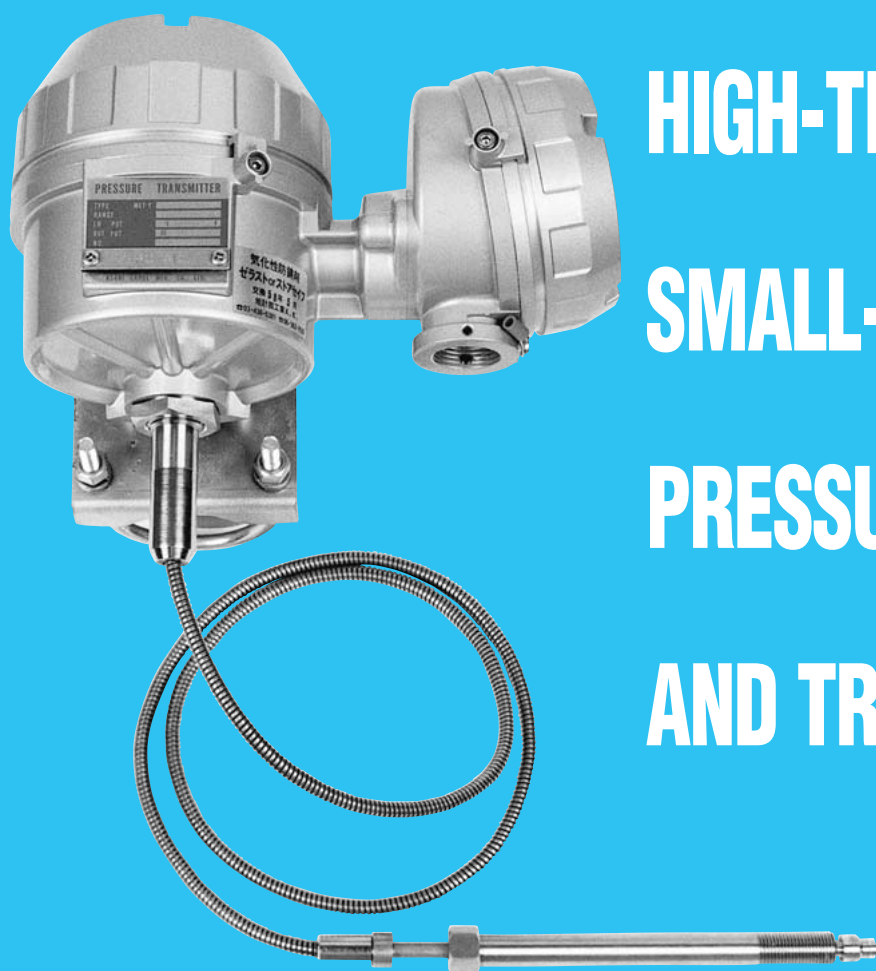


CATALOG No. 2006

MODEL 810, 811, 812, 813

MODEL MES, MEJ, TTS,
TTJ, MAS

HIGH-TEMPERATURE SMALL-DIAPHRAGM-SEAL PRESSURE GUAGES AND TRANSMITTERS



**HIGH-TEMPERATURE
SMALL-DIAPHRAGM-SEAL
PRESSURE GUAGES
AND TRANSMITTERS**



ASAHI GAUGE MFG. CO., LTD.
JAPAN

High-Temperature, Small-Diaphragm-Seal Pressure Gauges and Transmitters

Applications

These pressure gauges are mainly used for measuring and controlling the pressure of high-temperature and high-viscosity fluids in the petrochemical, textile, plastic processing, and other industries.
The 8 version is perfect for measuring the pressure of melted resin for extrusion molders.

Features

- 1) Accurate Fluid Measuring**
These gauges efficiently measure pressures of high-temperature and high-viscosity fluids. A small diaphragm in the gauge receives the pressure of the process medium and transmits it through a liquid pressure medium to the Bourdon tube for indication.
- 2) Tough Diaphragm**
The tough diaphragm resists accidental breakage; this rugged construction is a product of Asahi's long experience with pressure gauges.
- 3) Non-Mercuric Pressure Mediums**
Gauges with diaphragms 18 mm or more in diameter employ stable non-mercuric liquids for the pressure medium.
- 4) Small Temperature Error**
The gauge design minimizes measuring errors due to ambient temperature changes even in a high temperature range.
- 5) Effective Linkup with Transmitters**
These gauges can be easily incorporated into a strain-gauge pressure transmitter.

Standard Manufacturing Specifications

Model	Diaphragm Diameter (mm)	Installation	Connector Screw ¹	Indicator			MODEL	Wetted Material ²	Pressure Range... Lowest Graduation MPa	Graduation Extent	Accuracy Normal Temperature	
				Size(mm)	Shape	Casing						
810	8 ₃	Capillary Type	G ¹ / ₄ Union Joint	H130 x W108 x D59 Box	Wall-Mounted	ADC Black	810-CV2	SUS316	0 - 10...20 0 - 20...20 0 - 30...30 0 - 35...35 0 - 50...25 0 - 70...35	60°	± 3% F.S	
			1/2-20 UNF Union Joint									810-CVU
811	15	Non-Capillary Type	G ¹ / ₂ Union Joint	100	A	ADC Black	811-AN45	SUS316	0 - 20...40 0 - 25...50 0 - 30...30 0 - 35...35 0 - 50...50 0 - 70...35	270°	± 2.5% F.S	
		Capillary Type		100	B		811-BV45					
				100	D		811-DV45					
812	18	Non-Capillary Type	G ³ / ₄ Union Joint	100	A	ADC Black	812-ANG5	SUS316	0 - 5...50 0 - 7...35 0 - 10...50 0 - 15...30 0 - 20...40 0 - 25...50 0 - 30...30 0 - 35...35 0 - 50...50 0 - 70...35	270°	± 1.6% F.S	
				150			812-ANG8					
				100			812-DNG5					
		Capillary Type	G ³ / ₄ Union Joint	100	B		812-BVG5					
				150	812-BVG8							
				100	D		812-DVG5					
813	24	Non-Capillary Type	G1 Union Joint	100	A	ADC Black	813-ANH5	SUS316	0 - 5...50 0 - 7...35 0 - 10...50 0 - 20...40 0 - 30...30 0 - 35...35 0 - 50...50	270°	± 1.6% F.S	
				150			813-ANH8					
		Capillary Type		G1 Union Joint	100		B					813-BVH5
					150		813-BVH8					

1. Custom screws are also available.
2. Hastelloy can also be used for the diaphragm.
3. A 10 diaphragm can be made to order, with a G 3/8 union joint.

Medium Liquid	Max Allowable Temperature	Temperature Error at Diaphragm (20 - 80°F.S)	Capillary Length	Weight about 1 kg	Contact
Mercury	350	0.2MPa / 100deg	3m Max.	1.8	Without Contact
Mercury			3m Max.	2.0	WITH POINTER CONTACT
Mercury or Non-Mercuric	Mercury 350	Mercury 0.15MPa / 100deg Non-Mercuric 0.25MPa / 100deg	3m Max.	} 2.2 2.6	With Pointer Contact, Microswitch (150,1 Contact), Switch, and Relay
	Non-Mercuric 300				

When Ordering Indicators: High-Temperature Small-Diaphragm-Seal Pressure Gauges.

- (1)Specify the model number, pressure range, and (for the capillary version) the capillary length.
- (2)Specify the medium liquid, mercury or non-mercurics, for the 18 or 24 versions.
- (3)When non-standard diaphragms are required, specify the required dimensions for each part.

Example
18, Capillary Type, G³/₄ Union Screw
Size 100, Pressure Range 0 ~ 25MPa
812-BVG5 x 0 ~ 25MPa
Lead=3m
g=10 e=6
h=150 f=40

Standard Specifications for Manufacturing Pressure Transmitters and Transducers

(1) General Characteristics

Item	Amplifier	Diaphragm Diameter	Installation	Connector screw 1	Thermo-couple 2	Connector 3	Model	Drawing No.	Indicator	Indicator Graduation 4	Pressure Range MPa	Accuracy (Linearity/Hysteresis) at 25 Scale 20 to 80%
Pressure Transmitters	Incorporated	8 6	Capillary (with lead)	G ^{1/4} Union Joint 1/2-20UNF Union Joint	—	8	MES-Y A- -	01	--	--	± 1%F.S	
							MES-C A-K20	05	--	--		
							MES-E A-S4	03	100	90° Graduated		
							MES-B A-	02	150	240° Graduated		
							MES-Y C- -	01	--	--		
							MES-C C-K20	05	--	--		
		15	G ^{1/2} Union Joint	8	MES-B C-S4	02	--	--	0 ~ 5	± 1%F.S		
					MES-Y D- -	01	--	--	0 ~ 7			
					MES-C D-K20	05	--	--	0 ~ 10			
					MES-B D-S4	02	--	--	0 ~ 15			
					MES-Y E- -	01	--	--	0 ~ 20			
					MES-C E-K20	05	--	--	0 ~ 25			
18	G ^{3/4} Union Joint	8	Yes	MES-B D-S4	02	--	--	0 ~ 30	± 1%F.S			
				MEJ-Y D- -	01	--	--	0 ~ 35				
				MEJ-C D-K20	05	--	--	0 ~ 50				
				MEJ-B D-S4	02	--	--	0 ~ 70				
				MES-Y E- -	01	--	--	0 ~ 3				
				MES-C E-K20	05	--	--	0 ~ 5				
24	G1 Union Joint	8	—	MES-B E-S4	02	--	--	0 ~ 10	± 0.75%F.S			
				MES-Y E- -	01	--	--	0 ~ 25				
				MES-C E-K20	05	--	--	0 ~ 35				
				MES-B E-S4	02	--	--	0 ~ 50				
				MES-Y E- -	01	--	--	0 ~ 35				
				MES-C E-K20	05	--	--	0 ~ 50				

1) Custom screws are also available. A flange-mounted version can be made to order for the 24-diaphragm models.

2) Custom thermocouples are available for the 8 (10), 15 and 24 versions.

3) The 8p transducer connector has a calibration resistor for inspection. (See p.10.)

4) A digital indicator is also made to order.

6) Strain-gauge type transmitters and transducers, with a 10 diaphragm, are made to order.

7) A non-capillary version is available without lead.

8) The S42, S43 and S43J models are made to order with non-mercuric pressure liquids. (Characteristics may change.)

7 when the rated output of trasducer reads 3.33mV/V, 8 when 2mV/V.

(2) Electric Characteristics

Item	Wiring Method	Power Source 1	Rated Output	Load Resistance (Impedance)	Power Consumption	Zero Adjustment Range	Span Adjustment Range	Bridge Resistance
Pressure Transmitter	2-WIRE	DC24V	4 ~ 20mA	500	Max. 2.5VA	± 10%F.S	± 10%F.S	—
			4 ~ 20mA	600				
	4-WIRE	AC100/110V AC200/220V	0 ~ 10mV	(10)				
			1 ~ 5V	(250)				
Pressure Transducer	—	—	2 or 3.33mV/V	—	0.3VA	—	—	350

1 custom 4-wire, 24V-DC version is available.

Reproducibility	Pressure Medium	Max. Allowable Temperature	Ambient Temperature & Humidity	Wetted Material	Capillary Length (Standard)	Temperature Characteristics		Allowable Pressure Excess	body Finish	Transducing Method 5	Explosion-Proof Specifications (d2G4)	
						Transducer	Main body				Without Indication	With Indication
± 0.2% F.S	Mercury	350	- 20 ~ 60 85%RH below	SUS316 Diaphragm SUS316L	2m Max.3m	Zero Drift 0.2MPa / 100deg.	Zero Span 0.03% /	200% but 150% at 70MPa	MES-Y: Silver Gray, for outdoor use Other: Black, mainly for indoor use	Strain Gauge	AdS-MES-Y All Pressure Range Certified With Frame Arrester	AdS-MES-Y All Pressure Range Certified With Frame Arrester
						Mercury Zero Drift 0.15MPa / 100deg.					150%	Indicator Graduation: 270°
± 0.2% F.S	Mercury or Non-Mercuric	400	- 20 ~ 60 90%RH below	SUS316 Diaphragm SUS316L	2m Max.3m	Mercury: 350 Non-Mercuric :300	Zero Drift 0.2MPa / 100deg.	200% but 150% at 70MPa	Transducer: SUS, Drip Proof	Strain Gauge	—	—
						At pressure application					0.02% / Strain Gauge Zero Span	—

5) 15transducer are available custom-made.

8) The S42, S43 and S43J models are made to order with non-mercuric pressure liquids. (Characteristics may change.)

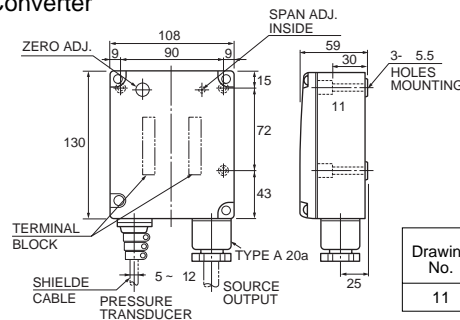
Impressed Bridge Voltage	Zero Unbalanced	Calibration Resistance	Insulation Resistance	Thermocouple			Conduit Outlet	
10V Recommended	± 5%F.S	80%F.S ± 0.5%	50V DC, over 100M	Flexible Cable	Variations	Connectors	Symbols	Description
							C4	GC1/2
							C6	GC3/4
							P10	Pressure-Tight Packing (8~10)
0.75m	K or J	with male and female connectors	P12	Pressure-Tight Packing (10~12)				

Pressure Converter (Amplifier Box)

Item	Model	Drawing No.	Input Power Source	Output Signals	Connecting Method ^{1,2}	Wiring Method	Zero Adjustment	Span Adjustment
Pressure Converter	MAS-C449	11	AC 100/110V 50/60Hz	DC 4 ~ 20mA	Terminal Connection with Calibration 7P or 8P	4-Wire	± 10%F.S	± 10%F.S
	MAS-C359		DC 24V	DC 1 ~ 5V		4-Wire		
	MAS-C249		DC 24V	DC 4 ~ 20mA		2-Wire		

- 1.The Transducer and the amplifier can be linked with a connector if the cable length between them is fixed.
- 2.In that case, adjust the instruments for the resistance, that varies in accordance with the cable length.

Converter



Drawing No.	Model
11	MAS-C

When ordering

Pressure Transmitters

- (1)Specify power source, output signals, and conduit fixtures in accordance with the model coding.
- (2)Also specify connector screws, diaphragm shapes and dimensions, indicator sizes (for Type B only), pressure ranges, and capillary lengths.
- (3)Indicate the pressure medium; mercury or non-mercurics, for Type 18 or 24.
- (4)When the explosion-proof version is required, so state, specifying with or without indicator.
- (5)Specify h, e, g, and f for the diaphragm dimensions.

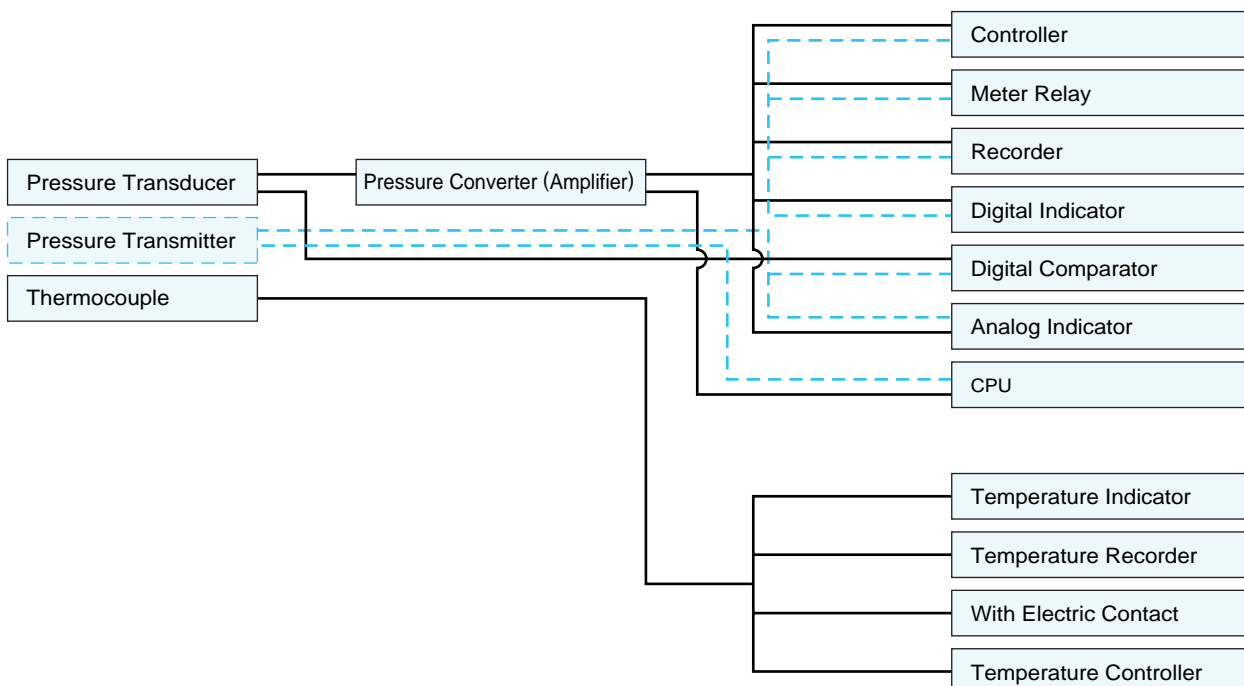
Pressure Transducers

- (1)Specify model numbers, pressure ranges, connector screws, diaphragm shapes, dimensions(h, e, g, f), and capillary lengths (ℓ).
- (2)State so if a transducer cable is required, specifying cable length and the connection method; receptor or terminal.
- (3)State so if a convertor (amplifier) is needed, specifying the input power source.
- (4)Specify K or J for the thermocouple.
- (5)Specify 7P or 8P, standard, for the connector.

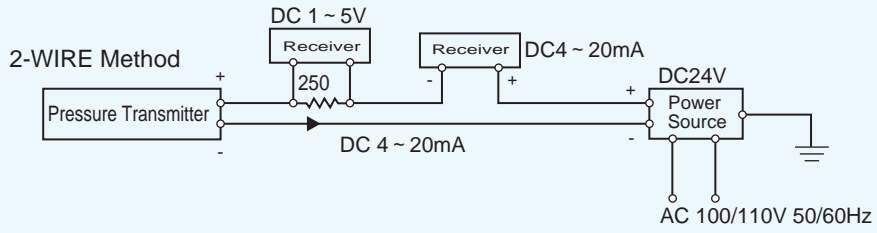
Model Coding for Pressure Transmitters

ME											Description
Transduction Format	S										Strain Gauge
	J										Strain Gauge with Thermocouple
Casing Variations		Y									Water-Proof (Without indication)
		C									square (")
		B									150 Screw Cap (With indication)
		E									100 Screw Cap (")
Power Source			2								24V DC(2-WIRE only)
			4								AC 100/110V
			8								AC 200/220V
Output Signals			4								DC 4 ~ 20mA
			5								DC 1 ~ 5V
			9								other
Diaphragm Diameter (mm)				A							8 Diaphragm
				C							15 Diaphragm
				D							18 Diaphragm
				E							24 Diaphragm
Conduit					C	4					1/2 Conduit
					C	6					3/4 Conduit
					P	10					Pressure-Tight Packing 8-10
					K	20					20a Through Fixtures for ships
					S	4					Water-Proof Terminal Box
					W	5					Water-Proof Connector
Fixtures							1	F			1B pipe Stand
							2	F			2B pipe Stand
							3	W			Wall-Mounting Holes
							4	W			Wall-Mounting Holes

Example of Combining Pressure Transmitter or Transducer with Instruments



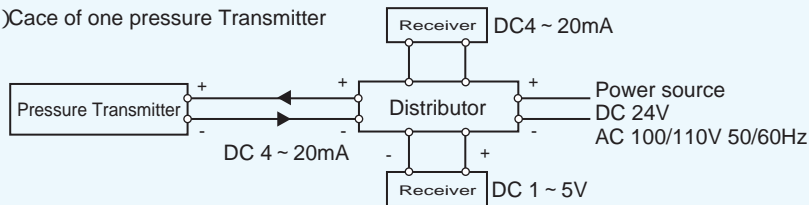
Wiring Examples



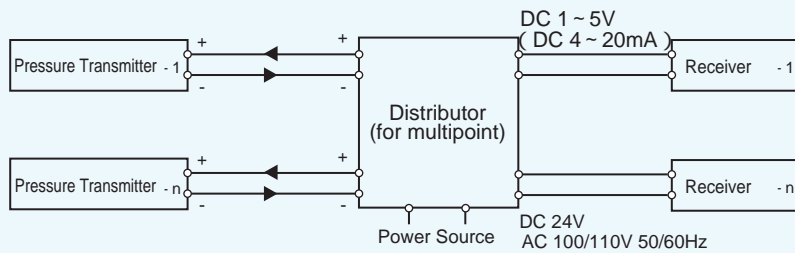
* N.B. Apply a standard 250-ohm resistance on the output side to convert a 4 to 20mA DC output into 1 to 5V DC

2. 2-WIRE Method (load resistance exceeding 600)

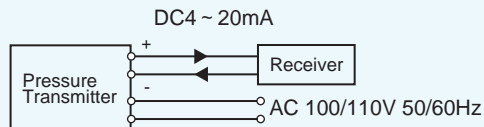
(1) Case of one pressure Transmitter



(2) Case of n pressure Transmitter



3. 4-WIRE Method



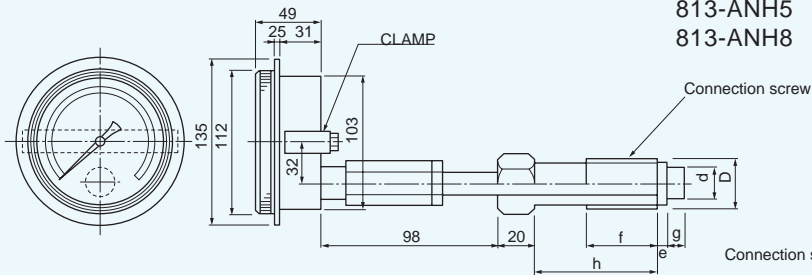
Terms Used Here

Terms	Symbol	Meaning
Impressed Bridge Voltage	V	Voltage impressed on the input terminal of a transducer. 6-8V recommended, 10V max.
Zero Unbalanced	% F.S	Output signals of a transducer, when, unloaded, a rated voltage is impressed on it.
Bridge Resistance		Resistance between input terminals, measured with output terminals open, unloaded, at a standard test temperature.
Insulation Resistance	M	Direct-current resistance (50V DC) between the transducer circuitry and the transducer main body.
Max. Allowable Temperature		A temperature range which can be impressed without any harmful, permanent changes to the transducer.
Calibration Resistance		Internal Calibration Resistance (Output can be measured at a given point without voltage impression.)

Indicator

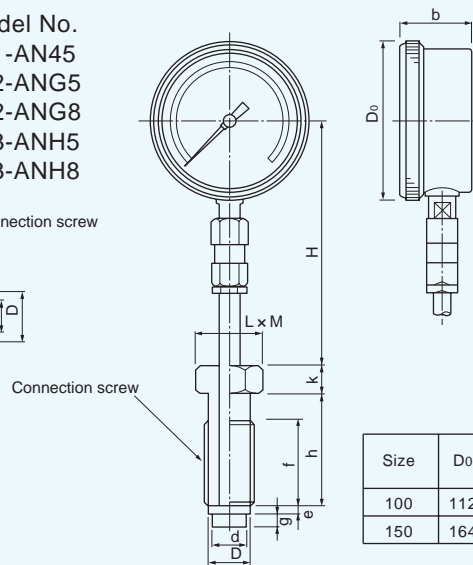
Non-Capillary 15, 18, 24

Model No.
811-DV45
812-DNG5



See the table on Page 10 for the diaphragm dimensions.

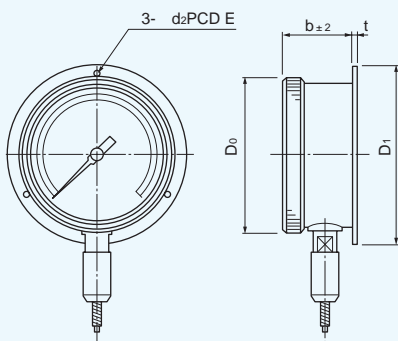
Model No.
811-AN45
812-ANG5
812-ANG8
813-ANH5
813-ANH8



Size	D ₀	b	H
100	112	50	155
150	164	52	180

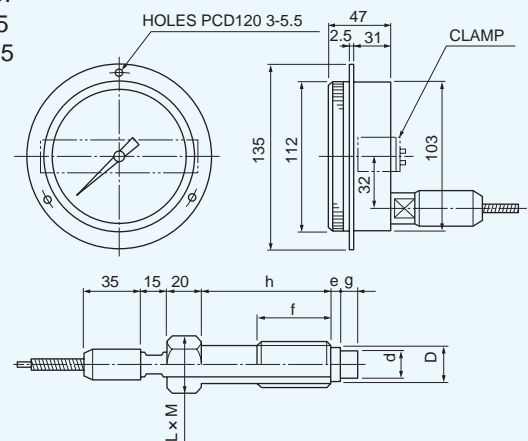
Capillary 8, 15, 18, 24

Model No.
811-BV45
812BVG5
812-BVG8
813-BVH5
813-BVH8

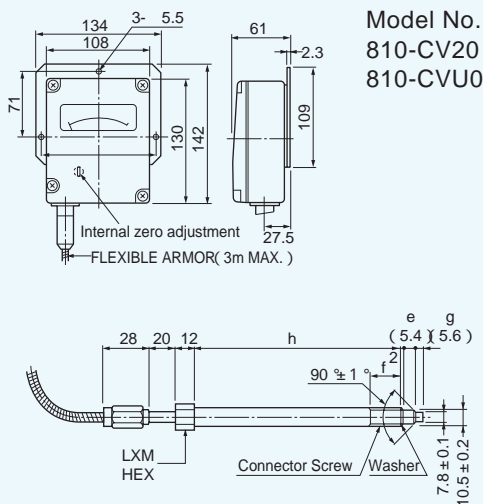


Size	D ₀	D ₁	b	t	d ₂	E
100	112	128	52	2.5	5.5	115
150	164	178	55	3	5.5	165

Model No.
811-DV45
812-DVG5



See the table on Page 10 for the diaphragm dimensions.

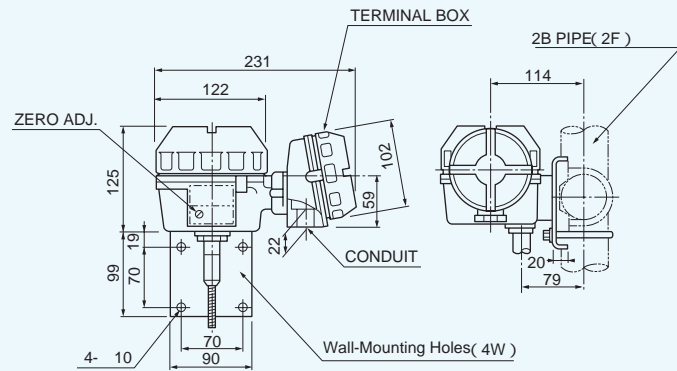


See the table on Page 10 for the diaphragm dimensions.

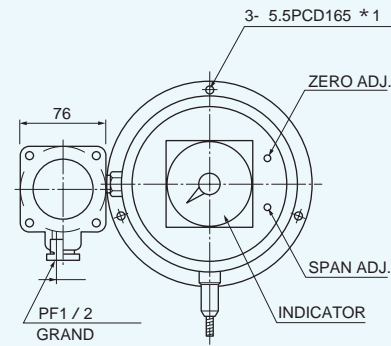


Pressure Transmitter

Drawing No.	Model	Diaphragm Diameter	Weight
01	MES-Y	8 (10) 15 18 24	about 3.5

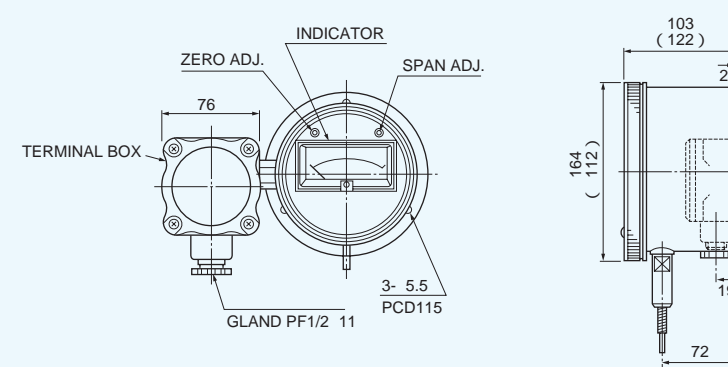


Drawing No.	Size	Model	Diaphragm Diameter	Weight
02	150	MES-B	8 (10) 15 18 24	about 3



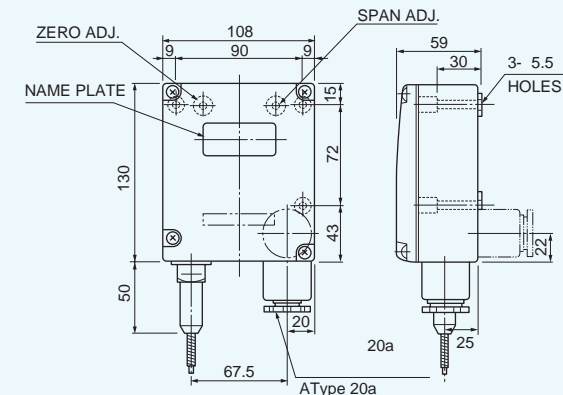
* 1 Available in the following specifications: transverse, 130 mm; vertical, 160 mm; installable with four 6.5 mm-diameter holes.

Drawing No.	Size	Model	Diaphragm Diameter	Weight
03	100	MES-E	8 (10) 15 18 24	about 2.5

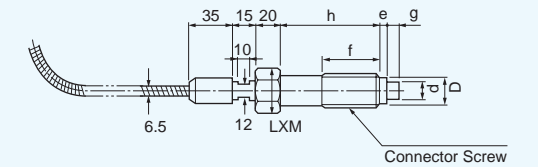


This is a side view of MES-B, and MES-E models. (figures in parentheses for MES-E)

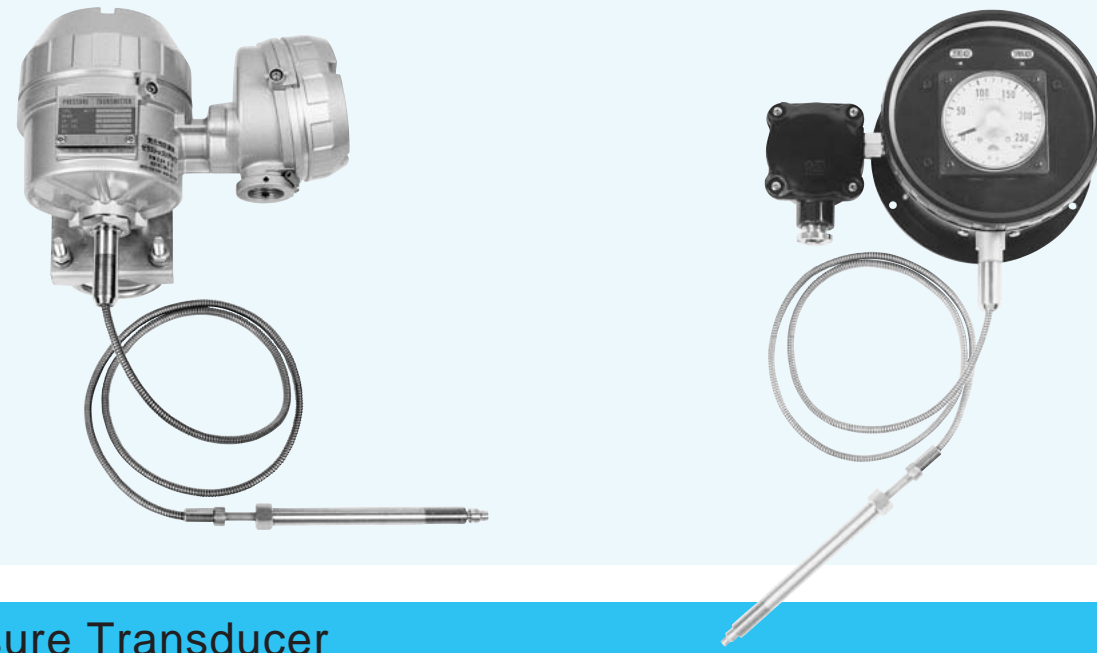
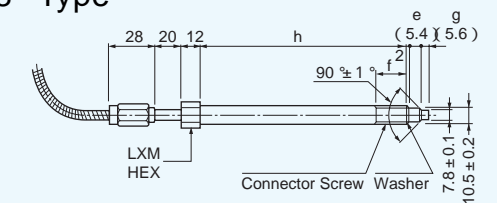
Drawing No.	Model	Diaphragm Diameter	Weight
05	MES-C	8 (10) 15 18 24	about 1.8



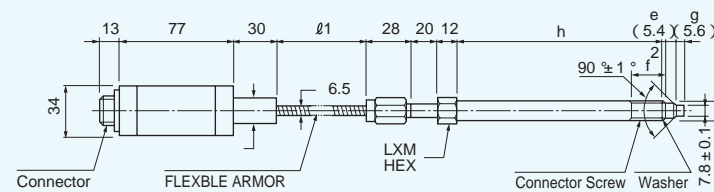
for 15,18,24 Type



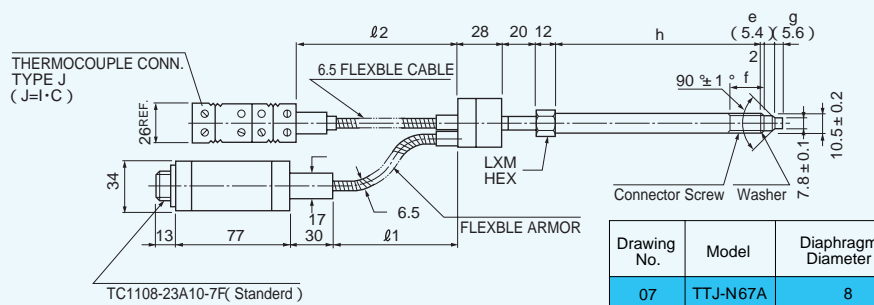
for 8 Type



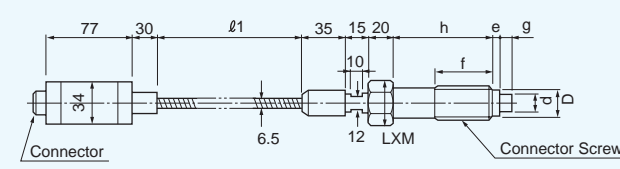
Pressure Transducer



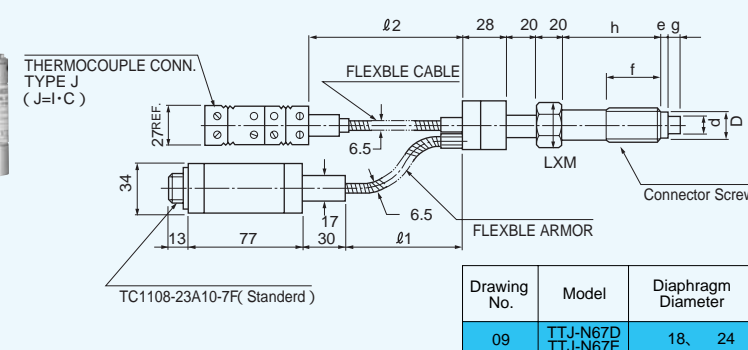
Drawing No.	Model	Diaphragm Diameter
06	TTS-N67A	8



Drawing No.	Model	Diaphragm Diameter
07	TTJ-N67A	8



Drawing No.	Model	Diaphragm Diameter
08	TTS-N67D TTS-N67E	18, 24



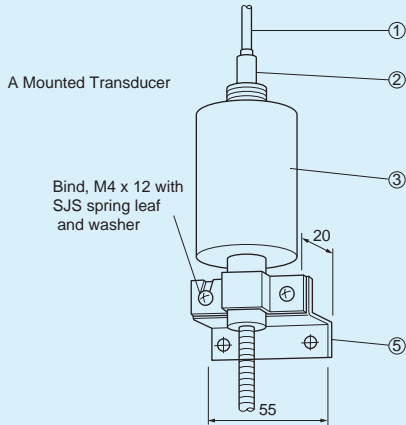
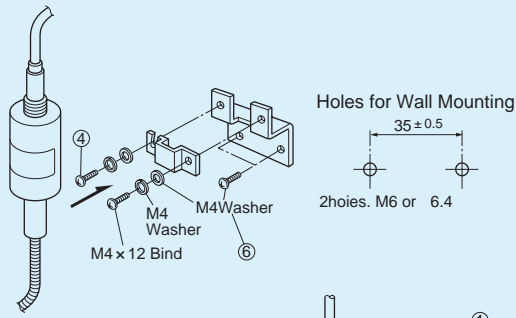
Drawing No.	Model	Diaphragm Diameter
09	TTJ-N67D TTJ-N67E	18, 24

Standard Diaphragm Dimensions

* 1 Diaphragm Diameter	8	15	18	24
Connector Screw	G 1/4 1/2-20UNF UNION	G 1/2 UNION	G 3/4 UNION	G 1 UNION
d	7.8 ±0.1	15 ±0.1	18 ±0.1	23.6 ±0.2
D	10.5 ±0.2	18 ±0.3	23.5 ±0.2	29.5 ±0.3
g	5.6	15	10	10
e	5.4	8	6	6
f * 1	22 35	35	45	45
h * 1	70 140 200 300 450	80 150	80 150 300	80 150 300
L x M	17 x 19	32 x 37	32 x 37	41 x 47
Lead length	ℓ1	460		
	ℓ2	240		

* 1 A gauge with a 10 mm-diameter diaphragm is made to order (connection screws, PF3/8, PF1/2).
* 2 Please specify the dimension in the box when ordering.

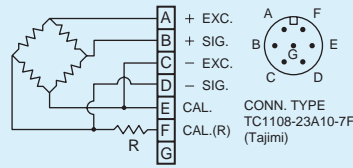
Mounting Example for Pressure Transducer



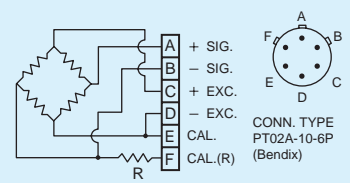
- 1. Cable
- 2. Plug (or Connector Plug)
- 3. Pressure Transducer Body
- 4. Clamp Screw
- 5. Fixture
- 6. Fixture Screw

Connector Wiring Diagram

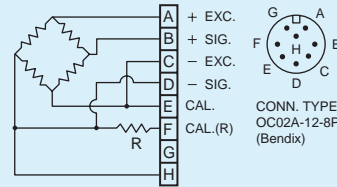
① 7P Standard Transducer



③ 6P Transducer

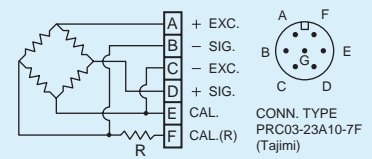


② 8P Standard Transducer



SIG. : Signal
 EXC. : Excitation
 CAL. : Calibration
 R : 80% Calibration Resistance

④ 7P Transducer



These specifications are subject to change without notice for improvement.

