

ranges and various models are available. Liquid filled dial thermometer is manufactured with -200-+500°C range, and its bulb is smaller than that of mercury filled type in the middle temperature range. Filled liquid or gas is harmless even in case of leakage by accident. Mercury filled dial thermometer is manufactured with -50-+650°C range, and its maximum length of capillary is longer than that of liquid filled type in the middle temperature range.

Features

Dial thermometer consists of a sensing part, an union part, an indicator part and a connecting lead tube as shown in the figure. This system is filled with liquid (mercury). The liquid (mercury) in sensor expands or contracts according to the changes of the temperature, such actuation of the changes of liquid (mercury) is carried through the lead tube to the Bourdon tube in the indicator part. The pointer indicate the temperature in proportion to the movement of the tail end of the Bourdon tube.

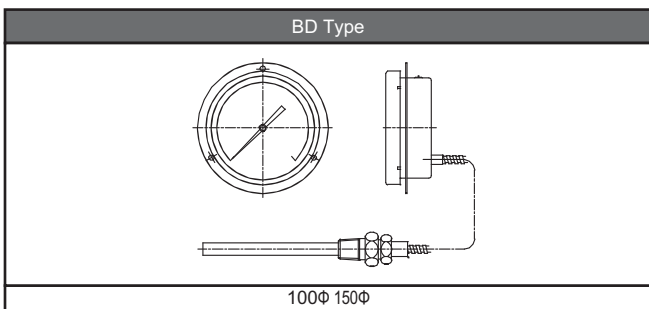
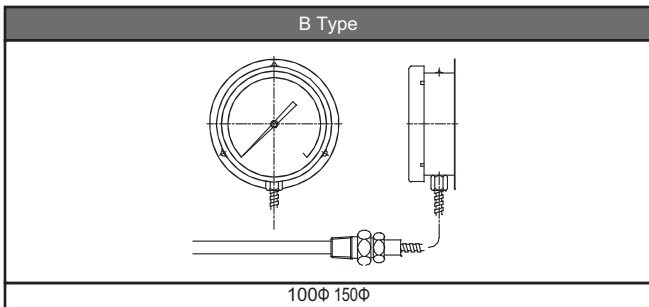
Ordering Codes

Model	Type	Diameter	Range	Connection	Accuracy	Capillary Tube
SS-4011B	B					STANDARD 2m
SS-4012	BD	100Φ 150Φ	-50°C 600°C	3/4 PT 1/2	± 2%F.S	MAXIMUM 10m



Functions

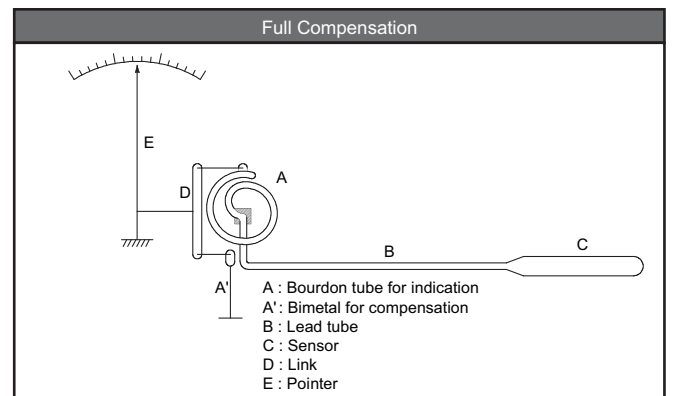
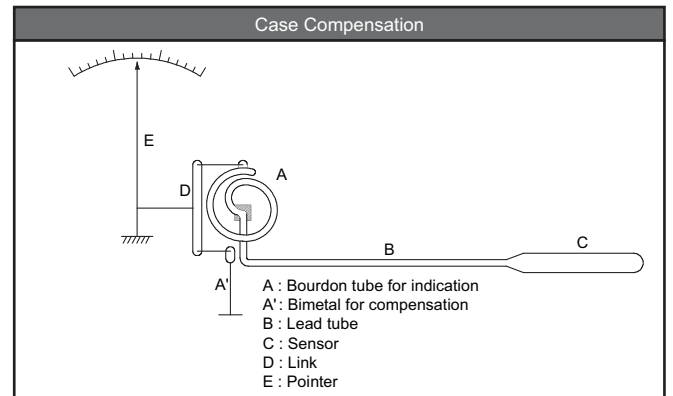
For the compensation of measuring errors due to the ambient temperature around lead part and indicator part, two methods are available. One is the compensation method by the bimetal fixed in the indicator part (shown below on the left). The other is that by an additional lead fixed symmetrically using the same element of the lead part (shown below on the right).



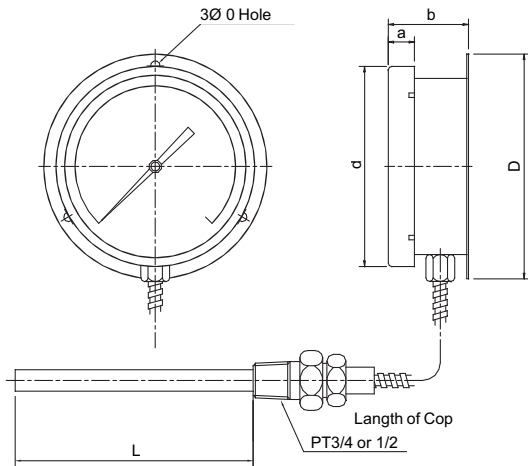
SS-4011	DIA SIZE	CAPILLARY LENGTH	BULB SIZE	TYPE	CONNECTION SIZE	RANGE
	100	2M	12ΦX951	B	PT 1/2	0~100°C

Material

- Bulb :
304 St. st., 316 St. st. (JIS)
- Thermo - well : 304St. st., 316St. st., 316L St. st., (JIS) Steel (S15C,SS41-JIS), Copperalloy, Brass, Titanium, HastilyB, Model, As for coating material, Rubber, Kel-F, Teflon, Lead, Glass, can be utilized. Thermo - well with coating (or lining) should be manufactured with flange connection



Dimensions

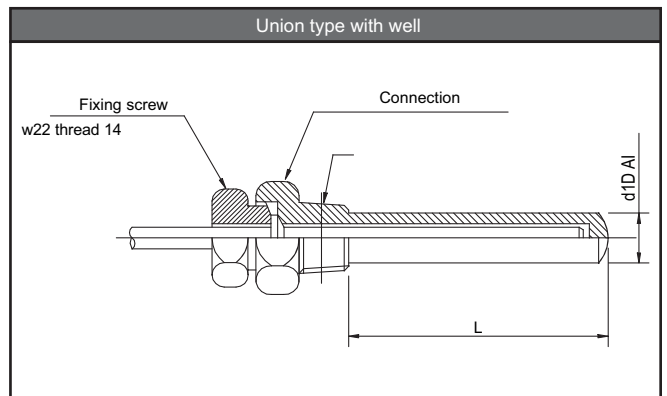
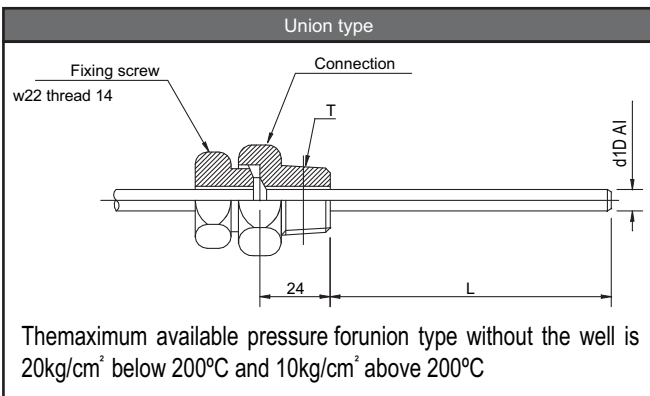


	DIA METER	a	b	c	d	D	e
SS-4011	100Φ	14	46	115	113	128	5.5
	150Φ	15	57	198	172	188	5.5
SS-4012	100Φ	14	46	115	113	128	5.5
	150Φ	15	57	184	172	198	5.5

Range (C°)	Min. graduation (C°)	Standard dia. & length of bulb dx L (d, X L)	Length of sensing part (L)mm					MAX.
			Minimum insertion length					
			d=8 _{DIA} (d _i =12 _{DIA})	d=10 _{DIA} (d _i =15 _{DIA})	d=12 _{DIA}	d=13 _{DIA} (d _i =19 _{DIA})	d=16 _{DIA} (d _i =23 _{DIA})	
-30-50	2	10 _{DIA} X200 (15 _{DIA} X200)	210(230)	160(180)	115	100(120)	75(95)	d=8 _{DIA} 16 _{DIA} 1000
-30-120	2	10 _{DIA} X100 (15 _{DIA} X150)	120(140)	90(115)	70	60(80)	50(70)	
-20-100	2	10 _{DIA} X150 (")	145(165)	110(130)	80	70(90)	55(75)	
-10-50	1	10 _{DIA} X300 (15 _{DIA} X300)	290(310)	220(240)	155	130(150)	100(120)	
0-50	1	" (")	360(380)	270(290)	190	160(180)	120(140)	
-60	1	" (")	290(310)	220(240)	155	130(150)	100(120)	
-80	2	10 _{DIA} X200 (15 _{DIA} X200)	210(230)	160(180)	115	100(120)	75(95)	
-100	2	10 _{DIA} X150 (15 _{DIA} X150)	170(190)	130(150)	95	85(105)	65(85)	
-120	2	" (")	145(165)	110(130)	80	70(90)	55(75)	
-150	2	10 _{DIA} X100 (")	120(140)	95(115)	70	60(80)	50(70)	
-200	5	(15 _{DIA} X300)	90(110)	75(95)	55	50(70)	40(60)	
-250	5	" (")	75(95)	60(80)	50	45(65)	40(60)	
-300	5	" (")	70(90)	60(80)	45	40(60)	40(60)	
-400	10	" (")	60(80)	50(70)	40	40(60)	40(60)	
-500	10	" (")	50(70)	40(60)	40	40(60)	40(60)	
-600	10	" (")	45(65)	40(60)	40	40(60)	40(60)	
-650	20	" (")	45(65)	40(60)	40	40(60)	40(60)	

(Note) 1. When the length of sensing part is specified, determine the length, longer than the above minimum insertion length in 5mm step.

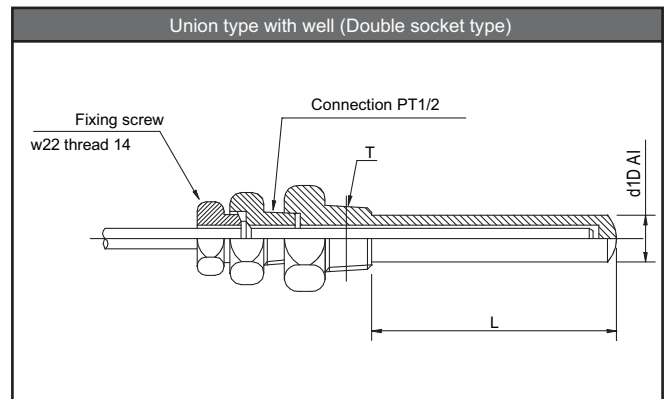
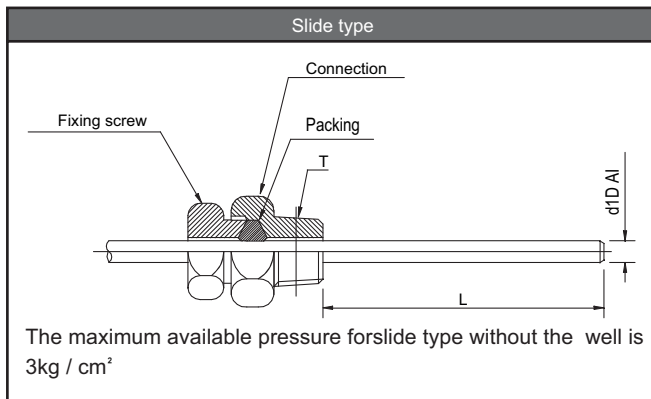
Connections



A	Recorders
B	Data Loggers
C	Indicators
D	Converters
E	Controllers
F	Thyristor Units
G	Transmitters
H	Temp. Sensors
I	Thermo Meters
J	Pressure Gauges
K	Others

SS-4010	SS-4020
SS-4030	SS-4040
SS-4050	SS-4060
SS-4067	SS-4068
SS-4070	SS-4080
SS-4090	series

Connections



• Relation between Diameter of Bulb and connection

Bulb dia (d)	Type of connection				T		
	Union		Slide		Connecting screw		Flange
	Direct	Remote	Direct	Remote	PT NPT 1/2 PF	PT NPT 3/4 PF	JIS JPI ANSI
8DIA.	0	0	-	0	0	0	0
10DIA.	0	0	0	0	0	0	0
12DIA.	0	0	0	0	0	0	0
13DIA.	0	0	0	0	0	0	0
16DIA.	0	0	-	-	-	0	0

• Relation between Diameter of Bulb and connection

O.D (d1)	Well			
	Type	Screw(T)		Flange
		PT NPT 1/2 PF	PT NPT 3/4 PF	JIS JPI ANSI
12 DIA.	Drilled	0	0	0
	Welded	0	0	0
15DIA.	Drilled	0	0	0
	Welded	0	0	0
19DIA.	Drilled	-	0	0
	Welded	-	0	0
23DIA 19DIA./23DIA. (taper)	Drilled	-	0	0

• Relation between Diameter of well and Buld

O.D (d1)	Well		Buld (d DIA.)
	Type	I.D	
12 DIA.	Drilled	8.5	8
	Welded	8.5	
15DIA.	Drilled	10.5	10
	Welded	11	
19DIA.	Drilled	13.5	13
	Welded	13.5	
23DIA 19DIA./23DIA. (taper)	Drilled	13.5	13
Welded	-		

• Diameter and Length of Bulb / Thermowell according to the range

RANGE	bulb DIA	10φ	12φ	14φ	16φ
0~50		210	210	145	125
0~80		165	135	95	85
-20~80		135	110	80	70
-20~100		115	95	70	60
0~100		135	110	80	70
0~120		115	95	70	60
0~150		95	80	60	50

RANGE	bulb DIA	10φ	12φ	14φ	16φ
0~200		75	65	45	40
0~250		75	60	45	40
0~300		65	55	40	35
0~350		60	50	35	30
0~400		55	45	35	30
0~500		55	45	35	30
0~600		55	45	35	30

(Unit:mm)