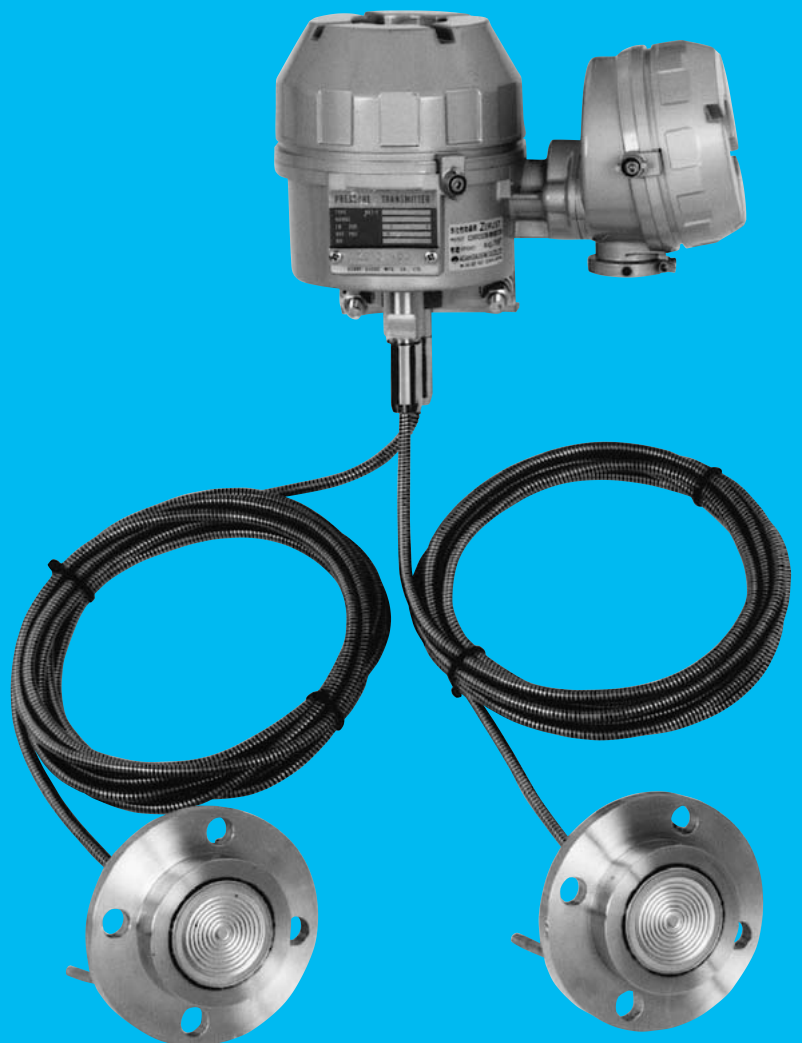
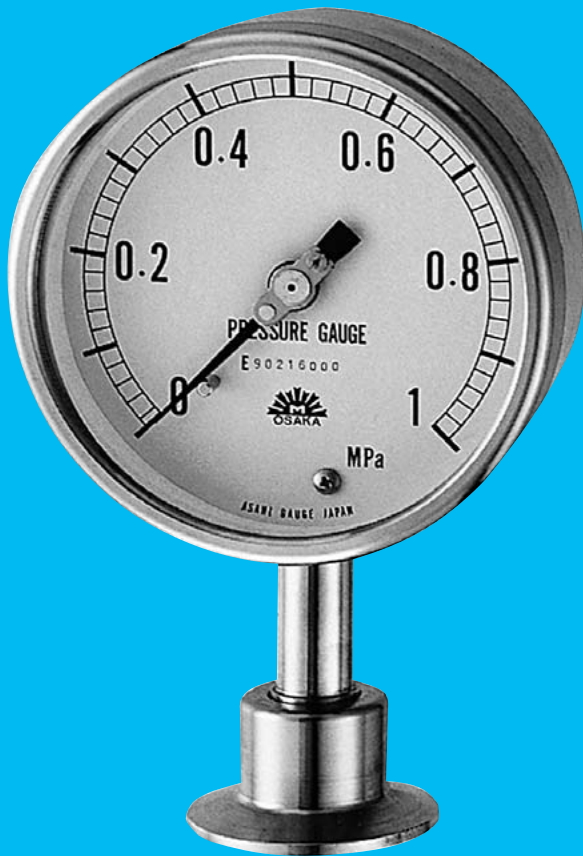


SANITARY PRESSURE GAUGES AND SANITARY TRANSMITTERS



Sanitary Pressure Gauges

Applications

These pressure gauges are used in the food, pharmaceutical, cosmetic, or other industries where hygiene and safety for health must be given the first priority.

Features

- Hygienic, Harmless**
The stainless wet part does not spoil the quality or flavor of a fluid being measured. Medium liquids are safe and harmless to health even if used as food additives. No fluid sticks or residues in the gauge.
- Easy to clean**
The waterproof casing can be cleaned with high-pressure shower or hot water.
- Heatproof**
The diaphragm withstands working temperatures of up to 140° C and is designed to allow only very little temperature drift.
- Stable**
Stable indication with no deviation, thanks to an optional device to absorb sample-fluid pulsation.
- Diaphragm protection**
The diaphragm face depresses for direct installation on a table without damage to the diaphragm.
- Shock-proof**
A glycerin-sealed gauge is available to measure fluids with strong vibration or high pulsation pressures. The glycerin sealed in the indicator prevents pointer runout.

Standard Specifications for Manufacturing Sanitary Pressure Gauges (Table 1)

Model	Connection Type	Installation	1) Casing	Size (mm)	Model	Nominal Connector Size 4)	Diaphragm Diameter	2) Pressure Range MPa
881 - J	Ferrule	Non-Capillary	A	75	881-JAD41	IDF1S	35	Compound gauges - 0.1 ~ 0 - 0.1 - 0.2 - 0.3 - 0.4 [72]
			F	100	881-JAD51	IDF1½S		
		Capillary	B	100	881-JFD51	IDF2S	47	
						IDF2½S		
881 - L	Cap Nut	Non-Capillary	A	75	881-LAD41	IDF1½	35	- 0.1 ~ 0 0 ~ 0.1 ~ 0.2 ~ 0.3 ~ 0.4 ~ 0.5 ~ 0.6 ~ 1 ~ 1.5 ~ 2 ~ 2.5 ~ 3.5 ~ 5 [72]
			F	100	881-LAD51	IDF2		
		Capillary	B	100	881-LFD51	IDF2½	47	
881 - N	Screw	Non-Capillary	A	75	881-NAD41	IDF1½	35	~ 0.6 ~ 1 ~ 1.5 ~ 2 ~ 2.5 ~ 3.5 ~ 5 [47]
			F	100	881-NAD51	IDF2		
		Capillary	B	100	881-NFD51	IDF2½	47	
881 - K	Union Screw	Non-Capillary	A	75	881-KAD41	PF1½	35	Diaphragm diameter in parentheses.
			F	100	881-KAD51			
		Capillary	B	100	881-KFD51			
881 - M	Flange	Non-Capillary	A	75	881-MAD41	MIN JIS 10K 10A JIS 20K 20A	MIN flange 35	
			F	100	881-MAD51			
		Capillary	B	100	881-MFD51			
883 - P	Homogenizer Diaphragm-Seal Pressure Gauge	Non-Capillary	A	100	883-PAD51	23 24	23 24	0 ~ 10 0 ~ 100
882 - P	Homogenizer Pipe-Seal Pressure Gauge	Non-Capillary	A	100	882-PAD51	Type 18 Type 22	—	0 ~ 25 0 ~ 100

1. F-Casing models have the sensor exposed on the reverse side.
2. Ferrule models with pressure ranges of 2.5MPa or over are not available.
3. A pressure sensor with fin is recommended for the gauges operating in temperatures over 50°C.
4. DIN 405 Rd thread available for 881-N connector.

Application	Weight (Non-Capillary)	3) Other Standard Specifications
For fastening ferrule clamps	about 0.9kg	Wetted Part Materials.....Diaphragm SUS316L, Other SUS316 Bourdon Tube, Stock.....SUS316 Casing.....Types A and B are made of SUS304 and ADC chrome plated. Type F is ADC chrome plated. Medium Liquid...Glycerin, Silicone oil Accuracy..... ± 1.6%F.S.(at 20 °C) Ambient temperature characteristics.....1.5kPa/
For male screws	about 1.0kg	Temperature characteristics of diaphragm Diaphragm diameter Temperature variation coefficient 35 0.15kPa/1 , 0.35kPa/ 47 0.1 kPa/1 , 0.30kPa/ 72, 91 0.07kPa/1 , 0.25kPa/
For cap nuts	about 0.9kg	Maximum allowable temperature at diaphragm...160 °C; the indicator temperature must not exceed allowable ambient temperature. Working temperature(diaphragm)... - 10 to + 140
For female fixing screw	about 1.0kg	Response speed(time constant) ...about 0.5sec. in those with buffer function. Remote control type...One case fixed at three points; 2leads in max. 3m.
For flanges	about 1.5kg	
For homogenizer split flanges	about 1.0kg	

Note:
1. When the gauge is used in an ambient temperature range of 20 ± 10 °C, a zero adjustment would help maintain the user's tolerance.

HOW TO ORDER

- Specify the model, nominal connector size, and pressure range.
- Specify the capillary length for a capillary type. (max. 3m)
- State so, when a damper is needed.

Order Example

When ordering a sanitary pressure gauge; pressure Sensor, Ferrule; Casing, B; Installation, Capillary; Size; 100; Nominal Connector Size, IDF2S; Pressure Range, 6kgf/cm²; Capillary Length, 2m, state; 881-JBL 0 to 0.6MPa Capillary length 2m IDF2S

Standard Specifications for Manufacturing Sanitary Pressure Gauges with Electric Contacts (Table 2)

Contact (Model)	Connection Type	Size	Installation	Casing	Minimum Nominal Connector Size
Microswitching (881ME)	Ferrule Cap Nut Screw Flange	100	Non-Capillary	A	over 1-1/2 for ferrule, cap nut, and screw; over JIS 10 K 50A for flange
			Capillary	B	
		150	Non-Capillary	A	
			Capillary	B	
Pointer Contact (881EE)	Ferrule Cap Nut Screw Flange	100	Non-Capillary	A	Same as nominal connector size on Table 1.
			Capillary	B	
		150	Non-Capillary	A	
			Capillary	B	

1.Models with relay available.
 2.Pointer-contact homogenizer version available.
 3.G3/8 and G1/2 connector screws available.
 6.Glycerin-filled 881EE is available.

Oil-sealed Sanitary Pressure Gauge

- This gauge is perfect for a place with strong outer vibration.
 - The gauge eliminates pointer runout for easy reading.
 - Glycerin medium is available for the following models on Table 1:
- | | |
|--------------|--|
| Installation | Non-Capillary |
| Casing | Type A |
| Size | 100 |
| Models | 881-J, 881-N, 881-K, 881-M, 882-P, 883-P |
| Dimensions | Same as sanitary pressure gauges. |

Contact (Model)	Pressure Range MPa	Number of Contacts	Switching Difference	Accuracy			Rated Current	Setting Method	Weight (Non-Capillary)	Other Standard Specifications
				Indication	Setting	Reproducibility				
Microswitching (881ME)	0 ~ 0.4 0 ~ 5	1 or 2	under 0.6MPa 15%; over 1MPa; under 10% Not more than 15% for 0.1 MPa or under // Not more than 10% for 0.3 MPa or under // Not more than 8% for 0.4 to 0.6 MPa // Not more than 6% for 1 MPa or over.	under ± 1.6% F.S. (at 20)	under 3%F.S.	under 1%F.S.	Resistance Load AC125V 10A AC250V 10A DC125V 0.4A DC 30V 2A Inductive Load AC125V 10A AC250V 10A DC125V 0.03A DC 30V 1A Power Factor 0.4 Time Constant 7mS	Internal Adjustment (Adjust with a screw-driver.)	about 1.5kg	Casing.....Material ADC (881 ME), Chrome Plated (881EE), Finish, Black Insulation Resistance... Over 10M at 500V DC Voltage Withstanding... 1 min. at 1,500V AC between casing terminals Conduit Outlet..... Waterproof Terminal Box Conduit PF1/2 Female, JIS 15C with gland Contact Types..... One-point upper or lower point Two-point upper/lower points lower/lower points upper/upper points
				under ± 1.6% F.S. (at 20)	under 2%F.S.					
Pointer Contact (881EE)	Same as pressure range on Table 1.	1 or 2	under 0.3%F.S.	under ± 1.6% F.S. (at 20)	under ± 1.5% F.S.	0.5%F.S.	Resistance Load 100V AC, 0.5A 200V AC, 0.5A 24V DC, 0.2A Inductive Load 100V AC, 0.05A Power Factor 0.4	Adjust with a knob from outside.	about 1.2kg	See Table 1, Standard Manufacturing Specifications for Sanitary Pressure Gauges, for the wetted part material, medium liquid, temperature characteristics, operation temperature range, and maximum capillary length.
				about 1.3kg						

1.Models with relay available.
 2.Pointer-contact homogenizer version available.
 3.G3/8 and G1/2 connector screws available.
 4.Microswitch contact:SPDT(1ab)(2ab) for both 1-contact and 2-contact versions.
 Pointer contact:SPST(1a)(2b) for both 1-contact and 2-contact versions and Those with relay:SPDT(1ab) for 1-contact version and SPST(2a) for 2-contact version.
 5.JIS C4505 industrial microswitches are used.
 6.Glycerin-filled 881EE is available.

Model Coding for Sanitary Pressure Gauges

Model	1	2	3	4	5	6	7	8	9	Description
										Sanitary Pressure Gauge
										Homogenizer Pipe-Seal Pressure Gauge
										Homogenizer Diaphragm-Seal Pressure Gauge
Connection			J							Ferrule
			K							Union Screw
			L							Cap Nut
			M							Flange
			N							Screw
			P							Split Flange
Casing				A						Type A
				B						Type B
				F						Inverse-Screw Type
Installation					D					Non-Capillary
					L					Capillary(with lead)
Size					4					75
					5					100
Materials									1	SUS316+SUS316L

HOW TO ORDER

- Follow the Model Coding for Sanitary Pressure Gauges with Electric Contacts. Specify the nominal connector size. (Page.4)
- Specify the capillary length for capillary version.
- Also specify the pressure range.
- State so, when a damper is needed.

Model Coding for Sanitary Pressure Gauges with Electric Contacts

Contact	ME	EE	J	L	N	K	M	A	B	D	L	5	8	1	2	Description
																With Microswitch
																With Pointer Contact
Pressure Sensor			J													Ferrule
			L													Cap Nut
			N													Screw
			K													Union Screw
			M													Flange
Indicator Type								A								Type A
								B								Type B
Installation										D						Non-Capillary
										L						Capillary
Indicator Size												5				100
												8				150
Number of Contacts														1		Single Contact
														2		Double Contact

Sanitary Pressure Transmitters

Applications

These pressure transmitters are ideal for the food, pharmaceutical, cosmetic, and other industries where hygiene and safety for health must come first. The level transmitters and differential-pressure level transmitters are perfect for measuring liquid levels in the tank.

Features

1. Hygienic, Harmless

The stainless wet part does not spoil the quality or flavor of a fluid being measured.

Medium liquids are safe and harmless to health even if used as food additives.

No fluid sticks or residues in the gauge.

2. Easy to clean

The waterproof casing can be cleaned with high-pressure shower or hot water.

3. Heatproof

The diaphragm withstands working temperatures of up to 140 °C and is designed to allow only very little temperature drift.

4. Reliable

These pressure transmitters have proved high reliability, either in the diffusion-type semiconductor sensor or strain gauge.

5. A small transmitting unit incorporates a transducer (amplifier) to output 4 to 20mA DC signals.

6. Stable to Temperature Changes

These level transmitters can perfectly compensate temperature changes caused by steam cleaning of the tank or by other heat sources.

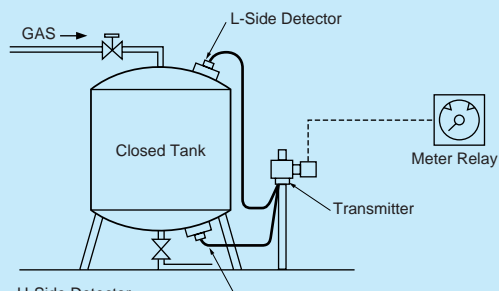
7. Zero span adjustments

The zero position and span should be adjusted at a working temperature for measurement with high accuracy.

Note:

1. When the gauge is used in an ambient temperature range of 20 ± 10 °C, a zero adjustment would help maintain the user's tolerance.

An Application of Sanitary Differential-Pressure Level Transmitter



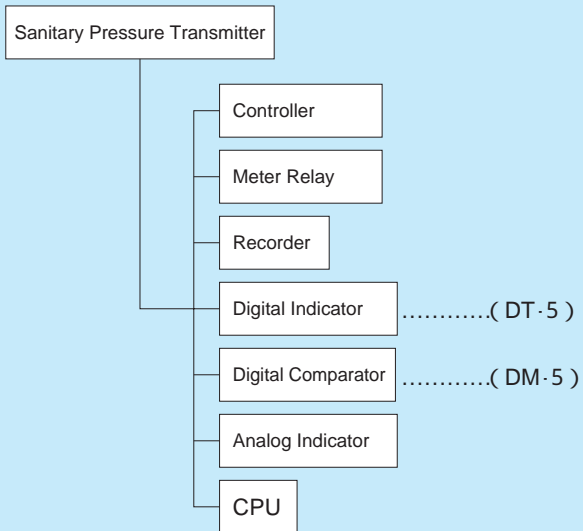
H-Side Detector
(The transmitter works the detector on the H side alone for open-top tanks.)

Scales are available for capacity (m^3), weight (t), or liquid level (cm).

The weight scale can be used even if the liquid's specific gravity changes.

Unsymmetrical graduation is available to match the inside shape of the tank.

An Example of Combining a Sanitary Pressure Transmitter and Instruments.



DT-5 Type

Standard Specifications for Manufacturing Sanitary Pressure Transmitters

Item	Model	Connection Type	Installation	Casing	Indication	Nominal Connector Size	Diaphragm Diameter	Application	Model	
Pressure Transmitters	MS -N·J	Ferrule J-Type	Non-Capillary	Stem	None	IDF	1½S	For fastening ferrule clamps	MS -N J	
	MS -E·J		Capillary	100 Type B	Yes		2S		47	MS -E J
	MS -C·J			Square	None		2½S			MS -C J
	MS -Y·J			Waterproof	None		3S			MS -Y J- -
	MS -N·L	Cap Nut L-Type	Non-Capillary	Stem	None	IDF DIN (Rd)	1½	For male screws	MS -N L	
	MS -E·L		Capillary	100 Type B	Yes		2		47	MS -E L
	MS -C·L			Square	None		2½			MS -C L
	MS -Y·L			Waterproof	None		72			MS -Y L- -
	MS -N·N	Screw N-Type	Non-Capillary	Stem	None	IDF DIN (Rd)	½	For cap nuts	MS -N N	
	MS -E·N		Capillary	100 Type B	Yes		2		47	MS -E N
	MS -C·N			Square	None		2½			MS -C N
	MS -Y·N			Waterproof	None		72			MS -Y N- -
Level Transmitter	MSC-N-M	Flange M-Type	Non-Capillary	Stem	None	JIS 5K 65A JIS 10K 50A or over	72	For open-top tanks	MSC-N2 M	
Differential Level Transmitter	MDC-Y-M	Flange (L & H) M-Type	Capillary	Waterproof	None	JIS 5K 65A JIS 10K 50A or over	72	For closed tanks with gas pressures on liquid level	MDC-Y M	

- The level transmitter measures the liquid level in an open-top tank, and the differential level transmitter, that in a closed tank.
- Ferrule models with pressure ranges of 2.5 MPa or over are not available.
- A heat radiation fin is available for the models with pressure ranges below 0.6MPa, if they are used in operation temperatures exceeding 50 .
- Cylinder type B waterproof construction satisfies Class 3, JIS F8001 and that of Waterproof type, Class 1 of the same standards.
- Union-screw (K-type) and flange (M-type) pressure transmitters are available.
- 24 homogenizer diaphragm-seal transmitters 0 to 10, 0 to 50MPa are available. (See Non-Standard Type on P.12)

HOW TO ORDER

- Specify the input power source, output signals, conduit outlet, and fixtures in the boxes of the model coding.
- Specify the nominal connector size, capillary or non-capillary, pressure range, connection method, and capillary length.
- Specify the height difference, if any, between the pressure sensor and the transmitter. Specify the distance between H and L pressure sensor for differential-pressure level transmitters.
- Also specify other requirements, if any.


Item	Model	Pressure Range MPa	Transducing Method	Conduit Outlet	Connection	Other Standard Specifications												
Pressure Transmitters	MS -N·J	- 0.1 ~ 0 ~ 0.1 ~ 0.2 ~ 0.3 ~ 0.4	Diffusion-type semiconductor sensor	Cable Conduit female JIS 15C Gland	4-line or 2-line	Electric Characteristics Connection and Power Source 2-line 24V DC 4-line 100/110V AC, 50/60Hz Rated Output 4 to 20mA (max. load 600) 0 to 10mV (resistance 10) 1 to 5V (resistance 250) Zero Adjustment ± 10% F.S Span Adjustment ± 10% F.S Insulation Resistance 100M at 50V DC Power Consumption approx. 2.5VA General Characteristics Maximum allowable Temperature at Diaphragm 160 Operation Temperature Range - 10 to +140 Ambient Temperatures and Humidity - 5 to +40 , below 85% RH Capillary Length max. 3m Medium Liquids Silicone Oil Wet Part Material SUS316(Diaphragm SUS316L) Allowable Overpressure 200% Accuracy ± 1.6% F.S. at 20 Reproducibility ± 0.5% F.S. Temperature Characteristics of Diaphragm Temperature variation coefficient/1												
	MS -E·J						- 0.1 ~ 0 ~ 0.1 0 ~ 0.2 0 ~ 0.3 0 ~ 0.4 0 ~ 0.5 0 ~ 0.6 0 ~ 1 0 ~ 1.5 0 ~ 2 0 ~ 2.5 0 ~ 3.5 0 ~ 5	Strain Gauge										
	MS -C·J																	
	MS -Y·J																	
	MS -N·L	Diaphragm diameter in parentheses.	Diffusion-type semiconductor sensor															
	MS -E·L																	
	MS -C·L																	
	MS -Y·L																	
	MS -N·N	Diaphragm diameter in parentheses.	Diffusion-type semiconductor sensor															
	MS -E·N																	
	MS -C·N																	
	MS -Y·N																	
Level Transmitter	MSC-N-M	0 ~ 20kPa } 0 ~ 50kPa	Diffusion-type semiconductor sensor			<table border="1"> <tr> <th>Diaphragm diameter</th> <th>Indicator Yes</th> <th>Indicator None</th> </tr> <tr> <td>35</td> <td>0.15kPa</td> <td>0.08kPa</td> </tr> <tr> <td>47</td> <td>0.1 kPa</td> <td>0.06kPa</td> </tr> <tr> <td>72</td> <td>0.07kPa</td> <td>0.03kPa</td> </tr> </table> In case the difference in height between the suppression pressure receiving part and the transmitter is very large (out of ± 120%), please specify it.	Diaphragm diameter	Indicator Yes	Indicator None	35	0.15kPa	0.08kPa	47	0.1 kPa	0.06kPa	72	0.07kPa	0.03kPa
Diaphragm diameter	Indicator Yes	Indicator None																
35	0.15kPa	0.08kPa																
47	0.1 kPa	0.06kPa																
72	0.07kPa	0.03kPa																
Differential Level Transmitter	MDC-Y-M	0 ~ 10kPa } 0 ~ 50kPa	Diffusion-type semiconductor sensor			Specifications are same as above, except: 1) Capillary length is the same (max. 5m) for L and H. 2) One-Sided Pressure Tightness 150% F.S. 3) Standard Pressure Tightness 50kgf/cm ² 4) Temperature Characteristics (Diaphragm) 0.01KPa/1 (at same temperature for L and H) 5) Reproducibility : 0.5% F.S. 6) Suppression : Adjustable to range width in both positive and negative directions.												

Model Coding for Sanitary Pressure Transmitters

No.	M															Description
-		S														Sanitary Pressure Transmitter
-		D														Differential-Pressure Transmitter
-		S														Strain Gauge
-		C														Diffusion Semiconductor Sensor
1																Stem
																100B
																Square
																Waterproof
2																24V DC
																100/110V AC
																Other
3																0 ~ 10mV DC
																4 ~ 20mA DC
																1 ~ 5V DC
																Other
4																J
																L
																N
																K
																M
																P
5																C 4
																C 6
6																2 F
																4 W

Specify Items 5 and 6 only for the MST-Y and MDC-Y (Waterproof).

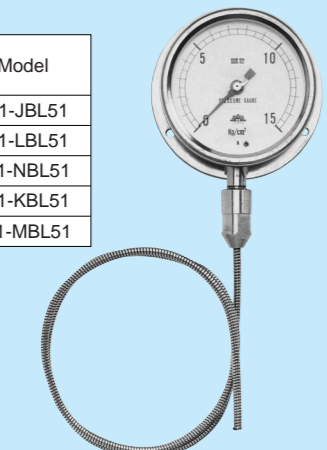
Non-Capillary Type




Model	Size	D	b	H MAX
881-JAD41	75	83	44	58
881-JAD51	100	107	49	83

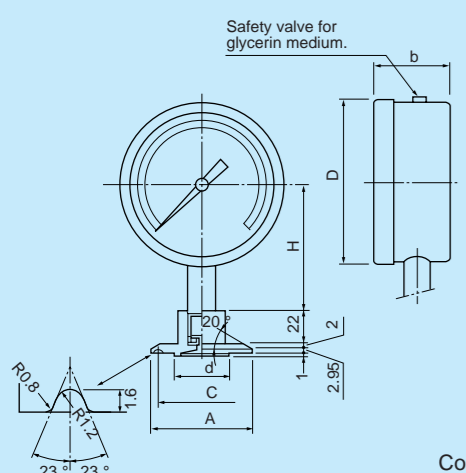
Capillary Type Indicator

Model
881-JBL51
881-LBL51
881-NBL51
881-KBL51
881-MBL51

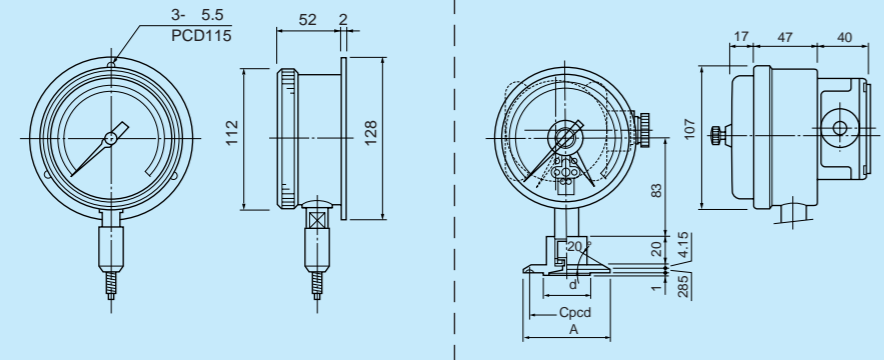


**Pointer-Contact Type
881-EE-JAD51**






Safety valve for glycerin medium.

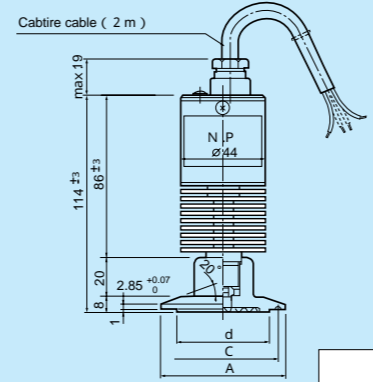


Connection types and dimensions are shown below.

Stem



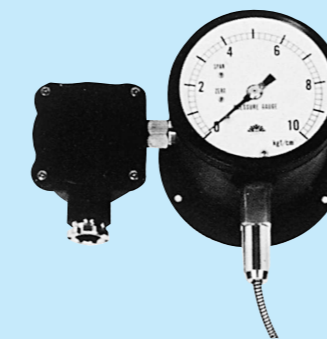
Cable cable (2 m)



Model
MS -N2 J
MS -N2 N
MS -N2 L

2-WIRE CABLE R E D+ DC24V
CABLE BLACK- DC24V POWER SOURCE
4-WIRE CABLE R E D+ DC24V POWER SOURCE
BLACK- DC4 - 20mA OUT PUT
WHITE -
GREEN -

Capillary Type Indicator

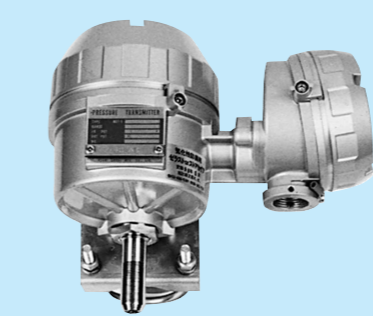


ZERO.SPAN ADJ 3- 5.5 PCD115
Mounting Flange Thickness 2
100 Depth

Model
MS -E J
MS -E N
MS -E L

Connection types and dimensions are shown below.

Capillary, Waterproof




NAME PLATE SET COVER
TERMINAL BOX
CONDUIT

Model
MS -Y J - -
MS -Y N - -
MS -Y L - -

Connection types and dimensions are shown below.

Capillary, Square

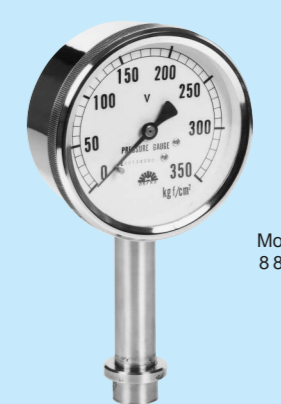


ZERO ADJ 108
SPAN ADJ 90
Name Plate
Marine cable feedthrough Type A, 20 A

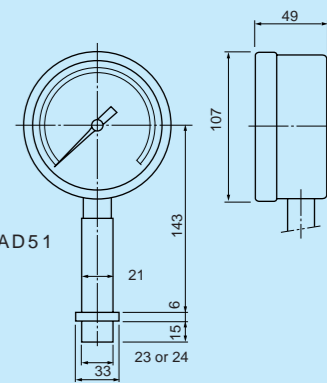
Model
MS -C J
MS -C N
MS -C L

Connection types and dimensions are shown below.


Homogenizer Diaphragm-Seal Pressure Gauge



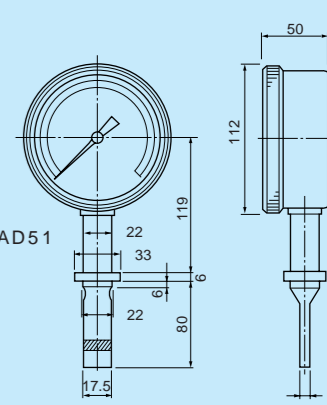
Model 883-PAD51



Homogenizer Pipe-Seal Pressure Gauge




Model 882-PAD51

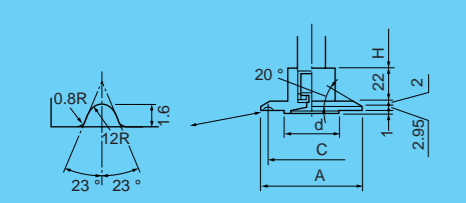


Connection Types and Dimensions

Ferrule Type

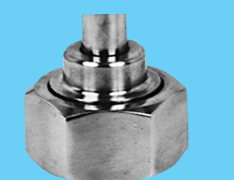


Non-Capillary

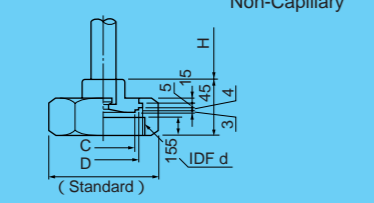


Nominal Ferrule Size	Diaphragm Diameter	A	C	d
1S	35 (mm)	50.5	43.5	35
1½S	35	50.5	43.5	35
2S	47	64	56.5	47
2½S	47	77.5	70.5	47
3S	72	91	83.5	72

Cap Nut Type




Non-Capillary



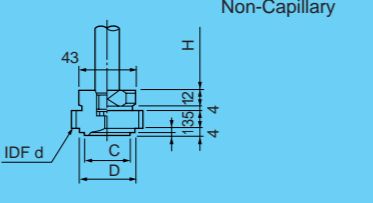
Common with Cap Nut and Screw Types

Nominal Screw Size	Diaphragm Diameter	C	D	L x M Standard
1½-8N	35 (mm)	35	42.5	55 x 61
2-8N	47	47	56	70 x 81
2½-8N	47	47	69.7	85 x 98

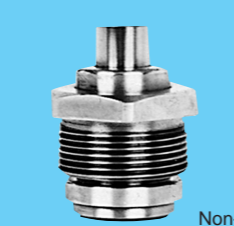
Screw Type



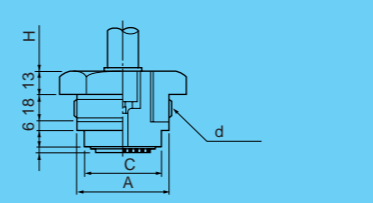
Non-Capillary



Union Screw Type




Non-Capillary

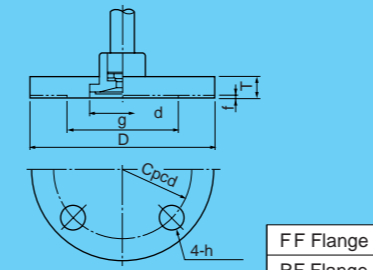


Nominal Screw Size	Diaphragm Diameter	C	D
1½	35 (mm)	38	44

Flange Type



Non-Capillary



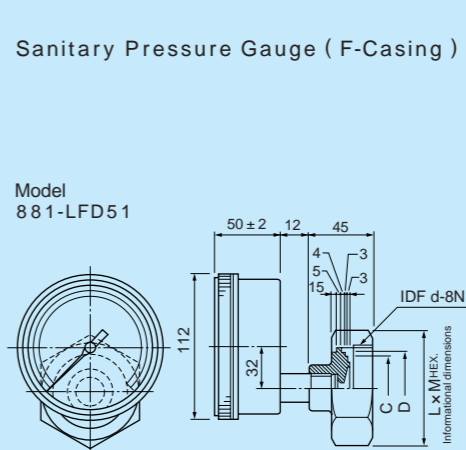
Nominal Pressure	Nominal Size	Diaphragm Diameter (mm)	d	D	C	n	f	g	T
JIS10K JIS20K	10	35	35	90	65	15	1	46	12 14
	15			95	70				51 12 14
	20			100	75				56 14 16
	25	47	50	125		19	1	67	15 16

FF Flange ——— Solid line
RF Flange ——— Two-dot chain line

Sanitary Pressure Gauges

Sanitary Pressure Gauge (F-Casing)

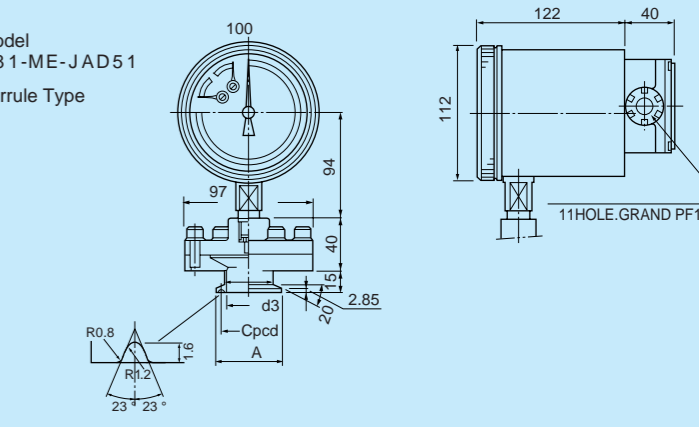
Model 881-LFD51



See the left for the diaphragm dimensions of ferrule, screw, union screw, and flange type gauges.

Sanitary Pressure Gauge with Microswitch

Model 881-ME-JAD51
Ferrule Type



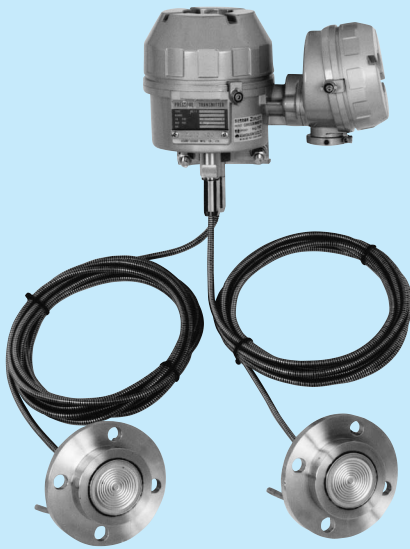
Model 881-ME-LAD51
Cap Nut Type

Nominal Ferrule Size	A	C	ds
1½	50.5	43.5	35
2	64	56.5	48
½	34	27.5	22
1	50.5	43.5	22
2½	77.5	70.5	59.5

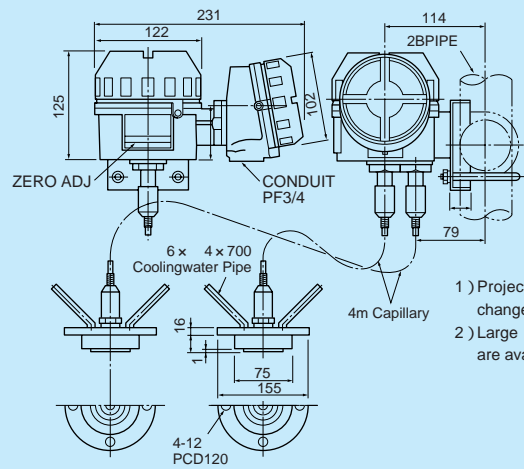
Sanitary Level Transmitter

Differential Level Transmitter (For Closed Tanks)

JIS10K50A Flange (with water-cooled pipe)



Model
MDC-Y•M

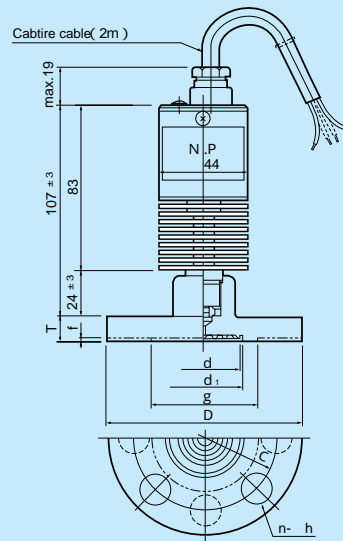


- 1) Projection height () can be changed to order.
- 2) Large flanges than this diagram are available.

Level Transmitter (For Open-Top Tanks)

JIS10K80A Flange

Model
MSC-M•M



- 1) Dimensions in parentheses can be changed to order ; radius to bolt hole (E) must be 115mm or over.
- 2) The 95 version is available with a same diameter projection.

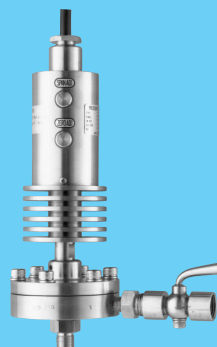
Sanitary Pressure Transmitter (Others)



PRESSURE TRANSMITTER WITH INDICATOR



SMALL PRESSURE TRANSMITTER



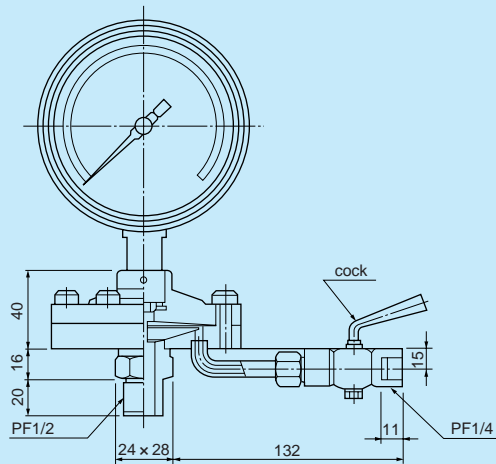
PRESSURE TRANSMITTER WITH COCK



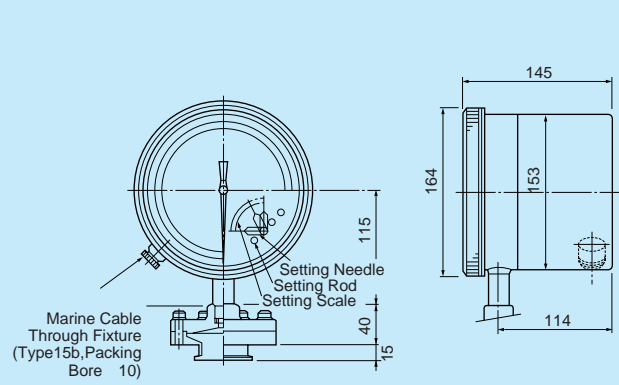
HOMOGENIZER TRANSMITTER

Non-Standard Type

Sanitary Pressure Gauge (with cock)



Special Sanitary Pressure Gauge with Photoelectric Switch



Specifications subject to change without notice.

