

SD _ _ Diaphragm Seal Pressure Gauge for High Temperature

Overview

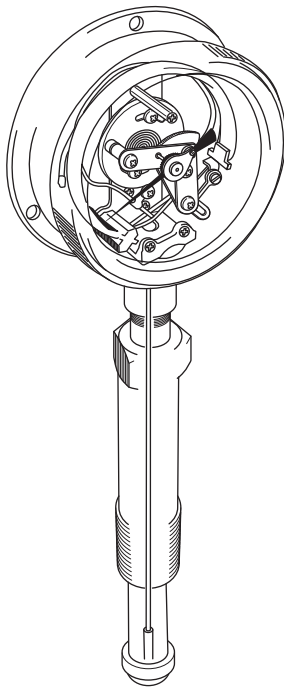
This is a pressure gauge that uses enclosed intermediate liquid between pressure receiving part and its bourdon tube. It is used to measure molten state process media under the high temperature condition and to measure the pressure of high viscosity fluid at normal temperature, and is widely used in the synthetic chemical, synthetic fiber, and plastic industries.

Features

- Pressure measurement possible under 0 to 330°C high temperature condition.
- Diaphragm seal type doesn't let process media inside pressure gauge without contacting incorporated bourdon tube suitable for high viscous pressure media measurement.
- Enclosed liquid has lesser specific gravity so indication error (elevation error) worry-free without compensation process.



Design



There is an intermediate liquid filled between diaphragm and bourdon tube which has a role of transmitting received pressure to bourdon tube for rotating pointer by its elastic deformation.

⚠ Attention

To maximize performance, select full scale pressure range to indicate normal operating pressure which comes to conditions below.

For constant pressure : The maximum operating pressure should not exceed three-quarters of the full-scale range.

For fluctuating pressure: The maximum operating pressure should not exceed two-thirds of the full-scale range.

Select appropriate wetted parts compatible with process fluid (gas and liquid) which the gauge will be subjected.

Please refer to JIS B 7505-1 for details.

Specifications 1

Item	Description
Media	Gas or liquid
Type	Direct type, Remote type
Enclosed liquid	X3···· NKS instrument oil For application where filling mercury is not suitable
Enclosure	Sealed type Not completely sealed in accordance with JIS C 0920 equivalent to IP43
Size	φ100, φ150
Type	A type (Direct type), B type (Remote type), D type (Remote type)
Diaphragm diameter	φ15, φ18, φ23.6, φ37
Connection	G3/4B, G1B, Flange If the connection type is required, specify the length of A and B (Refer to Dimensions for further details.)
Wetted parts	SUS316, SUS316L or Hastelloy [®] C-276 equivalent (Remote type only) Gasket (Standard): Aluminum
Pressure receiving part	With protector (φ15, φ18, φ23.6), Without protector
Allowable temperature range	Pressure receiving part: 0 to 330°C Indication part: 0 to 40°C
Pressure range	0 to 1.5→0 to 50MPa
Indication accuracy	±1.5%F.S. (Within 20 to 80°C F.S.)
Temperature coefficient	Pressure receiving part: ±0.005MPa/°C Indication part: ±0.2%F.S./°C
Dial scale angle	270°
Blowout disc	Blow out protection is used to protect window being blown up in case of high pressure leak happen from the failure of bourdon tube. The disc breaks and releases inner over pressure. Caution To maintain appropriate performance, space wider than 10mm against wall behind installing gauge is needed. Modification toward disk and plug, blocking out the disk are prohibited.
Case material · finishing	ADC12·Black
Maximum lead length	3m (Remote type)
Weight	Approx. 1.3kg to Approx. 1.9kg

Specifications 2

Minimum graduation:

Diaphragm diameter	Pressure range MPa	Minimum graduation MPa
φ 15	0 to 25	0.5
	0 to 35	1
	0 to 50	1
φ 18	0 to 10	0.2
	0 to 15	0.5
	0 to 20	0.5
	0 to 25	0.5
	0 to 35	1
	0 to 50	1

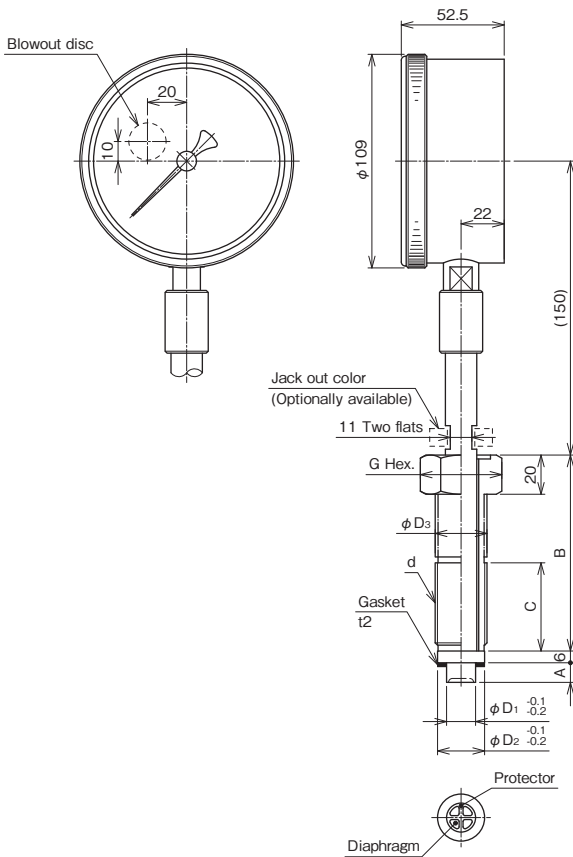
Diaphragm diameter	Pressure range MPa	Minimum graduation MPa
φ 23.6	0 to 5	0.1
	0 to 7	0.2
	0 to 10	0.2
	0 to 15	0.5
	0 to 20	0.5
	0 to 25	0.5
	0 to 35	1
φ 37	0 to 1.5	0.05
	0 to 2	0.05
	0 to 2.5	0.05
	0 to 3.5	0.1
	0 to 5	0.1
	0 to 10	0.2

Dimensions 1

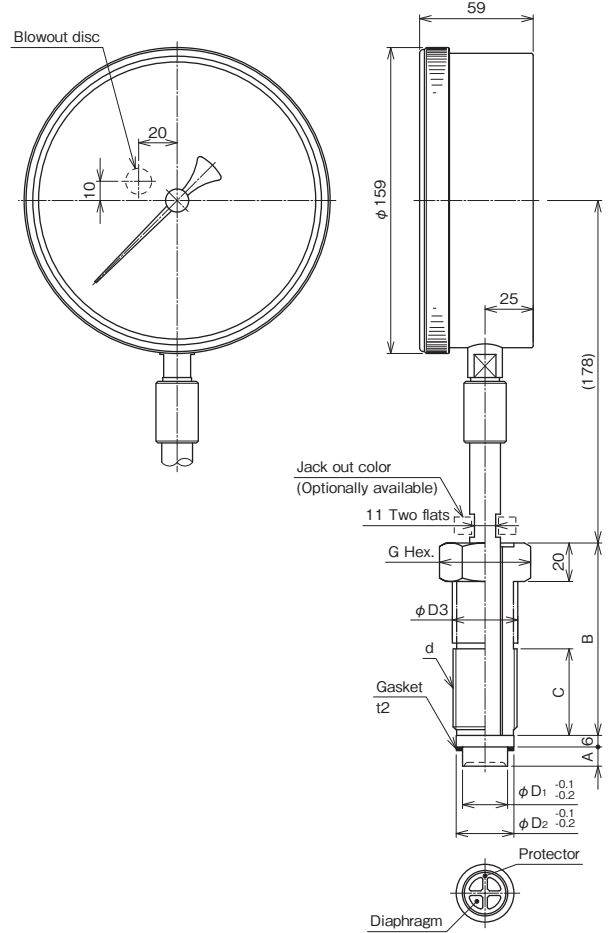
Unit: mm

Direct type

BE10 (φ 100)



BG10 (φ 150)

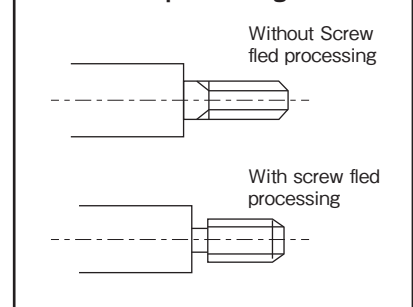


Specify the length of A and B parts when ordering.

Diaphragm diameter φD ₁	D ₂	Detail of connection	Screw fled processing	D ₃	d	G Hex.
15	24	Yes	No	26.4	G3/4B	36×41.6
		No	No			
		Yes	Yes	23.5		
		No	Yes			
18	24	Yes	No	26.4	G3/4B	36×41.6
		No	No			
		Yes	Yes	23.5		
		No	Yes			
23.6	30	Yes	No	34	G1B	41×47.3
		No	No			
		Yes	Yes	29.5		
		No	Yes			

A length=10 to 30mm (By 5mm)
 B length=55, 80 to 450mm (By 10mm)
 C=45 (If B length is 55, C=25)

Screw fled processing

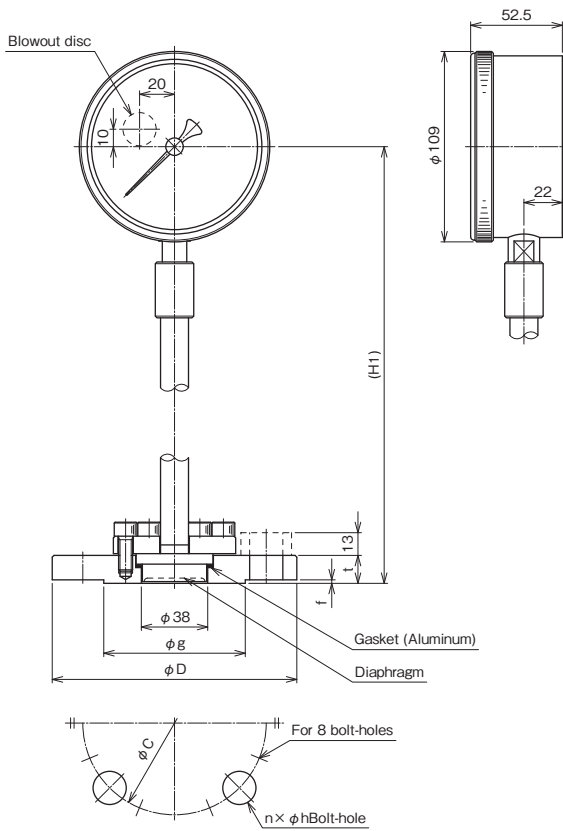


Dimensions 2

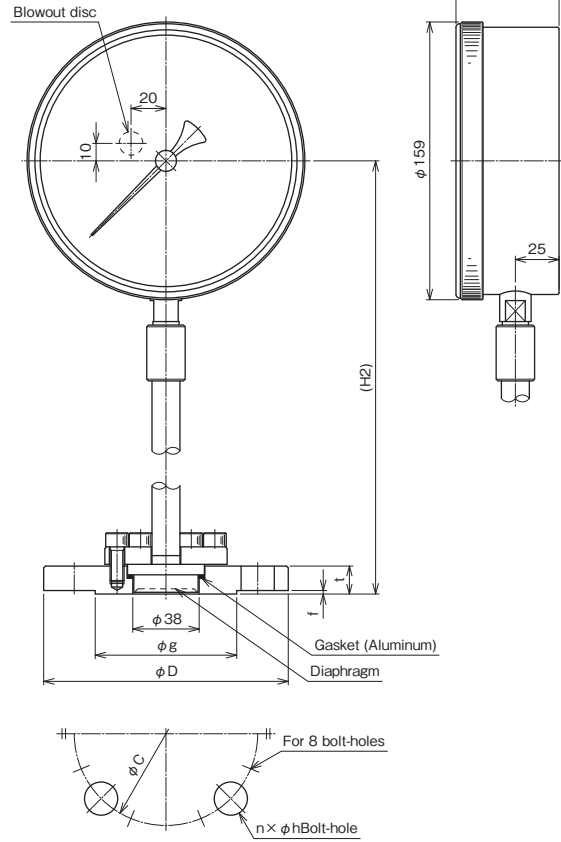
Direct flange type

Unit: mm

BE10 (φ100)



BG10 (φ150)



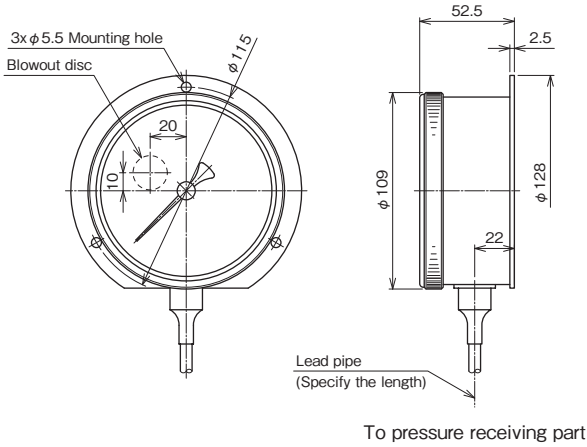
Flange standard	D	t	f	g	c	n	h	H1	H2
JIS 10K32A RF	135	16	2	76	100	4	19	250	278
40A RF	140	16	2	81	105	4	19	250	278
50A RF	155	16	2	96	120	4	19	250	278
JIS 20K32A RF	135	18	2	76	100	4	19	250	278
40A RF	140	18	2	81	105	4	19	250	278
50A RF	155	18	2	96	120	8	19	250	278
JIS 30K32A RF	140	22	2	80	105	4	19	250	278
40A RF	160	22	2	90	120	4	23	250	278
50A RF	165	22	2	105	130	8	19	250	278
JIS 40K32A RF	140	24	2	80	105	4	19	250	278
40A RF	160	24	2	90	120	4	23	250	278
50A RF	165	26	2	105	130	8	19	250	278
JIS 63K32A RF	150	30	2	80	110	4	23	253	281
40A RF	175	32	2	90	130	4	25	255	283
50A RF	185	34	2	105	145	8	23	257	285

Dimensions 3

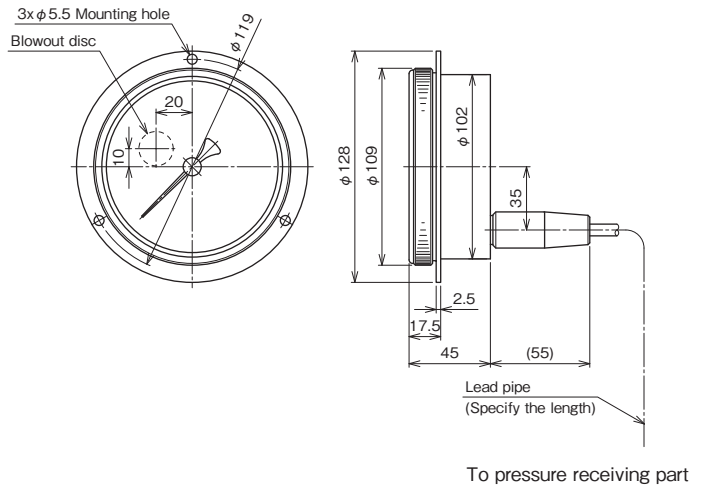
Unit: mm

Remote type

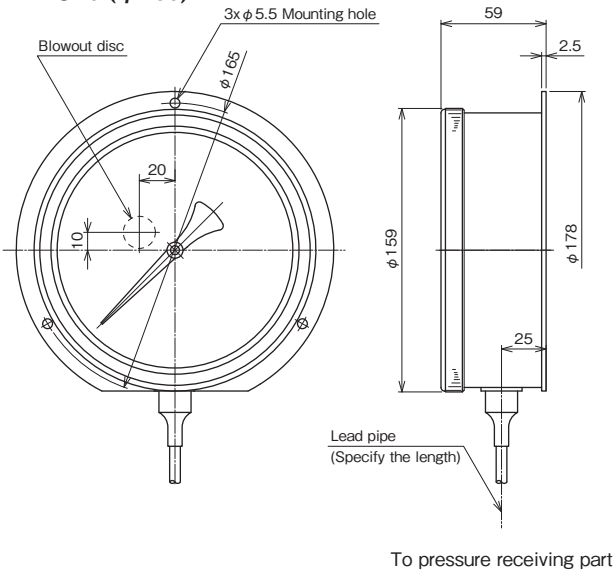
BE10 (φ100)



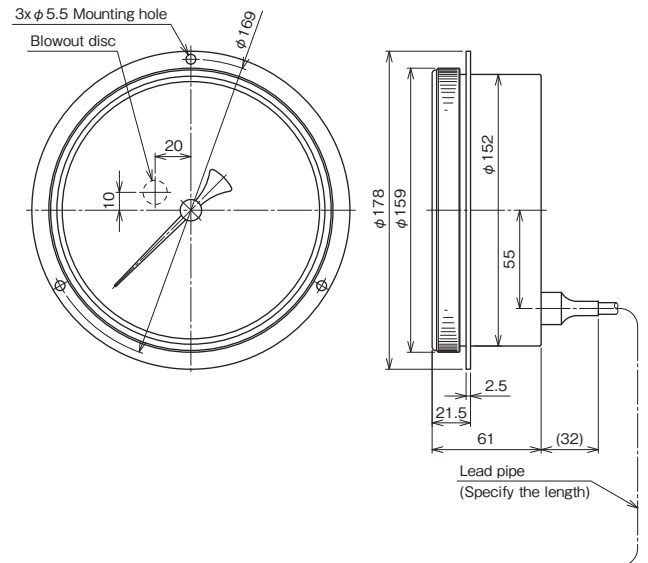
BE15 (φ100)



BG10 (φ150)

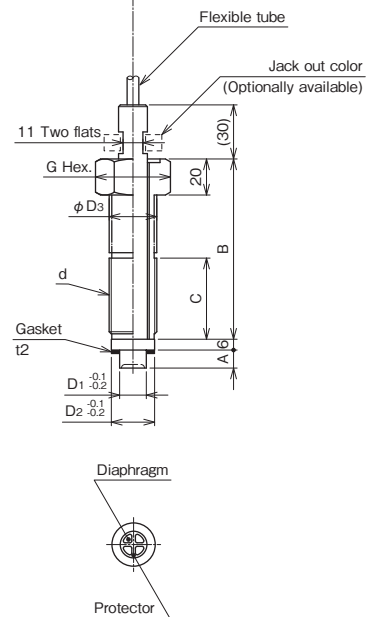


BG15 (φ150)



Specify the length of A and B parts when ordering.

Diaphragm diameter φD ₁	D ₂	Protector	Screw filed processing	D ₃	d	G Hex.	Lead length
15	24	Yes	No	26.4	G3/4B	36 × 41.6	1m 2m 3m
		No	No				
		Yes	Yes	23.5			
		No	Yes				
18	24	Yes	No	26.4			
		No	No				
		Yes	Yes	23.5			
		No	Yes				
23.6	30	Yes	No	34	G1B	41 × 47.3	
		No	No				
		Yes	Yes	29.5			
		No	Yes				



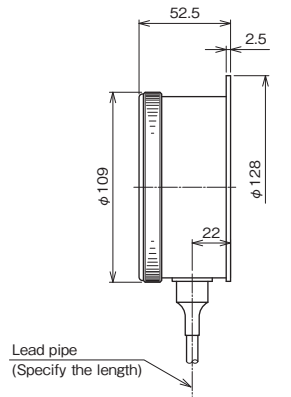
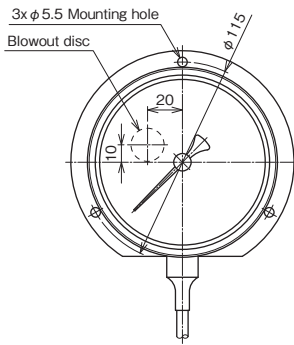
A length=10 to 30mm (By 5mm)
 B length=55, 80 to 450mm (By 10mm)
 C=45 (If B length is 55, C=25)

Dimensions 4

Unit: mm

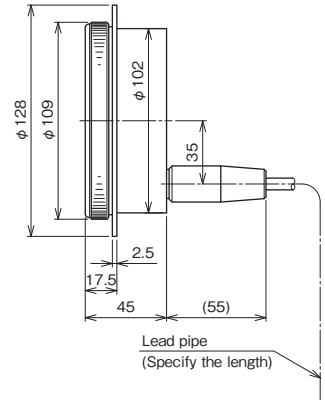
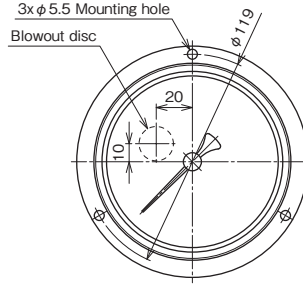
Remote flange connection type

BE10 (φ100)



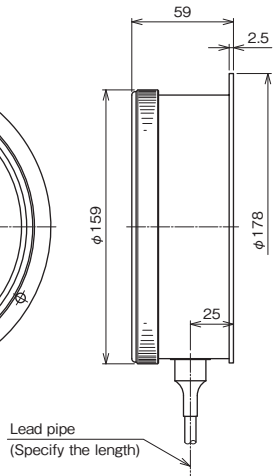
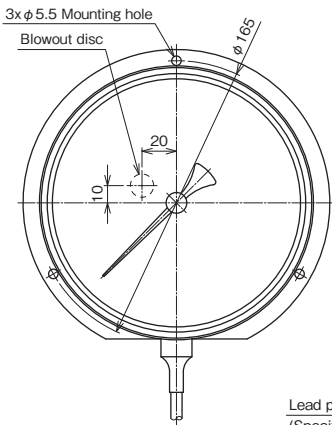
Pressure receiving part

BE15 (φ100)



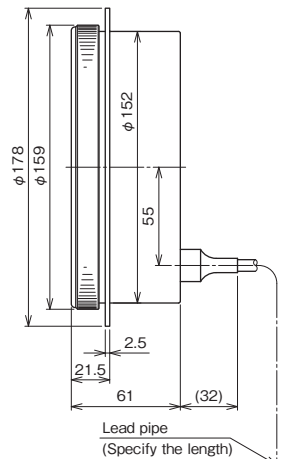
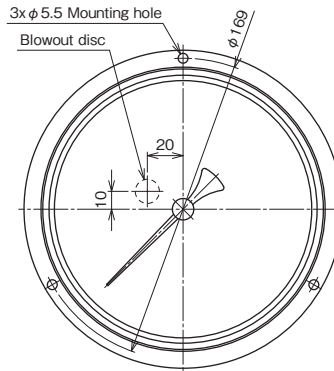
Pressure receiving part

BG10 (φ150)



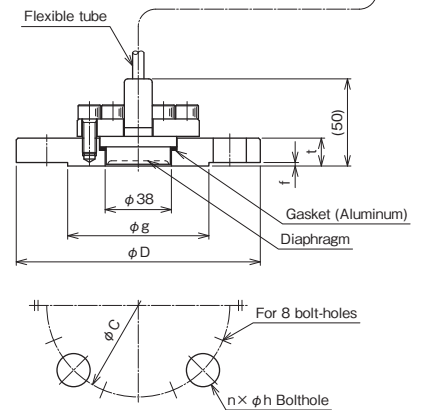
Pressure receiving part

BG15 (φ150)



Lead pipe (Specify the length)

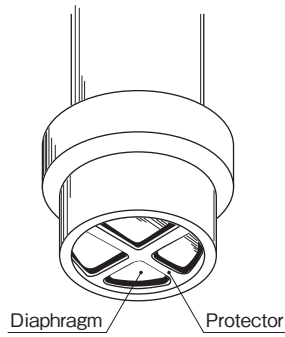
Flange standard	D	t	f	g	c	n	h	Lead length
JIS 10K32A RF	135	16	2	76	100	4	19	1m 2m 3m
40A RF	140	16	2	81	105	4	19	
50A RF	155	16	2	96	120	4	19	
JIS 20K32A RF	135	18	2	76	100	4	19	
40A RF	140	18	2	81	105	4	19	
50A RF	155	18	2	96	120	8	19	
JIS 30K32A RF	140	22	2	80	105	4	19	
40A RF	160	22	2	90	120	4	23	
50A RF	165	22	2	105	130	8	19	
JIS 40K32A RF	140	24	2	80	105	4	19	
40A RF	160	24	2	90	120	4	23	
50A RF	165	26	2	105	130	8	19	
JIS 63K32A RF	150	30	2	80	110	4	23	
40A RF	175	32	2	90	130	4	25	
50A RF	185	34	2	105	145	8	23	



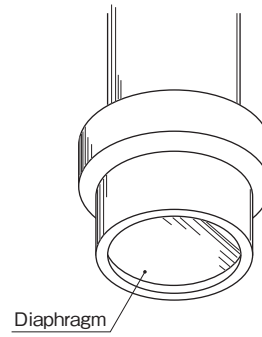
Pressure receiving part

Available for the diaphragm protection.

With protector



Without protector

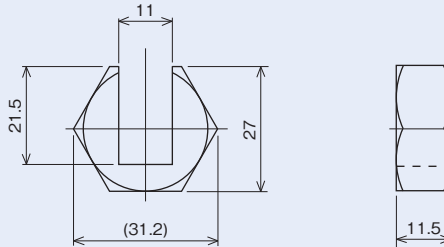


Recommended part

Jack out color:

When trying to pulling pressure receiving part out from the mounting hole, it may not be able to pull out because the measuring fluid is firmly fixed. In such a case, it can be pulled out without difficulty by inserting the jack out collar and then turning the mounting screws.

* When ordering, please specify separately.

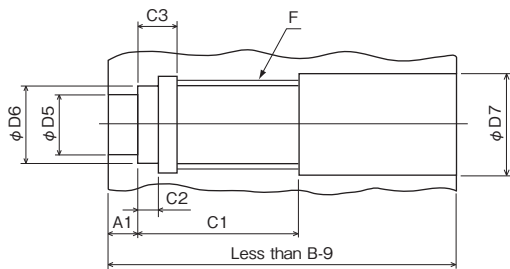


Mounting

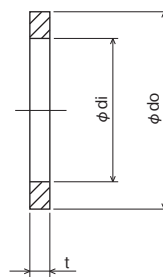
Unit: mm

Gasket seat:

(Recommended mounting hole dimensions)



(Recommended gasket dimensions)



Diaphragm diameter	di	do	t
15	15.5±0.2	23.5±0.2	2.0±0.1
18	18.5±0.2	23.5±0.2	2.0±0.1
23.6	24.0±0.2	29.5±0.2	2.0±0.1

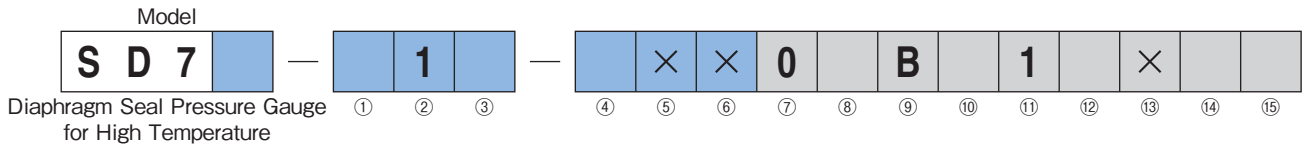
Standard material: Aluminum

Diaphragm diameter	F	D5	D6	D7	A1*	C1	C2*	C3
15	G3/4B	15.0 ^{+0.1} ₀	24.1 ^{+0.3} ₀	wider than 27.0	Wider than A-1	c ⁺⁶ ₀	Wider than 4	Less than 11
18	G3/4B	18.0 ^{+0.1} ₀	24.1 ^{+0.3} ₀	wider than 27.0	Wider than A-1	c ⁺⁶ ₀	Wider than 4	Less than 11
23.6	G1B	23.6 ^{+0.1} ₀	30.1 ^{+0.3} ₀	wider than 35.0	Wider than A-1	c ⁺⁶ ₀	Wider than 4	Less than 11

* Dimensions vary depending on used gasket dimension.

Model number configuration

Please specify for ordering the model number and each specs.



Model number		Product specifications		Additional specifications (Optional)	
Model	Diaphragm diameter	Connection	0 to 1.5, 2, 2.5, 3.5, 5, 7, 10MPa		
	1	JIS 10K			
	3	JIS 20K			
	4	JIS 30K			
	5	JIS 40K			
B	JIS 63K				
φ 37					
① Connection Nominal diameter		4	32A		
		5	40A		
		6	50A		
② Flange face		1	RF		
③ Wetted parts		3	SUS316		
		4	SUS316L		
④ Diaphragm material		3	SUS316		
		4	SUS316L		
⑤ A length		×			
⑥ B length		×			
⑦ Option		0	Not required		
⑧ Treatment		0	Not required		
		1	Use no oil		
		2	Use no water		
		3	Use no oil and water		
⑨⑩⑪⑫ Indication part		BE10	Pressure gauge		
		BE15	Pressure gauge		
		BG10	Pressure gauge		
		BG15	Pressure gauge		
⑭ Design and temperature limit		1	Direct type (Not available for BE15 and BG15)		
		2	Remote type Specify the type of lead and its length		
⑮ Document		0	Not required		
		1	Required (Documents available upon request) Datasheet (Drawing / Specifications) Instruction manual Inspection procedure Mill test report Calibration test report (One-part one sheet) Inspection / Traceability certificate Strength calculation sheet Attending inspection		

* Specify the lead length when ordering.

Max. lead length 3m

* Specify code "X" to refer N/A