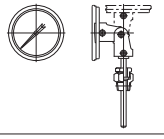
2. Small bimetal thermometers (Indoor)

Type	Shape	Manufacturing range	Size	Model	Page
T type		-50 ～ 50 ℃ ↓ 0 ～ 500 ℃	ϕ60	TB12	39
I type				TB22	
V type				TB32	

3. Bimetal thermometer made of stainless steel case (Rain-proof type)

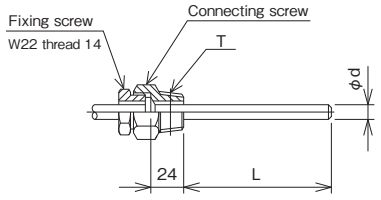
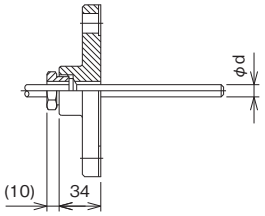
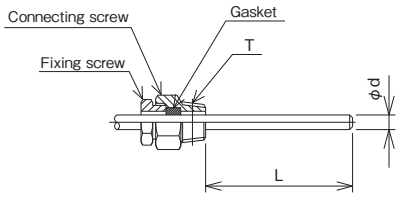
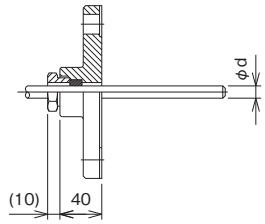
Type	Shape	Manufacturing range	Size	Model	Case construction	Page
T type		-50 ～ 50 ℃ ↓ 0 ～ 500 ℃	ϕ 75	RB43	Protection class: equivalent to IP65	41
			ϕ100	RB44		
			ϕ150	RB46		
I type			——	——		42
			ϕ100	RB14		
			ϕ150	RB16		

4. Tilt capabilities (rain-proof) bimetal thermometers

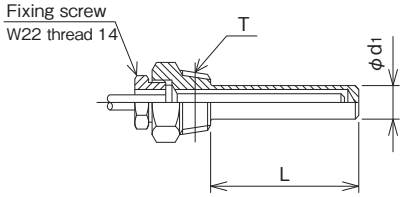
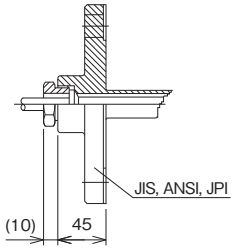
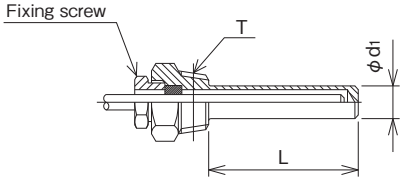
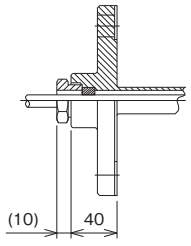
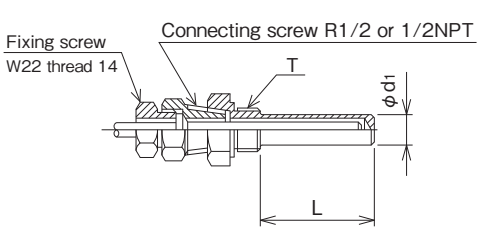
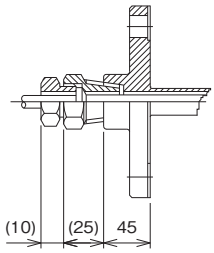
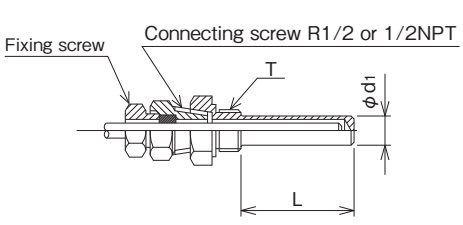
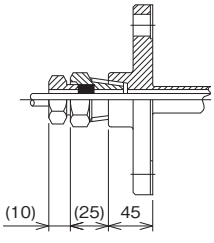
Shape	Manufacturing range	Size	Model	Case construction	Page
	-50 ～ 50 ℃ ↓ 0 ～ 500 ℃	ϕ100	TB44	Protection class: equivalent to IP65	44
		ϕ125	TB45		
		ϕ150	TB46		

Connection / Bulb specifications

1. Without thermowell

	Connection	
	Screw type	Flange type
Union type		
	Max. operating pressure: 2MPa for less than 200℃, 1MPa for 200℃ or over	
Slide type		
	Max. operating pressure 0.3MPa	

2. With thermowell

		Connection	
		Screw type	Flange type
Standard type	Union type		
	Slide type		
Double socket type	Union type		
	Slide type		

Connection / Bulb specifications

3. Connection standard

	Screw type	Flange type
Standard connection	R½, R¾, ½NPT, G½B, G¾B (Fixing screw only = W22 thread 14)	JIS 10K 20ARF JIS 10K 25ARF ANSI 1B 150RF ANSI 1B 300RF

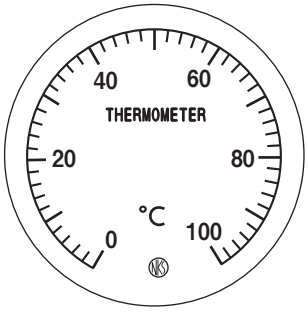
Other screws and flanges in addition to those shown at above are available.
Contact NKS for details.

Scale shape

Range ℃	Scale division and number entry position	Size (○ mark adapt) 60･75	100	150
0～ 50	0 10 20 30 40 50	○	○	○
0～100	0 20 40 60 80 100	○	○	○
0～500	0 100 200 300 400 500	○	○	○
0～250	0 50 100 150 200 250	○	○	○
0～ 60	0 10 20 30 40 50 60	○	–	–
	0 10 20 30 40 50 60	–	○	○
0～120	0 20 40 60 80 100 120	○	○	○
0～ 80	0 20 40 60 80	○	○	○
0～400	0 100 200 300 400	○	○	○
0～200	0 50 100 150 200	○	○	○
0～150	0 30 60 90 120 150	○	–	–
	0 30 60 90 120 150	–	○	○
0～300	0 50 100 150 200 250 300	○	–	–
	0 50 100 150 200 250 300	–	○	○
-10～ 50	-10 0 10 20 30 40 50	○	○	○
-20～100	-20 0 20 40 60 80 100	○	○	○
-30～ 50	-30 -20 -10 0 10 20 30 40 50	○	○	○
-50～ 50	-50 -40 -20 0 20 40 50	○	○	○

•Scale angle is 270˚ to 300˚.

〔Example：0～100℃〕



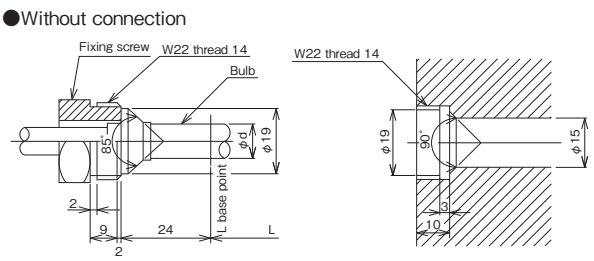
Ground: White
Entry: Black
Red for minus graduation lines and figures.

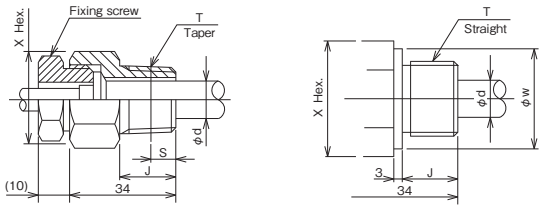
Connection / Bulb specifications

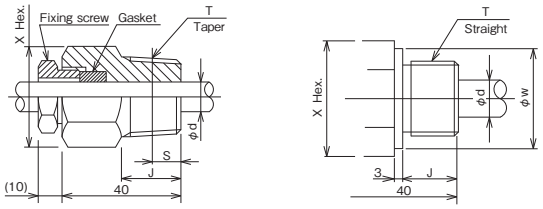
■Connection parts and dimensions

Screw type
- Union type
  - ●Without connection
  - ●With connection
- Slide type

Flange type
- Union type
- Slide type



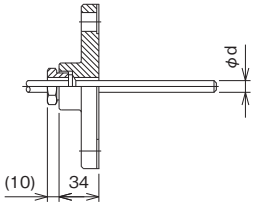


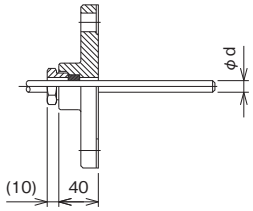


(mm)

T	J	S	W	X
R½	18	8	—	27×31.2
R¾	20	9.5	—	30×34.6
G½B	18	—	32	32×37
G¾B	20	—	36	36×41.6
½NPT	18	8	—	27×31.2

Note) Please refer to JIS, ANSI, and JPI standard for flange size.





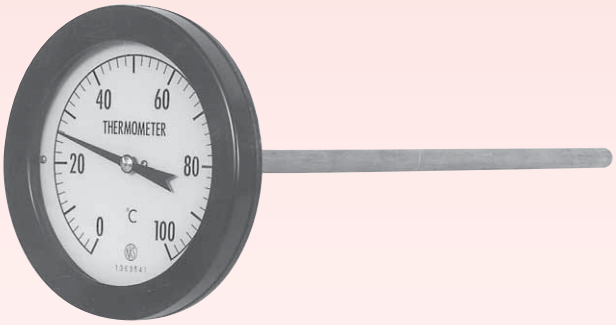
■Relationship between bulb outer dia., connection and T
(connection screw type, connection flange type)

Bulb outer dia. (d)	Connection		T		
	Union type	Slide type	Connection screw type		Connection flange type
			½	¾	JIS, ANSI, JPI
φ 6	○	—	○	○	○
φ 8	○	* ○	○	○	○
φ 10	○	○	○	○	○

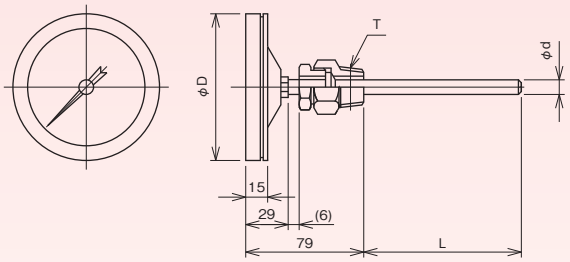
* φ 8 slide type is available only in the φ 75, φ 100.
However, no tilt capabilities and small type can be manufactured.

Bimetal Thermometers TB13·14·16

⟨Direct T type⟩



Dimensions



Model	Size	D	Weight (L=150)
TB13	75	96	Approx. 380g
TB14	100	122	Approx. 480g
TB16	150	172	Approx. 710g

Specifications

Item		Description	
Manufacturing range		-50～50℃→0～500℃	
Case		TB13・14 Construction: Drip-proof / Equivalent to IP43, Material: ADC12, Finish: Black TB16 Construction: Drip-proof / Equivalent to IP43, Material: AC7, Finish: Black	
Wetted parts material		Bulb: SUS304, Connection / Flange: SUS304	
Accuracy		Within ±2%F.S. Within ±1%F.S. (TB14 only available: However, exclude 0～400℃ and 500℃.)	
Connection		R½, R¾, ½NPT, G½B, G¾B	
Flange		JIS10K20ARF, JIS10K25ARF, ANSI1B150RF, ANSI1B300RF	
Connection	Without themowell	Union type, Slide type	φ6 and φ8 in the TB16 are not available in the slide type. When the maximum temperature of temperature range exceeds 400℃, slide type is not available.
	With themowell	Double socket union type: R½, ½NPT (Connection) Double socket slide type: R½, ½NPT (Connection)	
Bulb DIA. (φ)	Bulb (d)	6, 8, 10	
	Well (d1)	12, 15 (The φ6 bulb with a well cannot be manufactured.)	

Range / Bulb DIA. / Bulb length

Range ℃	Minimum graduation ℃	Standard Bulb dia. x Length (d) x (L) mm	Bulb length (L) mm			
			Minimum insertion requisite dimension			Maximum
			d＝φ6	d＝φ8	d＝φ10	
-50～ 50	2	φ10×100	105	140 (85)	100 (65)	500 (Until 300 by the bulb φ6)
-30～ 50	2	×150	125	165 (110)	120 (85)	
-20～100	2	×100	95	120 (80)	90 (65)	
-10～ 50	1	×150	160	205 (120)	145 (95)	
0～ 50	1	×200	185	240 (140)	165 (110)	
～ 60	1 (2)*	×150	160	205 (120)	145 (95)	
～ 80	2	×150	125	165 (110)	120 (85)	
～100	2	×100	105	140 (85)	100 (65)	
～120	2	×100	95	120 (80)	90 (65)	
～150	2 (5)*	×100	80	105 (65)	80 (55)	
～200	5	×100	65	90 (55)	70 (50)	
～250	5	×150	110	150 (85)	110 (65)	
～300	5 (10)*	×100	95	130 (75)	100 (60)	
～400	10	×100	85	110 (70)	80 (55)	
～500	10	×100	75	95 (60)	75 (50)	

＊The number ( ) in the minimum scale is for TB13.

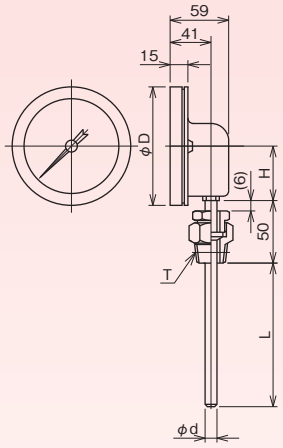
●When the minimum insertion dimension in ( ) for φ8 and φ10 bulb is used, please specify NKS.
●The dimensions of this table are the maximum length the bulb is inserted into the measurement liquid.
●When indicating the dimensions of the bulb, please indicate the L dimension on this value is 5mm increments.

The above minimum insertion length is the length without thermowell.
With thermowell, 25mm is added to the above length.

Bimetal Thermometers TB23·24·26

⟨Direct I type⟩

Dimensions



Model	Size	D	H	Weight (L=150)
TB23	75	96	46	Approx. 450g
TB24	100	122	58	Approx. 540g
TB26	150	172	58	Approx. 720g

Specifications

Item		Description	
Manufacturing range		-50～50℃→0～500℃	
Case		TB13・14 Construction: Drip-proof / Equivalent to IP43, Material: ADC12, Finish: Black TB16 Construction: Drip-proof / Equivalent to IP43, Material: AC7, Finish: Black	
Wetted parts material		Bulb: SUS304, Connection / Flange: SUS304	
Accuracy		Within ±2%F.S. Within ±1%F.S. (TB24 only available: However, exclude 0～400℃ and 500℃.)	
Connection		R½, R¾, ½NPT, G½B, G¾B	
Flange		JIS10K20ARF, JIS10K25ARF, ANSI1B150RF, ANSI1B300RF	
Connection	Without themowell	Union type, Slide type	φ6 and φ8 in the TB26 are not available in the slide type. When the maximum temperature of temperature range exceeds 400℃, slide type is not available.
	With themowell	Double socket union type: R½, ½NPT (Connection) Double socket slide type: R½, ½NPT (Connection)	
Bulb DIA. (φ)	Bulb (d)	6, 8, 10	
	Well (d1)	12, 15 (The φ6 bulb with a well cannot be manufactured.)	

Range / Bulb DIA. / Bulb length

Range ℃	Minimum graduation ℃	Standard Bulb dia. x Length (d) x (L) mm	Bulb length (L) mm			
			Minimum insertion requisite dimension			Maximum
			d＝φ6	d＝φ8	d＝φ10	
-50～ 50	2	φ10×100	105	140 (85)	100 (65)	500 (Until 300 by the bulb φ6)
-30～ 50	2	×150	125	165 (110)	120 (85)	
-20～100	2	×100	95	120 (80)	90 (65)	
-10～ 50	1	×150	160	205 (120)	145 (95)	
0～ 50	1	×200	185	240 (140)	165 (110)	
～ 60	1 (2)*	×150	160	205 (120)	145 (95)	
～ 80	2	×150	125	165 (110)	120 (85)	
～100	2	×100	105	140 (85)	100 (65)	
～120	2	×100	95	120 (80)	90 (65)	
～150	2 (5)*	×100	80	105 (65)	80 (55)	
～200	5	×100	65	90 (55)	70 (50)	
～250	5	×150	110	150 (85)	110 (65)	
～300	5 (10)*	×100	95	130 (75)	100 (60)	
～400	10	×100	85	110 (70)	80 (55)	
～500	10	×100	75	95 (60)	75 (50)	

*The number ( ) in the minimum scale is for TB23.

●When the minimum insertion dimension in ( ) for φ8 and φ10 bulb is used, please specify NKS.
●The dimensions of this table are the maximum length the bulb is inserted into the measurement liquid.
●When indicating the dimensions of the bulb, please indicate the L dimension on this value is 5mm increments.

The above minimum insertion length is the length without thermowell.
With thermowell, 25mm is added to the above length.

Model number configuration

Please specify the model number, each specs and the range for ordering.

Model

T B			—				—						×	×	×			
Bimetal Thermometers				①	②	③		④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮

Model number | Selective spec. | Additional spec. (Option)

Type

1 3	φ75	T type Drip-proof
2 3	φ75	I type Drip-proof
1 4	φ100	T type Drip-proof
2 4	φ100	I type Drip-proof
1 6	φ150	T type Drip-proof
2 6	φ150	I type Drip-proof

① Thermowell inside screws

For with thermowell, please specify the thermowell type on a separate page

	With thermowell	Welded type	Drilled type		Welded type
			Straight	Taper	Flange
0	Without thermowell				
1	Inside screws: Standard (W22 thread 14)	SW11 (SW10)	SW41 (SW40)	SW71 (SW70)	SW81
2	Inside screws: Rc1/2 double socket	SW12	SW42	SW72	SW82
3	Inside screws: 1/2NPT double socket	SW13	SW43	SW73	—
4	Inside screws: G1/2 double socket	SW14	SW44	SW74	—
5	Inside screws: Rc3/4 double socket	SW15	SW45	SW75	—

② Connecting part

0	Union type
1	Slide type (Not available for φ150 with φ8 bulb, and when the maximum temperature of temperature range exceeds 400℃.)

③ Connecting screws

0	R1/2	H	JIS10K50ARF
1	R3/4	J	JIS20K20ARF
2	1/2NPT	K	JIS20K25ARF
3	G1/2B	L	JIS10K15AFF
4	G3/4B	M	JIS10K20AFF
5	JIS10K20ARF	N	JIS10K25AFF
6	JIS10K25ARF	P	ANSI3/4B150RF
7	ANSI1B150RF	Q	ANSI3/4B300RF
8	ANSI1B300RF	R	ANSI1B600RF
A	Fixing screws (W22 thread 14)	S	ANSI 1 1/2B150RF
B	R3/8	T	ANSI 1 1/2B300RF
C	R1	U	ANSI 1 1/2B600RF
D	3/4NPT	W	JPI 1B150RF
E	1NPT	X	JPI 1B300RF
F	JIS10K15ARF	Y	JPI 1B600RF
G	JIS10K40ARF		

Please specify the temperature range and units separately besides selection of range code.

④ Range ℃

1	0～50, 60, 80, 100, 120, 150, 200, 250, 300
2	0～400, 500 Accuracy ±1%F.S. not available
3	-10～50, -20～100, -30～50, -50～50

⑤ Bulb material

1	SUS304
2	SUS316
X	With thermowell

⑥ Bulb DIA.

0	d=φ6 L=300 (max.) With thermowell and slide type not available
1	d=φ8 L=500 (max.)
2	d=φ10 L=500 (max.)
X	With thermowell

⑦ Bulb length (mm) L dimension

A	Minimum dimension ～ 500mm
X	With thermowell

⑧ Accuracy

0	±2%F.S. (Standard)
3	±1%F.S. (Selectable only TB14, 24)

⑨ Glass

0	Standard (Inorganic glass)
2	Tempered glass

⑬ Kind of thermowell

1	Welded type
4	Drilled type straight
7	Drilled type taper
8	Welded flange

⑭ Thermowell inside screws

0	For slide type, General products: Not available	
1	W22 thread 14	
2	Rc1/2	
3	1/2NPT	General products: Not available
4	G1/2	
5	Rc3/4	
6	3/4NPT	
7	G3/4	

⑮ Documents

0	Nil
1	Required (Please specify the desired documents separately.) Submission drawings, instruction manual, inspection procedure, mill sheet, test report (1 pc 1 copy), traceability / inspection certificate, strength calculation, attended inspection

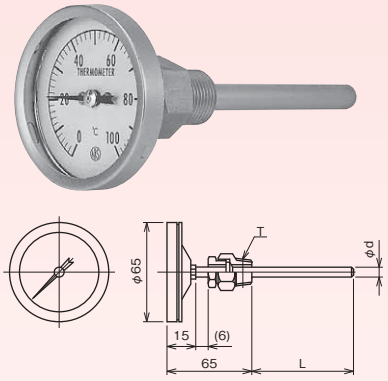
【Manufacturing range】
- φ6 bulb with a well cannot be manufactured.
- Slide type is not available when the following conditions are true.
  ①Bulb: φ6
  ②Bulb of TB16, TB26: φ8
  ③When the maximum temperature of temperature range exceeds 400℃.

＊When ordering, please specify the bulb length and lead length.
＊The thermowell model composition is SW ⑬ ⑭.
＊For with thermowell, please refer to P 16 ～thermowell manufacturing specifications and specify the SW model also.

*Specify "X" if there is no specification item.

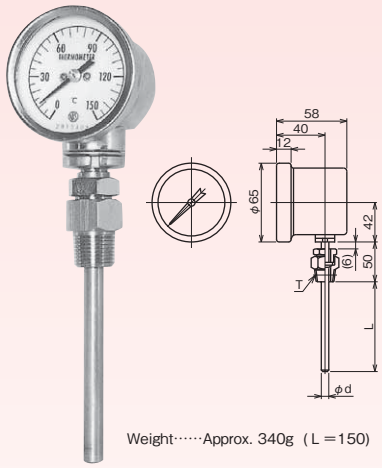
Small Bimetal Thermometers TB12·22·32

〈φ60 Indoor type〉



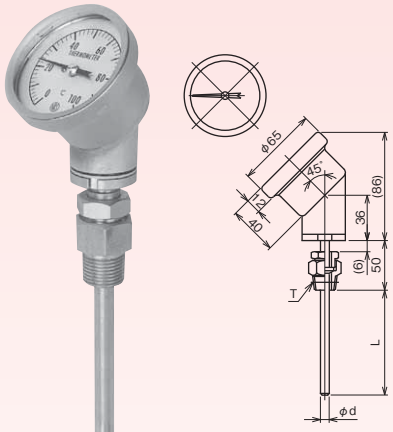
Weight……Approx. 220g (L=150)

TB12 (T type)



Weight……Approx. 340g (L=150)

TB22 (I type)



Weight……Approx. 400g (L=150)

TB32 (V type)

Specifications

Item		Description	
Manufacturing range		-50～50℃→0～500℃	
Case		Construction: Indoor type, Material: SPCC, Finish: Ni plating	
Wetted parts material		Bulb: SUS304, Connection / Flange: SUS304	
Accuracy		Within ±2%F.S.	
Connection		R½, R¾, ½NPT, G½B, G¾B	
Flange		JIS10K20ARF, JIS10K25ARF, ANSI1B150RF, ANSI1B300RF	
Connection	Without themowell	Union type, Slide type	φ6 bulb and the slide type in the TB12 are not available. When the maximum temperature of temperature range exceeds 400℃, slide type is not available.
	With themowell	Double socket union type: R½, ½NPT (Connection)	
Bulb DIA. (φ)	Bulb (d)	6, 8, 10	
	Thermowell (d1)	12, 15 (The φ6 bulb with a well cannot be manufactured.)	

Range / Bulb DIA. / Bulb length

Range ℃	Minimum graduation ℃	Standard Bulb dia. x Length (d) x (L) mm	Bulb length (L) mm			
			Bulb minimum insertion length			Maximum
			d=φ6	d=φ8	d=φ10	
-50～ 50	2	φ10×100	105	140 (85)	100 (65)	500 (Until 300 by the bulb φ6)
-30～ 50	2	×150	125	165 (110)	120 (85)	
-20～100	2	×100	95	120 (80)	90 (65)	
-10～ 50	1	×150	160	205 (120)	145 (95)	
0～ 50	1	×200	185	240 (140)	165 (110)	
～ 60	2	×150	160	205 (120)	145 (95)	
～ 80	2	×150	125	165 (110)	120 (85)	
～100	2	×100	105	140 (85)	100 (65)	
～120	2	×100	95	120 (80)	90 (65)	
～150	5	×100	80	105 (65)	80 (55)	
～200	5	×100	65	90 (55)	70 (50)	
～250	5	×150	110	150 (85)	110 (65)	
～300	10	×100	95	130 (75)	100 (60)	
～400	10	×100	85	110 (70)	80 (55)	
～500	10	×100	75	95 (60)	75 (50)	

- When the minimum insertion dimension in ( ) for φ8 and φ10 bulb is used, please specify NKS.
- The above lengths are the minimum necessary of the bulb to be inserted into the fluid to be measured.
- Bulb length should be over the above length and specified in 5mm steps.

The above minimum insertion length is the length without thermowell.
With thermowell, 25mm is added to the above length.

Model number configuration

Please specify the model number, each specs and the range for ordering.

Model

T B		2	—				—					×	×	×	×	×			
Small Bimetal Thermometers				①	②	③		④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮

Model number | Selective spec. | Additional spec. (Option)

Type

1 2		φ60 T type Small thermometer
2 2		φ60 I type Small thermometer
3 2		φ60 V type Small thermometer

① Thermowell inside screws

For with thermowell, please specify the thermowell type on a separate page

	With thermowell	Welded type	Drilled type		Welded type
			Straight	Taper	Flange
0	Without thermowell				
1	Inside screws: Standard (W22 thread 14)	SW11(SW10)	SW41(SW40)	SW71(SW70)	SW81
2	Inside screws: Rc1/2 double socket	SW12	SW42	SW72	SW82
3	Inside screws: 1/2NPT double socket	SW13	SW43	SW73	—
4	Inside screws: G1/2 double socket	SW14	SW44	SW74	—
5	Inside screws: Rc3/4 double socket	SW15	SW45	SW75	—

② Connecting part

0	Union type
1	Slide type (Not available for φ6 bulb, TB12, and when the maximum temperature of temperature range exceeds 400℃.)

③ Connecting screws

0	R1/2
1	R3/4
2	1/2NPT
3	G1/2B
4	G3/4B
A	Fixing screws (W22 thread 14)
	Other specified (Model number products only)

Please specify the temperature range and units separately besides selection of range code.

④ Range ℃

1	0～50, 60, 80, 100, 120, 150, 200, 250, 300
2	0～400, 500
3	-10～50, -20～100, -30～50, -50～50

⑤ Bulb material

1	SUS304
2	SUS316
X	With thermowell

⑥ Bulb DIA.

0	d=φ6 L=300 (max.)	With thermowell, Slide type not available
1	d=φ8 L=500 (max.)	
2	d=φ10 L=500 (max.)	
X	With thermowell	

⑦ Bulb length (mm) L dimension

A	Minimum dimension ～ 500mm (until 300mm in case φ6)
X	With thermowell

⑬ Kind of thermowell

1	Welded type
4	Drilled type straight
7	Drilled type taper
8	Welded flange

⑭ Thermowell inside screws

0	For slide type, General products: Not available	
1	W22 thread 14	
2	Rc1/2	
3	1/2NPT	General products: Not available
4	G1/2	
5	Rc3/4	
6	3/4NPT	
7	G3/4	

⑮ Documents

0	Nil
1	Required (Please specify the desired documents separately.) Submission drawings, instruction manual, inspection procedure, mill sheet, test report (1 pc 1 copy), traceability / inspection certificate, strength calculation, attended inspection

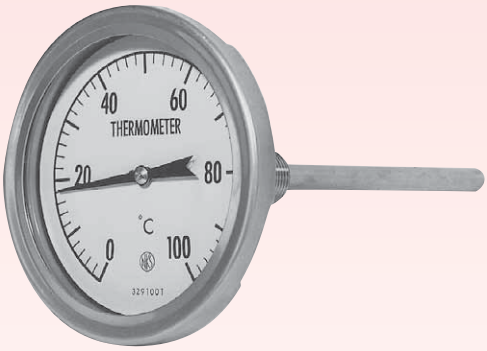
【Manufacturing range】
- φ6 bulb With thermowell is not available.
- Slide type is not available when the following conditions are true.
  ①Bulb: φ6
  ②TB12
  ③When the maximum temperature of temperature range exceeds 400℃.

＊When ordering, please specify the bulb length and lead length.
＊The thermowell model composition is SW ⑬ ⑭.
＊For with thermowell, please refer to P 16 ～thermowell manufacturing specifications and specify the SW model also.

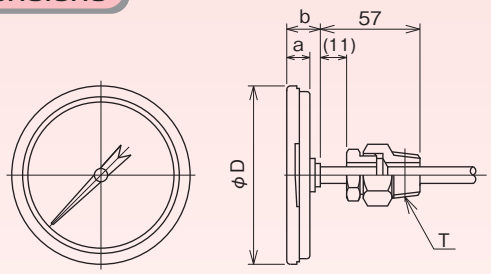
*Specify "X" if there is no specification item.

Stainless Steel Case Bimetal Thermometers
⟨Direct T type⟩

RB43·44·46



Dimensions



Mode	Dial size	D	a	b	Weight (L=200)
RB43	75	89	18	28	Approx. 300g
RB44	100	116	17	27	Approx. 400g
RB46	150	171	22	32	Approx. 1kg

Specifications

Item		Description	
Manufacturing range		-50～50℃→0～500℃	
Case		Construction: Spray-proof / Equivalent to IP65, Material: SUS304	
Wetted parts material		Bulb: SUS304, Connection / Flange: SUS304	
Accuracy		Within ±2%F.S. Within ±1%F.S. (RB44 only available: However, exclude 0～400℃ and 500℃.)	
Connection		R½, R¾, ½NPT, G½B, G¾B	
Flange		JIS10K20ARF, JIS10K25ARF, ANSI1B150RF, ANSI1B300RF	
Connection	Without themowell	Union type, Slide type	φ6 and φ8 in the RB46 are not available in the slide type. When the maximum temperature of temperature range exceeds 400℃, slide type is not available.
	With themowell	Double socket union type: R½, ½NPT (Connection) Double socket slide type: R½, ½NPT (Connection)	
Bulb DIA. (φ)	Bulb (d)	6, 8, 10	
	Themowell (d1)	12, 15 (The φ6 bulb with a well cannot be manufactured.)	

Range / Bulb DIA. / Bulb length

Range ℃	Minimum graduation ℃	Standard Bulb dia. x Length (d) x (L) mm	Bulb length (L) mm			
			Bulb minimum insertion length			Maximum
			d＝φ6	d＝φ8	d＝φ10	
-50～ 50	2	φ10×100	105	140 (85)	100 (65)	500 (Until 300 by the bulb φ6)
-30～ 50	2	×150	125	165 (110)	120 (85)	
-20～100	2	×100	95	120 (80)	90 (65)	
-10～ 50	1	×150	160	205 (120)	145 (95)	
0～ 50	1	×200	185	240 (140)	165 (110)	
～ 60	1 (2)*	×150	160	205 (120)	145 (95)	
～ 80	2	×150	125	165 (110)	120 (85)	
～100	2	×100	105	140 (85)	100 (65)	
～120	2	×100	95	120 (80)	90 (65)	
～150	2 (5)*	×100	80	105 (65)	80 (55)	
～200	5	×100	65	90 (55)	70 (50)	
～250	5	×150	110	150 (85)	110 (65)	
～300	5 (10)*	×100	95	130 (75)	100 (60)	
～400	10	×100	85	110 (70)	80 (55)	
～500	10	×100	75	95 (60)	75 (50)	

＊The number ( ) in the minimum scale is for RB43.

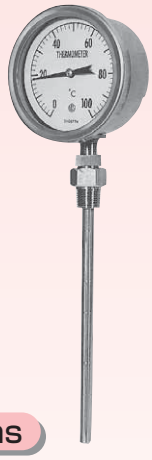
●When the minimum insertion dimension in ( ) for φ8 and φ10 bulb is used, please specify NKS.
● The above lengths are the minimum necessary of the bulb to be inserted into the fluid to be measured.
● Bulb length should be over the above length and specified in 5mm steps.

The above minimum insertion length is the length without thermowell.
With thermowell, 25mm is added to the above length.

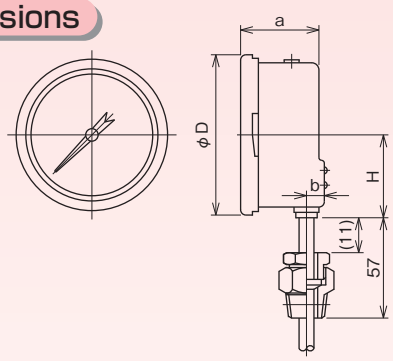
Stainless Steel Case Bimetal Thermometers

⟨Direct I type⟩

RB14·16



Dimensions



Mode	Dial size	D	a	b	H	Weight (L=200)
RB14	100	116	55	17	56	Approx. 550g
RB16	150	171	59	21	85	Approx. 1.3kg

Specifications

Item		Description	
Manufacturing range		-50～50℃→0～500℃	
Case		Construction: Spray-proof / Equivalent to IP65, Material: SUS304	
Wetted parts material		Bulb: SUS304, Connection / Flange: SUS304	
Accuracy		Within ±2%F.S. Within ±1%F.S. (RB14 only available: However, exclude 0～400℃ and 500℃.)	
Connection		R½, R¾, ½NPT, G½B, G¾B	
Flange		JIS10K20ARF, JIS10K25ARF, ANSI1B150RF, ANSI1B300RF	
Connection	Without themowell	Union type, Slide type	φ6 and φ8 in the RB16 are not available in the slide type. When the maximum temperature of temperature range exceeds 400℃, slide type is not available.
	With themowell	Double socket union type: R½, ½NPT (Connection) Double socket slide type: R½, ½NPT (Connection)	
Bulb DIA. (φ)	Bulb (d)	6, 8, 10	
	Themowell (d1)	12, 15 (The φ6 bulb with a well cannot be manufactured.)	

Range / Bulb DIA. / Bulb length

Range ℃	Minimum graduation ℃	Standard Bulb dia. x Length (d) x (L) mm	Bulb length (L) mm			
			Bulb minimum insertion length			Maximum
			d＝φ6	d＝φ8	d＝φ10	
-50～ 50	2	φ10×100	105	140 (85)	100 (65)	500 (Until 300 by the bulb φ6)
-30～ 50	2	×150	125	165 (110)	120 (85)	
-20～100	2	×100	95	120 (80)	90 (65)	
-10～ 50	1	×150	160	205 (120)	145 (95)	
0～ 50	1	×200	185	240 (140)	165 (110)	
～ 60	1	×150	160	205 (120)	145 (95)	
～ 80	2	×150	125	165 (110)	120 (85)	
～100	2	×100	105	140 (85)	100 (65)	
～120	2	×100	95	120 (80)	90 (65)	
～150	2	×100	80	105 (65)	80 (55)	
～200	5	×100	65	90 (55)	70 (50)	
～250	5	×150	110	150 (85)	110 (65)	
～300	5	×100	95	130 (75)	100 (60)	
～400	10	×100	85	110 (70)	80 (55)	
～500	10	×100	75	95 (60)	75 (50)	

- When the minimum insertion dimension in ( ) for φ8 and φ10 bulb is used, please specify NKS.
- The above lengths are the minimum necessary of the bulb to be inserted into the fluid to be measured.
- Bulb length should be over the above length and specified in 5mm steps.

The above minimum insertion length is the length without thermowell.
With thermowell, 25mm is added to the above length.

Model number configuration

Please specify the model number, each specs and the range for ordering.

Model

R B			—				—													
Stainless steel case Bimetal Thermometers				①	②	③		④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮
Model number								Selective spec.				Additional spec. (Option)							

Type

4 3	φ75 T type	Spray-proof type
1 4	φ100 I type	Spray-proof type
4 4	φ100 T type	Spray-proof type
1 6	φ150 I type	Spray-proof type
4 6	φ150 T type	Spray-proof type

① Thermowell inside screws

For with thermowell, please specify the thermowell type on a separate page

		Welded type	Drilled type		Welded type
	With thermowell		Straight	Taper	Flange
0	Without thermowell				
1	Inside screws: Standard (W22 thread 14)	SW11(SW10)	SW41(SW40)	SW71(SW70)	SW81
2	Inside screws: Rc1/2 double socket	SW12	SW42	SW72	SW82
3	Inside screws: 1/2NPT double socket	SW13	SW43	SW73	—
4	Inside screws: G1/2 double socket	SW14	SW44	SW74	—
5	Inside screws: Rc3/4 double socket	SW15	SW45	SW75	—

② Connecting part

0	Union type
1	Slide type (Not available for φ6 bulb, and φ8 of RB16, 46, and when the maximum temperature of temperature range exceeds 400℃.)

③ Connecting screws

0	R1/2	H	JIS10K50ARF
1	R3/4	J	JIS20K20ARF
2	1/2NPT	K	JIS20K25ARF
3	G1/2B	L	JIS10K15AFF
4	G3/4B	M	JIS10K20AFF
5	JIS10K20ARF	N	JIS10K25AFF
6	JIS10K25ARF	P	ANSI3/4B150RF
7	ANSI1B150RF	Q	ANSI3/4B300RF
8	ANSI1B300RF	R	ANSI1B600RF
A	Fixing screws (W22 thread 14)	S	ANSI 1 1/2B150RF
B	R3/8	T	ANSI 1 1/2B300RF
C	R1	U	ANSI 1 1/2B600RF
D	3/4NPT	W	JPI 1B150RF
E	1NPT	X	JPI 1B300RF
F	JIS10K15ARF	Y	JPI 1B600RF
G	JIS10K40ARF		

Please specify the temperature range and units separately besides selection of range code.

④ Range ℃

1	0～50, 60, 80, 100, 120, 150, 200, 250, 300	
2	0～400, 500	Accuracy ±1%F.S. not available
3	-10～50, -20～100, -30～50, -50～50	

⑤ Bulb material

1	SUS304
2	SUS316
X	With thermowell

⑥ Bulb DIA

0	d=φ6	L=300 (max.) With thermowell not available
1	d=φ8	L=500 (max.)
2	d=φ10	L=500 (max.)
X	With thermowell	

⑦ Bulb length

A	Minimum dimension ～ 500mm
X	With thermowell

⑧ Accuracy

0	±2%F.S. (Standard)
3	±1%F.S. (Selectable only RB14, 44)

⑨ Glass

0	Standard (Inorganic glass)
2	Tempered glass

⑬ Kind of thermowell

1	Welded type
4	Drilled type straight
7	Drilled type taper
8	Welded flange

⑭ Thermowell inside screws

0	For slide type, General products: Not available	
1	W22 thread 14	
2	Rc1/2	
3	1/2NPT	General products: Not available
4	G1/2	
5	Rc3/4	
6	3/4NPT	
7	G3/4	

⑮ Documents

0	Nil
1	Required (Please specify the desired documents separately.) Submission drawings, instruction manual, inspection procedure, mill sheet, test report (1 pc 1 copy), traceability / inspection certificate, strength calculation, attended inspection

【Manufacturing range】
- φ6 bulb with a well is not available.
- Slide type is not available when the following conditions are true.
  ①Bulb: φ6
  ②Bulb of RB16, RB26: φ8
  ③When the maximum temperature of temperature range exceeds 400℃.

＊When ordering, please specify the bulb length and lead length.
＊The thermowell model composition is SW ⑬ ⑭.
＊For with thermowell, please refer to P 16 ～thermowell manufacturing specifications and specify the SW model also.

*Specify "X" if there is no specification item.

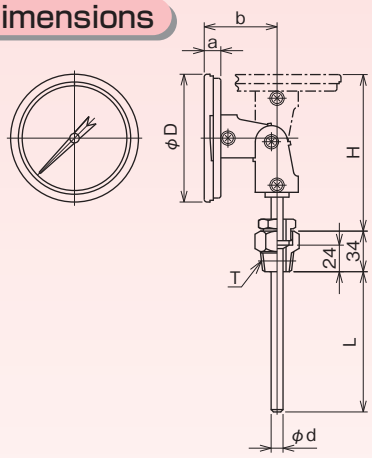
Stainless Steel Case Bimetal Thermometers

⟨Direct free angle type⟩

TB44·45·46

Tilt capabilities bimetal is a useful thermometer which can set the indicator to an arbitrary direction after installation.

Dimensions



Mode	Dial size	D	a	b	H	Weight (L=150)
TB44	100	116	17	57	117	Approx. 550g
TB45	125	145	17	57	117	Approx. 720g
TB46	150	171	21	61	121	Approx. 850g

Specifications

Item		Description
Manufacturing range		-50～50℃→0～500℃
Case		Construction: Spray-proof / Equivalent to IP65, Material: SUS304
Wetted parts material		Bulb: SUS304, Connection / Flange: SUS304
Accuracy		Within ±2%F.S.
Connection		R½, R¾, ½NPT, G½B, G¾B
Flange		JIS10K20ARF, JIS10K25ARF, ANSI1B150RF, ANSI1B300RF
Connection	Without themowell	Union type (The slide type is not available.)
	With themowell	Double socket union type: R½, ½NPT (Connection)
Bulb DIA. (φ)	Bulb (d)	6, 8, 10
	Themowell (d1)	12, 15 (The φ6 bulb with a well cannot be manufactured.)

Range / Bulb DIA. / Bulb length

Range ℃	Minimum graduation ℃	Standard Bulb dia. x Length (d) x (L) mm	Bulb length (L) mm			
			Bulb minimum insertion length			Maximum
			d＝φ6	d＝φ8	d＝φ10	
-50～ 50	2	φ10×100	105	140	100	500 (Until 300 by the bulb φ6)
-30～ 50	2	×150	125	165	120	
-20～100	2	×100	95	120	90	
-10～ 50	1	×150	160	205	145	
0～ 50	1	×200	185	240	165	
～ 60	1	×150	160	205	145	
～ 80	2	×150	125	165	120	
～100	2	×100	105	140	100	
～120	2	×100	95	120	90	
～150	2	×100	80	105	80	
～200	5	×100	65	90	70	
～250	5	×150	110	150	110	
～300	5	×100	95	130	100	
～400	10	×100	85	110	80	
～500	10	×100	75	95	75	

● The above lengths are the minimum necessary of the bulb to be inserted into the fluid to be measured.
● Bulb length should be over the above length and specified in 5mm steps.

The above minimum insertion length is the length without thermowell.
With thermowell, 25mm is added to the above length.

Model number configuration

Please specify the model number, each specs and the range for ordering.

Model

T B 4		—		0		—					×		×	×	×			
Tilt capabilities type Bimetal Thermometers			①	②	③		④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮

Model number | Selective spec. | Additional spec. (Option)

Type

4	φ100 Tilt capabilities type Spray-proof type
5	φ125 Tilt capabilities type Spray-proof type
6	φ150 Tilt capabilities type Spray-proof type

① Thermowell inside screws

For with thermowell, please specify the thermowell type on a separate page

	With thermowell	Welded type	Drilled type		Welded type
			Straight	Taper	Flange
0	Without thermowell				
1	Inside screws: Standard (W22 thread 14)	SW11(SW10)	SW41(SW40)	SW71(SW70)	SW81
2	Inside screws: Rc1/2 double socket	SW12	SW42	SW72	SW82
3	Inside screws: 1/2NPT double socket	SW13	SW43	SW73	—
4	Inside screws: G1/2 double socket	SW14	SW44	SW74	—
5	Inside screws: Rc3/4 double socket	SW15	SW45	SW75	—

② Connecting part

0	Union type

③ Connecting screws

0	R1/2	H	JIS10K50ARF
1	R3/4	J	JIS20K20ARF
2	1/2NPT	K	JIS20K25ARF
3	G1/2B	L	JIS10K15AFF
4	G3/4B	M	JIS10K20AFF
5	JIS10K20ARF	N	JIS10K25AFF
6	JIS10K25ARF	P	ANSI3/4B150RF
7	ANSI1B150RF	Q	ANSI3/4B300RF
8	ANSI1B300RF	R	ANSI1B600RF
A	Fixing screws (W22 thread 14)	S	ANSI 1 1/2B150RF
B	R3/8	T	ANSI 1 1/2B300RF
C	R1	U	ANSI 1 1/2B600RF
D	3/4NPT	W	JPI 1B150RF
E	1NPT	X	JPI 1B300RF
F	JIS10K15ARF	Y	JPI 1B600RF
G	JIS10K40ARF		

Please specify the temperature range and units separately besides selection of range code.

④ Range ℃

1	0～50, 60, 80, 100, 120, 150, 200, 250, 300
2	0～400, 500
3	-10～50, -20～100, -30～50, -50～50

⑤ Bulb material

1	SUS304
2	SUS316
X	With thermowell

⑥ Bulb DIA

0	d=φ6 L=300 (max.) With thermowell not available
1	d=φ8 L=500 (max.)
2	d=φ10 L=500 (max.)
X	With thermowell

⑦ Bulb length (mm) L dimension

A	Minimum dimension ～ 500mm
X	With thermowell

⑨ Glass

0	Standard (Inorganic glass)
2	Tempered glass

⑬ Kind of thermowell

1	Welded type
4	Drilled type straight
7	Drilled type taper
8	Welded flange

⑭ Thermowell inside screws

1	W22 thread 14	General products: Not available
2	Rc1/2	
3	1/2NPT	
4	G1/2	
5	Rc3/4	
6	3/4NPT	
7	G3/4	

⑮ Documents

0	Nil
1	Required (Please specify the desired documents separately.) Submission drawings, instruction manual, inspection procedure, mill sheet, test report (1 pc 1 copy), traceability / inspection certificate, strength calculation, attended inspection

【Manufacturing range】
・φ6 bulb with a well is not available.

＊When ordering, please specify the bulb length and lead length.
＊The thermowell model composition is SW ⑬ ⑭.
＊For with thermowell, please refer to P 16 ～thermowell manufacturing specifications and specify the SW model also.

*Specify "X" if there is no specification item.

For Temperature Gauges

SW Thermo-well

When measuring temperature object flows, and the speed is fast, and the pressure is high, the same as general temperature indication indicator, thermo-well (well) is necessary to temperature sensor department of temperature gauge. And, in general application, it uses protecting tube to be easy maintenance.

As a condition of protecting tube

1) Standing temperature, the pressure that is going to be measured (it contains a flow) fully.
2) Not raising corrosion, other chemical reaction by measuring temperature object.
3) With Leakage.
4) It isn't damaged even if receives sudden temperature change.
5) It stands meachanical power such as vibration, a shock enough.
6) Thermo-well oneself doesn't occur gas harmful to temperature sensor.
7) It informs measuring temperature department of temperature change quickly.

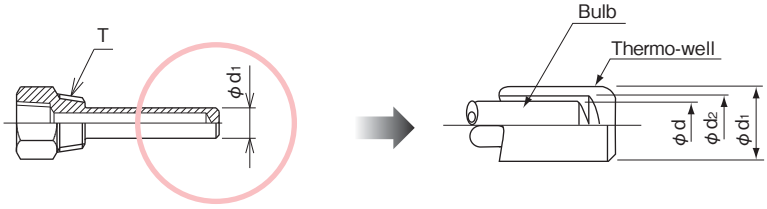
Thermo-well has digging type and welding type, and welding type is standard. And thermo-well a screw type and flange type by installation system.

Specifications

■Relation of thermo-well DIA. and bulb DIA., and manufacturing range of screws and flange

Outer DIA. (d_1)	Type	Inner DIA. (d_2)	Bulb outer DIA. (d)	Screw (T)			Flange
				3/8	1/2	3/4	JIS, ANSI, JPI
φ12	Drilled type	φ8.5	φ8	○	○	○	○
	Welded type			—	○	○	○
φ15	Drilled type	φ10.5	φ10	—	○	○	○
	Welded type	φ11		—	○	○	○
φ19	Drilled type	φ13.5	φ13	—	—	○	○
	Welded type			—	—	○	○
φ23	Drilled type	φ16.5	φ16	—	—	○	○
φ19/φ23 (Taper)	Drilled type	φ13.5	φ13	—	—	○	○

Inside screws (Connecting screws with thermometer): W22 thread 14 or Rc1/2



■Thermo-well material

SUS304, SUS316, SUS316L, Titanium, Hastelloy-B®, and Monel-metal® are available.
Teflon®, or Glass etc. coating is available.
Coated thermo-well is available with flange type only.

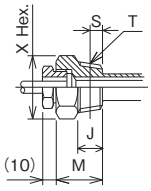
Specifications

■Connection parts and dimensions

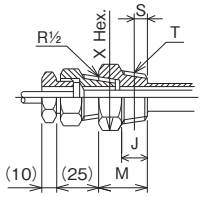
Screw type Union type

Standard

Taper Screw

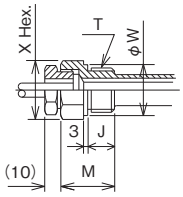


Double socket type

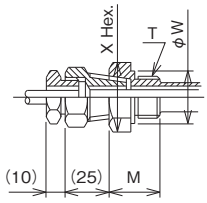


Standard

Straight Screw

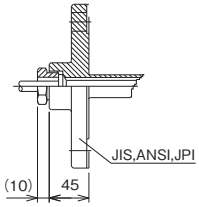


Double socket type

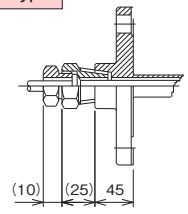


Flange type Union type

Standard



Double socket type

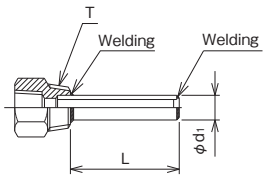


Note) Please refer to JIS, ANSI, and JPI standard for flange size.

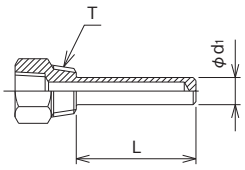
■Thermo-well type and size

Screw type

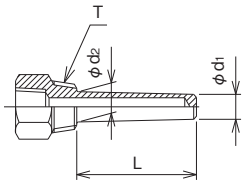
Welding type Weld the pipe as shown below.



Drilled type (Straight)



Drilled type (Taper)

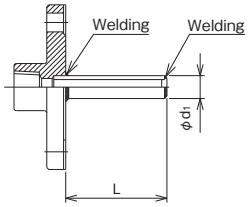


(mm)

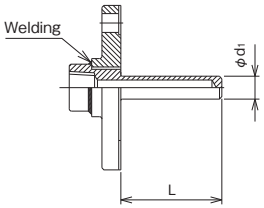
T	J	S	W	X	M
R½	18	8	–	27×31.2	43
R¾	20	9.5	–	30×34.6	45
G½B	18	–	32	32×37	43
G¾B	20	–	36	36×41.6	45

Flange type

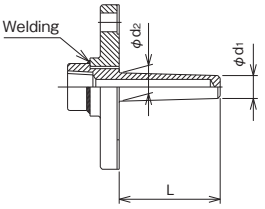
Welding type Weld the pipe as shown below.



Drilled type (Straight)



Drilled type (Taper)



Model number configuration

Please specify the model number and each specs for ordering.

Model

S	W	1		—				—															
Welded type thermo-well					①	②	③		④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮

Model number			Selective spec.										Additional spec. (Option)	
Model	0	Welding type straight	For slide type	W16 thread 18 (Bulb: ϕ8), W20 thread 16 (Bulb: ϕ10), W22 thread 14 (Bulb: ϕ13)										
	1	Welding type straight	Inside screws	W22 thread 14										
	2	Welding type straight	Inside screws	Rc1/2										
	3	Welding type straight	Inside screws	1/2NPT										
	4	Welding type straight	Inside screws	G1/2										
	5	Welding type straight	Inside screws	Rc3/4										
	6	Welding type straight	Inside screws	3/4NPT										
	7	Welding type straight	Inside screws	G3/4										

①② Connection							
00	R1/2	06	JIS10K25ARF	0M	JIS10K20AFF		
01	R3/4	07	ANSI 1B150RF	0N	JIS10K25AFF		
02	1/2NPT	08	ANSI 1B300RF	0P	ANSI 3/4 150RF		
03	G1/2B	0F	JIS10K15ARF	0Q	ANSI 3/4 300RF		
04	G3/4B	0G	JIS10K40ARF	0S	ANSI 1 1/2 150RF		
0C	R1	0H	JIS10K50ARF	0T	ANSI 1 1/2 300RF		
0D	3/4NPT	0J	JIS20K20ARF	0W	JPI 1 150RF		
0E	1NPT	0K	JIS20K25ARF	0X	JPI 1 300RF		
05	JIS10K20ARF	0L	JIS10K15AFF				

③ Material	
1	SUS304
2	SUS316

④ Outer DIA.	
1	Outer DIA. ϕ12 (Bulb inner DIA. for ϕ8)
2	Outer DIA. ϕ15 (Bulb inner DIA. for ϕ10)
3	Outer DIA. ϕ19 (Bulb inner DIA. for ϕ13)

⑤ L length (mm)	SUS304	SUS316	
0		A	～ 100
1		B	101～ 200
2		C	201～ 300
3		D	301～ 400
4		E	401～ 500
5		F	501～ 600
6		G	601～ 700
7		H	701～ 800
8		J	801～ 900
9		K	901～1000
			1001～ (/100mm)

Please specify thermo-well length.

⑮ Documents	
0	Nil
1	Required (Please specify the desired documents separately.) Submission drawings, mill sheet

・No oil & no water treatment are available.

*Specify “X” if there is no specification item.

Drilled type

Model number configuration

Please specify the model number and each specs for ordering.

Model

S W			—				—			×	×	×	×	×	×	×	×	×		
Drilled type thermo-well				①	②	③		④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮	
Model number								Selective spec.				Additional spec. (Option)								

Model	4	0	Drilled type straight	For slide type	W16 thread 18 (Bulb: ϕ8), W20 thread 16 (Bulb: ϕ10), W22 thread 14 (Bulb: ϕ13)
	4	1	Drilled type straight	Inside screws	W22山14
	4	2	Drilled type straight	Inside screws	Rc1/2
	4	3	Drilled type straight	Inside screws	1/2NPT
	4	4	Drilled type straight	Inside screws	G1/2
	4	5	Drilled type straight	Inside screws	Rc3/4
	4	6	Drilled type straight	Inside screws	3/4NPT
	4	7	Drilled type straight	Inside screws	G3/4
	7	0	Drilled type taper	For slide type	W16 thread 18 (Bulb: ϕ8), W20 thread 16 (Bulb: ϕ10), W22 thread 14 (Bulb: ϕ13)
	7	1	Drilled type taper	Inside screws	W22山14
	7	2	Drilled type taper	Inside screws	Rc1/2
	7	3	Drilled type taper	Inside screws	1/2NPT
	7	4	Drilled type taper	Inside screws	G1/2
	7	5	Drilled type taper	Inside screws	Rc3/4
	7	6	Drilled type taper	Inside screws	3/4NPT
	7	7	Drilled type taper	Inside screws	G3/4

①② Connection

00	R1/2	05	JIS10K20ARF	0N	JIS10K25AFF
01	R3/4	06	JIS10K25ARF	0P	ANSI 3/4 150RF
02	1/2NPT	07	ANSI 1B150RF	0Q	ANSI 3/4 300RF
03	G1/2B	08	ANSI 1B300RF	0S	ANSI 1 1/2 150RF
04	G3/4B	0G	JIS10K40ARF	0T	ANSI 1 1/2 300RF
0B	R3/8 (ϕ12 only)	0H	JIS10K50ARF	0W	JPI 1 150RF
0C	R1	0J	JIS20K20ARF	0X	JPI 1 300RF
0D	3/4NPT	0K	JIS20K25ARF		
0E	1NPT	0M	JIS10K20AFF		

③ Material ＊

1	SUS304
2	SUS316
5	SUS316L

④ Outer DIA.

1	Outer DIA. ϕ12 (Bulb inner DIA. for ϕ8)
2	Outer DIA. ϕ15 (Bulb inner DIA. for ϕ10)
3	Outer DIA. ϕ19 (Bulb inner DIA. for ϕ13)
4	Outer DIA. ϕ23 (Bulb inner DIA. for ϕ16)
5	Outer DIA. ϕ19/23 (Bulb inner DIA. for ϕ13)
	Specified outer dia.

⑤ L length (mm)

SUS304	SUS316	SUS316L	
0	A	ア	～ 100
1	B	イ	101～ 200
2	C	ウ	201～ 300
3	D	エ	301～ 400
4	E	オ	401～ 500
5	F	カ	501～ 600
6	G	キ	601～ 700
7	H	ク	701～ 800

Please specify thermo-well length.

⑮ Documents

0	Nil
1	Required (Please specify the desired documents separately.) Submission drawings, mill sheet, strength calculation

＊For drilled type, titanium, Hastelloy® and other special materials are also available. Please specify the material.

・No oil & no water treatment are available.

・Please contact us for JIS10K15A RF/FF.

【Manufacturing range】
Manufacturing range of connecting screws and well
3/8 : Well outer diameter ϕ12 drilling only
1/2 : Well outer diameter ϕ12, ϕ15
3/4, 1 : Well outer diameter ϕ12, ϕ15, ϕ19, ϕ19/23

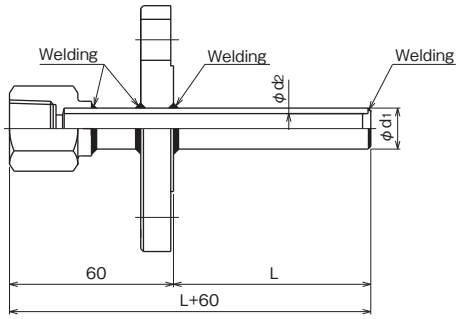
*Specify "X" if there is no specification item.

Welded type, flange general-purpose type

Flange general-purpose type specifications

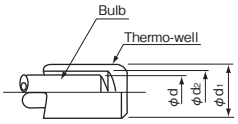
■Types and dimensions

Please weld the pipe and flange the following figure.



■Relation of thermo-well DIA. and bulb DIA., manufacturing range flange

Outer DIA. (d_1)	Type	Inner DIA. (d_2)	Bulb outer DIA. (d)	Flange JIS, ANSI, JPI
φ12	Welded type	φ8.5	φ8	○
φ15		φ11	φ10	○
φ19		φ13.5	φ13	○



Inside screws (Connecting screws with thermometer): W22 thread 14 or Rc½

■Thermo-well material

SUS304

Model number configuration

Please specify the model number and each specs for ordering.

Model

S	W	8		—			1	—			×	×	×	×	×	×	×	×	×	×	
					①	②	③		④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮

Welded type thermo-well (Flange type)

Model number			Selective spec.	Additional spec. (Option)
Model	1	Welding type straight Inside screws W22 thread 14		
	2	Welding type straight Inside screws Rc1/2		

①② Connection				
	05	JIS10K20ARF	0L	JIS10K15AFF
	06	JIS10K25ARF	0M	JIS10K20AFF
	07	ANSI 1B150RF	0N	JIS10K25AFF
	08	ANSI 1B300RF	0P	ANSI 3/4 150RF
	0F	JIS10K15ARF	0Q	ANSI 3/4 300RF
	0G	JIS10K40ARF	0S	ANSI 1 1/2 150RF
	0H	JIS10K50ARF	0T	ANSI 1 1/2 300RF
	0J	JIS20K20ARF	0W	JPI 1 150RF
	0K	JIS20K25ARF	0X	JPI 1 300RF

③ Material		
	1	SUS304

④ Outer DIA.		
	1	Outer DIA. φ12 (Bulb inner DIA. for φ8)
	2	Outer DIA. φ15 (Bulb inner DIA. for φ10)
	3	Outer DIA. φ19 (Bulb inner DIA. for φ13)

Please specify thermo-well length. →

⑤ L length (mm)		
	0	～ 100
	1	101～ 200
	2	201～ 300
	3	301～ 400
	4	401～ 500
	5	501～ 600
	6	601～ 700
	7	701～ 800
	8	801～ 900
	9	901～1000
		1001～ (/100mm)

⑮ Documents		
	0	Nil
	1	Required (Please specify the desired documents separately.) Submission drawings, mill sheet

・No oil & no water treatment are available.

*Specify "X" if there is no specification item.