

AT9000 Advanced Transmitter

Remote-sealed type of Absolute Pressure Transmitters

OVERVIEW

AT9000 Advanced Transmitter is a microprocessor-based smart transmitter that features high performance and excellent stability. Capable of measuring gas, liquid, and vapor, and liquid levels, it transmits 4 to 20 mA DC analog and digital signals according to the measured pressure.

It can also execute two-way communications between the communicator, thus facilitating self-diagnosis, range resetting, and automatic zero/span adjustment.

SFN, HART® and FOUNDATION Fieldbus are available.

* Refer to SS2-GTX00Z-0100 for FOUNDATION Fieldbus type for the items marked with [☆].

FEATURES

Excellent stability and high performance

- Long-term stability is proven in 500,000 installations worldwide.
- Unique characterization and composite semiconductor sensors realize excellent temperature and static pressure characteristics.

Remote communication

- Two-way communication using digital output facilitates self-diagnosis, range resetting, automatic zero adjustment, and other operations.



China RoHS

This device is used in the Oil & Gas, Petrochemical, Chemical, Pulp & Paper, Food & Beverage, Machinery, Steel/Metal & Mining, and Automobile industries and therefore does not fall under the China RoHS Legislation.

If this device is used in semiconductor manufacturing equipment, labeling on the device and documents for the China RoHS may be required. If such documents are required, consult an Azbil Corp. representative.

HART® is a registered trademark of the FieldComm Group.

FOUNDATION™ is a registered trademark of the FieldComm Group.

PRODUCT APPROVALS [☆]**FM Explosionproof for Division System/
Flameproof for Zone System (Code F1)**

Explosionproof for Class I, Division 1, Groups A, B, C and D; Class I, Zone 1, AEx d IIC

Dust-Ignitionproof for Class II, III, Division 1, Groups E, F and G

T5 $-40\text{ }^{\circ}\text{C} \leq T_{\text{amb}} \leq +85\text{ }^{\circ}\text{C}$

Hazardous locations

Indoor/Outdoor Type 4X, IP67

Factory sealed, conduit seal not required for Division applications

Caution - Use supply wires suitable for 5 °C above surrounding ambient

FM Intrinsic Safety (Code F2)

IS/I, II, III/1/ABCDEFGH/T4; $-40\text{ }^{\circ}\text{C} \leq T_{\text{amb}} \leq +60\text{ }^{\circ}\text{C}$;
80395278, 80395279, 80395280; Entity; TYPE 4X; IP67

I/0/AEx ia/IIC/T4; $-40\text{ }^{\circ}\text{C} \leq T_{\text{amb}} \leq +60\text{ }^{\circ}\text{C}$; 80395278,

80395279, 80395280; Entity; TYPE 4X; IP67

Entity Parameters: $V_{\text{max}} (U_i) = 30$ Volts, $I_{\text{max}} (I_i) = 100$ mA,
 $P_i = 1$ W, $C_i = 10$ nF, $L_i = 0.5$ mH

FM Nonincendive (Code F5)

NI/I/2/ABCD/T4; $-40\text{ }^{\circ}\text{C} \leq T_{\text{amb}} \leq +60\text{ }^{\circ}\text{C}$; 80395494; NIFW;
TYPE 4X; IP67

NI/I/2/IIC/T4; $-40\text{ }^{\circ}\text{C} \leq T_{\text{amb}} \leq +60\text{ }^{\circ}\text{C}$; 80395494; NIFW;
TYPE 4X; IP67

S/II, III/1/EFG/T4; $-40\text{ }^{\circ}\text{C} \leq T_{\text{amb}} \leq +60\text{ }^{\circ}\text{C}$;
80395494; NIFW; TYPE 4X; P67

Nonincendive Field Wiring Parameters:

$V_{\text{max}} (U_i) = 30$ Volts, $C_i = 10$ nF, $L_i = 0.5$ mH

**Combination of F1, F2 and F5 (Code F6)
ATEX Flameproof (Code A1)**

 0344

 KEMA 08ATEX0004

II 1/2 G Ex d IIC T6 $T_{\text{process}} = 85\text{ }^{\circ}\text{C}$
 $-30\text{ }^{\circ}\text{C} \leq T_{\text{amb}} \leq +75\text{ }^{\circ}\text{C}$ IP66/67

II 1/2 G Ex d IIC T5 $T_{\text{process}} = 100\text{ }^{\circ}\text{C}$
 $-30\text{ }^{\circ}\text{C} \leq T_{\text{amb}} \leq +80\text{ }^{\circ}\text{C}$ IP66/67

II 1/2 G Ex d IIC T4 $T_{\text{process}} = 110\text{ }^{\circ}\text{C}$
 $-30\text{ }^{\circ}\text{C} \leq T_{\text{amb}} \leq +80\text{ }^{\circ}\text{C}$ IP66/67

II 2 D Ex tD A21 IP66/67 T85 $T_{\text{process}} = 85\text{ }^{\circ}\text{C}$
 $-30\text{ }^{\circ}\text{C} \leq T_{\text{amb}} \leq +75\text{ }^{\circ}\text{C}$


II 2 D Ex tD A21 IP66/67 T100 $T_{\text{process}} = 100\text{ }^{\circ}\text{C}$
 $-30\text{ }^{\circ}\text{C} \leq T_{\text{amb}} \leq +75\text{ }^{\circ}\text{C}$

II 2 D Ex tD A21 IP66/67 T110 $T_{\text{process}} = 110\text{ }^{\circ}\text{C}$
 $-30\text{ }^{\circ}\text{C} \leq T_{\text{amb}} \leq +75\text{ }^{\circ}\text{C}$

Caution - Use supply wires suitable for 5 °C above surrounding ambient

ATEX Intrinsic Safety (Code A2)

 0344

 KEMA 07ATEX0200 X

II 1 G Ex ia IIC T4 $T_{\text{process}} = 105\text{ }^{\circ}\text{C}$
 $-30\text{ }^{\circ}\text{C} \leq T_{\text{amb}} \leq +60\text{ }^{\circ}\text{C}$ IP66/67

Electrical Parameters: $U_i = 30$ V, $I_i = 93$ mA, $P_i = 1$ W, $C_i = 5$ nF,
 $L_i = 0.5$ mH

II 1 D Ex iaD 20 IP66/67 T105 $T_{\text{process}} = 105\text{ }^{\circ}\text{C}$
 $-30\text{ }^{\circ}\text{C} \leq T_{\text{amb}} \leq +60\text{ }^{\circ}\text{C}$

NEPSI Flameproof (Code N1)

Ex d IIC T6 DIP A21 $T_A 85\text{ }^{\circ}\text{C}$ $T_{\text{process}} = 80\text{ }^{\circ}\text{C}$
 $-30\text{ }^{\circ}\text{C} \leq T_{\text{amb}} \leq +75\text{ }^{\circ}\text{C}$

Ex d IIC T5 DIP A21 $T_A 100\text{ }^{\circ}\text{C}$ $T_{\text{process}} = 95\text{ }^{\circ}\text{C}$
 $-30\text{ }^{\circ}\text{C} \leq T_{\text{amb}} \leq +80\text{ }^{\circ}\text{C}$

Ex d IIC T4 DIP A21 $T_A 115\text{ }^{\circ}\text{C}$ $T_{\text{process}} = 110\text{ }^{\circ}\text{C}$
 $-30\text{ }^{\circ}\text{C} \leq T_{\text{amb}} \leq +80\text{ }^{\circ}\text{C}$

ENCLOSURE TYPE IP66/67

NEPSI Intrinsic Safety (Code N2)

Ex ia IIC T4 $T_{\text{process}} = 105\text{ }^{\circ}\text{C}$

$-30\text{ }^{\circ}\text{C} \leq T_{\text{amb}} \leq +60\text{ }^{\circ}\text{C}$

Enclosure IP66/67

Electrical Parameters: $U_i = 30$ V, $I_i = 100$ mA, $P_i = 1$ W,
 $C_i = 13$ nF, $L_i = 0.5$ mH

NEPSI Type n (Code N5)

Ex nL IIC T4 $T_{\text{process}} = 110\text{ }^{\circ}\text{C}$

$-30\text{ }^{\circ}\text{C} \leq T_{\text{amb}} \leq +60\text{ }^{\circ}\text{C}$

Enclosure IP66/67

Electrical Parameters: $U_i = 30$ V, $I_i = 100$ mA, $P_i = 1$ W,
 $C_i = 13$ nF, $L_i = 0.5$ mH

IECEx Flameproof (Code E1)

Certificate No. IECEx KEM 08.0001

Ga/Gb Ex d IIC T6 $T_{\text{process}} = 85\text{ }^{\circ}\text{C}$
 $-30\text{ }^{\circ}\text{C} \leq T_{\text{amb}} \leq +75\text{ }^{\circ}\text{C}$ IP66/67

Ga/Gb Ex d IIC T5 $T_{\text{process}} = 100\text{ }^{\circ}\text{C}$
 $-30\text{ }^{\circ}\text{C} \leq T_{\text{amb}} \leq +80\text{ }^{\circ}\text{C}$ IP66/67

Ga/Gb Ex d IIC T4 $T_{\text{process}} = 110\text{ }^{\circ}\text{C}$
 $-30\text{ }^{\circ}\text{C} \leq T_{\text{amb}} \leq +80\text{ }^{\circ}\text{C}$ IP66/67

Ex tD A21 IP66/67 T85 $T_{\text{process}} = 85\text{ }^{\circ}\text{C}$
 $-30\text{ }^{\circ}\text{C} \leq T_{\text{amb}} \leq +75\text{ }^{\circ}\text{C}$

Ex tD A21 IP66/67 T100 $T_{\text{process}} = 100\text{ }^{\circ}\text{C}$
 $-30\text{ }^{\circ}\text{C} \leq T_{\text{amb}} \leq +75\text{ }^{\circ}\text{C}$

Ex tD A21 IP66/67 T110 $T_{\text{process}} = 110\text{ }^{\circ}\text{C}$
 $-30\text{ }^{\circ}\text{C} \leq T_{\text{amb}} \leq +75\text{ }^{\circ}\text{C}$

Caution - Use supply wires suitable for 5 °C above surrounding ambient

IECEx Intrinsic Safety (Code E2)

IECEx KEM 07.0058X

Zone 0 Ex ia IIC T4 $T_{\text{process}} = 105\text{ }^{\circ}\text{C}$
 $-30\text{ }^{\circ}\text{C} \leq T_{\text{amb}} \leq +60\text{ }^{\circ}\text{C}$ IP66/67

Electrical Parameters: $U_i = 30$ V, $I_i = 93$ mA, $P_i = 1$ W, $C_i = 5$ nF,
 $L_i = 0.5$ mH

Ex iaD 20 IP66/67 T105 $T_{\text{process}} = 105\text{ }^{\circ}\text{C}$
 $-30\text{ }^{\circ}\text{C} \leq T_{\text{amb}} \leq +60\text{ }^{\circ}\text{C}$

KOSHA Flameproof (Code K1)

Ex d II C T6 $T_{\text{process}} = 85\text{ }^{\circ}\text{C}$
 $-30\text{ }^{\circ}\text{C} \leq T_{\text{amb}} \leq +75\text{ }^{\circ}\text{C}$

Ex d II C T5 $T_{\text{process}} = 100\text{ }^{\circ}\text{C}$
 $-30\text{ }^{\circ}\text{C} \leq T_{\text{amb}} \leq +80\text{ }^{\circ}\text{C}$

Ex d II C T4 $T_{\text{process}} = 110\text{ }^{\circ}\text{C}$
 $-30\text{ }^{\circ}\text{C} \leq T_{\text{amb}} \leq +80\text{ }^{\circ}\text{C}$

EMC Conformity [☆]

EN 61326-1 (industrial electromagnetic environment)

EN 61326-2-3

FUNCTIONAL SPECIFICATIONS

Type of protection

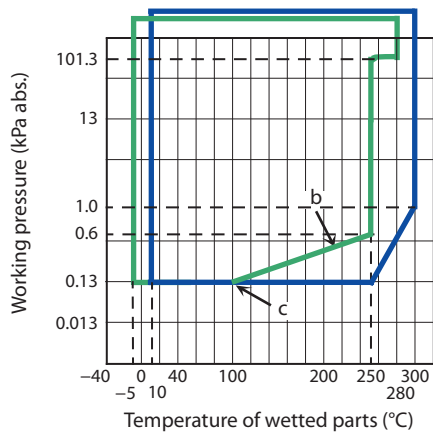
NEMA 3 and 4X
IEC IP66/67

Measuring span/Setting range

	Measuring span	Setting range
GTX30S	4 to 104 kPa abs. {30 to 780 mmHg abs.}	0 to 104 kPa abs. {0 to 780 mmHg abs.}
GTX60S	35 to 3500 kPa abs. {0.35 to 35 kgf/cm ² abs.}	0 to 3500 kPa abs. {0 to 35 kgf/cm ² abs.}

Working pressure range/Overload resistant value

	Working pressure range	Overload resistant value
GTX30S	0.13 to 104 kPa abs.	300 kPa abs. {3.0 kgf/cm ² }
GTX60S	Up to flange rating of the setting range, which is lower.	5250 kPa abs. {52.5 kgf/cm ² }



b. For high temperature and vacuum,
c. For high temperature and high vacuum

Figure 1. Working pressure temperature of wetted parts section (For high temperature and vacuum/high temperature and high vacuum)

Power Supply [☆]

12.5 to 42 V DC
Limited to 12.5 to 30 V DC for intrinsic safety, Type n, Non-incendive types

Power Supply voltage and load resistance characteristics [☆]

See Figure 2.

Limited to Load resistance: 250 to 1345 Ω for SFN or DE communication. 250 to 600 Ω for HART communication. Power supply voltage: 12.5 to 30 V DC for intrinsic safety, Type n, Nonincendive types

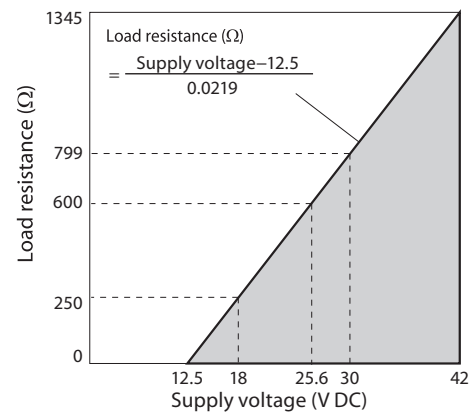


Figure 2. Supply voltage vs. load resistance characteristics

Note) For communication with a communicator, a load resistance of 250 Ω or more is necessary.

Output [☆]

Analog output (4 to 20 mA DC) with DE protocol
Analog output (4 to 20 mA DC) with HART protocol
Digital output (DE protocol)

Output signal [☆]

3.6 to 21.6 mA
3.8 to 20.5 mA (NAMUR NE43 compliant)

Failure Alarm [☆]

Upper: 21.6 mA or more
Lower: 3.6 mA or less

Ambient temperature limits/Temperature ranges of wetted parts

		Temperature Range (°C) *1 *4	
		High-temp. vacuum models	High-temp. high-vacuum models
Wetted parts section	Normal operating range	-5 to +280	+10 to +300
	Operative limit range	-10 to +310	-10 to +310
Ambient temperature *2	Normal operating range	-5 to +55	+10 to +55
	Operative limit range	-10 to +60	-10 to +60
Specific gravity of fill fluid *3		1.07	1.09

Note *1. See the working pressures and temperatures of the wetted parts section in Figure 1.

*2. Ambient temperatures of the transmitter itself

*3. Approximate values at the temperature of 25 °C

*4. Note that if the operating temperature falls below the lower limit of the normal operating range, the response of the transmitter becomes slower.

Ambient humidity limits

5 to 100 % RH

Stability against supply voltage change

±0.005 % FS/V

Response time [☆]

Approx. 400 ms (ref. value, with 5 m of ordinary capillaries, at room temp.)

Damping time [☆]

Selectable from 0 to 128 sec. (HART)

Selectable from 0 to 32 sec. in ten stages (SFN)

Zero Stability

±0.5 % of URL per 10 year

Lightning protection [☆]

Applicable Standards; IEC 61000-4-5

Peak value of current surge (80/20 μ sec.): 6000 A

Indicator

The digital LCD indicator (optional) shows the output in percentage or in engineering units. Range for engineering unit is from -99999 to 99999 when set at the factory, and from -19999 to 19999 when using the communicator. Specify the following items when placing order with engineering units,

- Pressure range
- Engineering unit of pressure
- Method of display, either linear or square-root.
These data may be set or changed using the communicator.

OPTIONAL SPECIFICATIONS**Oil free finish**

The transmitter is shipped with oil-free wetted parts.

External zero/span adjustment function

The transmitter can be easily adjusted to zero or span in the field.

Indicator must be selected to enable this option.

Fieldbus type does not have span adjustment.

Elbow

This is an adaptor for changing the electrical conduit connection port from the horizontal to the vertical direction, if required by wiring conditions in the field. One or two elbows may be used as needed.

Conformance to SI units

We deliver transmitters set to any SI units as specified.

Safety Transmitter

Select this option to be used as a component of Safety Instrument System (SIS).

AT9000 is complied with IEC61508, certified according to Safety Integrity Level 2 (SIL-2)

This option is not applicable for FOUNDATION Fieldbus type, DE communication type, external zero/span adjustment (option A2), and Alarm output (option Q7).

Alarm Output (contact output)

Contact output is prepared as alarm output when alarm (Output Alarm/Sensor Temp. Alarm) condition is detected. It can be set to or Normally Close.

Contact output type: One open collector (NPN)

Contact rating: 30 V DC max., 30 mA DC max.

Residual voltage at output ON: 3.0 V max.

Operating mode: Normally Open (default)

Normally Close is not recommended.

When this option is selected, CHECK terminals for current check cannot be used.

This option is not applicable for FOUNDATION Fieldbus type, and with intrinsic safety, Type n, Nonincendive types.

Advanced diagnostics [☆]

This option is applicable for FOUNDATION Fieldbus type.

Refer to SS2-GTX00Z-0100.

Custom calibration

Calibrate for the specified pressure range at the factory.

PHYSICAL SPECIFICATIONS**Materials****Fill fluid**

Silicone oil for high-temperature vacuum, and high temperature high-vacuum models

For specific gravity, refer to “Ambient temperature limits/ Temperature ranges of wetted parts” on page 3.

Center body

316 SST

Transmitter case

Aluminum alloy, CF8M (Equivalent to 316 SST)

Meter body cover

304 SST

Bolts and nuts (for fastening meter body cover)

Carbon steel (SNB7), 304 SST, 630 SST

O-ring

NBR

For Wetted parts

316 SST (316L SST for diaphragm only)

316L SST

Flange materials

304 SST, 316 SST, 316L SST

Mounting Bracket**Bracket**

Carbon steel, 304SST

U-bolt and nuts

304 SST

Paint

Standard: Baked acrylic paint
Corrosion-proof: Baked urethane paint

Color

Housing: azbil bordeaux 2.5R 2.25/5
Cap: Silver N-8.2

Weight

Approx. 13.5 kg (GTX30S) (Including ANSI 150# - 3 inches flange and capillary 5 m long)

INSTALLATION**Electrical connection**

1/2 NPT internal thread, M20 internal thread.

Grounding

Resistance 100 Ω max.

Mounting

Direct mounting on the process side
Using 2-inch pipe mounting brackets: Mount the transmitter on a horizontal or vertical 2-inch pipe

Process connection**Measured pressure**

Flanges

Flush diaphragm

JIS 10K, 20K, 30K and 63K: 80 mm (RF) equivalents
ANSI/JPI 150, 300 and 600: 3 inches (RF) equivalents

Extended diaphragm

JIS 10K, 20K and 30K: 100 mm (RF) equivalents
ANSI/JPI 150 and 300: 4 inches (RF) equivalents

Flange standards

JIS; JIS B 2220 (2004)
ANSI; ANSI B 16.5 (1988)
JPI; JPI-7S-15-93

TRANSMITTER HANDLING NOTES

To get the most from the performance this transmitter can offer, please use it properly noting the points mentioned below. Before using it, please read the Instruction Manual.

Transmitter installation notes**⚠ WARNING**

- When installing the transmitter, ensure that gaskets do not protrude from connecting points into the process (such as adapter flange connection points and connecting pipes and flanges). Failure to do so may cause a leak of process fluid, resulting in harm from burns, etc. In addition, if the process fluid contains toxic substances, take safety measures such as wearing goggles and a mask to prevent contact with the skin and eyes and to prevent inhalation.
- Use the transmitter within the operating ranges stated in the specifications (for explosion-proofing, pressure rating, temperature, humidity, voltage, vibration, shock, mounting direction, atmosphere, etc.). Using the transmitter outside the operating conditions may cause device failure or fire, resulting in a harmful physical risk of burning or the like.
- When performing wiring work in explosion-proof areas, follow the work method specified in the explosion-proof guidelines.

⚠ CAUTION

- After installation, do not use the transmitter as a foothold or put your weight on it. Doing so may cause damage.
- Be careful not to hit the glass indicator with tools etc. This could break the glass and cause injury.
- The transmitter is heavy. Wear safety shoes and take care when installing it.
- Impact to transmitter can damage sensor module.

Wiring notes**⚠ WARNING**

- To avoid shocks, do not perform electrical wiring work with wet hands or with live wires.

⚠ CAUTION

- Do wiring work properly in conformance with the specifications. Wiring mistakes may result in malfunction or irreparable damage to the instrument.
- Use a power supply that conforms to the specifications. Use of an improper power supply may result in malfunction or irreparable damage to the instrument.
- Use a power supply with overcurrent protection for this instrument.

Handling precautions for HART specification devices

- If you need to operate with a secondary host (HART communicator, etc.), set the communication interval of the primary host (DCS, device management system) to 8 seconds or more, or suspend communication from the primary host. If the primary host repeats HART communication within 8 seconds, the request from the secondary host may not be received (communication may not be possible).
- If electrical noise in the environment prevents HART communications with the host, take countermeasures such as separating the signal cables from the source of the noise, improving the grounding, changing to shielded signal cables, etc. Even if noise interferes with HART communications, the 4–20 mA analog signal will be unaffected and can be used for control. If this product is being operated in multidrop mode, there is a limit to the number of devices that can be used. If you are using multidrop mode, please consult with us.

To use the remote seal type transmitter correctly

A various accuracy regulation and notes of the remote seal type transmitter are as follows.

A. Standard accuracy

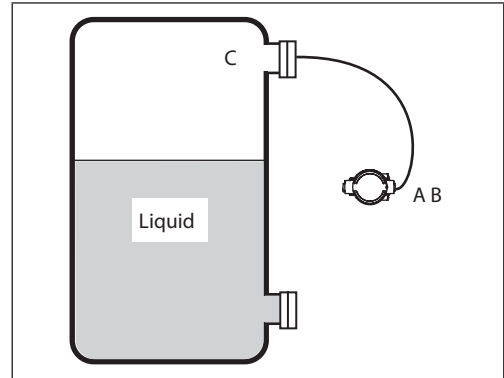
Linearity in constant ambient temperature and constant static pressure is shown. (Refer to “PERFORMANCE SPECIFICATIONS” on page 7)

B. Ambient temperature characteristics

Accuracy by the ambient temperature change in the main body under constant static pressure is shown. (Refer to “PERFORMANCE SPECIFICATIONS” on page 7)

C. Wetted parts temperature characteristics

Zero shift is shown, when the temperature fluctuate of process wetted parts of an upper flange and lower flange changes.



Flange type	3 inches flush diaphragm flange, 4 inches Extended diaphragm flange		
	Regular/High temp.	High-temp. and vacuum	High-temp. and high-vacuum
Wetted parts temperature characteristics (total shift of setting ranges)	$\pm \left\{ \left(600 + \frac{2L}{50} \right) \times \frac{1}{55} \times \frac{\Delta T}{1000x} \right\} \%$	$\pm \left\{ \left(900 + \frac{2L}{50} \right) \times \frac{1}{55} \times \frac{\Delta T}{1000x} \right\} \%$	$\pm \left\{ \left(1200 + \frac{3L}{50} \right) \times \frac{1}{55} \times \frac{\Delta T}{1000x} \right\} \%$

x : Shown for each item are the percentage ratio for x (kPa), which is the greatest value of either the upper range value (URV)*¹, the lower range value (LRV)*² or the span.

L : Flange length (mm) (In case, standard flange; $L=0$ mm)

ΔT : Temperature difference between upper flange and ambient temperature.

D. Installation position

Azbil Corporation is recommended to set up the main body of the transmitter from a flange downward when the transmitter is set up to the sealed tank. Please meet the following requirements when it is necessary to set up the transmitter by all means in the middle of the tank.

$$Po + (-\rho'h) / 102 \geq P \quad (1 \text{ kPa} = 102 \text{ mmH}_2\text{O})$$

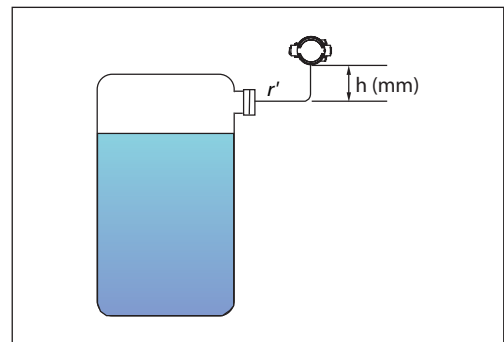
$$\therefore h \leq (Po - P) / (102 / \rho')$$

P : Permissible pressure lower bound value of the transmitter (kPa abs.)

ρ' : Fill fluid gravity of the transmitter

Po : Pressure in tank (kPa abs.)

h : Distance from a lower flange (mm)

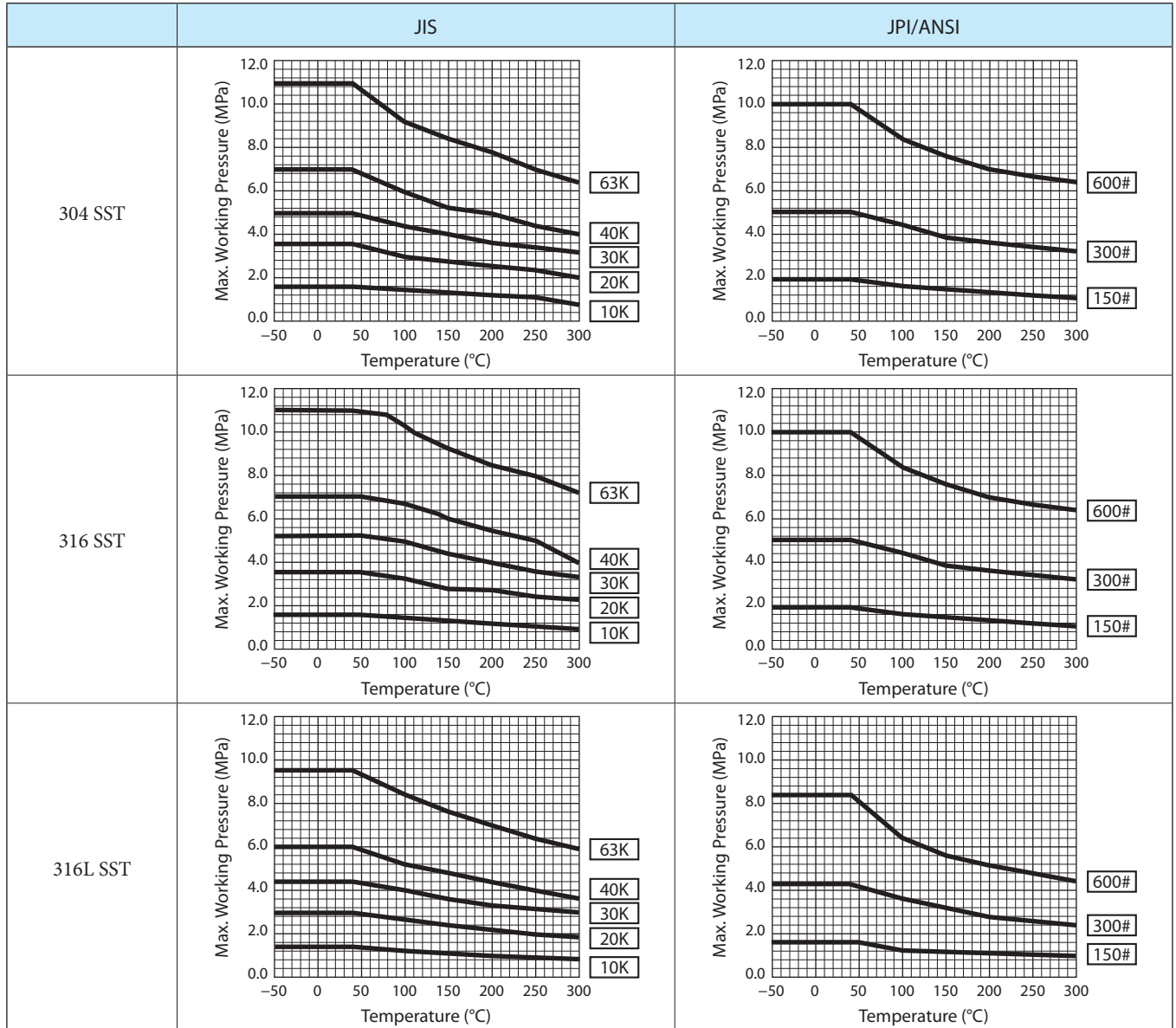


	Fill fluid gravity ρ'	Permissible pressure lower bound value P (kPa abs.)	Temperature range of wetted parts (°C)
High-temp. and vacuum	1.07	0.1333	-5 to +100
High-temp and high-vacuum	1.09	0.1333	10 to 250

PERFORMANCE SPECIFICATIONS

Max working pressure

- Note) 1. Max working pressure depends on flange rating, flange materials and operating temperature. Please refer to the following data. Operating range of temperature depends on specification of transmitters.
2. In case of flange type (model GTX60F) and remote scaled type (model GTX__S, model GTX60U), max working pressure depends on the smaller value of either 1.5 MPa or following data.
3. In case of remote scaled type (model GTX71U), max working pressure depends on the smaller value of either 10 MPa or following data.



Reference accuracy

Shown for each item are the percentage ratio for x (kPa), which is the greatest value of either the upper range value (URV)^{*1}, the lower range value (LRV)^{*2} or the span.

Model GTX30S (for high-temperature vacuum, high-temperature high-vacuum service)

Reference accuracy ^{*3}		± 0.25 %	(For $x \geq 12$ kPa abs. (90 mmHg abs.))
		$\pm \left(0.1 + 0.15 \times \frac{12}{x} \right)$ %	(For $x < 12$ kPa abs. (90 mmHg abs.))
Ambient Temperature effect (Shift from the set range) Change of 30 °C (Range from -5 to 55 °C)	Combined shift	± 0.79 %	(For $x \geq 12$ kPa abs. (90 mmHg abs.))
		$\pm \left(0.19 + 0.6 \times \frac{12}{x} \right)$ %	(For $x < 12$ kPa abs. (90 mmHg abs.))

Model GTX60S (for high-temperature vacuum, high-temperature high-vacuum service)

Reference accuracy ^{*3}		± 0.25 %	(For $x \geq 350$ kPa abs. (3.5 kgf/cm ² abs.))
		$\pm \left(0.1 + 0.15 \times \frac{350}{x} \right)$ %	(For $x < 350$ kPa abs. (3.5 kgf/cm ² abs.))
Ambient Temperature effect (Shift from the set range) Change of 30 °C (Range from -5 to 55 °C)	Combined shift	± 0.79 %	(For $x \geq 350$ kPa abs. (3.5 kgf/cm ² abs.))
		$\pm \left(0.19 + 0.6 \times \frac{350}{x} \right)$ %	(For $x < 350$ kPa abs. (3.5 kgf/cm ² abs.))

*1. URV denotes the process value for 100 % (20 mA DC) output.

*2. LRV denotes the process value for 0 % (4 mA DC) output.

*3. Reference accuracy at calibrated condition.

MODEL SELECTION

Model GTX30S (Remote-sealed type for standard absolute pressure)

Model GTX60S (Remote-sealed type for high absolute pressure)

Flush 3 inches flange type for high temperature vacuum, high temperature high vacuum service

Model No.: GTX_ _S - Selection I (I II III IV V VI VII VIII IX) - Selection II (I II III IV V VI) - Option

Basic Model No.

Measuring span	4.0 to 104 kPa abs. (30 to 780 mmHg abs.)	GTX30S	Flush flange type 3 inches (80mm)
	35 to 3500 kPa abs. (0.35 to 35 kgf/cm ² abs.)	GTX60S	

Selection I

I	Output	4 to 20 mA (SFN Communication)	A	
		4 to 20 mA (HART5 Communication)	B	
		FOUNDATION Fieldbus communication	C	
		Digital output (DE communication) *1	D	
		4 to 20 mA (HART7 Communication)	F	
II	Fill fluid	For high temperature vacuum service (Silicone oil)	C	
		For high temperature high vacuum service (Silicone oil)	D	
III	Wetted parts material	316L SST	D	
IV	Flange rating	ANSI150	A1	
		ANSI300	A2	
		ANSI600	A3	
		JIS10K	J1	
		JIS20K	J3	
		JIS30K	J4	
		JIS63K	J6	
		JPI150	P1	
		JPI300	P2	
		JPI600	P3	
V	Flange size	3 in./80 A	F	
VI	Flange type	Flush type	A	
VII	Flange material/bolt and nut material	Flange	Bolt and nut	
		304 SST	304 SST	A
		304 SST	630 SST	C
		304 SST	Carbon steel	D
		316 SST	304 SST	E
		316 SST	630 SST	G
		316 SST	Carbon steel	H
		316L SST	304 SST	J
		316L SST	630 SST	L
		316L SST	Carbon steel	M
VIII	Gasket face finish	None Standard JISRa3.2 (12.5S)	A	
IX	Capillary length	2 m	02	
		3 m	03	
		4 m	04	
		5 m	05	
		6 m	06	
		7 m	07	
		8 m	08	
		9 m	09	
		10 m	10	

*1. Not applicable for the combination with code A2 "With external Zero/Span adjustment", Q1 "Safety Transmitter", and Q2 "NAMUR NE43 Compliant Output signal limits" of Option.

Model No.: GTX_ _S - Selection I (I II III IV V VI VII VIII IX) - Selection II (I II III IV V VI) - Option

Selection II

			—	
I	Electrical connection	1/2 NPT, Watertight	A	
		M20, Watertight *2	B	
II	Explosion proof [☆] *5	None		XX
		FM Explosionproof for Division system/Flameproof for Zone system		F1
		FM Intrinsic safety		F2
		FM Nonincendive		F5
		Combination of code F1, F2, and F5		F6
		ATEX Flameproof		A1
		ATEX Intrinsic safety		A2
		IECEX Flameproof		E1
		IECEX Intrinsic safety		E2
		NEPSI Flameproof *3		N1
		NEPSI Intrinsic safety *3		N2
		NEPSI Type n *3		N5
III	Built-in indicating smart meter	None		X
		With indicator *6		A
IV	Paint *4	Standard		X
		None (316 stainless steel housing)		E
		Corrosion-proof (Urethane)		H
V	Failure alarm	UP Scale		A
		DOWN scale		B
		None (for FOUNDATION Fieldbus) *7		X
VI	Mounting Bracket	None		X
		Carbon steel (Flat Form)		5
		304 SST (Flat Form)		6

*2. Not applicable for the combination with code F1, F6 of Explosion proof.

*3. Not applicable for the combination with code E of Paint.

*4. In case code X, H, or D is selected, the material of transmitter case is aluminum alloy.

*5. For FOUNDATION Fieldbus type. Refer to SS2-GTX00Z-0100.

*6. In case the code C "FOUNDATION Fieldbus communication" of output is selected, code A2 of Option code should be selected.

*7. Not applicable for the combination with code A "4 to 20 mA (SFN Communication)", B "4 to 20 mA (HART Communication)", and D "Digital output (DE communication)" of output.

Model GTX30S (Remote-sealed type for standard absolute pressure)**Model GTX60S (Remote-sealed type for high absolute pressure)**

Extended 4 inches flange type for high temperature vacuum, high temperature high vacuum service

Model No.: GTX_ _S - Selection I (I II III IV V VI VII VIII IX) - Selection II (I II III IV V VI) - Option

Basic Model No.

Measuring span	4.0 to 104 kPa abs. (30 to 780 mmHg abs.)* ¹	GTX30S	Extended flange type 4 inches (100 mm)
	35 to 3500 kPa abs. (0.35 to 35 kgf/cm ² abs.)* ²	GTX60S	

Selection I

I	Output	4 to 20 mA (SFN Communication)	A	
		4 to 20 mA (HART5 Communication)	B	
		FOUNDATION Fieldbus communication	C	
		Digital output (DE communication) * ⁴	D	
		4 to 20 mA (HART7 Communication)	F	
II	Fill fluid	For high temperature vacuum service (Silicone oil)	C	
		For high temperature high vacuum service (Silicone oil)	D	
III	Wetted parts material	316 SST (Diaphragm: 316L SST)	A	
		316L SST	D	
IV	Flange rating	ANSI150	A1	
		ANSI300	A2	
		JIS10K	J1	
		JIS20K	J3	
		JIS30K	J4	
		JPI150	P1	
		JPI300 * ³	P2	
V	Flange size	4 in./100 A	G	
VI	Flange type	Extended Length 50 mm	B	
		Extended Length 100 mm	C	
		Extended Length 150 mm	D	
		Extended Length 200 mm * ³	E	
		Extended Length 250 mm * ³	F	
		Extended Length 300 mm * ³	G	
VII	Flange material/bolt and nut material	Flange	Bolt and nut	
		304 SST	304 SST	A
		304 SST	630 SST	C
		304 SST	Carbon steel	D
		316 SST	304 SST	E
		316 SST	630 SST	G
		316 SST	Carbon steel	H
		316L SST	304 SST	J
		316L SST	630 SST	L
316L SST	Carbon steel	M		
VIII	Gasket face finish	None Standard JISRa3.2 (12.5S)	A	
IX	Capillary length	2 m	02	
		3 m	03	
		4 m	04	
		5 m	05	
		6 m	06	
		7 m	07	
		8 m	08	
		9 m	09	
		10 m	10	

*1. Specify range in abs. Pressure. Correct: 0 to 500 mmHg abs. Incorrect: -700 mmHg to 1 kgf/cm².*2. Specify range in abs. Pressure. Correct: 0 to 3 kgf/cm² abs. Incorrect: -1 to 2 kgf/cm² abs.

*3. In case "ANSI/JPI300" is used for Flange Type & Rating, Not available for Length of Extended Parts: 200/250/300 mm.

*4. Not applicable for the combination with code A2 "With external Zero/Span adjustment", Q1 "Safety Transmitter", and Q2 "NAMUR NE43 Compliant Output signal limits" of Option.

Model No.: GTX_ _S - Selection I (I II III IV V VI VII VIII IX) - Selection II (I II III IV V VI) - Option

Selection II

			—	
I	Electrical connection	1/2 NPT, Watertight	A	
		M20, Watertight *5	B	
II	Explosion proof [☆] *8	None		XX
		FM Explosionproof for Division system/Flameproof for Zone system		F1
		FM Intrinsic safety		F2
		FM Nonincendive		F5
		Combination of code F1, F2, and F5		F6
		ATEX Flameproof		A1
		ATEX Intrinsic safety		A2
		IECEX Flameproof		E1
		IECEX Intrinsic safety		E2
		NEPSI Flameproof *6		N1
		NEPSI Intrinsic safety *6		N2
		NEPSI Type n *6		N5
		KOSHA Flameproof *6		K1
III	Built-in indicating smart meter	None		X
		With indicator *9		A
IV	Paint *7	Standard		X
		None (316 stainless steel housing)		E
		Corrosion-proof (Urethane)		H
V	Failure alarm	UP Scale		A
		DOWN scale		B
		None (for FOUNDATION Fieldbus) *10		X
VI	Mounting Bracket	None		X
		Carbon steel (Flat Form)		5
		304 SST (Flat Form)		6

*5. Not applicable for the combination with code F1, F6 of Explosion proof.

*6. Not applicable for the combination with code E of Paint.

*7. In case code X, H, or D is selected, the material of transmitter case is aluminum alloy.

*8. For FOUNDATION Fieldbus type. Refer to SS2-GTX00Z-0100.

*9. In case the code C "FOUNDATION Fieldbus communication" of output is selected, code A2 of Option code should be selected.

*10. Not applicable for the combination with code A "4 to 20 mA (SFN Communication)", B "4 to 20 mA (HART Communication)", and D "Digital output (DE communication)" of output.

Model No.: GTX_ _S - Selection I (I II III IV V VI VII VIII IX) - Selection II (I II III IV V VI) - Option

Option

		—
No options		XX
With external Zero/Span adjustment (With external ZERO adjustment only for FOUNDATION Fieldbus) ^{*8 *9}		A2
One elbow (left) ^{*3 *4 *7}		G1
One elbow (right) ^{*3 *4 *7}		G2
2 elbows ^{*3 *5 *7}		G3
Oil and water free finish		K1
Oil free finish ^{*1}		K3
Au Plating Diaphragm		L1
316 SST (Parts in contact with atmosphere) ^{*11 *12 *13}		P8
Safety Transmitter ^{*2 *9 *14}		Q1
NAMUR NE43 Compliant Output Signal Limits: 3.8 to 20.5 mA (Output 21.6 mA/selected upper limit, 3.6 mA/selected lower limit) ^{*9 *14}		Q2
Alarm Output (contact output) ^{*10 *14}		Q7
Advanced diagnostics ^{*15}		Q8
Custom calibration		R1
Test report		T1
Mill certificate		T2
Traceability certificate		T4
NACE certificate ^{*6}		T5
Non SI Unit		W1

*1. No need to select when Fill Fluid code H, or J is selected.

*2. Not applicable for the combination with code A2, or Q7 of Option.

*3. Not applicable for the combination with code A, or B of Process installation.

*4. Not applicable for the combination with code F1, F6 of Explosion proof.

*5. Not applicable for any Explosion proof. Please select code XX "None" of Explosion proof.

*6. Applicable for "ASTM B575", code B of Material (center body).

*7. Not applicable for the combination with code B "M20, Watertight" electrical connection.

*8. Not applicable for the combination with code X "None" of Indicator. Please select "With indicator".

*9. Not applicable for the combination with code D "Digital output (DE communication)" of output.

*10. Not applicable for the combination with code F2, F5, F6, N2, N5, E2, E5, A2 and A5 of Explosion proof.

*11. In case code P8 is selected, code D of Bolt/nut should be selected.

*12. In case code P8 is selected, code E of Paint should be selected.

*13. In case code P8 is selected, code X or 2 of Mounting bracket should be selected.

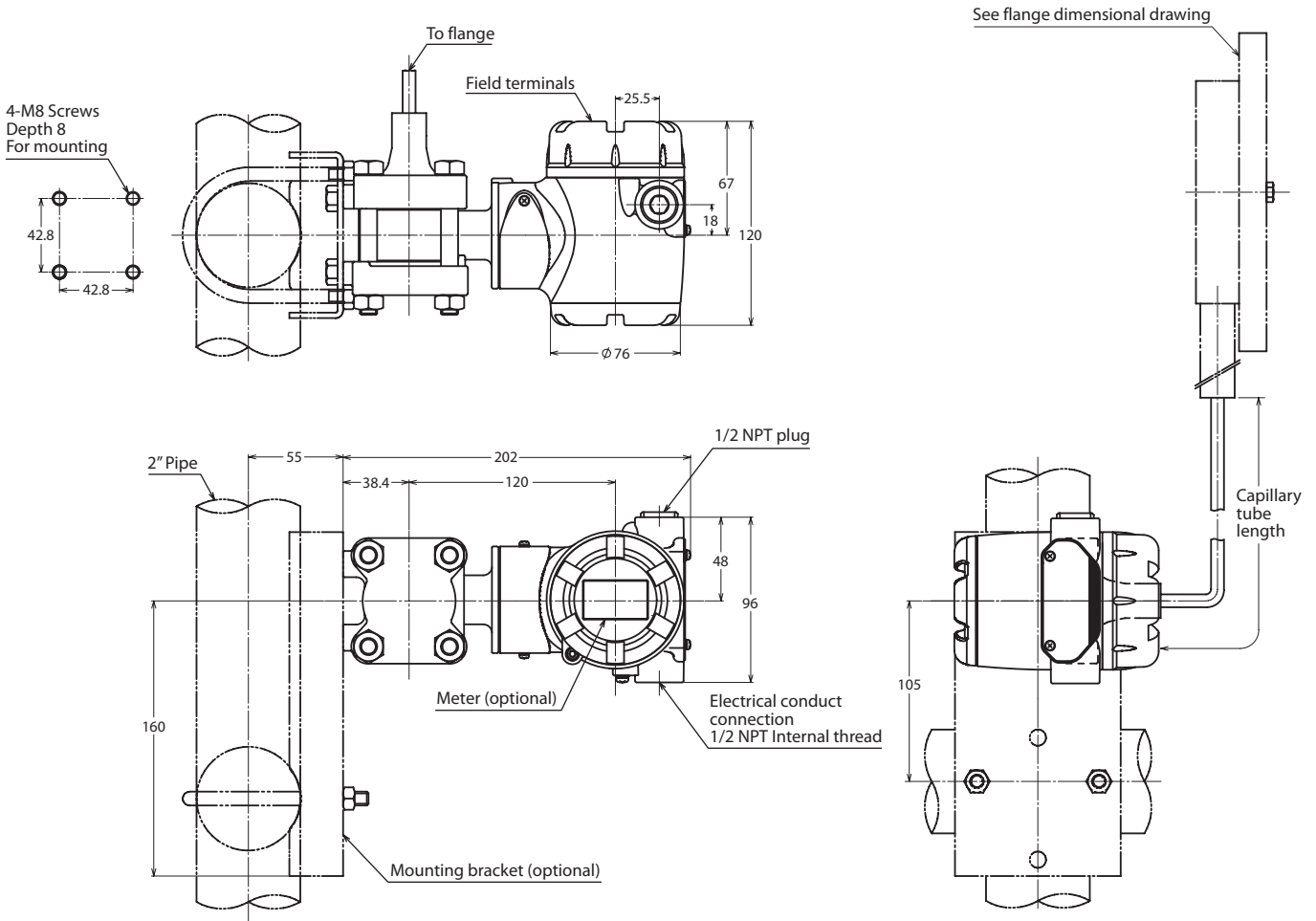
*14. Not applicable for the combination with code C "Digital output (FOUNDATION Fieldbus communication)" of output.

*15. Not applicable for the combination with code A "4 to 20 mA (SFN Communication)", B "4 to 20 mA (HART Communication)", and D "Digital output (DE communication)" of output.

DIMENSION

Model GTX30S/60S

Unit: mm



TERMINAL CONNECTION

(Not applicable for Fieldbus. See SS2-GTX00Z-0100 for Fieldbus.)

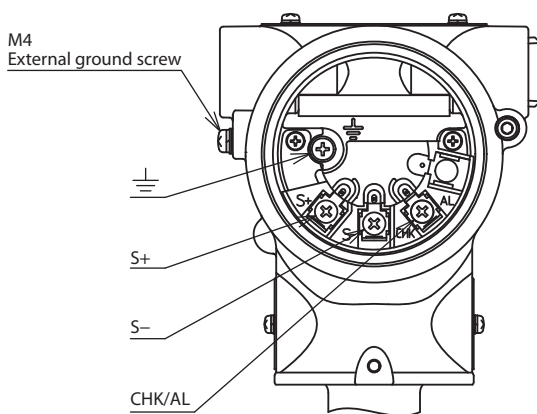


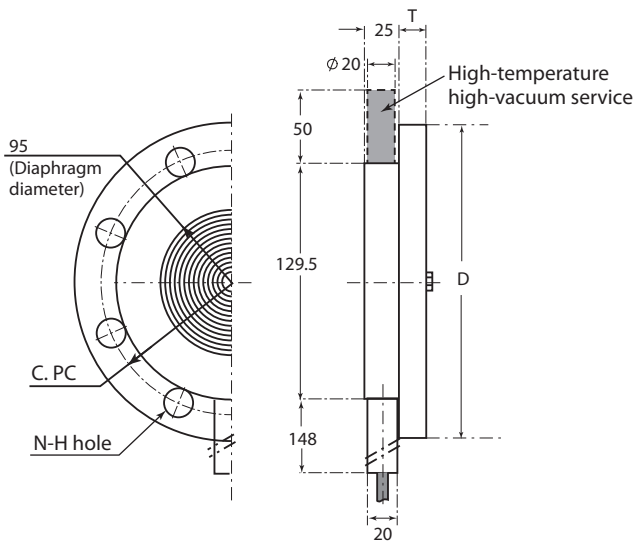
Table 1: Terminal connection

Symbol	Details
S+	Power supply and output signal +
S-	Power supply and output signal -/Check meter -
CHK/AL	Check meter +
⏏	Ground

Table 2: Terminal connection (option "07": Alarm output)

Symbol	Details
S+	Power supply and output signal +
S-	Power supply and output signal -
CHK/AL	Alarm +
⏏	Ground/Alarm -

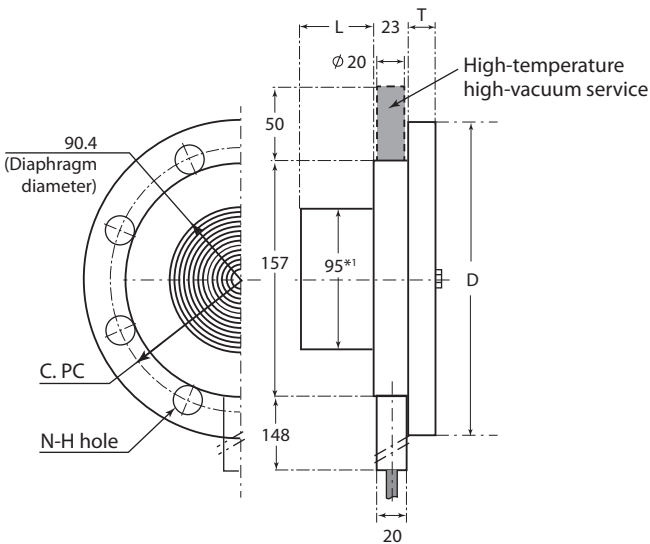
Table of flush diaphragm flange dimensions



Unit: mm

Rating	Flange rating	D	T	C	N	H
3 inches (80 mm)	JIS 10K-80 mm	185	18	150	8	19
	JIS 20K-80 mm	200	22	160	8	23
	JIS 30K-80 mm	210	28	170	8	23
	ANSI 150-3 inches	190	24	152.4	4	19
	ANSI 300-3 inches	210	28.5	168.1	8	22
	ANSI 600-3 inches	210	32	168.1	8	22
	JPI 150-3 inches	190	24	152.4	4	19
	JPI 300-3 inches	210	28.5	168.1	8	22
JPI 600-3 inches	210	32	168.1	8	22	

Table of extended diaphragm flange dimensions



Unit: mm

Rating	Flange rating	D	T	C	N	H	Extended length L
4 inches (100 mm)	JIS 10K - 100 mm	210	18	175	8	19	50
	JIS 20K - 100 mm	225	24	185	8	23	100
	JIS 30K - 100 mm	240	32	195	8	25	150
	ANSI 150 - 4 inches	229	24	191	8	19	
	ANSI 300 - 4 inches	254	32	200	8	22	
	JPI 150 - 4 inches	229	24	191	8	19	
	JPI 300 - 4 inches	254	32	200	8	22	

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