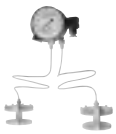
Diaphragm-Seal type Pressure Gauge

OUTLINE

This is a Diaphragm seal type pressure instrument in which liquid as a pressure transmitting media is filled between a diaphragm seal parts and bourdon tube as an element.
In this catalogue, General type of Indicator, Pressure gauge with Electric contact, Pressure Switch, Differential Pressure Guage, Differential Pressure Gauge with contact and Differential Pressure Switch are introduced.
Diaphragm and the lower flange as wetted parts can be selected according to applications, so these instruments are appropriate for the measurement of highly corrosive fluid, high viscosity fluid, fluid which contains solid materials or fluid to be easily solidified

FEATURES

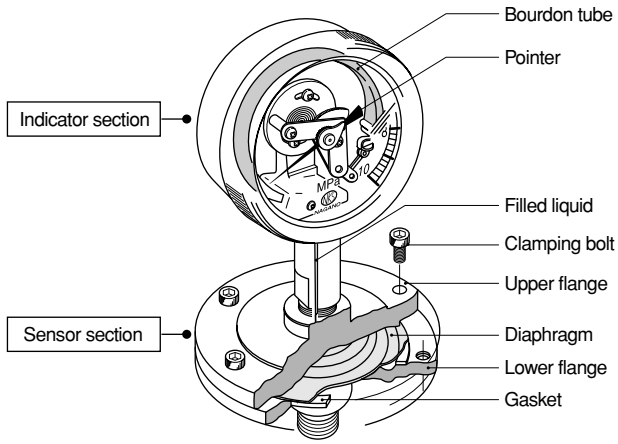
- **Because the high-corrosion resistant diaphragm can be used at the pressure receiving portion, this pressure gauge can be used for the measurement of highly corrosive measuring fluid.**
- **For a pressure gauge in which a diaphragm is attached by welding, the surface of a diaphram can be easily cleaned (by loosening the casing bolts.).**
- **A zero-adjusting pointer has been applied, so calibration required due to errors of temperature, elevation, etc. can be easily preformed.**
- **With the application of a welded diaphragm the application for leakage of filled liquid has been decreased. (diaphragms made of some materials are excluded.)**

Classification	General pressure gauge		Pressure gauge with electric contact		Pressure switch			Differential pressure gauge	Differential pressure switch
	General type, weather-proof type (conforming to JIS)	Glycerin filled type	Micro switch	Electronic type	Pressure switch (Explosion-proof pressure switch)			Differential pressure gauge (Differential switch with electric contact)	Differential pressure switch Explosion-proof differential pressure switch
	AC, AE, AG, BC, BE, BG	GV42	JM□□	JD1□	CD30	CQ30	CB13, CB33, CD75	DG9□	CL71, CD71
Measured fluid Temperature range	-30 ~ 230℃	-5 ~ 100℃	-30 ~ 230℃	-5 ~ 100℃	-30 ~ 230℃	-30 ~ 230℃	-30 ~ 100℃	-5 ~ 100℃	-5 ~ 100℃
Appearance									
Type	Direct type Remote type (option)	Direct type Remote type (option)	Direct type Remote type (option)	Direct type Remote type (option)	Remote type	Direct type Remote type (option)	Remote type	Remote type	Remote type
Pressure range Positive pressure gauge	0 ~ 0.05 MPa ↓ 0 ~ 15 MPa	0 ~ 0.1 MPa ↓ 0 ~ 15 MPa	0 ~ 0.1 MPa ↓ 0 ~ 5 MPa	0 ~ 0.2 MPa ↓ 0 ~ 15 MPa	0 ~ 0.2 MPa ↓ 0 ~ 15 MPa	0 ~ 0.2 MPa ↓ 0 ~ 15 MPa	0.04 ~ 0.4 MPa ↓ 1 ~ 10 MPa	0 ~ 0.05 MPa ↓ 0 ~ 0.5 MPa	0.01 ~ 0.05 MPa ↓ 0.2 ~ 1 MPa
Pressure range Vacuum gauge/ compound pressure gauge	-0.1 ~ 0 MPa ↓ -0.1 ~ 2 MPa	-0.1 ~ 0 MPa ↓ -0.1 ~ 2 MPa	-0.1 ~ 0 MPa ↓ -0.1 ~ 2 MPa	-0.1 ~ 0.1 MPa ↓ -0.1 ~ 2 MPa	-0.1 ~ 0 MPa ↓ -0.1 ~ 2 MPa	-0.1 ~ 0.2 MPa ↓ -0.1 ~ 2 MPa			
Diaphragm dia.	ϕ40, ϕ60, ϕ80, ϕ110	ϕ40, ϕ60, ϕ80, ϕ110	ϕ60, ϕ80, ϕ110	ϕ40, ϕ60, ϕ80	ϕ40, ϕ60, ϕ80, ϕ110	ϕ40, ϕ60, ϕ80, ϕ110	ϕ60, ϕ110	ϕ110	ϕ110

* In addition to these, pressure gauges with electric contacts or other combinations, for example, with electronic pressure transmitters or pneumatic pressure/differential pressure transmitters are available. Please contact the nearest NAGANO KEIKI office.

CONSTRUCTION

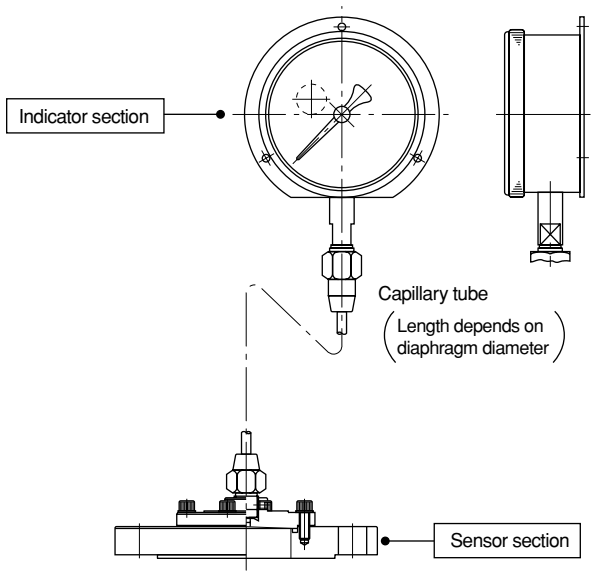
Direct type :



[Screw type]

Liquid is filled between the diaphragm and the Bourdon tube. The pressure which is received by the diaphragm is transmitted to the Bourdon tube by the filled liquid as pressure transmitting medium, and the Bourdon tube is deformed under the pressure to rotate the pointer.

Remote type :



Indicator section and sensor section are connected by a capillary tube in which liquid is filled.

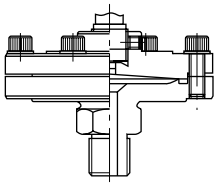
* For diaphragm-seal type pressure gauges, a "bellows type" which is not filled liquid (unfilled type) is also available. This type is especially suited to the food processing industry or other applications where no droplets of filled liquid are allowed to mix in with the object fluid.

SENSOR SECTION 1 Mounting

[Screw Type]

Model 100 · Screw Type

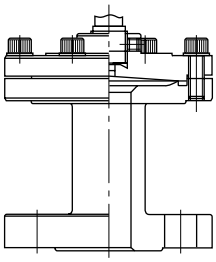
(Model : SC10)



[Flange type]

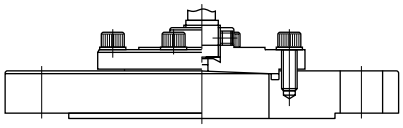
Model 200 · Flange Type

(Model : SC2□)



Model 300 · Flange Type

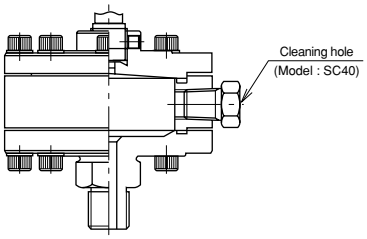
(Model : SC3□)



Special models

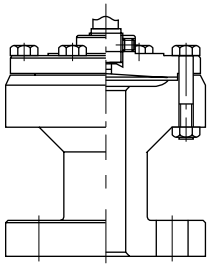
Model 410 · Screw type with middle flange

(Model : SC40)



Application: When fluid is stuck on the diaphragm, the inside of the flange can be cleaned through the cleaning hole without removing the lower flange.

Model 210 · Non-metal flange type

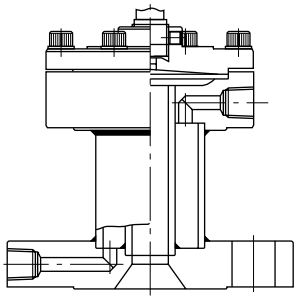


For non-metal flange type

Flange material:	Rigid polyvinyl chloride, polypropylene
Flange face:	FF (flat face)
Flange manufacturing range:	JIS10K15A ~ 40A
	ANSI 150LB3/4B ~ 1 1/2B
(Diaphragm diameter:	onlyϕ60 andϕ80)
Maximum pressure:	ϕ60···1MPa or less
	ϕ80···0.4MPa or less
Working temperature:	0 to 60℃

Model 220 · with steam jacket

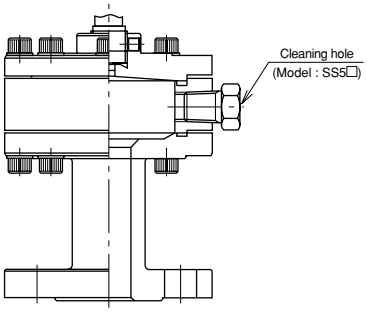
(Model : SJ2□)



Application: In order to prevent freezing or to increase viscosity, steam is let through the jacket to warm the fluid flowing in the inner pipe.

Model 500 · Middle flange type

(Model : SC5□)



Application: When fluid is stuck on the diaphragm, the inside of flange can be cleaned through the cleaning hole without removing the lower flange.

SENSOR SECTION 2

Connecting screw/flange:

Screw type (SC10)	Flange type (SC2□・3□)	
	Nominal pressure	Nominal size
G3/8B (PF) G1/2B (PF) R3/8 (PT) R1/2 (PT) 3/8NPT 1/2NPT	JIS10K, JIS16K, JIS20K, JIS30K, JIS40K, JIS63K, ANSI150, ANSI300, ANSI600, ANSI900, ANSI1500	10A, 15A, 20A, 25A, 32A, 40A, 50A, 65A, 80A, 100A 3/8", 1/2", 3/4", 1", 1 1/4", 1 1/2", 2", 2 1/2", 3", 3 1/2", 4"

Material:
Standard type (Model: SC□□)

Upper flange	Diaphragm	Lower flange		Gasket	Clamping bolt
		Screw type	Flange type		
S25C (Ni plated) SUS316	SUS316, SUS316L, Monel, TP35C (Titanium), Hastelloy B, Hastelloy C-276, TaP (Tantalum), Nickel, SUS316 +Neoprene lining,*1 SUS316 + FEP lining,*1 SUS316 +FEP coating*1	S25C, SUS316, SUS316L, Monel, TB35C (Titanium), Hastelloy B, Hastelloy C-276, NAS305 (Carpenter 20)	S25C, SUS316, SUS316L, S25C +Lining, (Glass, PTFE, Neoprene, crude rubber) S25C +FEP coating, SUS316 +Lining, (PTFE, Neoprene, Crude rubber) SUS316 +FEP coating, Rigid polyvinyl chloride (PVC),*2 Polypropylene*2	Less than 200℃ PTFE 200℃ or higher Asbestos (Only when temperature is specified)	SUS305

High withstand pressure type (Model: HH□□・HD□□)

Upper flange	Diaphragm	Lower flange		Gasket	Clamping bolt
		Screw type	Flange type		
S25C (Ni plated) (HD□□ only) SUS316 (HD□□ only)	SUS316, SUS316L, SUS316 +FEP lining,*1 SUS316 +FEP coating*1	S25C (HD□□ only), SUS316, SUS316L (HD□□ only),	S25C (HD□□ only), SUS316, SUS316L (HD□□ only),	Less than 200℃ PTFE 200℃ or higher Asbestos (temperature is specified)	SUS305

High withstand pressure welding end type (Model: HE□□)

Upper flange	Diaphragm	Lower flange	
		Screw type	Flange type
SUS316 SUS316L Upper flange comes into contact with liquid	SUS316, SUS316L	SUS316, SUS316L	SUS316, SUS316L

* 1 When diaphragm material is FEP or Neoprene, the maximum working temperature of sensor section is 100℃.
* 2 When the material of the lower flange is rigid polyvinyl chloride (PVC), polypropylene or other resin, a problem may arise involving heat resistance, weather resistance, strength or durability. Please use metal flange as much as possible.
(Rigid polyvinyl chloride (PVC) flanges are manufactured by bonding, not by machining.)

Note 1: Can be used as a vacuum gauge of specified accuracy when pressure is 2.7 kPa abs. or higher.
Note 2: When the product is used to measure high-pressure gas, NAGANO KEIKI can provide a strength calculation report conforming to the High-Pressure Gas Safety Act. Request it to us when necessary.
Note 3: When the material of diaphragm is monel, nickel or coating, the flange may not be welded.
In case of FEP, SUS316 is welded on the upper flange and then FEP is lined on the connected side.
However, for vacuum or compound pressure gauges, please specify "FEP coating."

Diaphragm-Seal Type Pressure Gauges

FABRICATION SPECIFICATION

Measured fluid :
Highly corrosive fluid, High-viscosity fluid

Type :
Direct type, Remote type (option)

Mounting method :
Screw type, Flange type

Accuracy :
±1.5%F.S./20℃±10℃

JIS B7505-1994-conforming (Bourdon tube pressure gauges) diaphragm-seal type pressure gauges are also available. However, their accuracy is ±1.6% F.S. / 20℃±10℃.

INDICATOR SECTION

Pressure indicator :
General type pressure gauge (Model : A□1□)
Weather-proof type pressure gauge
(Equivalent to drip-proof II type) (Model : B□1□)
Glycerin filled type (Model : GV42)

Dial size :
ϕ75, ϕ100, ϕ150

Mounting :
Stem (Type A, Type B)

Material of main parts :

Socket	YBsC3
Bourdon tube	C6872T, SUS316

Case material and finish :
Aluminum alloy, Bakelite (black)
(Glycerin filled type SUS304 · natural)

Construction :
Indoor type, weather-proof type,
(Equivalent to drip-proof II type)

* For details, see the catalog for the desired pressure gauge.

SENSOR SECTION · FILLED LIQUID

Diaphragm diameter :
ϕ40, ϕ60, ϕ80, ϕ110
* Determined by pressure range and the temperature of measured fluid.

Material of diaphragm :
For the material of upper/lower flange and diaphragm, see the page for SENSING PART 2.

Filled Liquid :
Silicone oil
-30 ~ 230℃
Note: For vacuum and compound pressure gauges, only those for -30 to 100℃ temperature range are available.
* Pressure gauges filled with Daifloil, glycerin water solution or ethylene glycol are also available. For details, please inquire at the nearest NAGANO KEIKI office. (Note that working temperature range changes according to the filled liquid type and that using as a vacuum or compound pressure gauge is possible only when low-temperature silicone oil is filled.)

Maximum length of capillary tube :
For remote type (option)
2m ~ 10m (depends on pressure range)

MANUFACTURING SPECIFICATION

Relationship between pressure range, temperature range and diaphragm diameter : **(Maximum length of capillary tube: For remote type (option))**

Filled liquid	Low-temperature silicone oil				Middle-temperature silicone oil	
Temperature range of measured fluid	Less than -30 to -5℃		-5 to 100℃ *		Higher than 100 to 230℃	
Pressure range MPa	Diaphragm diameter	Maximum length of capillary tube	Diaphragm diameter	Maximum length of capillary tube	Diaphragm diameter	Maximum length of capillary tube
0~ 0.05 (GV42 is not available)	ϕ110	6m	ϕ110	6m	ϕ110	6m
~ 0.07 (GV42 is not available)	ϕ110	6m	ϕ110	6m	ϕ110	6m
~ 0.1	ϕ110	6m	ϕ80	6m	ϕ110	6m
~ 0.16	ϕ110	6m	ϕ80	6m	ϕ110	6m
~ 0.2	ϕ110	6m	ϕ80	6m	ϕ110	6m
~ 0.25	ϕ80	4m	ϕ80	6m	ϕ80	4m
~ 0.3	ϕ80	4m	ϕ80	6m	ϕ80	4m
~ 0.4	ϕ80	6m	ϕ80	8m	ϕ80	6m
~ 0.6	ϕ80	6m	ϕ60	6m	ϕ80	6m
~ 1	ϕ80	6m	ϕ60	10m	ϕ80	6m
~ 1.5	ϕ60	2m	ϕ60	10m	ϕ60	2m
~ 1.6	ϕ60	2m	ϕ60	10m	ϕ60	2m
~ 2	ϕ60	2m	ϕ60	10m	ϕ60	2m
~ 2.5	ϕ60	2m	ϕ60	10m	ϕ60	2m
~ 3.5	ϕ60	2m	ϕ60	10m	ϕ60	2m
~ 4	ϕ60	2m	ϕ60	10m	ϕ60	2m
~ 5	ϕ60	2m	ϕ60	10m	ϕ60	2m
~ 6	ϕ40	2m	ϕ40	2m	ϕ40	2m
~ 7	ϕ40	2m	ϕ40	2m	ϕ40	2m
~10	ϕ40	2m	ϕ40	2m	ϕ40	2m
~15	ϕ40	2m	ϕ40	2m	ϕ40	2m
~16	ϕ40	2m	ϕ40	2m	ϕ40	2m
-0.1~0MPa	—	—	ϕ110 ϕ80	6m 3m	—	—
~0.05 (GV42 is not available)	—	—	ϕ110	6m	—	—
~0.07 (GV42 is not available)	—	—	ϕ110	6m	—	—
~0.1	—	—	ϕ80	6m	—	—
~0.16	—	—	ϕ80	6m	—	—
~0.2	—	—	ϕ80	6m	—	—
~0.25	—	—	ϕ80	6m	—	—
~0.3	—	—	ϕ80	6m	—	—
~0.4	—	—	ϕ80	8m	—	—
~0.6	—	—	ϕ60	6m	—	—
~1	—	—	ϕ60	10m	—	—
~1.5	—	—	ϕ60	10m	—	—
~1.6	—	—	ϕ60	10m	—	—
~2	—	—	ϕ60	10m	—	—
~2.5	—	—	ϕ60	10m	—	—

* For glycerin filled type (GV42), only those for the temperature range of -5 to100℃ are available.
* Specify the length of capillary tube by the meter.
Shading means the pressure ranges conforming to JIS B7505-1994.

Relationship between the size of flange/screw and the diameter of diaphragm :

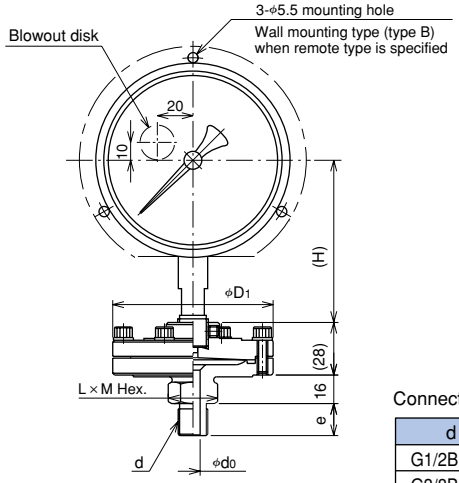
Mounting method	Flange type								Screw type
Diaphragm diameter	ϕ40		ϕ60		ϕ80		ϕ110		ϕ40, ϕ60, ϕ80, ϕ110
Mounting / Nominal size	Model 200 (SC2□)	Model 300 (SC3□)	Model 200 (SC2□)	Model 300 (SC3□)	Model 200 (SC2□)	Model 300 (SC3□)	Model 200 (SC2□)	Model 300 (SC3□)	Model 100 (SC1□)
10A (3/8″)	○	—	○	—	○	—	○	—	G3/8B G1/2B R3/8 R1/2 1/2NPT 3/8NPT
15A (1/2″)	○	—	○	—	○	—	○	—	
20A (3/4″)	○	—	○	—	○	—	○	—	
25A (1″)	—	○	○	—	○	—	○	—	
32A (1 1/4″)	—	○	○	—	○	—	○	—	
40A (1 1/2″)	—	○	—	○	○	—	○	—	
50A (2″)	—	○	—	○	—	○	○	—	
65A (2 1/2″)	—	—	—	○	—	○	○	—	
80A (3″)	—	—	—	○	—	○	—	○	
100A (4″)	—	—	—	○	—	○	—	○	

DIMENSIONS

Standard type (Model : SC☐☐)

[Screw type] **Model 100 · Screw**

General type · Weather-proof type pressure gauge

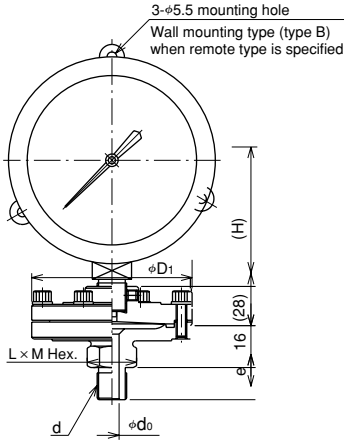


SC10-☐☐☐

Connecting screw size

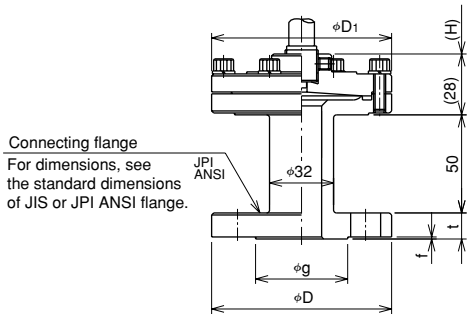
d	e	d0	L × M
G1/2B (PF)	20	10	24 × 27.7
G3/8B (PF)	18	8	
G3/4B (PF)	24	15	36 × 41.6
G1B (PF)	28	20	

Glycerin filled type



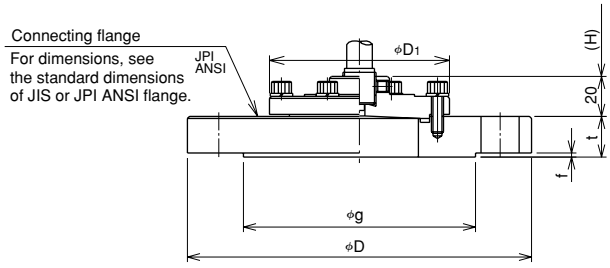
SC10-☐☐☐

[Flange type] **Model 200 · Flange**



SC2☐-☐☐☐

Model 300 · Flange



SC3☐-☐☐☐

Dimensions of indicator section (general type, weather-proof type)

Case material	Size	H	Type No. (indicator section)	
			Direct type	Remote type
Metal	75	56	AC10-1☐☐	AC10-2☐☐
			BC10-1☐☐	BC10-2☐☐
	100	94	AE10-1☐☐	AE10-2☐☐
			BE10-1☐☐	BE10-2☐☐
	150	109	AG10-1☐☐	AG10-2☐☐
			BG10-1☐☐	BG10-2☐☐
Plastic	75	56	BC12-1☐☐	BC12-2☐☐
	100	94	BE12-1☐☐	BE12-2☐☐
	150	109	BG12-1☐☐	BG12-2☐☐

Glycerin filled type Dimensions of indicator section

Case material	Size	H	Type No. (indicator section)	
			Direct type	Remote type
SUS304	100	72	GV42-1☐☐	GV42-2☐☐

Outside diameter of sensor section (φD1)

Diaphragm dia.	φD1
φ40	φ70
φ60	φ90
φ80	φ110
φ110	φ140

* For the dimensions of remote type (option), please inquire at the nearest NAGANO KEIKI office.
* For detailed outside dimensions of indicator section, see the catalog.

Diaphragm-seal type pressure gauges with electric contact

MANUFACTURING SPECIFICATION

Measured fluid :
Highly corrosive fluid, High-viscosity fluid

Type :
Direct type, Remote type (option)

Mounting method :
Screw type Flange type

Accuracy :
±1.5%F.S./20℃±10℃

INDICATOR SECTION

Pressure indicator :
Pressure gauge with micro switch (Model : JM☐☐)
Pressure gauge with electronic contact (Model : JD1☐)

Size :
ϕ100, ϕ150

Mounting :
Stem (Type A or type B), Flush type

Material of main parts :

Socket	YBsC3, SUS316 or SCS14
Bourdon tube	C6872T, SUS316

Number of contacts :
1 or 2

Setting method :
Internal adjustment type

Case material and finish :
ADC12 or AC7A
・Black or two-tone (blue/gray)

Construction :
Equivalent to drip-proof II type or drip-proof type (IP43)

* For details, see the catalog for the desired pressure gauge with switch.

SENSOR SECTION · FILLED LIQUID

Diaphragm diameter :
Pressure gauge with micro switch
ϕ60, ϕ80, ϕ110
Pressure gauge with electronic contact
ϕ40, ϕ60, ϕ80
* Determined by pressure range and the temperature of measured fluid.

Material of diaphragm :
For the material of upper/lower flange and diaphragm, see the page for SENSOR SECTION 2.

Filled liquid :
Silicone oil
-30 to 230℃
Note : For vacuum and compound pressure gauges, only those for -30 to 100℃ temperature range are available.
* Pressure gauges filled with Daifloil, glycerin water solution or ethylene glycol are also available. For details, please inquire at the nearest NAGANO KEIKI office. (Note that working temperature range changes according to filled liquid and that using as a vacuum or compound pressure gauge is possible only when low-temperature silicone oil is filled.)

Maximum length of capillary tube :
For remote type (option)
2m ~ 15m (depends on pressure range)

MANUFACTURING SPECIFICATION

Relationship between pressure range, temperature range and diaphragm diameter : (Maximum length of capillary tube : For remote type (option))

Filled liquid	Low-temperature silicone oil										Middle-temperature silicone oil			
Temperature range of measured fluid	Less than -30 to -5℃				-5 to 100℃						Higher than 100 to 230℃			
Number of contacts	1		2		1		2				1		2	
Indicator (model)	JM□□		JM□□		JM□□		JM□□		JD□□		JM□□		JM□□	
Pressure range MPa	Diaphragm diameter	Maximum length of capillary tube:	Diaphragm diameter	Maximum length of capillary tube:	Diaphragm diameter	Maximum length of capillary tube:	Diaphragm diameter	Maximum length of capillary tube:	Diaphragm diameter	Maximum length of capillary tube:	Diaphragm diameter	Maximum length of capillary tube:	Diaphragm diameter	Maximum length of capillary tube:
0~ 0.1	ϕ110	6m	ϕ110	6m	ϕ110	6m	ϕ110	6m	—	—	ϕ110	6m	ϕ110	6m
~ 0.2	ϕ110	6m	ϕ110	6m	ϕ80	4m	ϕ110	6m	ϕ80	6m	ϕ110	6m	ϕ110	6m
~ 0.3	ϕ110	6m	ϕ110	6m	ϕ80	4m	ϕ80	4m	ϕ80	6m	ϕ110	6m	ϕ110	6m
~ 0.4	ϕ80	2m	ϕ110	6m	ϕ80	8m	ϕ80	8m	ϕ80	6m	ϕ80	2m	ϕ110	2m
~ 0.6	ϕ80	2m	ϕ80	2m	ϕ80	8m	ϕ80	8m	ϕ60	6m	ϕ80	2m	ϕ80	2m
~ 1	ϕ80	2m	ϕ80	2m	ϕ80	8m	ϕ80	15m	ϕ60	10m	ϕ80	2m	ϕ80	2m
~ 1.5	ϕ80	2m	ϕ80	2m	ϕ60	6m	ϕ80	15m	ϕ60	10m	ϕ80	2m	ϕ80	2m
~ 2	ϕ80	2m	ϕ80	2m	ϕ60	6m	ϕ60	6m	ϕ60	10m	ϕ80	2m	ϕ80	2m
~ 2.5	ϕ60	2m	ϕ80	2m	ϕ60	6m	ϕ60	6m	ϕ60	10m	ϕ60	2m	ϕ80	2m
~ 3.5	ϕ60	2m	ϕ60	2m	ϕ60	6m	ϕ60	6m	ϕ60	10m	ϕ60	2m	ϕ60	2m
~ 5	ϕ60	2m	ϕ60	2m	ϕ60	6m	ϕ60	6m	ϕ60	10m	ϕ60	2m	ϕ60	2m
~ 7	—	—	—	—	—	—	—	—	ϕ40	2m	—	—	—	—
~10	—	—	—	—	—	—	—	—	ϕ40	2m	—	—	—	—
~15	—	—	—	—	—	—	—	—	ϕ40	2m	—	—	—	—
—0.1~0MPa	—	—	—	—	ϕ110	3m	ϕ110	3m	—	—	—	—	—	—
~0.1	—	—	—	—	ϕ110	6m	ϕ110	6m	ϕ80	6m	—	—	—	—
~0.2	—	—	—	—	ϕ80	4m	ϕ110	4m	ϕ80	6m	—	—	—	—
~0.3	—	—	—	—	ϕ80	4m	ϕ80	4m	ϕ80	6m	—	—	—	—
~0.4	—	—	—	—	ϕ80	8m	ϕ80	8m	ϕ80	6m	—	—	—	—
~0.6	—	—	—	—	ϕ80	8m	ϕ80	8m	ϕ60	6m	—	—	—	—
~1	—	—	—	—	ϕ80	8m	ϕ80	15m	ϕ60	10m	—	—	—	—
~1.5	—	—	—	—	ϕ60	6m	ϕ80	15m	ϕ60	10m	—	—	—	—
~2	—	—	—	—	ϕ60	6m	ϕ60	6m	ϕ60	10m	—	—	—	—

* For pressure gauges with electronic contact (JD1□), only 2-contact type for -5℃~100℃ temperature range is available.
* Specify the length of capillary tube by the meter.

Relationship between the size of flange/screw and the diameter of diaphragm :

Mounting method	Flange type								Screw type
Diaphragm diameter	ϕ40		ϕ60		ϕ80		ϕ110		ϕ40, ϕ60, ϕ80, ϕ110
Model / Nominal size	Model 200 (SC2□)	Model 300 (SC3□)	Model 200 (SC2□)	Model 300 (SC3□)	Model 200 (SC2□)	Model 300 (SC3□)	Model 200 (SC2□)	Model 300 (SC3□)	Model 100 (SC1□)
10A (3/8″)	○	—	○	—	○	—	○	—	
15A (1/2″)	○	—	○	—	○	—	○	—	
20A (3/4″)	○	—	○	—	○	—	○	—	G3/8B
25A (1″)	—	○	○	—	○	—	○	—	G1/2B
32A (1 1/4″)	—	○	○	—	○	—	○	—	R3/8
40A (1 1/2″)	—	○	—	○	○	—	○	—	R1/2
50A (2″)	—	○	—	○	—	○	○	—	1/2NPT
65A (2 1/2″)	—	—	—	○	—	○	○	—	3/8NPT
80A (3″)	—	—	—	○	—	○	—	○	
100A (4″)	—	—	—	○	—	○	—	○	

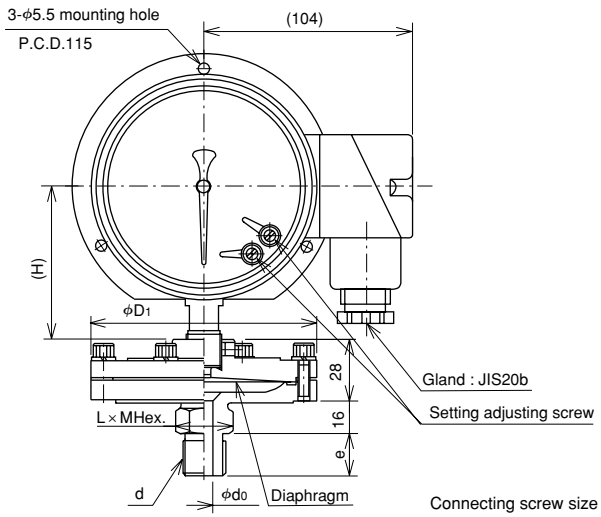
OUTSIDE DIMENSIONS

Standard type (Model : SC☐☐)

[Screw type]

Model 100 · Screw

Pressure gauge with micro switch

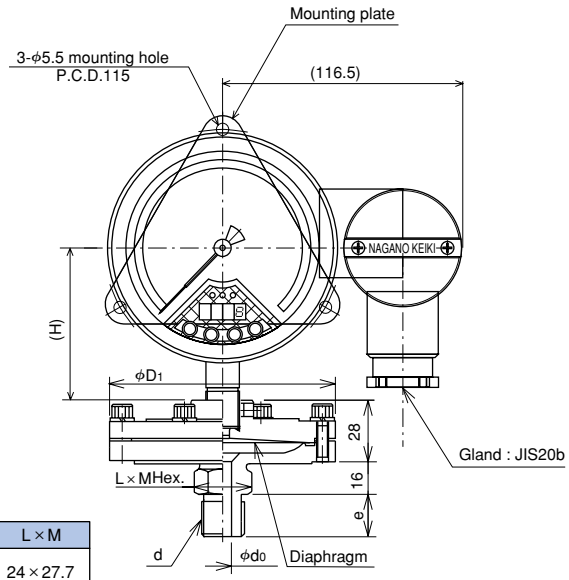


SC10-☐☐☐

Connecting screw size

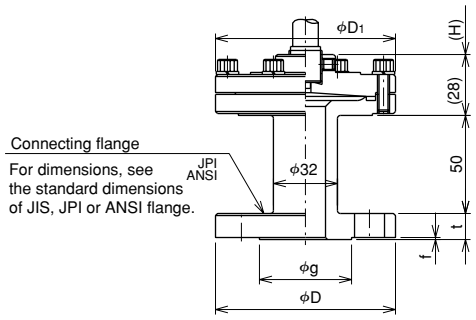
d	e	d0	L×M
G1/2B (PF)	20	10	24×27.7
G3/8B (PF)	18	8	
G3/4B (PF)	24	15	36×41.6
G1B (PF)	28	20	

Pressure gauge with electronic contact



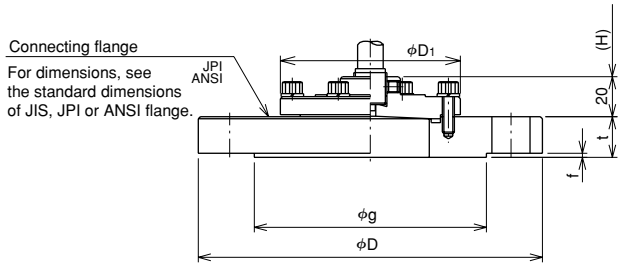
SC10-☐☐☐

[Flange type] **Model 200 · Flange**



SC2☐-☐☐☐

Model 300 · Flange



SC3☐-☐☐☐

Dimensions of indicator section

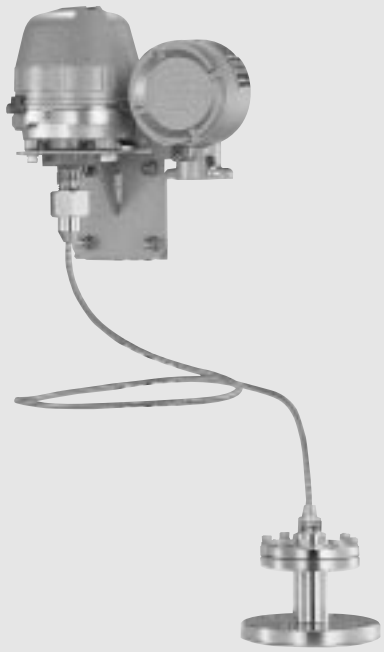
Case material	Size	H	Type No. (indicator section)
Metal	100	74	JM11-☐☐☐
			JD10-2☐3
	150	107	JM21-☐☐☐

Outside diameter of sensor section (ϕD1)

Diaphragm diameter	ϕD1
ϕ40	ϕ70
ϕ60	ϕ90
ϕ80	ϕ110
ϕ110	ϕ140

* For the dimensions of remote type (option), please inquire at the nearest NAGANO KEIKI office.

* For detailed outside dimensions of indicator section, see the catalog.



Diaphragm-Seal Type Pressure Switch

(CQ30/CD30: Bourdon tube type)

MANUFACTURING SPECIFICATION

Measured fluid :
Highly corrosive fluid, High-viscosity fluid

Type :
Remote type, Direct type (option)

Mounting method :
Screw type, Flange type

Accuracy :
±1.0%F.S./Room temperature (constant)

Working temperature range :
CQ30 -20 to 60℃
CD30 -5 to 40℃

INDICATOR SECTION

Pressure switch :
Pressure switch (Model : CQ30)
Explosion-proof pressure switch (Model : CD30)

Mounting :
Panel mounting, 2B pipe mounting

Material of main parts :

Socket	SCS14
Bourdon tube	SUS316

Case material and finish :
ADC12
・Crystalline gray paint or blue-gray two-tone acid-proof paint

Construction :
Waterproof, drip-proof or outdoor type

* For details, see the catalog for the desired pressure switch.

SENSOR SECTION & FILLED LIQUID

Diaphragm diameter :
φ40, φ60, φ80, φ110
* Determined by pressure range and the temperature of measured fluid.

Material of diaphragm :
For the material of upper/lower flange and diaphragm, see the page for SENSOR SECTION 2.

Filled liquid :
Silicone oil
-30 to 230℃
Note : For vacuum and compound range, only those for -30 to 100℃ temperature range are available.
* Filled with Daifloil, glycerin water solution or ethylene glycol are also available. For details, please inquire at the nearest NAGANO KEIKI office. (Note that working temperature range changes according to the filled liquid.)

Maximum length of capiliary tube :
For remote type
2m ~ 10m (depends on pressure range)

MANUFACTURING SPECIFICATION

Relationship between diaphragm diameter and withstand pressure or temperature coefficient (for reference only)

Diaphragm diameter	Withstand pressure of diaphragm part (MPa)	Temperature coefficient of switch part (%F.S./℃)	Temperature coefficient of capillary tube part (Pa/℃/m)	Temperature coefficient of welded parts (Pa/℃)
ϕ110	0.5	-0.2	15	50
ϕ80	1.5	-0.2	30	100
ϕ60	5	-0.1	150	250
ϕ40	15	-0.1	1500	5000

* When low-strength material such as titanium is used or when the temperature of the welded parts is high, the withstand pressure of the diaphragm part may be lower than these figures.
* Whichever is lower of the withstand pressure of pressure switch part (1.5 times the pressure range) and that of diaphragm part becomes the withstand pressure of the entire pressure gauge.

Relationship between pressure range, temperature range and diaphragm diameter (figures of maximum capillary length are for remote type)

Temperature range of measured fluid	Less than -30 to -5℃		-5 to 100℃		Higher than 100 to 230℃	
Pressure range MPa	Diaphragm diameter	Maximum length of capillary tube	Diaphragm diameter	Maximum length of capillary tube	Diaphragm diameter	Maximum length of capillary tube
0 ~ 0.2	ϕ110	6m	ϕ80	6m	ϕ110	6m
~ 0.4	ϕ80	6m	ϕ80	8m *	ϕ80	6m
~ 0.6	ϕ80	6m	ϕ60	6m	ϕ80	6m
~ 1	ϕ80	6m	ϕ60	10m	ϕ80	6m
~ 1.5	ϕ60	2m	ϕ60	10m	ϕ60	2m
~ 2	ϕ60	2m	ϕ60	10m	ϕ60	2m
~ 2.5	ϕ60	2m	ϕ60	10m	ϕ60	2m
~ 3.5	ϕ60	2m	ϕ60	10m	ϕ60	2m
~ 5	ϕ60	2m	ϕ60	10m	ϕ60	2m
~ 7	ϕ40	2m	ϕ40	2m	ϕ40	2m
~10	ϕ40	2m	ϕ40	2m	ϕ40	2m
~15	ϕ40	2m	ϕ40	2m	ϕ40	2m
-0.1~ 0 (Only CD30 is available)	—	—	ϕ110 ϕ80	6m 3m	—	—
~ 0.2	—	—	ϕ80	6m	—	—
~ 0.4	—	—	ϕ80	8m *	—	—
~ 0.6	—	—	ϕ60	6m	—	—
~ 1	—	—	ϕ60	10m	—	—
~ 1.5	—	—	ϕ60	10m	—	—
~ 2	—	—	ϕ60	10m	—	—

* 6 m for CQ30.
* Specify the length of capillary tube by the meter.

Relationship between the size of flange/screw and the diameter of diaphragm.

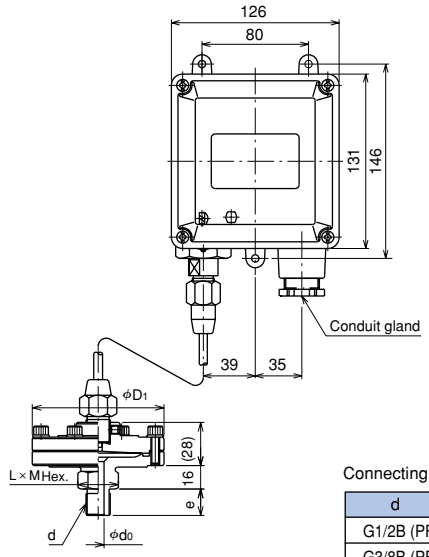
Mounting method	Flange type								Screw type
Diaphragm diameter	ϕ40		ϕ60		ϕ80		ϕ110		ϕ40, ϕ60, ϕ80, ϕ110
Mounting / Nominal size	Model 200 (SC2□)	Model 300 (SC3□)	Model 200 (SC2□)	Model 300 (SC3□)	Model 200 (SC2□)	Model 300 (SC3□)	Model 200 (SC2□)	Model 300 (SC3□)	Model 100 (SC1□)
10A (3/8″)	○	—	○	—	○	—	○	—	
15A (1/2″)	○	—	○	—	○	—	○	—	
20A (3/4″)	○	—	○	—	○	—	○	—	G3/8B
25A (1″)	—	○	○	—	○	—	○	—	G1/2B
32A (1 1/4″)	—	○	○	—	○	—	○	—	R3/8
40A (1 1/2″)	—	○	—	○	○	—	○	—	R1/2
50A (2″)	—	○	—	○	—	○	○	—	1/2NPT
65A (2 1/2″)	—	—	—	○	—	○	○	—	3/8NPT
80A (3″)	—	—	—	○	—	○	—	○	
100A (4″)	—	—	—	○	—	○	—	○	

OUTSIDE DIMENSIONS

Standard type (Model : SC☐☐)

[Screw type] **Model 100 · Screw**

CQ30 Pressure indicator

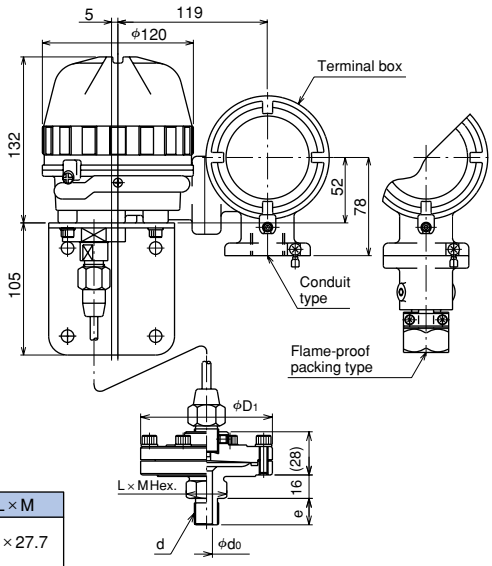


SC10-☐☐☐

Connecting screw size

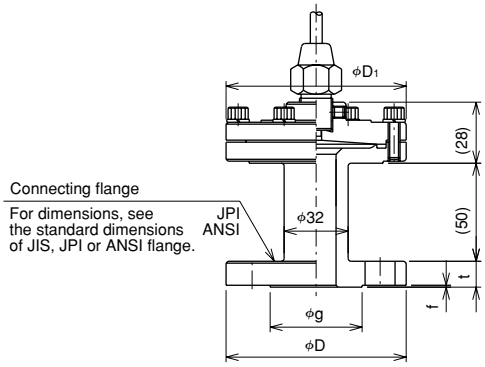
d	e	d0	L×M
G1/2B (PF)	20	10	24×27.7
G3/8B (PF)	18	8	
G3/4B (PF)	24	15	36×41.6
G1B (PF)	28	20	

CD30 Explosion-proof pressure switch



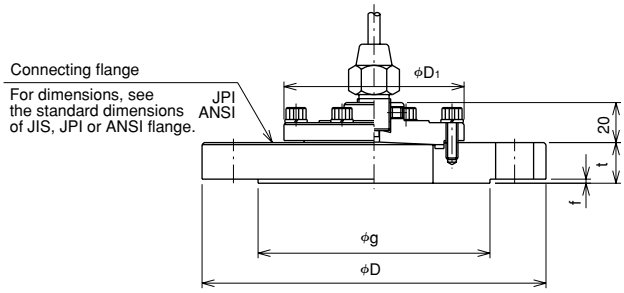
SC10-☐☐☐

[Flange type] **Model 200 · Flange**



SC2☐-☐☐☐

Model 300 · Flange



SC3☐-☐☐☐

Dimensions of indicator section

Type No. (indicator section)	Mounting
CQ30-☐☐3	Panel mounting
CD30-☐☐3	Panel mounting
	2B pipe mounting

Outside diameter of sensor section (ϕD1)

Diaphragm diameter	ϕD1
ϕ40	ϕ70
ϕ60	ϕ90
ϕ80	ϕ110
ϕ110	ϕ140

* For the dimensions of CQ30 direct type (option), please inquire at the nearest NAGANO KEIKI office.
* For detailed outside dimensions of indicator section, see the catalog.

Diaphragm-Seal Type Pressure Switch

(CB13 · 33, CD75 Bellows type for low- and middle-pressure ranges)

MANUFACTURING SPECIFICATION

Measured fluid :
Highly corrosive fluid, High-viscosity fluid

Type :
Remote type

Mounting method :
Screw type, Flange type

Accuracy :
±0.5%F.S./Room temperature (constant)

Response speed :
Within 15 seconds

Working temperature range :
-5 to 40℃

INDICATOR SECTION

Pressure switch :
Pressure switch (Model : CB13 · 33)
Explosion-proof pressure switch (Model : CD75)

Mounting :
Panel mounting, 2B pipe mounting

Material of main parts :

Socket	SUS316
Bellows	SUS316L

Number of contacts :
1 or 2

Setting method :
Internal adjustment type

Explosion-proof pressure switch :
ADC12 or AC7A
· Crystalline gray paint or blue-gray two-tone paint.

Construction :
Drip-proof or outdoor type

* For details, see the catalog for the desired pressure gauge with switch.

SENSOR SECTION · FILLED LIQUID

Diaphragm diameter :
ϕ60, ϕ110
* Determined by pressure range and the temperature of measured fluid.

Material of diaphragm :
For the material of upper/lower flange and diaphragm, see the page for SENSOR SECTION 2.

Filled liquid :
Silicone oil
-30 to 100℃

Maximum length of capillary tube :
2m to 8m (depends on pressure range)

MANUFACTURING SPECIFICATION

Pressure range · Diaphragm diameter · Relationship between diaphragm diameter and withstand pressure and temperatue coefficient (for reference only) :

Pressure range MPa	Diaphragm diameter	Withstand * pressure of diaphragm part (MPa)	Maximum langth of capillary tube	Ambient temperature coefficient of pressure switch part (including capillary tube) (%max. P./℃)	Temperature coefficient of wet part (Pa/℃)
0.04 ~ 0.4	ϕ110	3	2m	-0.1	-50
0.06 ~ 0.6	ϕ110	3	3m	-0.1	
0.1 ~ 1	ϕ110	3	8m	-0.1	
0.15 ~ 1.5	ϕ110	3	8m	-0.07	
0.2 ~ 2	ϕ110	3	8m	-0.07	
0.3 ~ 3	ϕ110	3	8m	-0.07	
0.5 ~ 5	ϕ60	15	5m	-0.07	-250
0.7 ~ 7	ϕ60	15	5m	-0.07	
1 ~ 10	ϕ60	15	5m	-0.07	

* When low-strength material such as titanium is used or when the temperature of the part coming in contact with liquid is high, the withstand pressure of diaphragm part may be lower than these figures.
* Whichever is lower of the withstand pressure of pressure of pressure switch part (1.5 times the pressure range) and that of the diaphragm part becomes the withstand pressure of the entire pressure gauge.
* Specify the length of capillary tube by the meter.

Relationship between the size of flange/screw and the diameter of diaphragm :

Mounting method	Flange type				Screw type
Diaphragm diameter	ϕ60		ϕ110		ϕ60, ϕ110
Mounting / Nominal size	Model 200 (HH2□)	Model 300 (HH3□)	Model 200 (HH2□)	Model 300 (HH3□)	Model 100 (HH1□)
10A (3/8″)	○	—	○	—	G3/8B G1/2B R3/8 R1/2 1/2NPT 3/8NPT
15A (1/2″)	○	—	○	—	
20A (3/4″)	○	—	○	—	
25A (1″)	○	—	○	—	
32A (1 1/4″)	○	—	○	—	
40A (1 1/2″)	○	—	○	—	
50A (2″)	○	—	○	—	
65A (2 1/2″)	—	○	○	—	
80A (3″)	—	○	○	—	
100A (4″)	—	○	○	○ *	
125A (5″)	—	○	—	○	
150A (6″)	—	○	—	○	

* Nominal size 100A is available only for 30k or higher nominal pressure.

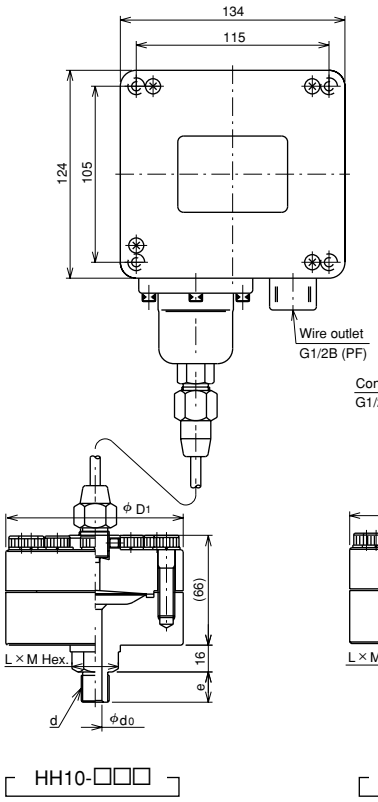
OUTSIDE DIMENSIONS

High withstand pressure type (Model : HH□□)

[Screw type]

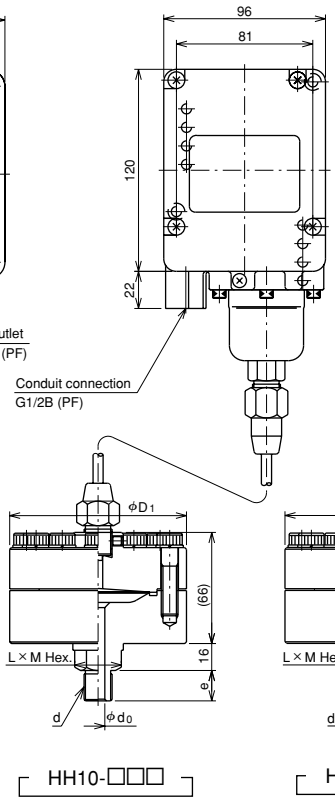
Model 100 · Scerw

CB13 Pressure switch



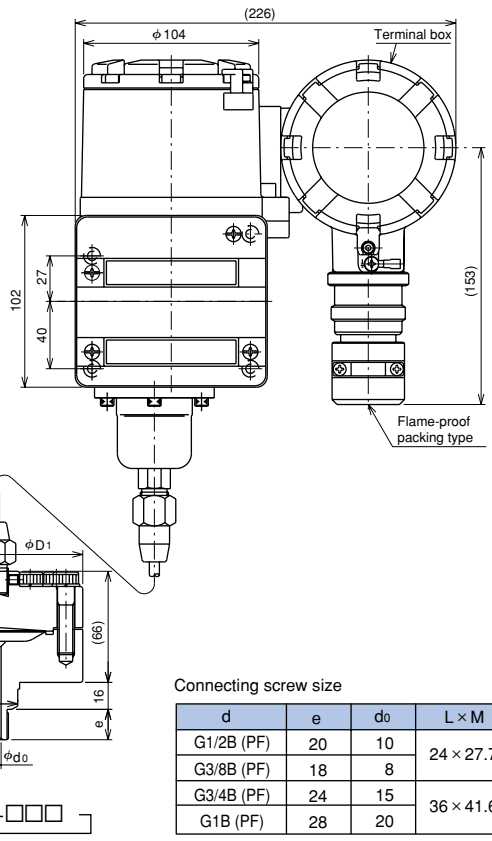
HH10-□□□

CB33 Pressure switch



HH10-□□□

CD75 Explosion-proof pressure switch



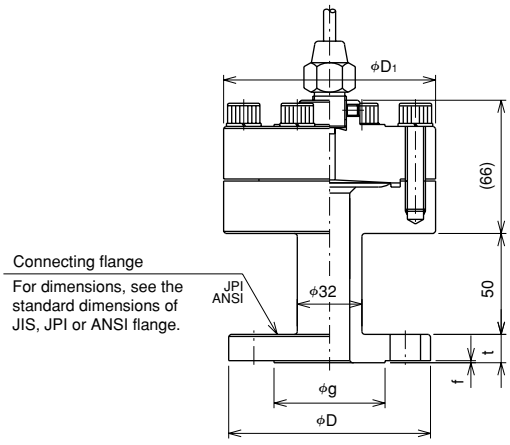
HH10-□□□

Connecting screw size

d	e	d0	L×M
G1/2B (PF)	20	10	24×27.7
G3/8B (PF)	18	8	
G3/4B (PF)	24	15	36×41.6
G1B (PF)	28	20	

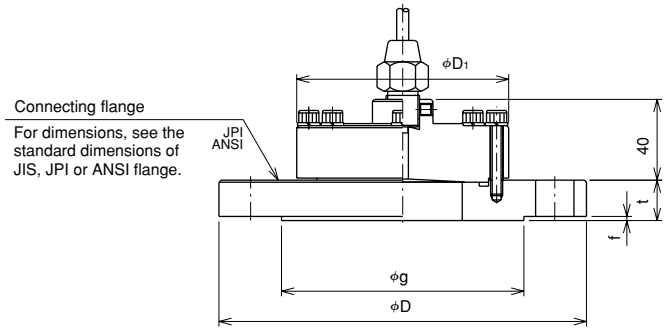
[Flange type]

Model 200 · Flange



HH2□-□□□

Model 300 · Flange



HH3□-□□□

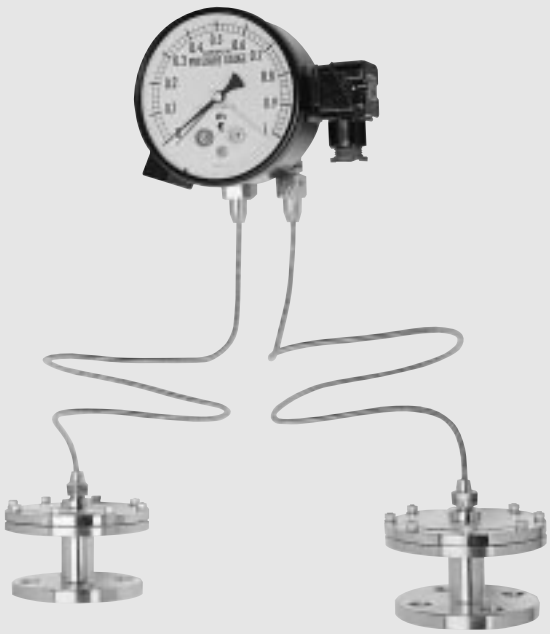
Dimensions of indicator section

Type No. (indicator section)	Mounting
CB13-□□3	Panel mounting
CB33-□□3	Panel mounting
CD75-3□□	Panel mounting
CD75-7□□	2B pipe mounting

Outside diameter of sensor section (φD1)

Diaphragm dia.	φD1
φ60	φ105
φ110	φ155

* For detailed outside dimensions of indicator section, see the catalog.



Diaphragm-Seal Type Differential Pressure Gauges (with Electric Contact)

MANUFACTURING SPECIFICATION

Measured fluid :
Highly corrosive fluid, High-viscosity fluid

Type :
Remote type

Mounting method :
Screw type, Flange type

Accuracy :
±1.5%F.S./Room temperature (constant)

Working temperature range :
-5 to 40℃

INDICATOR SECTION

Pressure indicator :
General differential pressure gauge (Model : DG95・96)
Differential switch with electric contact (Model : DG97・98)

Size :
ϕ100, ϕ150

Stem :
Surface mounting type, 2B pipe mounting

Material of main parts :

Body	SCS14
Bellows	SUS316L

Number of contacts : (DG97・98)
1 or 2

Setting method : (DG97・98)
External adjustment type

Case material/finish :
ADC12 or AC7A・Black

* For details, see the catalog for the differential pressure gauges.

SENSOR SECTION・FILLED LIQUID

For diaphragm type, select according to the pressure (Maximum working pressure)
Standard type (0.5MPa) (Model : SC☐☐)
High pressure-proof type (2MPa) (Model : HD☐☐)
High pressure-proof and welded type
(5MPa) (Model : HE☐☐)

Diaphragm dia. :
ϕ110

Material :
For the material of upper/lower flange and diaphragm, see the page for SENSOR SECTION 2.

Filled liquid :
Silicone oil
-5 ~ 100℃

Maximum length of capillary tube :
1m or 2m

Note :
- To minimize temperature error, the diaphragm part needs to be installed on both H and L sides.
- H- and L-side diaphragm parts must be at the same level. (A difference in their level leads to a difference in head, resulting in incorrect indication of differential pressure.)

FABRICATION SPECIFICATION

Relationship between differential pressure range, one-side withstand differential pressure, and temperature coefficient (for reference only) :

Differential pressure range MPa	One-side withstand pressure (withstand differential pressure) (MPa)	Temperature coefficient of indicator section (including capillary tube) (%F.S./℃)	Temperature coefficient of diaphragm part (when both H and L sides are at same temperature) (Pa/℃)
0~0.05	0.2	±0.15	±50
~0.07	0.2	±0.15	
~0.1	0.2	±0.1	
~0.15	1.2	±0.1	
~0.2	1.2	±0.1	
~0.3	1.2	±0.1	
~0.4	1.2	±0.1	
~0.5	1.2	±0.1	

Relationship between the size of flange/screw and the diaphragm diameter

Mounting method	Flange type				Screw type
Mounting	Model 200		Model 300		Model 100
* Type / Nominal size	Standard type (SC2□) High pressure-proof type (HD2□)	High pressure-proof and welded type (HE2□)	Standard type (SC3□) High pressure-proof type (HD3□)	High pressure-proof and welded type (HE3□)	Standard type (SC1□) High pressure-proof type (HD1□) High pressure-proof and welded type (HE1□)
10A (3/8″)	○	○	—	—	G3/8B G1/2B R3/8 R1/2 1/2NPT 3/8NPT
15A (1/2″)	○	○	—	—	
20A (3/4″)	○	○	—	—	
25A (1″)	○	○	—	—	
32A (1 1/4″)	○	○	—	—	
40A (1 1/2″)	○	○	—	—	
50A (2″)	○	○	—	—	
65A (2 1/2″)	○	○	—	—	
80A (3″)	—	○	○	—	
100A (4″)	—	○	○	—	
125A (5″)	—	—	○	○	
150A (6″)	—	—	○	○	

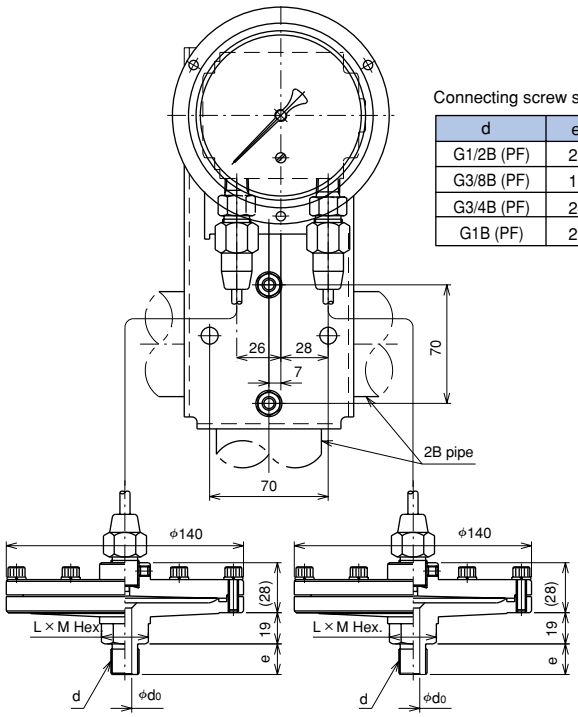
* For diaphragm seal type, select according to the pressure (base pressure + differential pressure).
- Standard type (Model : SC□□) : Maximum working pressure: 0.5 MPa
- High pressure-proof type (Model : HD□□) : Maximum working pressure: 2 MPa
- High pressure-proof and welded type (Model : HE□□) : Maximum working pressure: 5 MPa

OUTSIDE DIMENSIONS 1

Standard type (Model : SC☐☐)

[Screw type] **Model 100 · Screw**

DG95 · 96 General differential pressure gauge

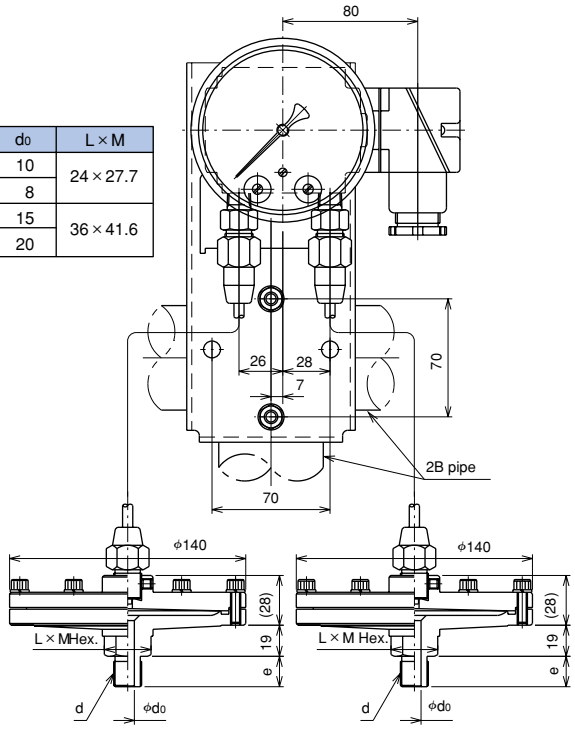


Connecting screw size

d	e	d0	L × M
G1/2B (PF)	20	10	24 × 27.7
G3/8B (PF)	18	8	
G3/4B (PF)	24	15	36 × 41.6
G1B (PF)	28	20	

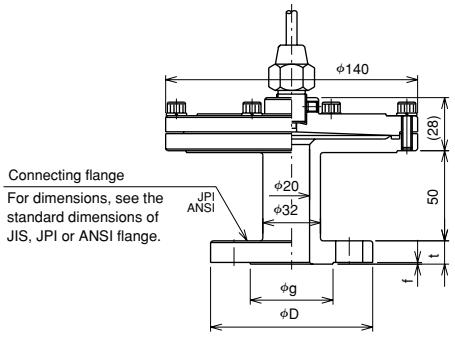
SC10-☐☐☐

DG97 · 98 Differential pressure switch with electric contact



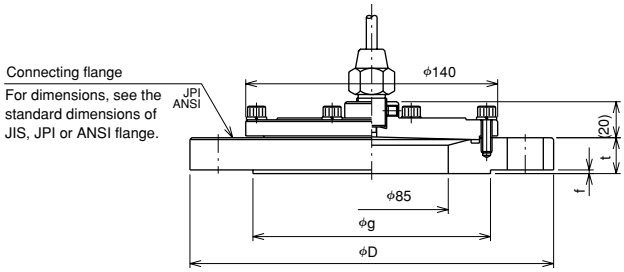
SC10-☐☐☐

[Flange type] **Model 200 · Flange**



SC2☐-☐☐☐

Model 300 · Flange



SC3☐-☐☐☐

Dimensions of indicator section

	Mounting	Size	Type No. (indicator section)
General differential	2B pipe mounting	100	DG95-1☐3
		150	DG96-1☐3
Differential switch with electric contact	2B pipe mounting	100	DG97-1☐3
		150	DG98-1☐3
	Surface mounting type	100	DG97-2☐3
		150	DG98-2☐3

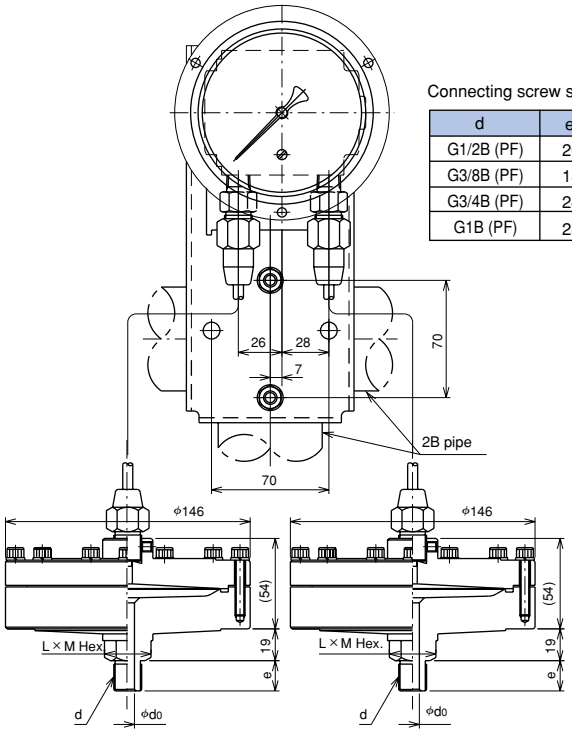
* For detailed outside dimensions of indicator section, see the catalog of differential pressure gauge.

OUTSIDE DIMENSIONS 2

High pressure-proof type (Model : HD☐☐)

[Screw type] **Model 100 · Screw**

DG95 · 96 General differential pressure gauge

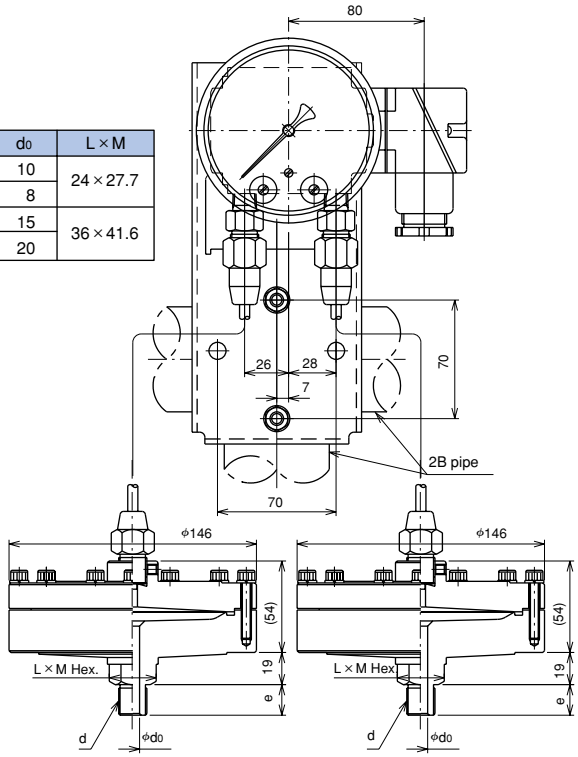


Connecting screw size

d	e	d0	L×M
G1/2B (PF)	20	10	24×27.7
G3/8B (PF)	18	8	
G3/4B (PF)	24	15	36×41.6
G1B (PF)	28	20	

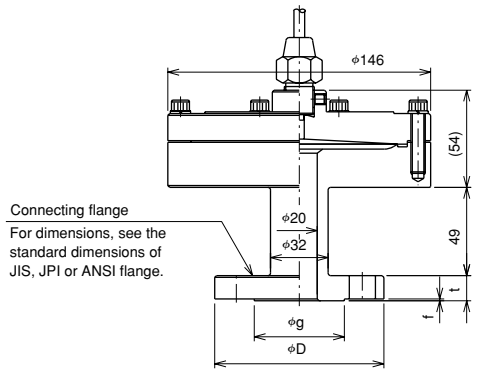
HD10-☐☐☐

DG97 · 98 Differential pressure switch with electric contact



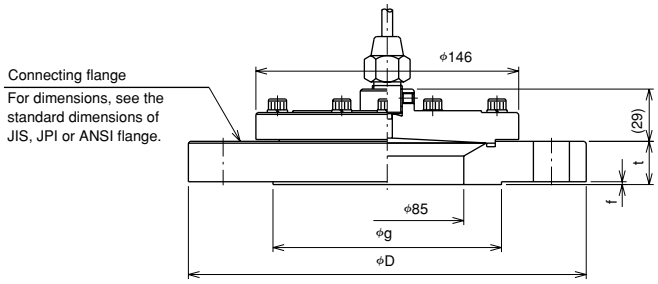
HD10-☐☐☐

[Flange type] **Model 200 · Flange**



HD2☐-☐☐☐

Model 300 · Flange



HD3☐-☐☐☐

Dimensions of indicator section

	Mounting	Size	Type No. (indicator section)
General differential	2B pipe mounting	100	DG95-1☐3
		150	DG96-1☐3
Differential switch with electric contact	2B pipe mounting	100	DG97-1☐3
		150	DG98-1☐3
	Wall mounting type	100	DG97-2☐3
		150	DG98-2☐3

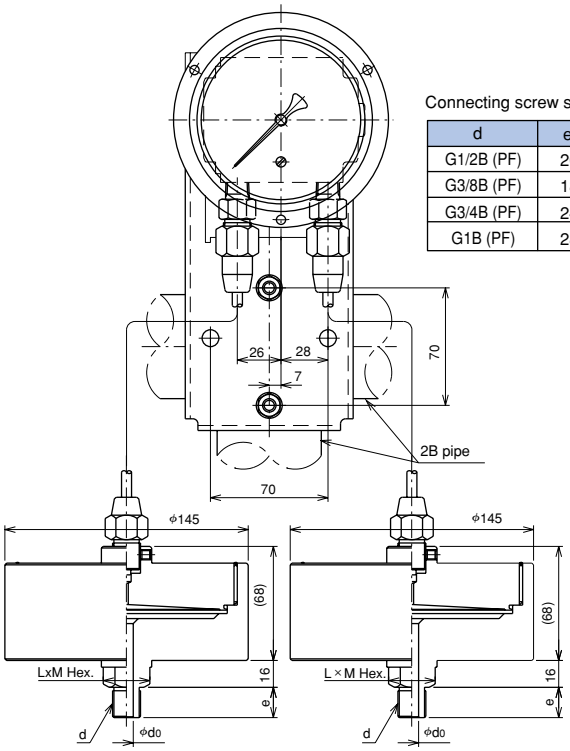
* For detailed outside dimensions of indicator section, see the catalog of differential pressure gauge.

OUTSIDE DIMENSIONS 3

High pressure-proof and welded type (Model : HE□□)

[Screw type] **Model 100 · Screw**

DG95 · 96 General differential pressure gauge

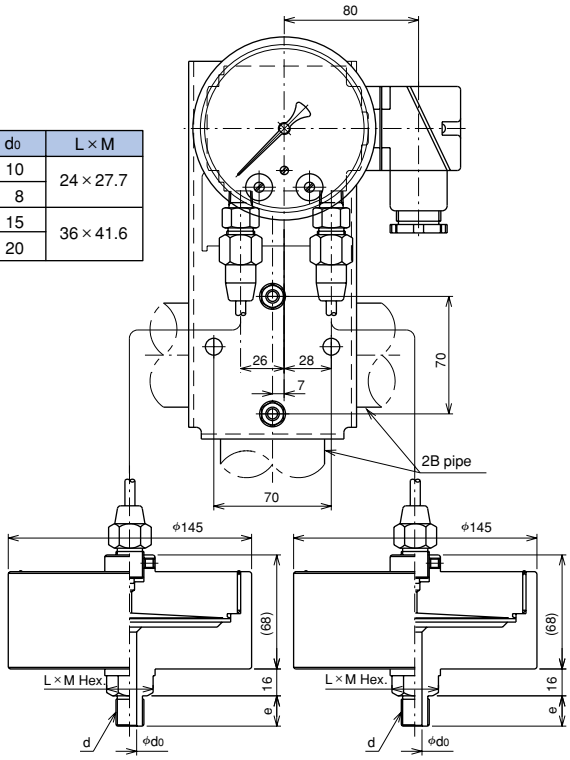


Connecting screw size

d	e	d0	L×M
G1/2B (PF)	20	10	24×27.7
G3/8B (PF)	18	8	
G3/4B (PF)	24	15	36×41.6
G1B (PF)	28	20	

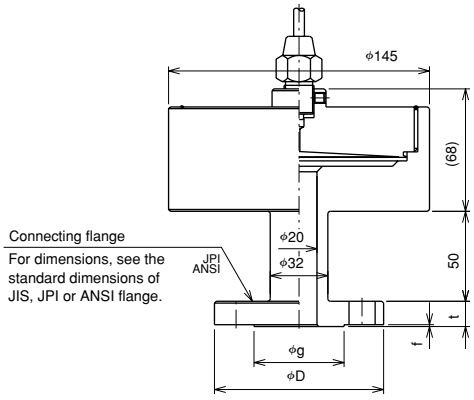
HE10-□□□

DG97 · 98 Differential switch with electric contact



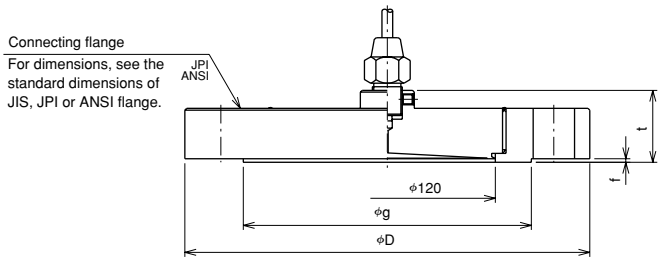
HE10-□□□

[Flange type] **Model 200 · Flange**



HE2□-□□□

Model 300 · Flange

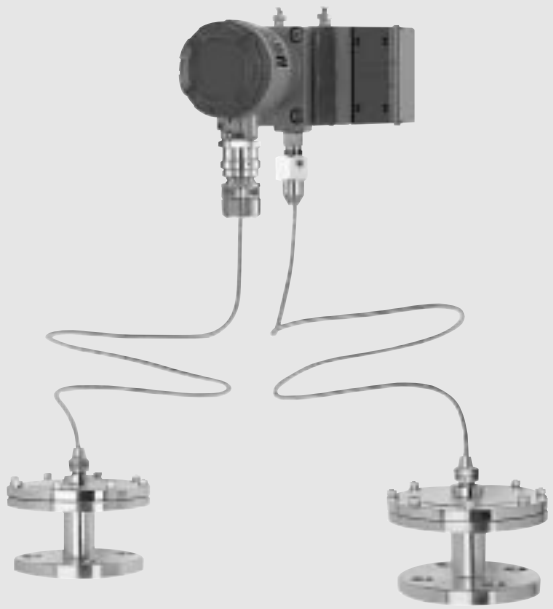


HE3□-□□□

Dimensions of indicator section

	Mounting	Size	Type No. (indicator section)
General differential	2B pipe mounting	100	DG95-1□3
		150	DG96-1□3
Differential switch with electric contact	2B pipe mounting	100	DG97-1□3
		150	DG98-1□3
	Wall mounting type	100	DG97-2□3
		150	DG98-2□3

* For detailed outside dimensions of indicator section, see the catalog of differential pressure gauge.



Diaphragm-Seal type Differential Pressure Switch

MANUFACTURING SPECIFICATION

Measured fluid :
Highly corrosive fluid, High-viscosity fluid

Type :
Remote type

Mounting method :
Screw type, Flange type

Accuracy :
±1.5%F.S./20℃±10℃

Working temperature range :
-5 to 40℃

INDICATOR SECTION

Differential pressure switch :
Differential pressure switch (Model : CL71)
Explosion-proof differential pressure switch (Model : CD71)

Mounting :
Panel mounting, 2B pipe mounting

Material of main parts :

Diaphragm	SUS316+NBR (Buna B)
Main body	SCS14

Number of contacts
1 or 2 (to be set simultaneously)

Setting method :
Internal adjustment type

Case material and finish :
ADC12 · blue-gray two-tone paint
Acid-proof paint.

Construction :
IP65

* For details, see the catalog for differential pressure switch.

SENSOR SECTION 2 · FILLED LIQUID

For diaphragm type, select according to the pressure (Maximum working pressure)
Standard type (0.5MPa) (Model : SC☐☐)
High pressure-proof type (2MPa) (Model : HD☐☐)
High pressure-proof and welded type (5MPa) (Model : HE☐☐)

Diaphragm dia. :
ϕ110

Material :
For the material of upper/lower flange and diaphragm, see the page for SENSOR SECTION 2.

Filled liquid :
Silicone oil
-5 ~ 100℃

Maximum length of capillary tube :
1m or 2m

Note :
- To minimize temperature error, the diaphragm part needs to be installed on both H and L sides.
- H- and L-side diaphragm parts must be at the same level. (A difference in their level leads to a difference in head, resulting in incorrect indication of differential pressure.)

FABRICATION SPECIFICATION

Relationship between differential pressure range, and temperature coefficient (for reference only) :

Differential pressure range MPa	Differential pressure switch part, Temperature coefficient of indicator section (including capillary tube) (%max. P./℃)	Temperature coefficient of wetted part (when both H and L sides are at same temperature) (Pa/℃)
0.01~0.05	±0.2	±50
0.02~0.1	±0.15	
0.04~0.2	±0.1	
0.06~0.3	±0.1	
0.08~0.4	±0.1	
0.1 ~0.5	±0.1	
0.12~0.6	±0.07	
0.16~0.8	±0.07	
0.2 ~1	±0.07	

Relationship between the size of flange/screw and the diameter of diaphragm

Mounting method	Flange type				Screw type
Mounting	Model 200		Model 300		Model 100
* Type / Nominal size	Standard type (SC2□) High pressure-proof type (HD2□)	High pressure-proof and welded type (HE2□)	Standard type (SC3□) High pressure-proof type (HD3□)	High pressure-proof and welded type (HE3□)	Standard type (SC1□) High pressure-proof type (HD1□) High pressure-proof and welded type(HE1□)
10A (3/8″)	○	○	—	—	
15A (1/2″)	○	○	—	—	
20A (3/4″)	○	○	—	—	G3/8B
25A (1″)	○	○	—	—	G1/2B
32A (1 1/4″)	○	○	—	—	R3/8
40A (1 1/2″)	○	○	—	—	R1/2
50A (2″)	○	○	—	—	1/2NPT
65A (2 1/2″)	○	○	—	—	3/8NPT
80A (3″)	—	○	○	—	
100A (4″)	—	○	○	—	
125A (5″)	—	—	○	○	
150A (6″)	—	—	○	○	

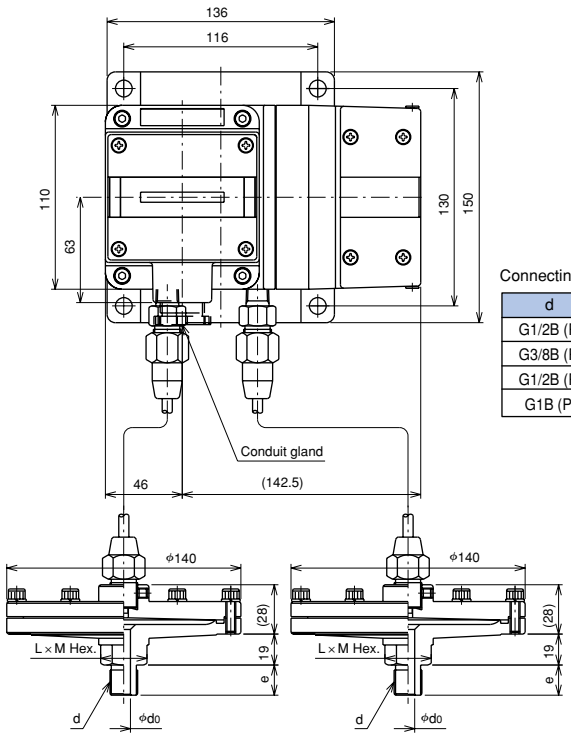
* For diaphragm seal type, select according to the pressure (base pressure + differential pressure).
- Standard type (Model : SC□□) : Maximum working pressure: 0.5 MPa
- High pressure-proof type (Model : HD□□) : Maximum working pressure: 2 MPa
- High pressure-proof and welded type (Model : HE□□) : Maximum working pressure: 5 MPa

OUTSIDE DIMENSIONS 1

Standard type (Model : SC□□)

[Screw type] **Model 100 · Screw**

CL71 Differential pressure switch

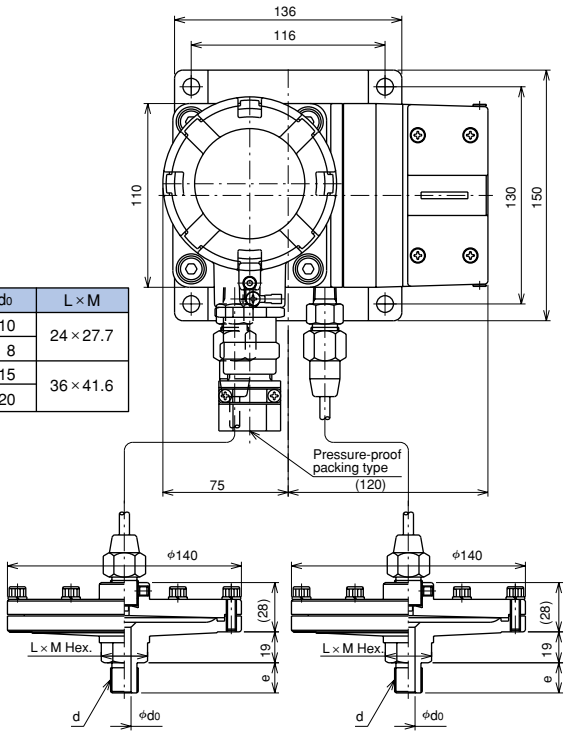


Connecting screw size

d	e	d0	L×M
G1/2B (PF)	20	10	24×27.7
G3/8B (PF)	18	8	
G1/2B (PF)	24	15	36×41.6
G1B (PF)	28	20	

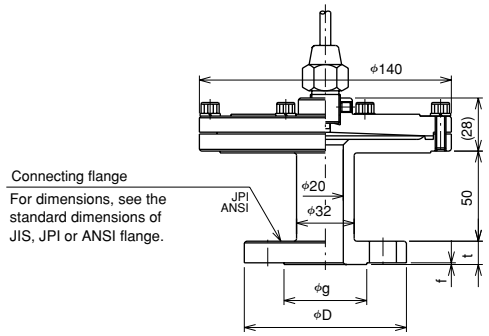
SC10-□□□

CD71 Explosion-proof pressure switch



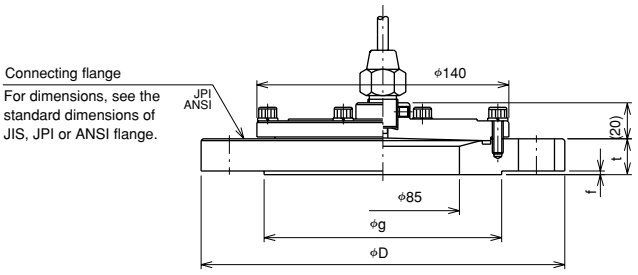
SC10-□□□

[Flange type] **Model 200 · Flange**



SC2□-□□□

Model 300 · Flange



SC3□-□□□

Type No.	Mounting
CL71-173 -273	Panel mounting
CL71-373 -473	2B pipe mounting
CL71-373 -473	Panel mounting
CL71-773 -873	2B pipe mounting

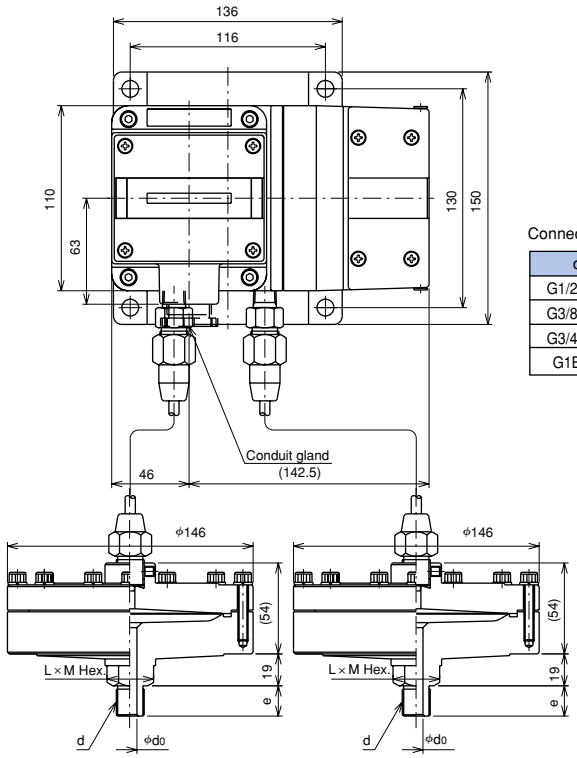
* For detailed outside dimensions of indicator section, see the catalog.

OUTSIDE DIMENSIONS 2

High pressure-proof type (Model : □□)

[Screw type] Model 100 · Screw

CL71 Differential pressure switch

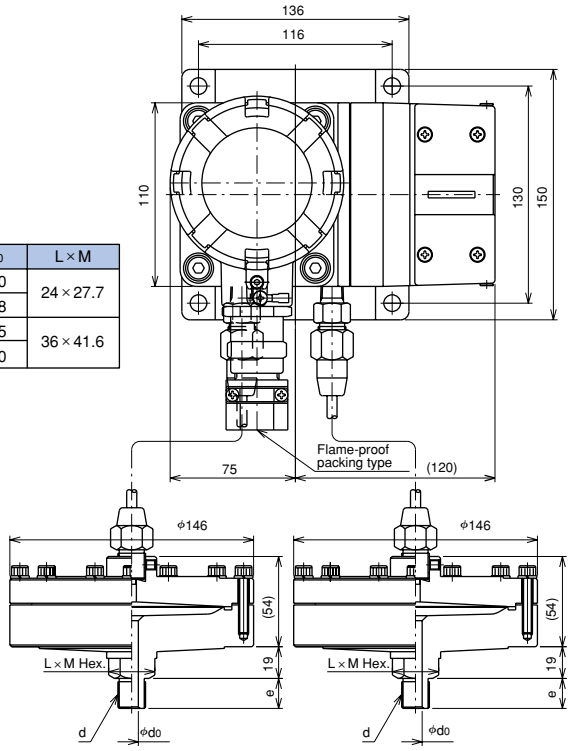


HD10-□□□

Connecting screw size

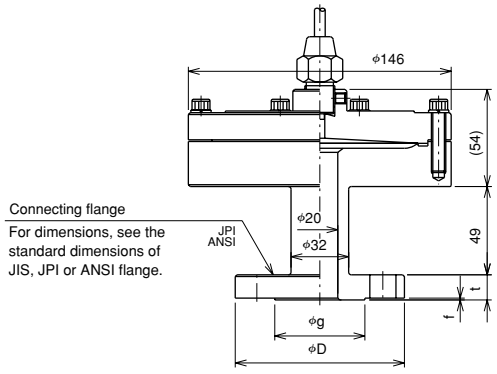
d	e	d0	L×M
G1/2B (PF)	20	10	24×27.7
G3/8B (PF)	18	8	
G3/4B (PF)	24	15	36×41.6
G1B (PF)	28	20	

CD71 Explosion-proof differential pressure switch



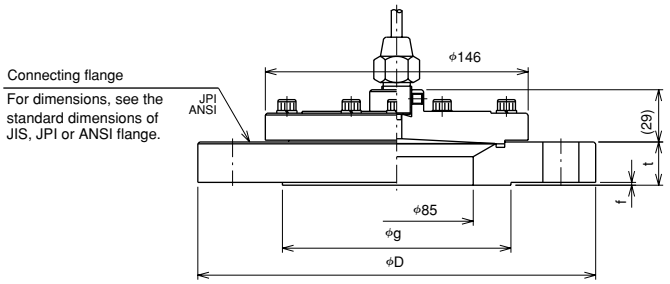
HD10-□□□

[Flange type] Model 200 · Flange



HD2□-□□□

Model 300 · Flange



HD3□-□□□

Type No.	Mounting
CL71-173 -273	Panel mounting
CL71-373 -473	2B pipe mounting
CL71-373 -473	Panel mounting
CL71-773 -873	2B pipe mounting

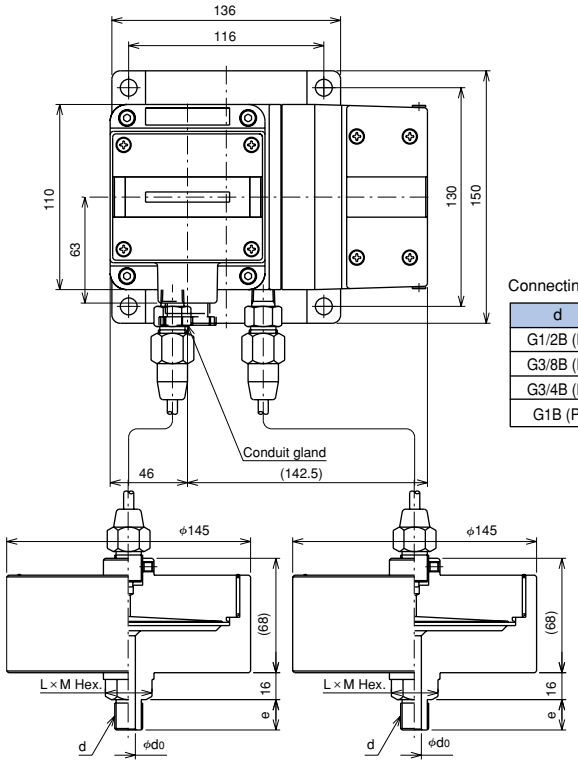
* For detailed outside dimensions of indicator section, see the catalog.

OUTSIDE DIMENSIONS 3

High pressure-proof and welding type (Model : HE□□)

[Screw type] **Model 100 · Screw**

CL71 Differential pressure switch

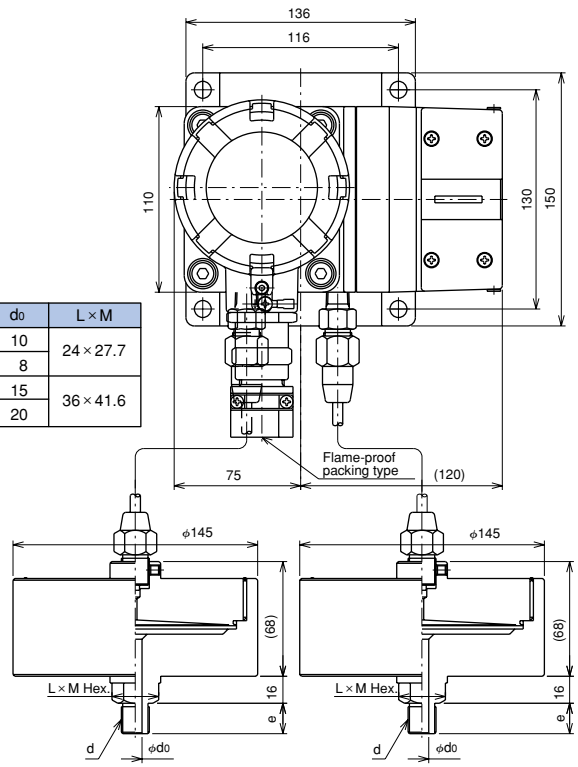


HE10-□□□

Connecting screw size

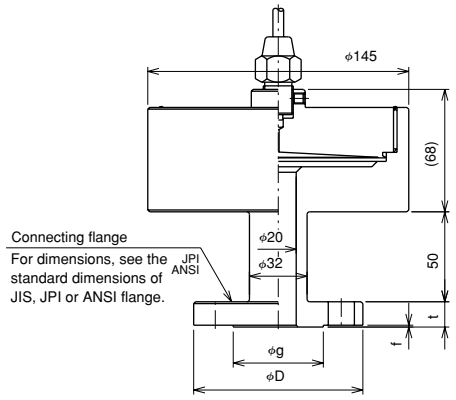
d	e	d0	L×M
G1/2B (PF)	20	10	24×27.7
G3/8B (PF)	18	8	
G3/4B (PF)	24	15	36×41.6
G1B (PF)	28	20	

CD71 Explosion-proof differential pressure switch



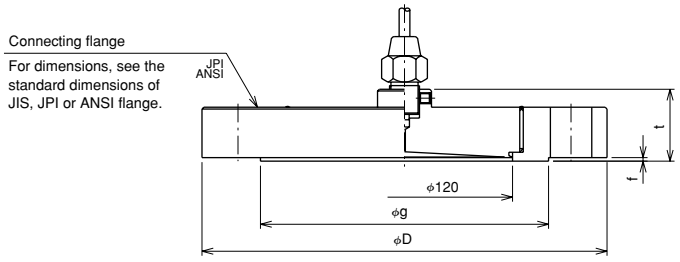
HE10-□□□

[Flange type] **Model 200 · Flange**



HE2□-□□□

Model 300 · Flange



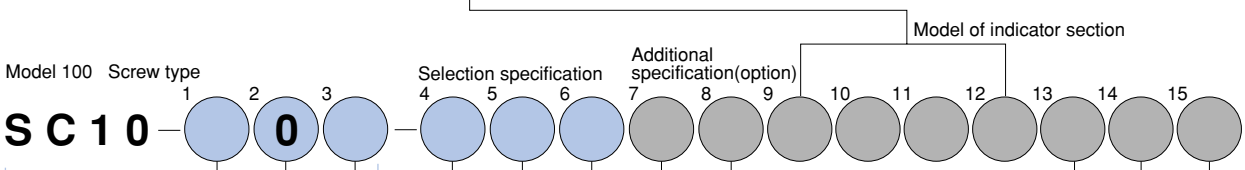
HE3□-□□□

Type No.	Mounting
CL71-173 -273	Panel mounting
CL71-373 -473	2B pipe mounting
CL71-373 -473	Panel mounting
CL71-773 -873	2B pipe mounting

* For detailed outside dimensions of indicator section, see the catalog.

Type No. construction

Please specify the type No., each specification and pressure (differential pressure) range when ordering.



High pressure-proof type (Model : HD10・HH10)
High pressure-proof and welded type (Model: HE10)
Basic specification is the same as high withstand pressure type.

1 Screw size

3	G3/8B
4	G1/2B
G	R3/8
H	R1/2
L	3/8NPT
M	1/2NPT

2 Screw

0	Screw type

3 Wetted parts material (Lower flange)

2	S25C
3	SUS316
4	SUS316L
5	Monel
6	TB35C (Titanium)
7	Hastelloy B
8	Hastelloy C-276
A	NAS305 (Carpenter 20)
B	SUS304

4 Diaphragm diameter

		A□10 B□1□ GV42	JM□□	JD10	CQ30 CD30	CB13 CB33 CD75	DG9□ C□71
4	φ40	○	—	○	○	—	—
6	φ60	○	○	○	○	○	—
8	φ80	○	○	○	○	—	—
9	φ110	○	○	—	○	○	○

* Please indicate pressure range, dampener and radiator piping separately.

5 Diaphragm material

1	SUS316 + FEP lining
2	SUS316 + FEP coating
3	SUS316
4	SUS316L
5	Monel
6	TP35C (Titanium)
7	Hastelloy B
8	Hastelloy C-276
A	TaP (Tantalum)
D	Nickel
J	SUS316 + Neoprene lining

6 Upper flange material

2	S25C
3	SUS316

7 Middle-temperature

0	Nil (Low-temperature)
B	Middle-temperature (Higher than 100 to 230℃)

8 Treatment

0	Nil
1	Use no oil
2	Use no water
3	Use no oil & water

9 10 11 12 Indicators

AC10	φ75	General type pressure gauge
AE10	φ100	General type pressure gauge
AG10	φ150	General type pressure gauge
BC10	φ75	Weather-proof type pressure gauge
BC12	φ75	Weather-proof type pressure gauge
BE10	φ100	Weather-proof type pressure gauge
BE12	φ100	Weather-proof type pressure gauge
BG10	φ150	Weather-proof type pressure gauge
BG12	φ150	Weather-proof type pressure gauge
GV42	φ100	Glycerin filled type
JM11	φ100	Pressure gauge with micro switch (Stem)
JM16	φ100	Pressure gauge with micro switch (Flush type)
JM21	φ150	Pressure gauge with micro switch contact (Stem)
JM26	φ150	Pressure gauge with micro switch contact (Flush type)
JD10	φ100	Pressure gauge with electronic contact

When you need a special indicator section other than those listed above, please consult the nearest NAGANO KEIKI office.

CQ30	Pressure switch
CD30	Explosion-proof pressure switch
CB13	Pressure switch
CB33	Pressure switch
CD75	Explosion-proof pressure switch
DG95	φ100 Differential pressure gauge
DG96	φ150 Differential pressure gauge
DG97	φ100 Differential switch with electric contact
DG98	φ150 Differential switch with electric contact
CL71	Differential pressure switch
CD71	Explosion-proof differential pressure switch

13 Material of indicator section elements

0	Nil
1	General (except GV42 and JD)
2	Corrosion resistant

14 Construction

0	Nil
1	Direct type
2	Remote type (Specify type and length of lead by the meter.)

15 Document

0	Nil
1	To be provided (Please specify your requirements in a separate form.) Drawing, instruction manual, inspection procedure, standard inspection record (one copy per item), traceability system diagram, calibration certificate, standard inspection record, strength calculation, witnessed inspection record.

Type No. construction

Please specify the type No., each specification and pressure (differential pressure) range when ordering.

S	C	2	A	JIS 5K
S	C	2	1	JIS 10K
S	C	2	2	JIS 16K
S	C	2	3	JIS 20K
S	C	2	4	JIS 30K
S	C	2	5	JIS 40K
S	C	2	B	JIS 63K
S	C	2	6	ANSI 150
S	C	2	7	ANSI 300
S	C	2	8	ANSI 600
S	C	2	E	ANSI 1500
S	C	2	G	JPI 150
S	C	2	H	JPI 300
S	C	2	K	JPI 600

Flange standard

Model

Model 200 Flange type

Selection specification

Additional specification (option)

Model of indicator section

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

Type No.

High pressure-proof type (Model : HD20・HH20)
High pressure-proof and welded type (Model: HE20)
Basic specification is the same as high withstand pressure type.

1 Flange size

A	10A (3/8″)
1	15A (1/2″)
2	20A (3/4″)
3	25A (1″)
4	32A (1 1/4″)
5	40A (1 1/2″)
6	50A (2″)
7	65A (2 1/2″)
8	80A (3″)
B	90A (3 1/2″)
C	100A (4″)

* Available flange size changes with the type of indication part and the diameter of diaphragm. For details, see fabrication specification.

2 Flange type

1	RF
2	FF
3	MF
4	GF
5	TF
6	FMF
8	Serration processing

3 Wetted parts material (Lower flange)

2	S25C
3	SUS316
4	SUS316L
E	S25C + Glass lining
F	S25C + PTFE lining
G	S25C + FEP coating
J	S25C + Neoprene lining
K	S25C + Crude-rubber lining
S	Rigid polyvinyl chloride *
T	Polypropylene *
X	SUS316 + PTFE lining
Y	SUS316 + FEP coating
a	SUS316 + Neoprene lining
b	SUS316 + Crude-rubber lining

* Available only for ϕ60 and ϕ80 diameter diaphragms, flange mounting FF, and JIS 10K 15A to 40A and ANSI 150LB 3/4B to 1 1/2B flanges.

4 Diaphragm diameter

		A□10 B□1□ GV42	JM□□	JD10	CQ30 CD30	CB13 CB33 CD75	DG9□ C□71
4	ϕ40	○	—	○	○	—	—
6	ϕ60	○	○	○	○	○	—
8	ϕ80	○	○	○	○	—	—
9	ϕ110	○	○	—	○	○	○

* Please indicate pressure range, dampener and radiator piping separately.

5 Diaphragm material

1	SUS316 + FEP lining
2	SUS316 + FEP coating
3	SUS316
4	SUS316L
5	Monel
6	TP35C (Titanium)
7	Hastelloy B
8	Hastelloy C-276
A	TaP (Tantalum)
D	Nickel
J	SUS316 + Neoprene lining

6 Upper flange material

2	S25C
3	SUS316

7 Middle-temperature

0	Nil (Low-temperature)
B	Middle-temperature (Higher than 100 to 230℃)

8 Treatment

0	Nil
1	Use no oil
2	Use no water
3	Use no oil & water

9 10 11 12 Indicators

AC10	ϕ75	General type pressure gauge
AE10	ϕ100	General type pressure gauge
AG10	ϕ150	General type pressure gauge
BC10	ϕ75	Weather-proof type pressure gauge
BC12	ϕ75	Weather-proof type pressure gauge
BE10	ϕ100	Weather-proof type pressure gauge
BE12	ϕ100	Weather-proof type pressure gauge
BG10	ϕ150	Weather-proof type pressure gauge
BG12	ϕ150	Weather-proof type pressure gauge
GV42	ϕ100	Glycerin filled type
JM11	ϕ100	Pressure gauge with micro switch (Stem)
JM16	ϕ100	Pressure gauge with micro switch (Flush type)
JM21	ϕ150	Pressure gauge with micro switch (Stem)
JM26	ϕ150	Pressure gauge with micro switch (Flush type)
JD10	ϕ100	Pressure gauge with electronic contact

When you need a special indicator section other than those listed above, please consult the nearest NAGANO KEIKI office.

CQ30	Pressure switch
CD30	Explosion-proof pressure switch
CB13	Pressure switch
CB33	Pressure switch
CD75	Explosion-proof pressure switch
DG95	ϕ100 Differential pressure gauge
DG96	ϕ150 Differential pressure gauge
DG97	ϕ100 Differential switch with electric contact
DG98	ϕ150 Differential switch with electric contact
CL71	Differential pressure switch
CD71	Explosion-proof differential pressure switch

13 Material of indicator section elements

0	Nil
1	General (except GV42 and JD)
2	Corrosion resistant

14 Construction

0	Nil
1	Direct type
2	Remote type (Specify type and length of lead by the meter.)

15 Document

0	Nil
1	To be provided (Please specify your requirements in a separate form.) Drawing, instruction manual, inspection procedure, standard inspection record (one copy per item), traceability system diagram, calibration certificate, standard inspection record, strength calculation, witnessed inspection record.

Type No. construction

Please specify the type No., each specification and pressure (differential pressure) range when ordering.

S	C	3	A	JIS 5K
S	C	3	1	JIS 10K
S	C	3	2	JIS 16K
S	C	3	3	JIS 20K
S	C	3	4	JIS 30K
S	C	3	5	JIS 40K
S	C	3	B	JIS 63K
S	C	3	6	ANSI 150
S	C	3	7	ANSI 300
S	C	3	8	ANSI 600
S	C	3	E	ANSI 1500
S	C	3	G	JPI 150
S	C	3	H	JPI 300
S	C	3	K	JPI 600

Flange standard

Model

Model 300 Flange type

Type No.

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

Selection specification

Additional specification (option)

Model of indicator section

High pressure-proof type (Model : HD30・HH30)
High pressure-proof and welded type (Model: HE30)
Basic specification is the same as high withstand pressure type.

1 Flange size

3	25A (1″)
4	32A (1 1/4″)
5	40A (1 1/2″)
6	50A (2″)
7	65A (2 1/2″)
8	80A (3″)
B	90A (3 1/2″)
C	100A (4″)
D	120A (5″)
E	150A (6″)

* Available flange size changes with the type of indication part and the diameter of diaphragm. For details, see fabrication specification.

2 Flange type

1	RF
2	FF
3	MF
4	GF
5	TF
6	FMF
8	Serration processing

3 Wetted parts material (Lower flange)

2	S25C
3	SUS316
4	SUS316L
E	S25C + Glass lining Available only for flange mounting FF.
G	S25C + FEP coating Available only for flange mounting FF.
J	S25C + Neoprene lining Available only for flange mounting FF.
K	S25C + Crude-rubber lining Available only for flange mounting FF.
Y	SUS316 + FEP coating Available only for flange mounting FF.
a	SUS316 + Neoprene lining Available only for flange mounting FF.
b	SUS316 + Crude-rubber lining Available only for flange mounting FF.

4 Diaphragm diameter

		A□10 B□1□ GV42	JM□□	JD10	CQ30 CD30	CB13 CB33 CD75	DG9□ C□71
4	ϕ40	○	—	○	○	—	—
6	ϕ60	○	○	○	○	○	—
8	ϕ80	○	○	○	○	—	—
9	ϕ110	○	○	—	○	○	○

* Please indicate pressure range, dampener and radiator piping separately.

5 Diaphragm material

1	SUS316 + FEP lining
2	SUS316 + FEP coating
3	SUS316
4	SUS316L
5	Monel
6	TP35C (Titanium)
7	Hastelloy B
8	Hastelloy C-276
A	TaP (Tantalum)
D	Nickel
J	SUS316 + Neoprene lining

6 Upper flange material

2	S25C
3	SUS316

7 Middle-temperature

0	Nil (Low-temperature)
B	Middle-temperature (Higher than 100 to 230℃)

8 Treatment

0	Nil
1	Use no oil
2	Use no water
3	Use no oil & water

9 10 11 12 Indicators

AC10	ϕ75	General type pressure gauge
AE10	ϕ100	General type pressure gauge
AG10	ϕ150	General type pressure gauge
BC10	ϕ75	Weather-proof type pressure gauge
BC12	ϕ75	Weather-proof type pressure gauge
BE10	ϕ100	Weather-proof type pressure gauge
BE12	ϕ100	Weather-proof type pressure gauge
BG10	ϕ150	Weather-proof type pressure gauge
BG12	ϕ150	Weather-proof type pressure gauge
GV42	ϕ100	Glycerin filled type
JM11	ϕ100	Pressure gauge with micro switch (Stem)
JM16	ϕ100	Pressure gauge with micro switch (Flush type)
JM21	ϕ150	Pressure gauge with micro switch (Stem)
JM26	ϕ150	Pressure gauge with micro switch (Flush type)
JD10	ϕ100	Pressure gauge with electronic contact

When you need a special indicator section other than those listed above, please consult the nearest NAGANO KEIKI office.

CQ30	Pressure switch
CD30	Explosion-proof pressure switch
CB13	Pressure switch
CB33	Pressure switch
CD75	Explosion-proof pressure switch
DG95	ϕ100 Differential pressure gauge
DG96	ϕ150 Differential pressure gauge
DG97	ϕ100 Differential switch with electric contact
DG98	ϕ150 Differential switch with electric contact
CL71	Differential pressure switch
CD71	Explosion-proof differential pressure switch

13 Material of indicator section elements

0	Nil
1	General (except GV42 and JD)
2	Corrosion resistant

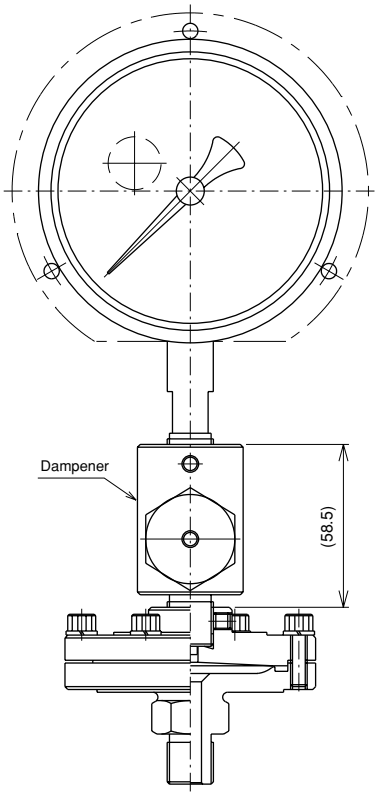
14 Construction

0	Nil
1	Direct type
2	Remote type (Specify type and length of lead by the meter.)

15 Document

0	Nil
1	To be provided (Please specify your requirements in a separate form.) Drawing, instruction manual, inspection procedure, standard inspection record (one copy per item), traceability system diagram, calibration certificate, standard inspection record, strength calculation, witnessed inspection record.

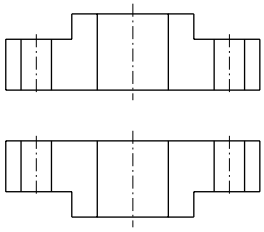
DAMPENER



When your pressure gauge is subjected to high pulsating pressure or surge pressure, please install the dampener to protect the gauge.
The dampener has a variable throttle, which can be adjusted according to pressure variation.
When installed in diaphragm-seal type pressure gauges, the dampener throttles only the filled liquid, eliminating the danger of clogging due to foreign matter. In addition, stable throttling effect is ensured, thanks to the excellent characteristic of filled liquid where viscosity hardly changes with temperature.

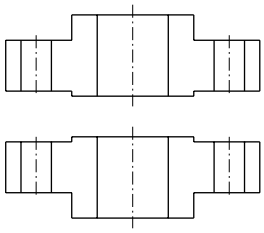
FLANGE TYPE

FF (flat face)



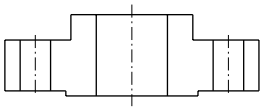
Application: Cast iron or copper alloy flanges of 16K or lower nominal pressure.

RF (raised face)

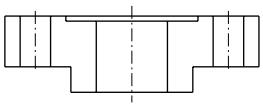


Application: Flanges of 63K or lower nominal pressure.

MF (male flange)

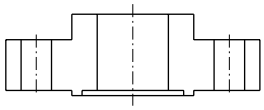


FMF (female flange)

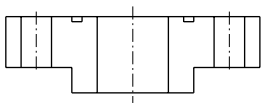


Application: 16K or higher nominal pressure requiring airtightness.

TF (tongue flange)



GF (groove flange)

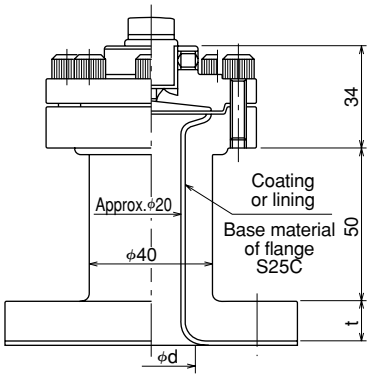


Application: 16K or higher nominal pressure using dangerous fluid or requiring airtightness.

* Names in ( ) are JIS, [ ] are JPI.

LINING & COATING

Lined or coated flange



Name	Thickness (mm)	Working temperature range
Glass lining	0.4 ~ 0.8	-30 ~ 230℃
Neoprene lining	2	-20 ~ 100℃
Crude-rubber lining	2	-15 ~ 80℃
PTFE lining	2	-20 ~ 150℃
FEP coating	0.2 ~ 0.3	-30 ~ 180℃

There is a case where "φd" is bigger than the standard dimension, so please pay attention to gasket size.

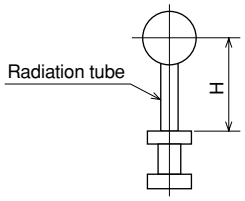
Available flange type: FF only

Dimension "t" does not include the thickness of coating or lining.

RADIATION TUBE

For middle temperature pressure gauges (over 100℃, below 230℃) or direct mounting type, or when the temperature of sensing part becomes 180℃ or higher, we recommend to use the radiation tube as shown below to minimize the influence of temperature on the indication part. Please specify the temperature of measured fluid. Remote type has similar effect.

Model 200 with radiation tube



H length

Height	Weather-proof type φ100	Weather-proof type φ150
H	213	228

Material

Upper flange	S25C	SUS316
Radiation tube	SS400	SUS316

NAGANO KEIKI CO., LTD.

Ueda Factory (measuring instrument) (JQA-0794)
Maruko Factory (electronic equipment) (JQA-0789)

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