

# ST3000 Series 900 Smart Transmitter

## Remote-sealed type of Pressure Transmitters with FOUNDATION™ fieldbus

### Model STH920/STH940/STH960/STH980

#### OVERVIEW

The ST3000 Series 900 with FOUNDATION™ fieldbus is an accurate, stable, and reliable pressure / differential pressure transmitter, which fully complies with the 31.25kbps voltage mode FOUNDATION™ fieldbus. Its built-in AI function blocks provide process variables to devices on the Fieldbus and its PID control function block enables process control in the field.

Since the ST3000 Series 900 is FOUNDATION™ registered, it can operate seamlessly with other registered field devices as well as host systems in a wide range of control applications.



#### 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.
- The measuring range of the STD920, for example, is 0.75 to 100 kPa (rangeability = 1:135).

##### **A diverse lineup**

- A diverse flange lineup, ranging from small diameter 1.5 in. (40mm) and 2 in. (50mm) to 3 in. (80mm), is available to meet user requirements.
- A wide range of models, including those for general purposes, high-temperature, and high-temperature and high-vacuum service, is available to meet user requirements. In addition, the working temperature range of general purpose models has been expanded to 180°C maximum to allow you greater freedom instrumentation.

- A wide variety of corrosion-resistant materials for wetted parts is also available.

##### **Function to correct the temperature of the fill fluid of the capillary section**

Changes in the density of the fill fluid caused by temperature fluctuations are calculated, and the output is corrected accordingly. This function substantially reduces (to 1/5-1/10) the effect of seasonal fluctuations in temperature.

FOUNDATION™ is a registered trademark of the Fieldbus Foundation.

**APPLICATION**

**Petroleum/Petrochemical/Chemical**

- For the measurement of liquid levels including corrosive fluids at high temperatures, and high temperatures under vacuum
- For the measurement of liquid levels in small tanks

**Electric power/City gas/Other utilities**

For measurement applications that require high degrees of stability and accuracy.

**Pulp and paper**

- For lines that need transmitters resistant to chemical liquids, corrosive fluids and the like
- For the measurement of liquid levels in small tanks

**Iron and steel/Nonferrous metal/Ceramics**

For lines that require stable measurement under strictly controlled (temperature, humidity, etc.) conditions.

**Machinery/Shipbuilding**

For lines that require stable measurement under strictly controlled (temperature, humidity, vibration, etc.) conditions.

**FUNCTIONAL SPECIFICATIONS**

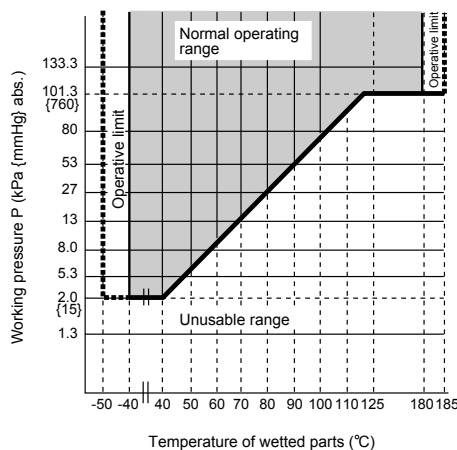
**Type of protection**

JIS C0920 watertight: NEMA3 and 4X

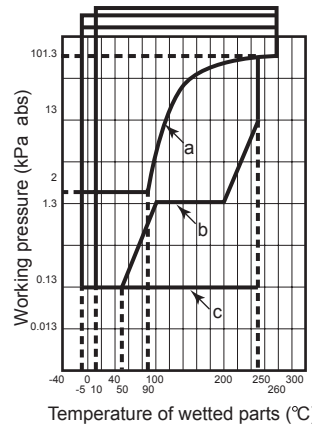
JIS F8001 class 2 watertight: IEC IP67

**Measuring span / Setting range / Working pressure range**

	Measuring Span	Setting Range	Working Pressure Range	Overload Resistant Value
STH 920	2.5 to 100kPa {250 to 10160mmH <sub>2</sub> O}	-100 to 100kPa {-10160 to 10160 mmH <sub>2</sub> O}	Up to flange rating (For negative pressures, see Figures 1, 2 and 3.)	None
STH 940	35 to 3500kPa {0.35 to 35kgf/cm <sup>2</sup> }	-100 to 3500kPa {-1 to 35kgf/cm <sup>2</sup> }	Up to flange rating (For negative pressures, see Figures 1, 2 and 3.)	5250kPa {52.5kgf/cm <sup>2</sup> }
STH 960	0.7 to 10MPa {7 to 102kgf/cm <sup>2</sup> }	-0.1 to 10MPa {-1 to 102kgf/cm <sup>2</sup> }	Up to flange rating (For negative pressures, see Figures 1, 2 and 3.)	15.3MPa {153kgf/cm <sup>2</sup> }
STH 980	0.7 to 42 MPa {7 to 420kgf/cm <sup>2</sup> }	-0.1 to 42 MPa {-1 to 420kgf/cm <sup>2</sup> }	Up to flange rating (For negative pressures, see Figures 1, 2 and 3.)	63MPa {630kgf/cm <sup>2</sup> }

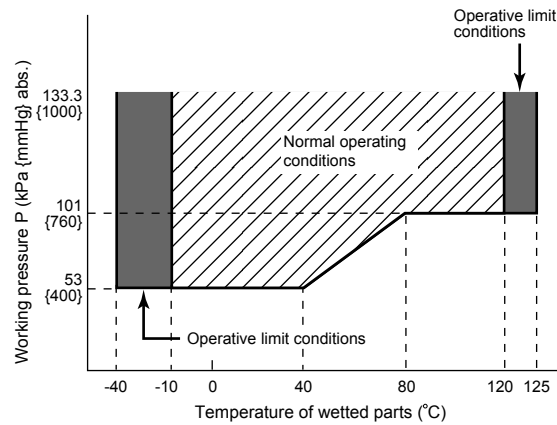


**Figure 1 Working Pressure and Temperature of Wetted Parts Section (for General purpose models)**



- a. For high temperature
- b. For high temperature and vacuum
- c. For high temperature and high vacuum

**Figure 2 Working pressure temperature of wetted parts section (For high temperature / high temperature and vacuum / high temperature and high vacuum)**



**Figure 3 Working pressure and temperature of wetted parts section (for oxygen and chlorine models)**

**Supply voltage**

9 to 32V DC.

**Ambient temperature limits / Temperature ranges of wetted parts**

See “Table 1: Ambient temperature limits / Temperature ranges of wetted parts” on page 5.

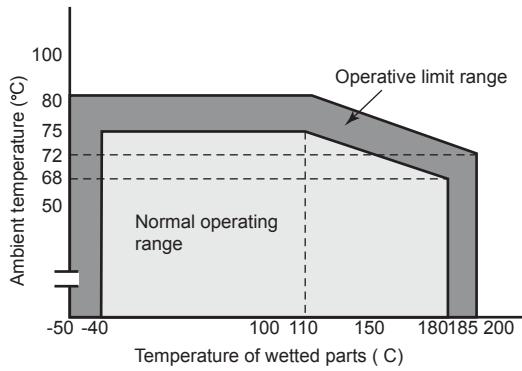
**For Explosionproof models with digital indicators, which have to be used within the following ranges.**

**Normal operating condition**

-20 to 70°C

**Operative limit**

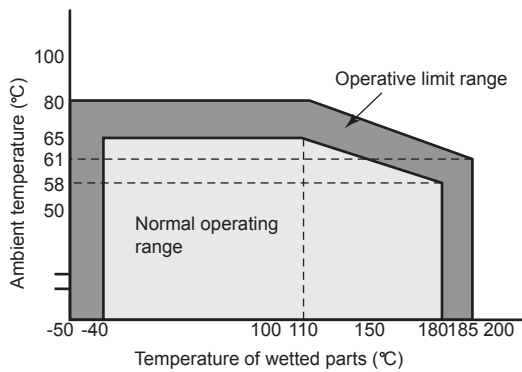
-30 to 80°C



**Figure 4** Ambient temperature and temperature of wetted parts section (for general purpose models)

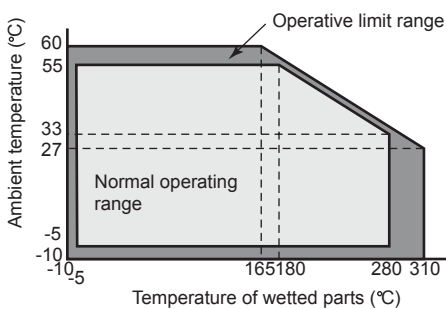
[Flange diameter: Flush diaphragm 2in. (50mm)/1.5in. (40mm)  
Extended diaphragm 3in. (80mm)2in. (50mm)]

Note) When the fill liquid is for general purposes, make sure before using your transmitter that the conditions in both Figure 1, Figure 4 and Figure 5 are met.



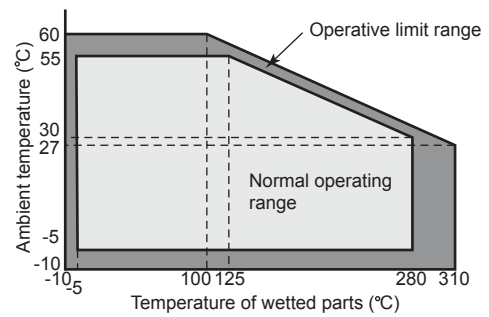
**Figure 5** Ambient temperature and temperature of wetted parts section (for general purpose models)

[Flange diameter: Flush diaphragm 3in. (80mm)  
Extended diaphragm 4in. (100mm)]



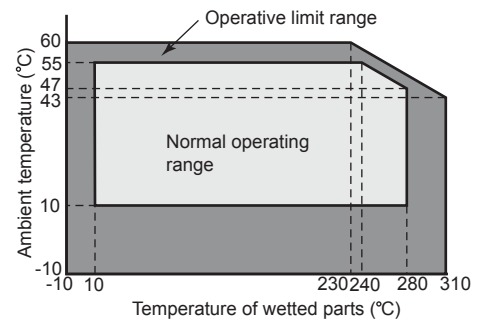
**Figure 6** Ambient temperature and temperature of wetted parts section (for high temperature and vacuum 2, 3m)

[Flange diameter: Flush diaphragm 2in. (50mm)/1.5in. (40mm)]



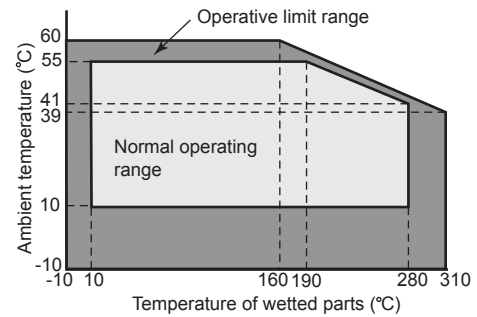
**Figure 7** Ambient temperature and temperature of wetted parts section (for high temperature and vacuum 4, 5m)

[Flange diameter: Flush diaphragm 2in. (50mm)/1.5in. (40mm)]



**Figure 8** Ambient temperature and temperature of wetted parts section (for high temperature and high vacuum 2, 3m)

[Flange diameter: Flush diaphragm 2in. (50mm)/1.5in. (40mm)]



**Figure 9** Ambient temperature and temperature of wetted parts section (for high temperature and high vacuum 4, 5m)

[Flange diameter: Flush diaphragm 2in. (50mm)/1.5in. (40mm)]

**Ambient humidity limits**

5 to 100% RH

**Stability against supply voltage change**

±0.005% FS/V

**Lightning protection**

Peak value of voltage surge: 12kV

Peak value of current surge: 1000A

**Optional specifications****Built-in indicating meter**

The digital LCD indicator (optional) indicates engineering units and can be set freely between -19999 and 19999 (4.5 digits).

**Bolts and nuts materials (for fastening meter body cover)**

Carbon steel (SNB7), SUS304, SUS630

(Pressure rating 7000kPa {70kgf/cm<sup>2</sup>} or Flange rating)

Baked acrylic paint.

**Corrosion-resistant finish****Corrosion-resistant finish**

Corrosion-resistant paint (Baked acrylic paint), fungus-proof finish.

**Corrosion-proof finish**

Corrosion-proof paint (Baked epoxy paint), fungus-proof finish.

**Corrosion-resistant finish (silver paint)**

Transmitter case is coated with silver paint in addition to the above corrosion-resistant finish.

**FEP protective film**

Use FEP protective films when corrosive fluids are used or to inhibition migration from metal diaphragms.

**Working temperature range**

0 to 110°C

**Working pressure range**

Atmospheric pressure to flange rating

(up to JIS10K, ANSI/JPI150)

(Not usable under negative pressure)

**Oil free finish**

The transmitter is shipped with oil-free wetted parts.

(The vent drain plug is coated with a small amount of fluorine oil to prevent galling.)

**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.

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

Silicone oil for general purpose and high-temperature vacuum models

Fluorine oil for oxygen and chlorine models

For specific gravity, refer to "Ambient temperature limits / Temperature ranges of wetted parts" on page 2

**Center body**

SUS316

**Transmitter case**

Aluminum alloy

**Meter body cover**

SUSF304

**For Wetted parts**

SUS316 (SUS316L for diaphragm only)

Hastelloy C, Tantalum, SUS316L

**Flange materials**

Carbon steel (SF440A), SUS304, SUS316, SUS316L

**Capillary section****Capillary tube length**

2, 3, 4, 5, 6, 7, 8, 9 and 10m

2, 3, 4 and 5m when flange diameter is flush diaphragm

2in.(50mm)/1.5in.(40mm) extended diaphragm

3in.(80mm)/2in.(50mm) (same for olefin covering)

**Capillary tube material**

SUS316

**Armored tube material**

SUS304

**Coating (optional)**

Olefin coating to improve corrosion resistance

**Finish**

Baked acrylic paint

Housing light beige (Munsell 4Y7.2/1.3)

Cap dark beige (Munsell 10YR4.7/0.5)

**Weight**

Approx. 19.8kg

(Including JIS10K-80mm flange and capillary 5m long)

**INSTALLATION****Electrical connection**

1/2NPT 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

**Bracket**

Carbon steel

**Ubolt and nuts**

SUS 304

**Process connection****Measured pressure (liquid side)**

Flanges (both higher and lower pressure sides)

**Flush diaphragm**

JIS10K, 20K and 30K: 40mm/50mm/80mm (RF) equivalents

ANSI 150, 300 and 600: 1.5in./2in./3in.(RF) equivalents

JPI150, 300 and 600:1.5in./2in./3in.(RF) equivalents

**Extended diaphragm**

JIS10K, 20K and 30K: 50mm/ 80mm/100mm (RF) equivalents

JIS10K, 20K and 30K: 100mm/80mm/50mm (RF) equivalents

ANSI150 and 300: 2in./3in./4in. (RF) equivalents

ANSI150 and 300: 4in./3in./2in. (RF) equivalents

JPI150 and 300: 2in./3in./4in. (RF) equivalents

JPI 150 and 300: 4in./3in./2in. (RF) equivalents

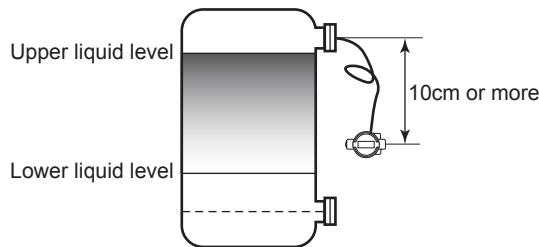
**Screw connection**

G1½ button diaphragm (G1½ external thread)

**Mounting Notes**

**For pressure measurement**

- 1) If the fluid to be measured contains hydrogen, please consult us.
- 2) When mounting the transmitter, leave a space of at least 10cm under the upper nozzle of the tank. If the no space is available, please consult us.



**Table 1: Ambient temperature limits / Temperature ranges of wetted parts**

		Temperature range (°C) Note 1), 4)				
		General purpose model	High-temperature model	High-temperature Vacuum models	High-temperature High-vacuum models	Oxygen and Chlorine models
Wetted parts section	Normal operating range	-40 to 180	-5 to 280 Note 5)	-5 to 280 Note 5)	10 to 280 Note 5)	-10~120
	Operative limit range	-50 to 185	-10 to 310 Note 6)	-10 to 310 Note 6)	-10 to 310 Note 6)	-40~125
Ambient temperature Note 2) Flange diameter: Flush diaphragm type 3 in.(80mm) Extended diaphragm type 4 in.(100mm)	Normal operating range	-30 to 75	-5 to 55	-5 to 55	10 to 55	-10~75
	Operative limit range	-50 to 80	-10 to 60	-10 to 60	-10 to 60	-40~80
Ambient temperature Note 2) Flange diameter: Flush diaphragm type 2 in.(50mm)/1.5 in.(40mm) Extended diaphragm type 3 in.(80mm)/2 in.(50mm)	Normal operating range	-15 to 65	-5 to 45	-5 to 55	10 to 55	-10~75
	Operative limit range	-30 to 80	-10 to 55	-10 to 60	-10 to 60	-40~80
Specific gravity of fill fluid Note 3)		0.935	1.07	1.07	1.09	1.87

Note) 1. See the working pressures and temperatures of the wetted parts section in Figure 1, Figure 2, and Figure 3.

Note) 2. Ambient temperatures of the transmitter itself

Note) 3. Approximate values at the temperature of 25°C

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

Note) 5. When the wetted parts material is tantalum, the upper limit is 180°C.

Note) 6. When the wetted parts material is tantalum, the upper limit is 200°C.

**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.
- Note 2. In case of flange type (STC940□) and remote sealed type (STU940□, STH940□), Max working pressure depends on the smaller value of either 1.5MPa or following data.
- Note 3. In case of remote sealed type (STH960□), max working pressure depends on the smaller value of either 10MPa or following data

	<b>JIS</b>	<b>JPI/ANSI</b>
<b>Carbon steel</b>		
<b>SUS304</b>		
<b>SUS316</b>		
<b>SUS316L</b>		

**Accuracy**

Shown for each item is the percentage ratio for  $\chi$  (kPa), which is the greatest value of either XD\_SCALE\_EU\_100, XD\_SCALE\_EU\_0, or the span.

**STH920 (for regular type and high-temperature service)**

Material of wetted parts: Diaphragm; SUS316L, Others; SUS316

Flange diameter: Flush diaphragm 3 in. (80mm) Extended diaphragm 4 in. (100mm)

Accuracy (*3)		$\pm 0.3\%$	(For $\chi \geq 12.5kPa$ {1250mmH <sub>2</sub> O})
		$\pm\left(0.3 \times \frac{12.5}{\chi}\right)\%$	(For $\chi < 12.5kPa$ {1250mmH <sub>2</sub> O})
Temperature characteristics (Shift from the set range) Change of 55°C(*3)	Zero shift:	$\pm 1.25\%$	(For $\chi \geq 25kPa$ {2500mmH <sub>2</sub> O})
		$\pm\left(1.25 \times \frac{2.5}{\chi}\right)\%$	(For $\chi < 25kPa$ {2500mmH <sub>2</sub> O})
Change of 55°C(*3)	Combined shift: (including zero and span shifts)	$\pm 2.5\%$	(For $\chi \geq 25kPa$ {2500mmH <sub>2</sub> O})
		$\pm\left(2.5 \times \frac{2.5}{\chi}\right)\%$	(For $\chi < 25kPa$ {2500mmH <sub>2</sub> O})

**STH920 (for regular type and high-temperature service)**

Material of wetted parts: Diaphragm; Hastelloy C, Tantalum, SUS316L Others; Hastelloy C, Tantalum, SUS316L

Flange diameter: Flush diaphragm 3 in. (80mm)

Accuracy(*3)		$\pm 0.4\%$	(For $\chi \geq 12.5kPa$ {1250mmH <sub>2</sub> O})
		$\pm\left(0.4 \times \frac{12.5}{\chi}\right)\%$	(For $\chi < 12.5kPa$ {1250mmH <sub>2</sub> O})
Temperature characteristics (Shift from the set range) Change of 30°C(Range from the -5 to 55°C) (*3)	Zero shift:	$\pm 3.2\%$	(For $\chi \geq 25kPa$ {2500mmH <sub>2</sub> O})
		$\pm\left(3.5 \times \frac{2.5}{\chi}\right)\%$	(For $\chi < 25kPa$ {2500mmH <sub>2</sub> O})
Change of 30°C(Range from the -5 to 55°C) (*3)	Combined shift:	$\pm 4.5\%$	(For $\chi \geq 25kPa$ {2500mmH <sub>2</sub> O})
		$\pm\left(4.5 \times \frac{2.5}{\chi}\right)\%$	(For $\chi < 25kPa$ {2500mmH <sub>2</sub> O})

**STH940 (for regular type and high-temperature service)**

Material of wetted parts: Diaphragm; SUS316L, Others; SUS316

Flange diameter: Flush diaphragm 3 in. (80mm) Extended diaphragm 4 in. (100mm)

Accuracy(*3)		$\pm 0.2\%$	(For $\chi \geq 350kPa$ {3.5kgf/cm <sup>2</sup> })
		$\pm\left(0.05 + 0.15 \times \frac{350}{\chi}\right)\%$	(For $\chi < 350kPa$ {3.5kgf/cm <sup>2</sup> })
Temperature characteristics (Shift from the set range) Change of 55°C(*3)	Zero shift:	$\pm\left(0.25 + 0.5 \times \frac{350}{\chi}\right)\%$	$\chi$ : kPa
	Combined shift:	$\pm 1.05\%$	(For $\chi \geq 350kPa$ {3.5kgf/cm <sup>2</sup> })
Change of 55°C(*3)		$\pm\left(0.35 + 0.7 \times \frac{350}{\chi}\right)\%$	(For $\chi < 350kPa$ {3.5kgf/cm <sup>2</sup> })

Note (\*1): XD\_SCALE\_EU\_100 denotes the upper limit of the calibration range.

(\*2): XD\_SCALE\_EU\_0 denotes the lower limit of the calibration range.

(\*3): Within a range of XD\_SCALE\_EU\_100  $\geq$  0 and XD\_SCALE\_EU\_0  $\geq$  0.

**STH940 (for regular type and high-temperature service)**

Material of wetted parts: Diaphragm; Hastelloy C, Tantalum, SUS316L Others; Hastelloy C, Tantalum, SUS316L  
 Flange diameter: Flush diaphragm 3 in. (80mm)

Accuracy(*3)		$\pm 0.2\%$	(For $\chi \geq 350kPa$ {3.5kgf/cm <sup>2</sup> })
		$\pm\left(0.05 + 0.15 \times \frac{350}{\chi}\right)\%$	(For $\chi < 350kPa$ {3.5kgf/cm <sup>2</sup> })
Temperature characteristics (Shift from the set range) Change of 30°C (Range from -5 to 55°C) (*3)	Zero shift:	$\pm\left(0.15 + 0.5 \times \frac{350}{\chi}\right)\%$	$\chi$ : kPa
	Combined shift:	$\pm 0.9\%$	(For $\chi \geq 350kPa$ {3.5kgf/cm <sup>2</sup> })
		$\pm\left(0.35 + 0.55 \times \frac{350}{\chi}\right)\%$	(For $\chi < 350kPa$ {3.5kgf/cm <sup>2</sup> })

**STH960 (for regular type and high-temperature service)**

Material of wetted parts: Diaphragm; SUS316L, Others; SUS316  
 Flange diameter: Flush diaphragm 3 in. (80mm) Extended diaphragm 4 in. (100mm)

Accuracy(*3)		$\pm 0.2\%$	(For $\chi \geq 3.5MPa$ {35kgf/cm <sup>2</sup> })
		$\pm\left(0.05 + 0.15 \times \frac{3.5}{\chi}\right)\%$	(For $\chi < 3.5MPa$ {35kgf/cm <sup>2</sup> })
Temperature characteristics (Shift from the set range) Change of 55°C(*3)	Zero shift:	$\pm\left(0.25 + 0.5 \times \frac{3.5}{\chi}\right)\%$	$\chi$ : kPa
	Combined shift:	$\pm 1.05\%$	(For $\chi \geq 3.5MPa$ {35kgf/cm <sup>2</sup> })
		$\pm\left(0.35 + 0.7 \times \frac{3.5}{\chi}\right)\%$	(For $\chi < 3.5MPa$ {35kgf/cm <sup>2</sup> })

**STH960 (for regular type and high-temperature service)**

Material of wetted parts: Diaphragm; Hastelloy C, Tantalum, SUS316L Others; Hastelloy C, Tantalum, SUS316L  
 Flange diameter: Flush diaphragm 3 in. (80mm)

Accuracy(*3)		$\pm 0.2\%$	(For $\chi \geq 3.5MPa$ {35kgf/cm <sup>2</sup> })
		$\pm\left(0.05 + 0.15 \times \frac{3.5}{\chi}\right)\%$	(For $\chi < 3.5MPa$ {35kgf/cm <sup>2</sup> })
Temperature characteristics (Shift from the set range) Change of 30°C(*3) (Range from -5 to 55°C)	Zero shift:	$\pm\left(0.15 + 0.5 \times \frac{3.5}{\chi}\right)\%$	$\chi$ : kPa
	Combined shift:	$\pm 0.9\%$	(For $\chi \geq 3.5MPa$ {35kgf/cm <sup>2</sup> })
		$\pm\left(0.35 + 0.55 \times \frac{3.5}{\chi}\right)\%$	(For $\chi < 3.5MPa$ {35kgf/cm <sup>2</sup> })

**STH940 (for regular type and high-temperature service)**

Material of wetted parts: Diaphragm; SUS316L, Others; SUS316  
 Flange diameter: Flush diaphragm 2 in. (50mm)/1.5 in.(40mm) Extended diaphragm 3 in. (80mm)/2 in.(50mm)

Accuracy(*3)		$\pm 0.2\%$	(For $\chi \geq 350kPa$ {3.5kgf/cm <sup>2</sup> })
		$\pm\left(0.2 \times \frac{350}{\chi}\right)\%$	(For $\chi < 350kPa$ {3.5kgf/cm <sup>2</sup> })
Temperature characteristics (Shift from the set range) Change of 55°C(*3)	Zero shift:	$\pm\left(0.25 + 0.5 \times \frac{350}{\chi}\right)\%$	$\chi$ : kPa
	Combined shift:	$\pm 1.05\%$	(For $\chi \geq 350kPa$ {3.5kgf/cm <sup>2</sup> })
		$\pm\left(0.35 + 0.7 \times \frac{350}{\chi}\right)\%$	(For $\chi < 350kPa$ {3.5kgf/cm <sup>2</sup> })

Note) (\*3): Within a range of XD\_SCALE\_EU\_100  $\geq$  0 and XD\_SCALE\_EU\_0  $\geq$  0.

**STH940 (for regular type and high-temperature service)**

Material of wetted parts: Diaphragm; Hastelloy C, Tantalum, SUS316L Others; Hastelloy C, Tantalum, SUS316L  
 Flange diameter: Flush diaphragm 2 in. (50mm)/1.5 in.(40mm)

Accuracy (*3)	Analog mode:	$\pm 0.3\%$	(For $\chi \geq 350kPa$ {3.5kgf/cm <sup>2</sup> })
		$\pm\left(0.3 \times \frac{350}{\chi}\right)$	(For $\chi < 350kPa$ {3.5kgf/cm <sup>2</sup> })
Temperature characteristics (Shift from the set range) Change of 30°C(*3) (Range from -5 to 55°C)	Zero shift:	$\pm\left(0.68 \times \frac{350}{\chi}\right) \%$	(For $\chi \geq 350kPa$ {3.5kgf/cm <sup>2</sup> }) (For $\chi < 350kPa$ {3.5kgf/cm <sup>2</sup> })
	Combined shift:	$\pm 1.75\%$	(For $\chi \geq 350kPa$ {3.5kgf/cm <sup>2</sup> })
		$\pm\left(1.75 \times \frac{350}{\chi}\right) \%$	(For $\chi < 350kPa$ {3.5kgf/cm <sup>2</sup> })

**STH960 (for regular type and high-temperature service)**

Material of wetted parts: Diaphragm; SUS316L, Others; SUS316  
 Flange diameter: Flush diaphragm 2 in. (50mm)/1.5 in.(40mm) Extended diaphragm 3 in. (80mm)/2 in.(50mm)

Accuracy(*3)		$\pm 0.2\%$	(For $\chi \geq 3.5MPa$ {35kgf/cm <sup>2</sup> })
		$\pm\left(0.2 \times \frac{3.5}{\chi}\right)$	(For $\chi < 3.5MPa$ {35kgf/cm <sup>2</sup> })
Temperature characteristics (Shift from the set range) Change of 55°C(*3)	Zero shift:	$\pm\left(0.25 + 0.5 \times \frac{3.5}{\chi}\right) \%$	$\chi$ : kPa
	Combined shift:	$\pm 1.5\%$	(For $\chi \geq 3.5MPa$ {35kgf/cm <sup>2</sup> })
		$\pm\left(0.35 + 0.7 \times \frac{3.5}{\chi}\right) \%$	(For $\chi < 3.5MPa$ {35kgf/cm <sup>2</sup> })

**STH960 (for regular type and high-temperature service)**

Material of wetted parts: Diaphragm; Hastelloy C, Tantalum, SUS316L Others; Hastelloy C, Tantalum, SUS316L  
 Flange diameter: Flush diaphragm 2 in. (50mm)/1.5 in.(40mm)

Accuracy (*3)		$\pm 0.2\%$	(For $\chi \geq 3.5MPa$ {35kgf/cm <sup>2</sup> })
		$\pm\left(0.2 \times \frac{3.5}{\chi}\right)$	(For $\chi < 3.5MPa$ {35kgf/cm <sup>2</sup> })
Temperature characteristics (Shift from the set range) Change of 30°C(*3) (Range from -5 to 55°C)	Zero shift:	$\pm 0.68\%$	(For $\chi \geq 3.5MPa$ {35kgf/cm <sup>2</sup> })
		$\pm\left(0.68 \times \frac{3.5}{\chi}\right) \%$	(For $\chi < 3.5MPa$ {35kgf/cm <sup>2</sup> })
	Combined shift:	$\pm 1.75\%$	(For $\chi \geq 3.5MPa$ {35kgf/cm <sup>2</sup> })
		$\pm\left(1.75 \times \frac{3.5}{\chi}\right) \%$	(For $\chi < 3.5MPa$ {35kgf/cm <sup>2</sup> })

**STH940 (for high temperature and vacuum / high temperature and high vacuum)**

Material of wetted parts: Diaphragm; SUS316L, Others; SUS316  
 Flange Size: Flush diaphragm 3 in. (80mm) Extended diaphragm 4 in. (100mm)

Accuracy (*3)		$\pm 0.2\%$	(For $\chi \geq 350kPa$ {3.5kgf/cm <sup>2</sup> })
		$\pm\left(0.05 + 0.15 \times \frac{350}{\chi}\right) \%$	(For $\chi < 350kPa$ {3.5kgf/cm <sup>2</sup> })
Temperature characteristics (Shift from the set range) Change of 30°C (Range from -5 to 55°C) (*3)	Zero shift:	$\pm\left(0.15 + 0.45 \times \frac{350}{\chi}\right) \%$	$\chi$ : kPa
	Combined shift:	$\pm 0.9\%$	(For $\chi \geq 350kPa$ {3.5kgf/cm <sup>2</sup> })
		$\pm\left(0.35 + 0.55 \times \frac{350}{\chi}\right) \%$	(For $\chi < 350kPa$ {3.5kgf/cm <sup>2</sup> })

Note) (\*3): Within a range of XD\_SCALE\_EU\_100  $\geq$  0 and XD\_SCALE\_EU\_0  $\geq$  0.

**STH940 (for high temperature and vacuum / high temperature and high vacuum)**

Material of wetted parts: Hastelloy C, Tantalum

Flange Size: Flush diaphragm 3 in. (80mm) Extended diaphragm 4 in. (100mm)

Accuracy (*3)		$\pm 0.2\%$	(For $\chi \geq 350kPa$ {3.5kgf/cm <sup>2</sup> })
		$\pm\left(0.05 + 0.15 \times \frac{350}{\chi}\right)\%$	(For $\chi < 350kPa$ {3.5kgf/cm <sup>2</sup> })
Temperature characteristics (Shift from the set range) Change of 30°C (Range from -5 to 55°C) (*3)	Zero shift:	$\pm\left(0.15 + 0.5 \times \frac{350}{\chi}\right)\%$	$\chi$ : kPa
	Combined shift:	$\pm 0.9\%$	(For $\chi \geq 350kPa$ {3.5kgf/cm <sup>2</sup> })
		$\pm\left(0.35 + 0.55 \times \frac{350}{\chi}\right)\%$	(For $\chi < 350kPa$ {3.5kgf/cm <sup>2</sup> })

**STH960 (for high temperature and vacuum / high temperature and high vacuum)**

Material of wetted parts: Diaphragm; SUS316L, Others; SUS316

Flange Size: Flush diaphragm 3 in. (80mm) Extended diaphragm 4 in. (100mm)

Accuracy (*3)		$\pm 0.2\%$	(For $\chi \geq 3.5MPa$ {35kgf/cm <sup>2</sup> }) {35kgf/cm <sup>2</sup> })
		$\pm\left(0.05 + 0.15 \times \frac{3.5}{\chi}\right)\%$	(For $\chi < 3.5MPa$ {35kgf/cm <sup>2</sup> })
Temperature characteristics (Shift from the set range) Change of 30°C (*3) (Range from -5 to 55°C)	Zero shift:	$\pm\left(0.15 + 0.45 \times \frac{3.5}{\chi}\right)\%$	$\chi$ : MPa
	Combined shift:	$\pm 0.9\%$	(For $\chi \geq 3.5MPa$ {35kgf/cm <sup>2</sup> })
		$\pm\left(0.35 + 0.55 \times \frac{3.5}{\chi}\right)\%$	(For $\chi < 3.5MPa$ {35kgf/cm <sup>2</sup> })

**STH960 (for high temperature and vacuum / high temperature and high vacuum)**

Material of wetted parts: Hastelloy C, Tantalum

Flange Size: Flush diaphragm 3 in. (80mm) Extended diaphragm 4 in. (100 mm)

Accuracy (*3)		$\pm 0.2\%$	(For $\chi \geq 3.5MPa$ {35kgf/cm <sup>2</sup> })
		$\pm\left(0.05 + 0.15 \times \frac{3.5}{\chi}\right)\%$	(For $\chi < 3.5MPa$ {35kgf/cm <sup>2</sup> })
Temperature characteristics (Shift from the set range) Change of 30°C (*3) (Range from -5 to 55°C)	Zero shift:	$\pm\left(0.15 + 0.5 \times \frac{3.5}{\chi}\right)\%$	$\chi$ : kPa
	Combined shift:	$\pm 0.9\%$	(For $\chi \geq 3.5MPa$ {35kgf/cm <sup>2</sup> })
		$\pm\left(0.35 + 0.55 \times \frac{3.5}{\chi}\right)\%$	(For $\chi < 3.5MPa$ {35kgf/cm <sup>2</sup> })

**STH940 (for high temperature and vacuum / high temperature and high vacuum)**

Material of wetted parts: Diaphragm; SUS316L, Others; SUS316

Flange Size: Flush diaphragm 2 in. (50mm)/1.5 in. (40mm) Extended diaphragm 3 in. (80mm)/2 in. (50mm)

Accuracy (*3)		$\pm 0.2\%$	(For $\chi \geq 350kPa$ {3.5kgf/cm <sup>2</sup> })
		$\pm\left(0.05 + 0.15 \times \frac{350}{\chi}\right)\%$	(For $\chi < 350kPa$ {3.5kgf/cm <sup>2</sup> })
Temperature characteristics (Shift from the set range) Change of 30°C (*3) (Range from -5 to 55°C)	Zero shift:	$\pm\left(0.15 + 0.45 \times \frac{350}{\chi}\right)\%$	$\chi$ : MPa
	Combined shift:	$\pm 0.9\%$	(For $\chi \geq 350kPa$ {3.5kgf/cm <sup>2</sup> })
		$\pm\left(0.35 + 0.55 \times \frac{350}{\chi}\right)\%$	(For $\chi < 350kPa$ {3.5kgf/cm <sup>2</sup> })

Note) (\*3): Within a range of XD\_SCALE\_EU\_100  $\geq$  0 and XD\_SCALE\_EU\_0  $\geq$  0.

**STH940 (for high temperature and vacuum / high temperature and high vacuum)**

Material of wetted parts: Hastelloy C, Tantalum

Flange Size: Flush diaphragm 2 in. (50mm)/1.5 in.(40mm)

Accuracy (*3)	Analog mode:	$\pm 0.2\%$	(For $\chi \geq 350kPa$ {3.5kgf/cm <sup>2</sup> })
		$\pm\left(0.05 + 0.15 \times \frac{350}{\chi}\right) \%$	(For $\chi < 350kPa$ {3.5kgf/cm <sup>2</sup> })
Temperature characteristics (Shift from the set range) Change of 30°C (*3) (Range from -5 to 55°C)	Zero shift:	$\pm\left(0.15 + 0.50 \times \frac{350}{\chi}\right) \%$	$\chi$ : kPa
	Combined shift:	$\pm 0.9\%$	(For $\chi \geq 350kPa$ {3.5kgf/cm <sup>2</sup> })
		$\pm\left(0.35 + 0.55 \times \frac{350}{\chi}\right) \%$	(For $\chi < 350kPa$ {3.5kgf/cm <sup>2</sup> })

**STH960 (for high temperature and vacuum / high temperature and high vacuum)**

Material of wetted parts: Diaphragm; SUS316L, Others; SUS316

Flange Size: Flush diaphragm 2 in. (50mm)/1.5 in.(40mm) Extended diaphragm 3 in. (80mm)/2 in.(50mm)

Accuracy (*3)		$\pm 0.2\%$	(For $\chi \geq 3.5MPa$ {35kgf/cm <sup>2</sup> })
		$\pm\left(0.05 + 0.15 \times \frac{3.5}{\chi}\right) \%$	(For $\chi < 3.5MPa$ {35kgf/cm <sup>2</sup> })
Temperature characteristics (Shift from the set range) Change of 30°C (*3) (Range from -5 to 55°C)	Zero shift:	$\pm\left(0.15 + 0.45 \times \frac{3.5}{\chi}\right) \%$	$\chi$ : MPa
	Combined shift:	$\pm 0.9\%$	(For $\chi \geq 3.5MPa$ {35kgf/cm <sup>2</sup> })
		$\pm\left(0.35 + 0.55 \times \frac{3.5}{\chi}\right) \%$	(For $\chi < 3.5MPa$ {35kgf/cm <sup>2</sup> })

**STH960 (for high temperature and vacuum / high temperature and high vacuum)**

Material of wetted parts: Hastelloy C, Tantalum

Flange Size: Flush diaphragm 2 in. (50mm)/1.5 in.(40mm)

Accuracy(*3)		0.2%	(For $\chi \geq 3.5MPa$ {35kgf/cm <sup>2</sup> })
		$\pm\left(0.05 + 0.15 \times \frac{3.5}{\chi}\right) \%$	(For $\chi < 3.5MPa$ {35kgf/cm <sup>2</sup> })
Temperature characteristics (Shift from the set range) Change of 30°C (*3) (Range from -5 to 55°C)	Zero shift:	$\pm\left(0.15 + 0.50 \times \frac{3.5}{\chi}\right) \%$	$\chi$ : MPa
	Combined shift:	$\pm 0.9\%$	(For $\chi \geq 3.5MPa$ {35kgf/cm <sup>2</sup> })
		$\pm\left(0.35 + 0.55 \times \frac{3.5}{\chi}\right) \%$	(For $\chi < 3.5MPa$ {35kgf/cm <sup>2</sup> })

**STH980 (for regular type and high temperature service)**

Material of wetted parts: Diaphragm; SUS316L, Others; SUS316

Flange Size: G1½ External Screw

Accuracy (*3)		$\pm 0.2\%$	(For $\chi \geq 7MPa$ {70kgf/cm <sup>2</sup> })
		$\pm\left(0.05 + 0.15 \times \frac{7}{\chi}\right) \%$	(For $\chi < 7MPa$ {70kgf/cm <sup>2</sup> })
Temperature characteristics (Shift from the set range) Change of 30°C (*3) (Range from -5 to 55°C)	Zero shift:	$\pm\left(0.15 + 0.45 \times \frac{7}{\chi}\right) \%$	$\chi$ : MPa
	Combined shift:	$\pm 1.05\%$	(For $\chi \geq 7MPa$ {70kgf/cm <sup>2</sup> })
		$\pm\left(0.35 + 0.8 \times \frac{7}{\chi}\right) \%$	(For $\chi < 7MPa$ {70kgf/cm <sup>2</sup> })

Note) (\*3): Within a range of  $XD\_SCALE\_EU\_100 \geq 0$  and  $XD\_SCALE\_EU\_0 \geq 0$ .

**FIELDBUS SPECIFICATIONS****Block supported by the S900**

Name of block	Number of block	Description	Max. execution time msec.
Resource block	1	The Resource Block (RB) maintains overall resources of the S900.	-
Transducer block	1	The Transducer Block (XB) interfaces with the sensing element of the S900, converts the measured value into specified engineering unit, and sends it to the AI Function Block.	-
AI Function Block	2	The AI Function Block (AI FB) accepts an analog input signal from the XB, scales it, detects alarm conditions, and provides it in a uniform format on the Fieldbus network.	75
Diagnostics Block	1	The Diagnostics Block (DB) is Yamatake proprietary block which provides the result of self-diagnostics of the S900.	-
PID Function Block	1	The PID Function Block (PID FB) accepts a process variable (PV) from an AI Function Block on the Fieldbus network, calculates the valve position using the PID algorithm, and sends a new valve output signal to the AO Function Block.	125

**VCR structure**

The S900 has 16 VCRs (Virtual Communication Relationships), of which the first one is dedicated to the SMIB/NMIB as defined by Foundation Fieldbus specifications. The rest of the VCRs are fully configurable. Their default configurations are shown below:

VCR No.	Configuration	VCR No.	Configuration
1	QUB (Server) for NIMIB/SMIB	9	QUU (Source)
2	BNU (Subscriber)	10	QUU (Source)
3	BNU (Subscriber)	11	QUU (Source)
4	BNU (Subscriber)	12	QUB (Server)
5	BNU (Subscriber)	13	QUB (Server)
6	BNU (Publisher)	14	QUB (Server)
7	BNU (Publisher)	15	QUB (Server)
8	QUU (Source)	16	QUB (Server)

**Network parameters**

The following table lists the key parameter values that affect the interoperability of the Fieldbus devices. The LAS must be configured to satisfy these parameters. If other devices on the same Fieldbus network require a greater number for them, the greater number must be used. This however will degrade network performance.

Symbol	Parameter name	Range of value
V (ST)	Slot Time	4 to 100
V (MID)	Minimum Interframe Gap	10 to $(V (MRD) - 1) \times V (ST)$ , less than 120 inclusive.
V (MRD)	Maximum Response Delay	$V (MRD) \times V (ST)$ shall be greater than 20 and $V (MRD)$ shall be less than 11, inclusive.
T1	SM step timer	96000 (3 seconds)
T2	SM set address sequence timer	1920000 (60 seconds)
T3	SM set address wait timer	480000 (15 seconds)

- Note)
- An LAS requires parameters other than those listed here for operation. Please refer to the user's manual that is provided with your LAS device.
  - The T3 must be set between 15 seconds and 60 seconds.

**MODEL SELECTION**

**ST3000 Series 900 electric pressure transmitter**

**Model STH920 / STH940 / STH960 (Remote-sealed diaphragm type for gauge pressure)**

**Flush diaphragm type: 3in. / 80mm**

**For regular / high-temperature service**

Model No.: STH9X0 - I II III IV V VI VII VIII - Option I - Option II

Basic Model No.

Measuring Span	2.5 to 100kPa (250 to 10,160mmH <sub>2</sub> O)	STH920	Flush Diaphragm Flange Type: 3in. / 80mm
	35 to 3500kPa (0.35 to 35kgf/cm <sup>2</sup> )	STH940	
	0.7 to 10 MPa (7 to 102 kgf/cm <sup>2</sup> )	STH960	

Selection I		Code	Fill Fluid Code						
I	Fill Fluid	Model No.	Fill Fluid	-	1	2	3	5	
		STH920	Regular type service (Silicone oil)	1					
		STH940	For oxygen service (Fluorine oil) *3	2					
		STH960	For high-temperature service (Silicone oil)	3					
		Flush Diaphragm Flange Type 3in. (80mm)	For chlorine service (Fluorine oil) *3	5					
II	Flange Standard	ANSI flange		A	✓	✓	✓	✓	
		JIS flange		J	✓	✓	✓	✓	
		JPI flange		P	✓	✓	✓	✓	
III	Flange Type & Rating	JIS 10K, ANSI/JPI 150 (RF) equivalent		A	✓	✓	✓	✓	
		JIS 20K, ANSI/JPI 300 (RF) equivalent		B	✓	✓	✓	✓	
		JIS 30K, ANSI/JPI 600 (RF) equivalent		C	✓	✓	✓	✓	
IV	Flange Material	Carbon Steel		1	✓	✓	✓	✓	
		SUS304		7	✓	✓	✓	✓	
		SUS316		2	✓	✓	✓	✓	
		SUS316L		8	✓	✓	✓	✓	
V	Material of Wetted Parts	SUS316 (Diaphragm : SUS316L, othes : SUS316)		2	✓	✓	✓		
		SUS316L (Diaphragm :SUS316L, others : SUS316L)		8	✓	✓	✓		
		Tantalum (Diaphragm :Tantalum, others : Tantalum) *17		4	✓	✓	✓	✓	
		Hastelloy C (Diaphragm :Hastelloy C, others : Hastelloy C)		9	✓	✓	✓		
VI	Finish of Gasket Face	Standard (JIS18 to 25S)		J	✓	✓	✓	✓	
VII	Length of Extended Parts	Flush Diaphragm 3in. / 80mm		00	✓	✓	✓	✓	
VIII	Length of Capillary Tube	2m		2	✓	✓	✓	✓	
		3m		3	✓	✓	✓	✓	
		4m		4	✓	✓	✓	✓	
		5m		5	✓	✓	✓	✓	
		6m		6	✓	✓	✓	✓	
		7m		7	✓	✓	✓	✓	
		8m		8	✓	✓	✓	✓	
		9m		9	✓	✓	✓	✓	
		10m		A	✓	✓	✓	✓	
		Length of Capillary Tube with Olefin Coating	2m			B	✓	✓	✓
	3m				C	✓	✓	✓	✓
	4m				H	✓	✓	✓	✓
	5m				D	✓	✓	✓	✓
	6m				J	✓	✓	✓	✓
	7m				E	✓	✓	✓	✓
	8m				F	✓	✓	✓	✓
	9m				K	✓	✓	✓	✓
		10m			G	✓	✓	✓	✓

Options I	No options	X	✓	✓	✓	✓
	Built-in indicating smart meter (0 to 100% liner scales)	P	✓	✓	✓	✓
	Built-in indicating smart meter (engineering unit scales)	R	✓	✓	✓	✓
	SUS304 Bolt and nuts material	W	✓	✓	✓	✓
	SUS630 Bolt and nuts material	U	✓	✓	✓	✓
	Corrosion-resistant finish	A	✓	✓	✓	✓
	Corrosion-proof finish	B	✓	✓	✓	✓
	Corrosion-resistant finish, silver paint	D	✓	✓	✓	✓
	Oil Free finish	K	✓	✓	✓	✓
	FEP protective Film	T	✓	✓	✓	✓

Options II	No option	XX	✓	✓	✓	✓
	Water free finish (with Oil free finish)	A7	✓	✓	✓	✓
	Custom calibration	C7	✓	✓	✓	✓
	One Elbow	E1	✓	✓	✓	✓
	Two Elbows	E2	✓	✓	✓	✓
	Mounting bracket	E9	✓	✓	✓	✓
	0.1mm Thickness Diaphragm *15	F4	✓	✓	✓	✓
	SI unit	U1	✓	✓	✓	✓
	FOUNDATION™ fieldbus *33	D6	✓	✓	✓	✓
	Fieldbus communication stack BASIC class *33	L1	✓	✓	✓	✓

Note) \*3 In case "For oxygen or chlorine (Fluorine oil) service" is used, "oil free finish - code K" must be selected.  
 \*15 Only available for Material of Wetted parts: "SUS316" and "SUS316L".  
 \*17 In case "Tantalum" is used for diaphragm material and in case of "For high-temperature service", normal operating conditions of meter body (process fluid) temperature is -10 to +180deg.C  
 \*33 "FOUNDATION™ fieldbus - code D6" and "Fieldbus communication stack BASIC class - code L1" must be selected.

**ST3000 Series 900 electric pressure transmitter**  
**Model STH940 / STH960 (Remote-sealed diaphragm type)**  
**Flush diaphragm type: 2in. / 50mm, 1.5in. / 40mm**  
**For regular / high-temperature service**

Model No.: STH9X0 - I II III IV V VI VII VIII - Option I - Option II

Basic Model No.

Measuring Span	35 to 3500kPa(0.35 to 35kgf/cm <sup>2</sup> )	STH940	Flush Diaphragm Flange Type: 2in./50mm, 1.5in./40mm
	0.7 to 10 MPa (7 to 102 kgf/cm <sup>2</sup> )	STH960	

Selection I		Model No.	Fill fluid	Code	Fill Fluid Code			
I	Fill Fluid				1	2	3	5
		STH940	Regular type service (Silicone oil)	1				
		STH960	For oxygen service (Fluorine oil) *3	2				
		Flush Diaphragm Flange Type 2in.(50mm) 1.5in.(40mm)	For high-temperature service (Silicone oil)	3				
			For chlorine service (Fluorine oil) *3	5				
II	Flange Standard	ANSI flange		A	✓	✓	✓	
		JIS flange		J	✓	✓	✓	
		JPI flange		P	✓	✓	✓	
III	Flange Type & Rating	JIS 10K, ANSI/JPI 150 (RF) equivalent		A	✓	✓	✓	
		JIS 20K, ANSI/JPI 300 (RF) equivalent		B	✓	✓	✓	
		JIS 30K, ANSI/JPI 600 (RF) equivalent		C	✓	✓	✓	
IV	Flange Material	Carbon Steel		1	✓	✓	✓	
		SUS304		7	✓	✓	✓	
		SUS316		2	✓	✓	✓	
		SUS316L		8	✓	✓	✓	
V	Material of Wetted Parts	SUS316 (Diaphragm: SUS316L, others: SUS316)		2	✓	✓	✓	
		SUS316L (Diaphragm:SUS316L, others: SUS316L) *17		8	✓	✓	✓	
		Tantalum (Diaphragm:Tantalum, others: Tantalum) *27		4	✓	✓		
		Hastelloy C (Diaphragm:Hastelloy C, others: Hastelloy C)		9	✓	✓	✓	
VI	Finish of Gasket Face	Standard (JIS18 to 25S)		J	✓	✓	✓	
VII	Length of Extended Parts	Flush Diaphragm 2in. / 50mm		01		✓	✓	
		Flush Diaphragm 1.5in. /40mm *27		02		✓	✓	
VIII	Length of Capillary Tube	2m		2	✓	✓	✓	
		3m		3	✓	✓	✓	
		4m		4	✓	✓	✓	
		5m		5	✓	✓	✓	
	Length of Capillary Tube with Olefin Coating	2m		B	✓	✓	✓	
		3m		C	✓	✓	✓	
		4m		H	✓	✓	✓	
		5m		D	✓	✓	✓	

Options I						
No options		X	✓	✓	✓	✓
Built-in indicating smart meter (0 to 100% liner scales)		P	✓	✓	✓	✓
Built-in indicating smart meter (engineering unit scales)		R	✓	✓	✓	✓
SUS304 Bolt and nuts material		W	✓	✓	✓	✓
SUS630 Bolt and nuts material		U	✓	✓	✓	✓
Corrosion-resistant finish		A	✓	✓	✓	✓
Corrosion-proof finish		B	✓	✓	✓	✓
Corrosion-resistant finish, silver paint		D	✓	✓	✓	✓
Oil Free finish		K	✓	✓	✓	✓
FEP protective Film		T	✓	✓	✓	✓

Options II						
No option		XX	✓	✓	✓	✓
Water free finish (with Oil free finish)		A7	✓	✓	✓	✓
Custom calibration		C7	✓	✓	✓	✓
One Elbow		E1	✓	✓	✓	✓
Two Elbows		E2	✓	✓	✓	✓
Mounting bracket		E9	✓	✓	✓	✓
SI unit		U1	✓	✓	✓	✓
FOUNDATION™ fieldbus *33		D6	✓	✓	✓	✓
Fieldbus communication stack BASIC class *33		L1	✓	✓	✓	✓

- Note) \*3 In case “For oxygen or chlorine (Fluorine oil) service” is used, “oil free finish - code K” must be selected.  
 \*17 In case “Tantalum” is used for diaphragm material and in case of “For high-temperature service”, normal operating conditions of meter body (process fluid) temperature is -10 to +180deg.C  
 \*27 In case “Tantalum” is used for diaphragm material and flange size is 1.5in., fill fluid “For high-temperature service” is not applicable and only 2m and 3 m are available for capillary length.  
 \*33 “FOUNDATION™ fieldbus - code D6” and “Fieldbus communication stack BASIC class - code L1” must be selected.

**ST3000 Series 900 electric pressure transmitter**  
**Model STH920 / STH940 / STH960 (Remote-sealed diaphragm type for gauge pressure)**  
**Flush diaphragm type: 4in. / 100mm**  
**For regular / high-temperature service**

Model No.: STH9X0 - I II III IV V VI VII VIII - Option I - Option II

Basic Model No.

Measuring Span	2.5 to 100kPa (250 to 10,160mmH <sub>2</sub> O)	STH920	Flush Diaphragm Flange Type: 4in. / 100mm
	35 to 3500kPa(0.35 to 35kgf/cm <sup>2</sup> )	STH940	
	0.7 to 10MPa (7 to 102 kgf/cm <sup>2</sup> )	STH960	

Selection I				Code	Fill Fluid Code				
					1	2	3	5	
I	Fill Fluid	Model No.	STH920, STH940, STH960	1					
		Fill Fluid	Regular type service (Silicone oil)	2					
		Flush Diaphragm Flange Type	4in. (80mm)	3					
			For oxygen service (Fluorine oil) *3 For high-temperature service (Silicone oil) *19						
II	Flange Standard	ANSI flange	A	✓	✓	✓	✓		
		JIS flange	J	✓	✓	✓	✓		
		JPI flange	P	✓	✓	✓	✓		
III	Flange Type & Rating	JIS 10K, ANSI/JPI 150 (RF) equivalent	A	✓	✓	✓	✓		
		JIS 20K, ANSI/JPI 300 (RF) equivalent *19	B	✓	✓	✓	✓		
		JIS 30K, ANSI/JPI 600 (RF) equivalent *16 *20 *24	C	✓	✓	✓	✓		
IV	Flange Material	Carbon Steel	1	✓	✓	✓	✓		
		SUS304	7	✓	✓	✓	✓		
		SUS316	2	✓	✓	✓	✓		
		SUS316L	8	✓	✓	✓	✓		
V	Material of Wetted Parts	SUS316 (Diaphragm: SUS316L, others: SUS316)	2	✓	✓	✓			
		SUS316L (Diaphragm:SUS316L, others: SUS316L) *16 *19 *20	8	✓	✓	✓			
VI	Finish of Gasket Face	Standard (JIS18 to 25S)	J	✓	✓	✓	✓		
VII	Length of Extended Parts	L = 50mm (4in. / 100mm) *20 *-24	09	✓	✓	✓	✓		
		L = 100mm (4in. / 100mm) *20 *24	14						
		L = 150mm (4in. / 100mm) *16 *20 *24	19						
		L = 200mm (4in. / 100mm) *16 *20 *24	24						
		L = 250mm (4in. / 100mm) *16 *19 *20 *24	29						
		L = 300mm (4in. / 100mm) *16 *19 *20 *24	34						
VIII	Length of Capillary Tube	2m	2	✓	✓	✓	✓		
		3m	3	✓	✓	✓	✓		
		4m	4	✓	✓	✓	✓		
		5m	5	✓	✓	✓	✓		
		6m	6	✓	✓	✓	✓		
		7m	7	✓	✓	✓	✓		
		8m	8	✓	✓	✓	✓		
		9m	9	✓	✓	✓	✓		
		10m	A	✓	✓	✓	✓		
		Length of Capillary Tube with Olefin Coating	2m	B	✓	✓	✓	✓	
	3m		C	✓	✓	✓	✓		
	4m		H	✓	✓	✓	✓		
	5m		D	✓	✓	✓	✓		
	6m		J	✓	✓	✓	✓		
	7m		E	✓	✓	✓	✓		
	8m		F	✓	✓	✓	✓		
	9m		K	✓	✓	✓	✓		
	10m	G	✓	✓	✓	✓			

- Note) \*3 In case “For oxygen or chlorine (Fluorine oil) service” is used, “oil free finish - code K” option must be selected.  
 \*16 In case “JIS30K” is used for flange type and rating, “SUS316L” is used for flange material and for regular service or oxygen service, not available for length of extended parts:150/200/250/300mm  
 \*19 In case fill fluid: For high-temperature service and flange rating: ANSI300 and Wetted parts material: SUS316L, Extension length of flange 250mm/300mm are not available.  
 \*20 In case flange rating: JIS30K, Wetted parts material: SUS316L and for high temperature service, Extended diaphragm type is not available.  
 \*24 In case of “ANSI/JPI 600” is used for 3in. flange type and rating, not available for the extended diaphragm flange type.

**ST3000 Series 900 electric pressure transmitter**

**Model STH920 / STH940 / STH960 (Remote-sealed diaphragm type for gauge pressure)**

**Flush diaphragm type: 4in. / 100mm**

**For regular / high-temperature service**

Model No.: STH9X0 - I II III IV V VI VII VIII - Option I - Option II

Basic Model No.

Measuring Span	2.5 to 100kPa (250 to 10,160mmH <sub>2</sub> O)	STH920	Flush Diaphragm Flange Type: 4in. / 100mm
	35 to 3500kPa(0.35 to 35kgf/cm <sup>2</sup> )	STH940	
	0.7 to 10 MPa (7 to 102 kgf/cm <sup>2</sup> )	STH960	

	Code	Fill Fluid Code				
		1	2	3	5	
	-					
Options I	No options	X	✓	✓	✓	✓
	Built-in indicating smart meter (0 to 100% liner scales)	P	✓	✓	✓	✓
	Built-in indicating smart meter (engineering unit scales)	R	✓	✓	✓	✓
	SUS304 Bolt and nuts material	W	✓	✓	✓	✓
	SUS630 Bolt and nuts material	U	✓	✓	✓	✓
	Corrosion-resistant finish	A	✓	✓	✓	✓
	Corrosion-proof finish	B	✓	✓	✓	✓
	Corrosion-resistant finish, silver paint	D	✓	✓	✓	✓
	Oil Free finish	K	✓	✓	✓	✓
	FEP protective Film	T	✓	✓	✓	✓
	-					
Options II	No option	XX	✓	✓	✓	✓
	Water free finish (with Oil free finish)	A7	✓	✓	✓	✓
	Custom calibration	C7	✓	✓	✓	✓
	One Elbow	E1	✓	✓	✓	✓
	Two Elbows	E2	✓	✓	✓	✓
	Mounting bracket	E9	✓	✓	✓	✓
	0.1mm Thickness Diaphragm	F4	✓	✓	✓	✓
	SI unit	U1	✓	✓	✓	✓
	FOUNDATION™ fieldbus *33	D6	✓	✓	✓	✓
	Fieldbus communication stack BASIC class *33	L1	✓	✓	✓	✓

Note) \*33 “FOUNDATION™ fieldbus - code D6” and “Fieldbus communication stack BASIC class - code L1” must be selected.

**ST3000 Series 900 electric pressure transmitter**  
**Model STH940 / STH960 (Remote-sealed diaphragm type)**  
**Flush diaphragm type: 3in. / 80mm, 2in. / 50mm**  
**For regular / high-temperature service**

Model No.: STH9X0 - I II III IV V VI VII VIII - Option I - Option II

Basic Model No.

	Measuring Span	35 to 3500kPa(0.35 to 35kgf/cm <sup>2</sup> )	STH940	Flush Diaphragm Flange Type: 3in./80mm, 2in./50mm
		0.7 to 10 MPa (7 to 102 kgf/cm <sup>2</sup> )	STH960	

Selection I		Model No.	Fill fluid	Code	Fill Fluid Code			
I	Fill Fluid				1	2	3	5
		STH940 / STH960	Regular type service (Silicone oil)	1				
		Flush Diaphragm Flange Type	For oxygen service (Fluorine oil) *3	2				
		3in.(80mm)	For high-temperature service (Silicone oil) *31	3				
		2in.(50mm)						
II	Flange Standard	ANSI flange		A		✓	✓	✓
		JIS flange		J		✓	✓	✓
		JPI flange		P		✓	✓	✓
III	Flange Type & Rating	JIS 10K, ANSI/JPI 150 (RF) equivalent		A		✓	✓	✓
		JIS 20K, ANSI/JPI 300 (RF) equivalent		B		✓	✓	✓
		JIS 30K, ANSI/JPI 600 (RF) equivalent *24 *31		C		✓	✓	✓
IV	Flange Material	Carbon Steel		1		✓	✓	✓
		SUS304		7		✓	✓	✓
		SUS316		2		✓	✓	✓
		SUS316L		8		✓	✓	✓
V	Material of Wetted Parts	SUS316 (Diaphragm: SUS316L, others: SUS316)		2		✓	✓	✓
		SUS316L (Diaphragm:SUS316L, others: SUS316L) *31		8		✓	✓	✓
VI	Finish of Gasket Face	Standard (JIS18 to 25S)		J		✓	✓	✓
VII	Length of Extended Parts	L = 50mm (3in. / 100mm) *24		05	✓	✓	✓	✓
		L = 100mm (3in. / 100mm) *24		10				
		L = 150mm (3in. / 100mm) *24		15				
		L = 200mm (3in. / 100mm) *24		20				
		L = 250mm (3in. / 100mm) *24		25				
		L = 300mm (3in. / 100mm) *24		30				
		L = 50mm (2in. / 100mm) *24		06				
		L = 100mm (2in. / 100mm) *24		11				
		L = 150mm (2in. / 100mm) *24		16				
		L = 200mm (2in. / 100mm) *24		21				
		L = 250mm (2in. / 100mm) *24 *31		26				
		L = 300mm (2in. / 100mm) *24 *31		31				
VIII		Length of Capillary Tube	2m		2		✓	✓
	3m			3		✓	✓	✓
	4m			4		✓	✓	✓
	5m			5		✓	✓	✓
	Length of Capillary Tube with Olefin Coating		2m		B		✓	✓
		3m		C		✓	✓	✓
		4m		H		✓	✓	✓
		5m		D		✓	✓	✓

Options I		Code	1	2	3	5
	No options	X	✓	✓	✓	✓
	Built-in indicating smart meter (0 to 100% liner scales)	P	✓	✓	✓	✓
	Built-in indicating smart meter (engineering unit scales)	R	✓	✓	✓	✓
	SUS304 Bolt and nuts material	W	✓	✓	✓	✓
	SUS630 Bolt and nuts material	U	✓	✓	✓	✓
	Corrosion-resistant finish	A	✓	✓	✓	✓
	Corrosion-proof finish	B	✓	✓	✓	✓
	Corrosion-resistant finish, silver paint	D	✓	✓	✓	✓
	Oil Free finish	K	✓	✓	✓	✓

Options II		Code	1	2	3	5
	No option	XX	✓	✓	✓	✓
	Water free finish (with Oil free finish)	A7	✓	✓	✓	✓
	Custom calibration	C7	✓	✓	✓	✓
	One Elbow	E1	✓	✓	✓	✓
	Two Elbows	E2	✓	✓	✓	✓
	Mounting bracket	E9	✓	✓	✓	✓
	SI unit	U1	✓	✓	✓	✓
	FOUNDATION™ fieldbus *33	D6	✓	✓	✓	✓
	Fieldbus communication stack BASIC class *33	L1	✓	✓	✓	✓

Note) \*3 In case “For oxygen or chlorine (Fluorine oil) service” is used, “oil free finish - code K” option must be selected.  
 \*24 In case of “ANSI/JPI 600” is used for 3in. flange type and rating, not available for the extended diaphragm flange type.  
 \*31 In case fill fluid: For high-temperature service, for high-temperature vacuum service or high-temperature high vacuum service and 2in. Flange rating: ANSI/JPI600 and Wetted parts material: SUS316L, Extension length of Flange 200/250/300mm are not available.  
 \*33 “FOUNDATION™ fieldbus - code D6” and “Fieldbus communication stack BASIC class - code L1” must be selected.

**ST3000 Series 900 electric pressure transmitter**  
**Model STH940 / STH960 (Remote-sealed diaphragm type for gauge pressure)**  
**Flush diaphragm type: 3in. / 80mm**  
**For high-temperature / vacuum, high-temperature / high-vacuum service**

Model No.: STH9X0 - I II III IV V VI VII VIII - Option I - Option II

Basic Model No.

	Measuring Span	35 to 3500kPa(0.35 to 35kgf/cm <sup>2</sup> )	STH940	Flush Diaphragm Flange Type: 3in./80mm, 2in./50mm
		0.7 to 10 MPa (7 to 102 kgf/cm <sup>2</sup> )	STH960	

Selection I		Model No.	Fill fluid	Code	Fill Fluid Code	
I	Fill Fluid				4	7
		STH940 / STH960	For high-temperature vacuum service (silicone oil)	4		
		Flush Diaphragm Flange Type 3in.(80mm)	For high-temperature high vacuum service (silicone oil)	7		
II	Flange Standard	ANSI flange		A	✓	✓
		JIS flange		J	✓	✓
		JPI flange		P	✓	✓
III	Flange Type & Rating	JIS 10K, ANSI/JPI 150 (RF) equivalent		A	✓	✓
		JIS 20K, ANSI/JPI 300 (RF) equivalent		B	✓	✓
		JIS 30K, ANSI/JPI 600 (RF) equivalent		C	✓	✓
IV	Flange Material	Carbon Steel		1	✓	✓
		SUS304		7	✓	✓
		SUS316		2	✓	✓
		SUS316L		8	✓	✓
V	Material of Wetted Parts	SUS316 (Diaphragm: SUS316L, others: SUS316)		2	✓	✓
		SUS316L (Diaphragm:SUS316L, others: SUS316L)		8	✓	✓
		Tantalum (Diaphragm: Tantalum, others: Tantalum) *17		4	✓	✓
		Hastelloy C (Diaphragm: Hastelloy C, others: Hastelloy C)		9	✓	✓
VI	Finish of Gasket Face	Standard (JIS18 to 25S)		J	✓	✓
VII	Parts	Flush diaphragm 3in. / 80mm			✓	✓
VIII	Length of Capillary Tube	2m		2	✓	✓
		3m		3	✓	✓
		4m		4	✓	✓
		5m		5	✓	✓
		6m		6	✓	✓
		7m		7	✓	✓
		8m		8	✓	✓
		9m		9	✓	✓
		10m		A	✓	✓

Options I	No options	X	✓	✓
	Built-in indicating smart meter (0 to 100% liner scales)	P	✓	✓
	Built-in indicating smart meter (engineering unit scales)	R	✓	✓
	SUS304 Bolt and nuts material	W		
	SUS630 Bolt and nuts material	U	✓	✓
	Corrosion-resistant finish	A	✓	✓
	Corrosion-proof finish	B	✓	✓
	Corrosion-resistant finish, silver paint	D	✓	✓
	Oil Free finish	K	✓	✓
	FEP protective film	T		

Options II	No option	XX	✓	✓
	Water free finish (with Oil free finish)	A7	✓	✓
	Custom calibration	C7	✓	✓
	One Elbow	E1	✓	✓
	Two Elbows	E2	✓	✓
	Mounting bracket	E9	✓	✓
	0.1mm thickness diaphragm *15	F4		
	SI unit	U1	✓	✓
	FOUNDATION™ fieldbus *33	D6	✓	✓
	Fieldbus communication stack BASIC class *33	L1	✓	✓

Note) \*15 Only available for Material of Wetted parts: “SUS316” and “SUS316L”.  
 \*17 In case “Tantalum” is used for diaphragm material, and in case of “For high-temperature service”, normal operating conditions of meter body (process fluid) temperature is -10 to +180deg.C  
 \*33 “FOUNDATION™ fieldbus - code D6” and “Fieldbus communication stack BASIC class - code L1” must be selected.

**ST3000 Series 900 electric pressure transmitter**  
**Model STH940 / STH960 (Remote-sealed diaphragm type for gauge pressure)**  
**Flush diaphragm type: 2in. / 50mm, 1.5in. / 40mm**  
**For high-temperature / vacuum, high-temperature / high-vacuum service**

Model No.: STH9X0 - I II III IV V VI VII VIII - Option I - Option II

Basic Model No.

Measuring Span	35 to 3500kPa(0.35 to 35kgf/cm <sup>2</sup> ) 0.7 to 10 MPa (7 to 102 kgf/cm <sup>2</sup> )	STH940 STH960	Flush Diaphragm Flange Type: 3in./50mm, 1.5in./40mm
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Selection I		Model No.	Fill fluid	Code	Fill Fluid Code	
I	Fill Fluid	STH940 / STH960	For high-temperature vacuum service (silicone oil)	4	4	7
		Flush Diaphragm Flange Type 2in.(50mm) / 1.5in. (40mm)	For high-temperature high vacuum service (silicone oil)	7		
II	Flange Standard	ANSI flange		A	✓	✓
		JIS flange		J	✓	✓
		JPI flange		P	✓	✓
III	Flange Type & Rating	JIS 10K, ANSI/JPI 150 (RF) equivalent		A	✓	✓
		JIS 20K, ANSI/JPI 300 (RF) equivalent		B	✓	✓
		JIS 30K, ANSI/JPI 600 (RF) equivalent		C	✓	✓
IV	Flange Material	Carbon Steel		1	✓	✓
		SUS304		7	✓	✓
		SUS316		2	✓	✓
		SUS316L		8	✓	✓
V	Material of Wetted Parts	SUS316 (Diaphragm: SUS316L, others: SUS316)		2	✓	✓
		SUS316L (Diaphragm:SUS316L, others: SUS316L)		8	✓	✓
		Tantalum (Diaphragm: Tantalum, others: Tantalum) *17		4	✓	✓
		Hastelloy C (Diaphragm: Hastelloy C, others: Hastelloy C)		9	✓	✓
VI	Finish of Gasket Face	Standard (JIS18 to 25S)		J	✓	✓
VII	Length of extended parts	Flush diaphragm 2in. /50mm		01	✓	✓
		Flush diaphragm 1.5in. /40mm		02	✓	✓
VIII	Length of Capillary Tube	2m		2	✓	✓
		3m		3	✓	✓
		4m		4	✓	✓
		5m		5	✓	✓
		6m		6	✓	✓
		7m		7	✓	✓
		8m		8	✓	✓
		9m		9	✓	✓
		10m		A	✓	✓

Options I	No options		X	✓	✓
	Built-in indicating smart meter (0 to 100% liner scales)		P	✓	✓
	Built-in indicating smart meter (engineering unit scales)		R	✓	✓
	SUS304 Bolt and nuts material		W		
	SUS630 Bolt and nuts material		U	✓	✓
	Corrosion-resistant finish		A	✓	✓
	Corrosion-proof finish		B	✓	✓
	Corrosion-resistant finish, silver paint		D	✓	✓
	Oil Free finish		K	✓	✓
	FEP protective film		T		
Options II	No option		XX	✓	✓
	Water free finish (with Oil free finish)		A7	✓	✓
	Custom calibration		C7	✓	✓
	One Elbow		E1	✓	✓
	Two Elbows		E2	✓	✓
	Mounting bracket		E9	✓	✓
	SI unit		U1	✓	✓
	FOUNDATION™ fieldbus *33		D6	✓	✓
	Fieldbus communication stack BASIC class *33		L1	✓	✓

Note) \*17 In case “Tantalum” is used for diaphragm material, and in case of “For high-temperature service”, normal operating conditions of meter body (process fluid) temperature is -10 to +180deg.C

\*33 “FOUNDATION™ fieldbus - code D6” and “Fieldbus communication stack BASIC class - code L1” must be selected.

**ST3000 Series 900 electric pressure transmitter**  
**Model STH940 / STH960 (Remote-sealed diaphragm type for gauge pressure)**  
**Extended diaphragm type: 4in. / 100mm**  
**For high-temperature / vacuum, high-temperature / high-vacuum service**

Model No.: STH9X0 - I II III IV V VI VII VIII - Option I - Option II

Basic Model No.

	Measuring Span	35 to 3500kPa(0.35 to 35kgf/cm <sup>2</sup> )	STH940	Flush Diaphragm Flange Type: 4in./100mm
		0.7 to 10 MPa (7 to 102 kgf/cm <sup>2</sup> )	STH960	

Selection I			Code	Fill Fluid Code	
I	Fill Fluid	Model No.		4	7
		STH940 / STH960			
	Flush Diaphragm Flange Type 4in. (100mm)	For high-temperature vacuum service (silicone oil)	4		
		For high-temperature high vacuum service (silicone oil)	7		
II	Flange Standard	ANSI flange	A	✓	✓
		JIS flange	J	✓	✓
		JPI flange	P	✓	✓
III	Flange Type & Rating	JIS 10K, ANSI/JPI 150 (RF) equivalent	A	✓	✓
		JIS 20K, ANSI/JPI 300 (RF) equivalent *23	B	✓	✓
		JIS 30K, ANSI/JPI 600 (RF) equivalent *20 *24	C	✓	✓
IV	Flange Material	Carbon Steel	1	✓	✓
		SUS304	7	✓	✓
		SUS316	2	✓	✓
		SUS316L *20 *23	8	✓	✓
V	Material of Wetted Parts	SUS316 (Diaphragm: SUS316L, others: SUS316)	2	✓	✓
		SUS316L (Diaphragm:SUS316L, others: SUS316L)	8	✓	✓
VI	Finish of Gasket Face	Standard (JIS18 to 25S)	J	✓	✓
VII	Length of extended parts	L = 50mm (4in. / 100mm) *24	09	✓	✓
		L = 100mm (4in. / 100mm) *24	14	✓	✓
		L = 150mm (4in. / 100mm) *24	19	✓	✓
		L = 200mm (4in. / 100mm) *23 *24	24	✓	✓
		L = 250mm (4in. / 100mm) *23 *24	29	✓	✓
		L = 300mm (4in. / 100mm) *23 *24	34	✓	✓
VIII	Length of Capillary Tube	2m	2	✓	✓
		3m	3	✓	✓
		4m	4	✓	✓
		5m	5	✓	✓
		6m	6	✓	✓
		7m	7	✓	✓
		8m	8	✓	✓
		9m	9	✓	✓
		10m	A	✓	✓

Options I	No options	X	✓	✓
	Built-in indicating smart meter (0 to 100% liner scales)	P	✓	✓
	Built-in indicating smart meter (engineering unit scales)	R	✓	✓
	SUS304 Bolt and nuts material	W		
	SUS630 Bolt and nuts material	U	✓	✓
	Corrosion-resistant finish	A	✓	✓
	Corrosion-proof finish	B	✓	✓
	Corrosion-resistant finish, silver paint	D	✓	✓
	Oil Free finish	K	✓	✓

Options II	No option	XX	✓	✓
	Water free finish (with Oil free finish)	A7	✓	✓
	Custom calibration	C7	✓	✓
	One Elbow	E1	✓	✓
	Two Elbows	E2	✓	✓
	Mounting bracket	E9	✓	✓
	SI unit	U1	✓	✓
	FOUNDATION™ fieldbus *33	D6	✓	✓
	Fieldbus communication stack BASIC class *33	L1	✓	✓

Note) \*20 In case Flange rating: JIS30K, Wetted parts material: SUS316L and for high temperature service, Extended diaphragm type is not available.  
 \*23 In case “ANSI/JPI300” is used for Flange Type & Rating, not available for Length of Extended Parts: 200/250/300mm.  
 \*24 In case of “ANSI/JPI 600” is used for 3in. flange type and rating, not available for the extended diaphragm flange type.  
 \*33 “FOUNDATION™ fieldbus - code D6” and “Fieldbus communication stack BASIC class - code L1” must be selected.

**ST3000 Series 900 electric pressure transmitter**

**Model STH940 / STH960 (Remote-sealed diaphragm type)**

**Extended diaphragm type: 3in. / 80mm, 2in. / 50mm**

**For high-temperature / vacuum, high-temperature / high-vacuum service**

Model No.: STH9X0 - I II III IV V VI VII VIII - Option I - Option II

Basic Model No.

	Measuring Span	35 to 3500kPa(0.35 to 35kgf/cm <sup>2</sup> )	STH940	Flush Diaphragm Flange Type: 3in./80mm, 2in. / 50mm
		0.7 to 10 MPa (7 to 102 kgf/cm <sup>2</sup> )	STH960	

Selection I			Code	Fill Fluid Code	
I	Fill Fluid	Model No.		4	7
		STH940 / STH960	For high-temperature vacuum service (silicone oil)		
II	Flange Standard	ANSI flange	A	✓	✓
		JIS flange	J	✓	✓
		JPI flange	P	✓	✓
III	Flange Type & Rating	JIS 10K, ANSI/JPI 150 (RF) equivalent	A	✓	✓
		JIS 20K, ANSI/JPI 300 (RF) equivalent	B	✓	✓
		JIS 30K, equivalent *24 *32	C	✓	✓
IV	Flange Material	Carbon Steel	1	✓	✓
		SUS304	7	✓	✓
		SUS316	2	✓	✓
		SUS316L *32	8	✓	✓
V	Material of Wetted Parts	SUS316 (Diaphragm: SUS316L, others: SUS316)	2	✓	✓
		SUS316L (Diaphragm:SUS316L, others: SUS316L)	8	✓	✓
VI	Finish of Gasket Face	Standard (JIS18 to 25S)	J	✓	✓
VII	Length of extended parts	L = 50mm (4in. / 100mm) *24	05	✓	✓
		L = 100mm (4in. / 100mm) *24	10	✓	✓
		L = 150mm (4in. / 100mm) *24	15	✓	✓
		L = 200mm (4in. / 100mm) *24	06	✓	✓
		L = 250mm (4in. / 100mm) *24	11	✓	✓
		L = 300mm (4in. / 100mm) *24	16	✓	✓
VIII	Length of Capillary Tube	2m	2	✓	✓
		3m	3	✓	✓
		4m	4	✓	✓
		5m	5	✓	✓

Options I	No options	X	✓	✓
	Built-in indicating smart meter (0 to 100% liner scales)	P	✓	✓
	Built-in indicating smart meter (engineering unit scales)	R	✓	✓
	SUS304 Bolt and nuts material	W		
	SUS630 Bolt and nuts material	U	✓	✓
	Corrosion-resistant finish	A	✓	✓
	Corrosion-proof finish	B	✓	✓
	Corrosion-resistant finish, silver paint	D	✓	✓
	Oil Free finish	K	✓	✓

Options II	No option	XX	✓	✓
	Water free finish (with Oil free finish)	A7	✓	✓
	Custom calibration	C7	✓	✓
	One Elbow	E1	✓	✓
	Two Elbows	E2	✓	✓
	Mounting bracket	E9	✓	✓
	SI unit	U1	✓	✓
	FOUNDATION™ fieldbus *33	D6	✓	✓
	Fieldbus communication stack BASIC class *33	L1	✓	✓

Note) \*24 In case of “ANSI/JPI 600” is used 3in. flange type and rating, not available for the extended diaphragm flange type.

\*32 In case flange rating: JIS30K, flange material: 316L is not available.

\*33 “FOUNDATION™ fieldbus - code D6” and “Fieldbus communication stack BASIC class - code L1” must be selected.

**ST3000 Series 900 electric pressure transmitter**  
**Model STH980 (Remote-sealed button diaphragm type)**  
**Button diaphragm type: 1½ in. External screw**  
**For regular / oxygen service**

Model No.: STH9X0 - I II III IV V VI VII VIII - Option I - Option II

Basic Model No.

Measuring Span	35 to 3500kPa (0.35 to 35kgf/cm <sup>2</sup> )	STH960	Button Diaphragm Type: 1-1/2 in. Male screw
	0.7 to 42MPa (7 to 420 kgf/cm <sup>2</sup> )	STH980	

Selection I				Code	Fill Fluid Code		
					STH960		STH980
I	Fill Fluid	Flange Type	Model No.	Fill Fluid	1	2	1
		Button Dia-phragm Type 1-1/2 in. External screw	STH960	Regular type service (Silicone oil)	1		
				For oxygen service (Fluorine oil) *3	2		
			STH980	Regular type service (Silicone oil)	1		
				For oxygen service (Fluorine oil) *3	2		
II	Flange Standard	No flange		N	✓	✓	✓
III	Flange Type & Rating	1-1/2in. Male screw button diaphragm		2	✓	✓	✓
IV	Screw Material	SUS304		7	✓	✓	✓
V	Material of Wetted Parts	SUS316 (Diaphragm: SUS316L, others: SUS316)		2	✓	✓	✓
		SUS316L (Diaphragm:SUS316L, others: SUS316L)		8	✓	✓	✓
VI	Finish of Gasket Face	Standard (JIS18 to 25S)		J	✓	✓	✓
VII	Length of Extended Parts	Flush Diaphragm (For 1-1/2in. Male screw)			✓	✓	✓
VIII	Length of Capillary Tube	2m		2	✓	✓	✓
		3m		3	✓	✓	✓
		4m		4	✓	✓	✓
		5m		5	✓	✓	✓
	Length of Capillary Tube with Olefin Coating	2m		B	✓	✓	✓
		3m		C	✓	✓	✓
		4m		H	✓	✓	✓
		5m		D	✓	✓	✓

Options I			Code	Fill Fluid Code	
				STH960 STH980	
			1	2	
Options I	No options		X	✓	✓
	Built-in indicating smart meter (0 to 100% liner scales)		P	✓	✓
	Built-in indicating smart meter (engineering unit scales)		R	✓	✓
	SUS304 Bolt and nuts material		W	✓	✓
	SUS630 Bolt and nuts material		U	✓	✓
	Corrosion-resistant finish		A	✓	✓
	Corrosion-proof finish		B	✓	✓
	Corrosion-resistant finish, silver paint		D	✓	✓
	Oil Free finish		K	✓	✓
			-		
Options II	No option		XX	✓	✓
	Water free finish (with Oil free finish)		A7	✓	✓
	Custom calibration		C7	✓	✓
	One Elbow		E1	✓	✓
	Two Elbows		E2	✓	✓
	Mounting bracket		E9	✓	✓
	SI unit		U1	✓	✓
	FOUNDATION™ fieldbus *33		D6	✓	✓
	Fieldbus communication stack BASIC class *33		L1	✓	✓

Note) \*3 In case “For oxygen or chlorine (Fluorine oil) service” is used, “oil free finish - code K” option must be selected.

\*33 “FOUNDATION™ fieldbus - code D6” and “Fieldbus communication stack BASIC class - code L1” must be selected.

**ST3000 Series 900 electric pressure transmitter**  
**Model STH920/940/960/980 (Remote-sealed 2 in. wafer diaphragm type)**  
**2 in. wafer (Pancake)**

Model No.: STH9X0 - I II III IV V VI VII VIII - Option I - Option II  
 Basic Model No.

	Measuring Span	2.5 to 100kPa (0.35 to 35kgf/cm <sup>2</sup> )	STH920	2in. wafer diaphragm type ANSI 1500 equivalent
		0.7 to 10MPa (7 to 102 kgf/cm <sup>2</sup> )	STH940	
		35 to 3500kPa (0.35 to 350kgf/cm <sup>2</sup> )	STH960	
		0.7 to 42MPa (7 to 420 kgf/cm <sup>2</sup> )	STH980	

Selection I				Code	Fill Fluid Code	
	Fill Fluid	Flange Type	Model No.		1	2
I		2 in. wafer	STH920	Regular type service (Silicone oil)	1	
				For oxygen service (Fluorine oil) *3	2	
			STH940	Regular type service (Silicone oil)	1	
				For oxygen service (Fluorine oil) *3	2	
II	Flange Standard	No flange		N	✓	✓
III	Flange Type & Rating	1-1/2in. Male screw button diaphragm		2	✓	✓
IV	Screw Material	SUS304		7	✓	✓
V	Material of Wetted Parts	SUS316 (Diaphragm: SUS316L, others: SUS316)		2	✓	✓
		SUS316L (Diaphragm: SUS316L, others: SUS316L)		8	✓	✓
VI	Finish of Gasket Face	Standard (JIS18 to 25S)		J	✓	✓
VII	Length of Extended Parts	Flush		00	✓	✓
VIII	Length of Capillary Tube	2m		2	✓	✓
		3m		3	✓	✓
		4m		4	✓	✓
		5m		5	✓	✓
		6m		6	✓	✓
		7m		7	✓	✓
		8m		8	✓	✓
		9m		9	✓	✓
		10m		A	✓	✓
		10m				
	Length of Capillary Tube with Olefin Coating	2m		B	✓	✓
		3m		C	✓	✓
		4m		H	✓	✓
		5m		D	✓	✓
		6m		J	✓	✓
		7m		E	✓	✓
		8m		F	✓	✓
		9m		K	✓	✓
10m		G	✓	✓		
Options I	No options		X	✓	✓	
	Built-in indicating smart meter (0 to 100% liner scales)		P	✓	✓	
	Built-in indicating smart meter (engineering unit scales)		R	✓	✓	
	SUS630 Bolt and nuts material		U	✓	✓	
	Corrosion-resistant finish		A	✓	✓	
	Corrosion-proof finish		B	✓	✓	
	Corrosion-resistant finish, silver paint		D	✓	✓	
	Oil Free finish		K	✓	✓	
		-				
Options II	No option		XX	✓	✓	
	Water free finish (with Oil free finish)		A7	✓	✓	
	Custom calibration		C7	✓	✓	
	One Elbow		E1	✓	✓	
	Two Elbows		E2	✓	✓	
	Mounting bracket		E9	✓	✓	
	SI unit		U1	✓	✓	
	FOUNDATION™ fieldbus *33		D6	✓	✓	
	Fieldbus communication stack BASIC class *33		L1	✓	✓	

Note) \*3 In case “For oxygen or chlorine (Fluorine oil) service” is used, “oil free finish - code K” option must be selected.  
 \*33 “FOUNDATION™ fieldbus - code D6” and “Fieldbus communication stack BASIC class - code L1” must be selected.

**ST3000 Series 900 electric pressure transmitter**  
**Model STH920/940/960/980 (Remote-sealed 2 in. wafer diaphragm type)**  
**2 in. wafer (Pancake)**

Model No.: STH9X0 - I II III IV V VI VII VIII - Option I - Option II

Basic Model No.

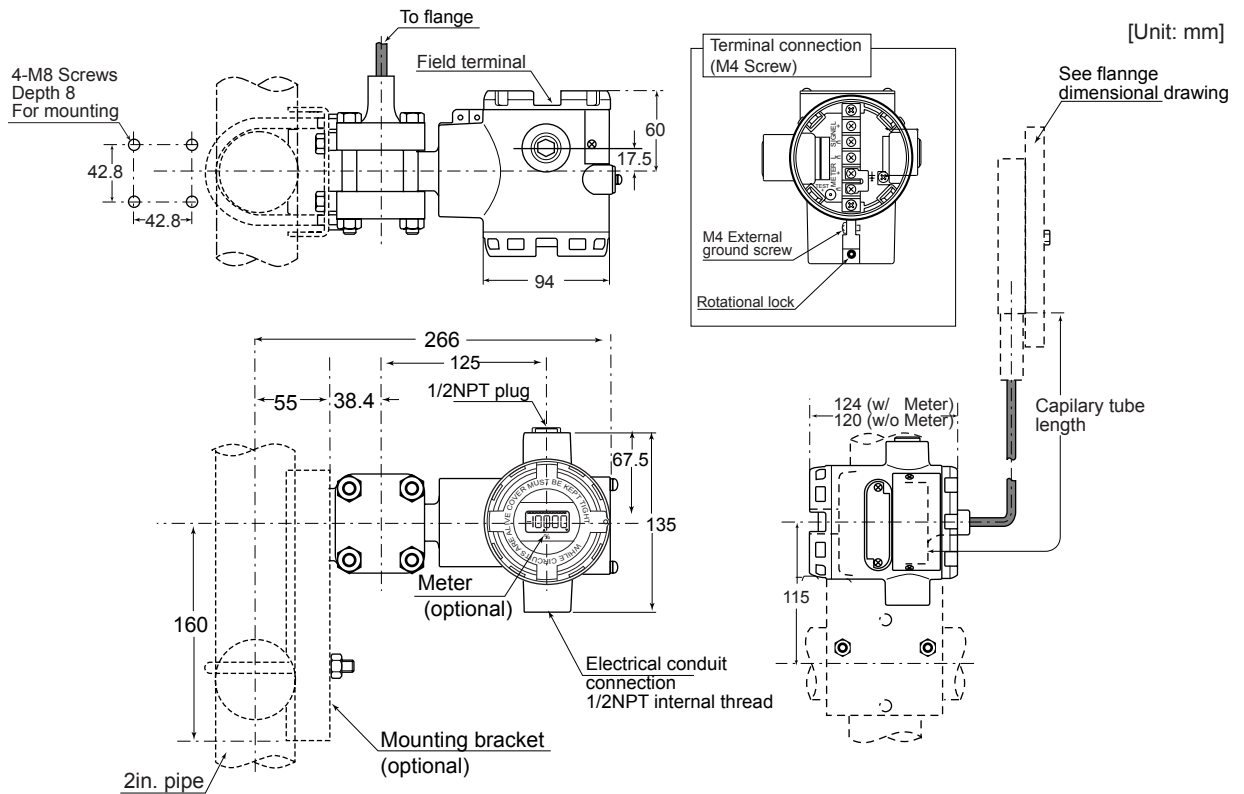
Measuring Span	0.7 to 10MPa (7 to 102 kgf/cm <sup>2</sup> )	STH940	2in. wafer diaphragm type ANSI 1500 equivalent
	35 to 3500kPa (0.35 to 350kgf/cm <sup>2</sup> )	STH960	
	0.7 to 42MPa (7 to 420 kgf/cm <sup>2</sup> )	STH980	

Selection I				Code	Fill Fluid Code STH940/STH960		
I	Fill Fluid	Flange Type	Model No.	Fill Fluid	-	4	7
		2 in. wafer	STH940 STH960 STH980	For high-temperature vacuum service (Silicone oil)	4		
				For high-temperature high-vacuum service (Silicone oil)	7		
II	Flange Standard	No flange		N	✓	✓	
III	Flange Type & Rating	1-1/2in. Male screw button diaphragm		2	✓	✓	
IV	Screw Material	SUS304		7	✓	✓	
V	Material of Wetted Parts	SUS316 (Diaphragm: SUS316L, others: SUS316)		2	✓	✓	
		SUS316L (Diaphragm:SUS316L, others: SUS316L)		8	✓	✓	
VI	Finish of Gasket Face	Standard (JIS18 to 25S)		J	✓	✓	
VII	Length of Extended Parts	Flush		00	✓	✓	
VIII	Length of Capillary Tube	2m		2	✓	✓	
		3m		3	✓	✓	
		4m		4	✓	✓	
		5m		5	✓	✓	
		6m		6	✓	✓	
		7m		7	✓	✓	
		8m		8	✓	✓	
		9m		9	✓	✓	
10m		A	✓	✓			
Options I	No options		X	✓	✓		
	Built-in indicating smart meter (0 to 100% liner scales)		P	✓	✓		
	Built-in indicating smart meter (engineering unit scales)		R	✓	✓		
	SUS630 Bolt and nuts material		U	✓	✓		
	Corrosion-resistant finish		A	✓	✓		
	Corrosion-proof finish		B	✓	✓		
	Corrosion-resistant finish, silver paint		D	✓	✓		
	Oil Free finish		K	✓	✓		
Options II	No option		XX	✓	✓		
	Water free finish (with Oil free finish)		A7	✓	✓		
	Custom calibration		C7	✓	✓		
	One Elbow		E1	✓	✓		
	Two Elbows		E2	✓	✓		
	Mounting bracket		E9	✓	✓		
	SI unit		U1	✓	✓		
	FOUNDATION™ fieldbus *33		D6	✓	✓		
	Fieldbus communication stack BASIC class *33		L1	✓	✓		

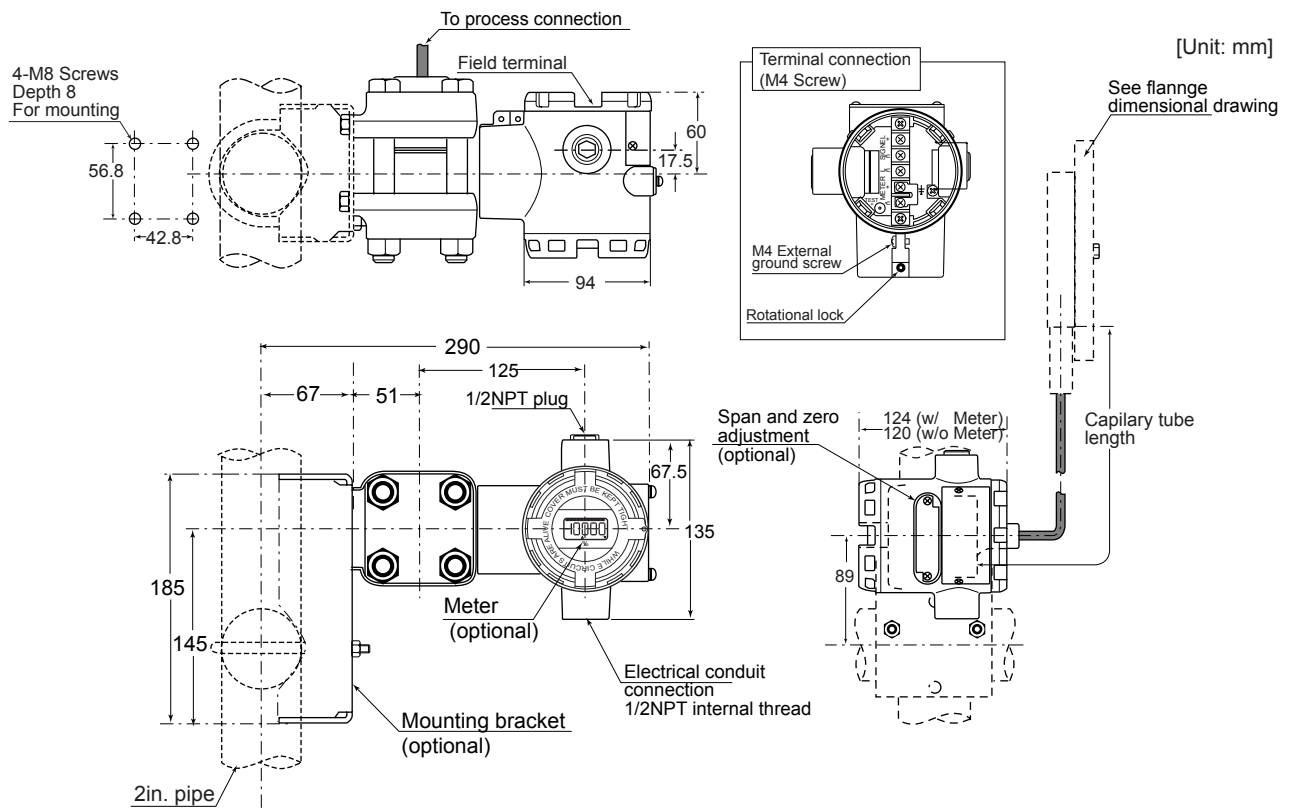
Note) \*33 “FOUNDATION™ fieldbus - code D6” and “Fieldbus communication stack BASIC class - code L1” must be selected.

# DIMENSIONS

## STH920/STH940/STH960



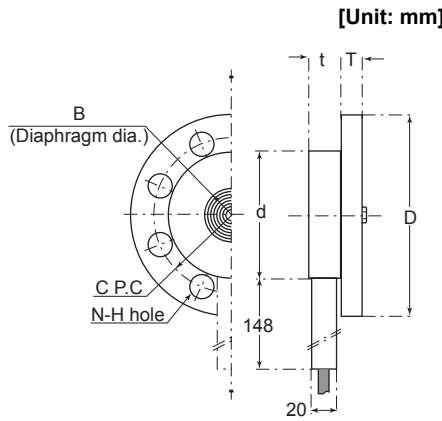
## STH980



- Note) 1. To prevent vibration, you are recommended to fasten the capillary tube mid-length.  
 2. Select a gasket that will not contact the diaphragm after it is tightened.

STH920/STH940/STH960

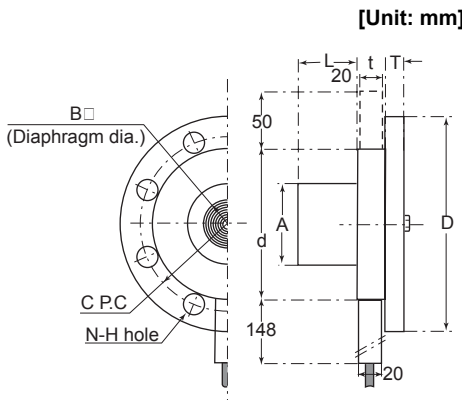
Table of flash diaphragm flange dimensions



Rating	Flange rating	D	T	C	N	H	d	t	B
1.5 in./40mm	JIS 10K-40mm	140	16	105	4	19	81	25* <sup>i</sup>	43
	JIS 20K-40mm	140	18	105	4	19			
	JIS 30K-40mm	160	22	120	4	23			
	ANSI 150-1.5 in.	127	18	98.6	4	16			
	ANSI 300-1.5 in.	155	21	114.3	4	22			
	ANSI 600-1.5 in.	155	22.5	114.3	4	22			
	JPI 150-1.5 in.	127	18	98.6	4	16			
	JPI 300-1.5 in.	155	21	114.3	4	22			
2 in./50mm	JIS 10K-50mm	155	16	120	4	19	99	62* <sup>ii</sup>	
	JIS 20K-50mm	155	18	120	8	19			
	JIS 30K-50mm	165	22	130	8	19			
	ANSI 150-2 in.	152	19.5	120.6	4	19			
	ANSI 300-2 in.	165	22.5	127	8	19			
	ANSI 600-2 in.	165	25.5	127	8	19			
	JPI 150-2 in.	152	19.5	120.6	4	19			
	JPI 300-2 in.	165	22.5	127	8	19			
3 in./80mm	JIS 10K-80mm	185	18	150	8	19	129.5	25	95
	JIS 20K-80mm	200	22	160	8	23			
	JIS 30K-80mm	210	28	170	8	23			
	ANSI 150-3 in.	190	24	152.4	4	19			
	ANSI 300-3 in.	210	28.5	168.1	8	22			
	ANSI 600-3 in.	210	32	168.1	8	22			
	JPI 150-3 in.	190	24	152.4	4	19			
	JPI 300-3 in.	210	28.5	168.1	8	22			
JPI 600-3 in.	210	32	168.1	8	22				

- i. Wetted parts material is Hastelloy C and fill fluid is for regular, high-temperature, oxygen, or chlorine service: t=26.7
- ii. Wetted parts material is Hastelloy C and fill fluid is for regular, high-temperature, oxygen, or chlorine service: B=43

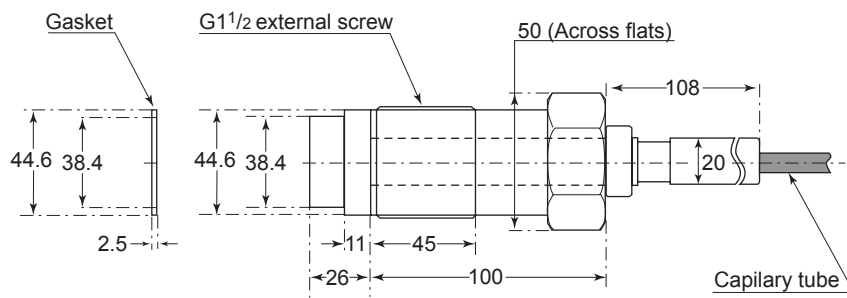
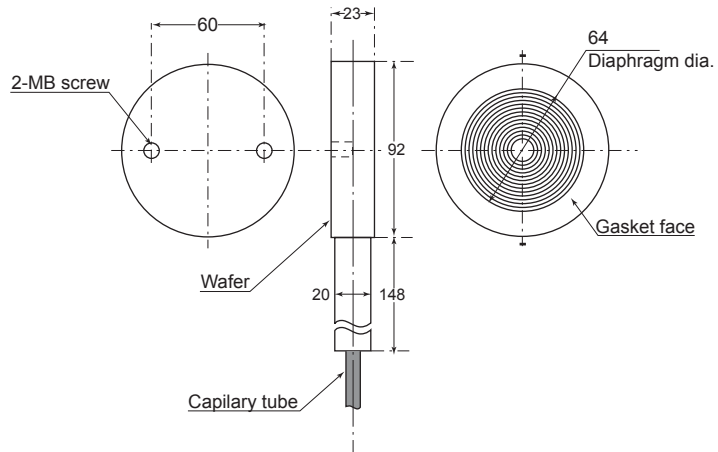
Table of extended diaphragm flange dimensions



Rating	Flange rating	D	T	C	N	H	d	A	t	B	L
2 in./50mm	JIS 10K-50mm	155	16	120	4	19	99	47±1	25	43	50
	JIS 20K-50mm	155	18	120	8	19					100
	JIS 30K-50mm	165	22	130	8	19					150
	ANSI 150-2 in.	152	19.5	120.6	4	19					200
	ANSI 300-2 in.	165	22.5	127	8	19					250
	ANSI 600-2 in.	165	25.5	127	8	19					300
	JPI 150-2 in.	152	19.5	120.6	4	19					
	JPI 300-2 in.	165	22.5	127	8	19					
	JPI 600-2 in.	165	25.5	127	8	19					
3 in./80mm	JIS 10K-80mm	185	18	150	8	19	129.5	69±1	25	62* <sup>i</sup>	
	JIS 20K-80mm	200	22	160	8	23					
	JIS 30K-80mm	210	28	170	8	23					
	ANSI 150-3 in.	190	24	152.4	4	19					
	ANSI 300-3 in.	210	28.5	168.1	8	22					
	ANSI 600-3 in.	210	32	168.1	8	22					
	JPI 150-3 in.	190	24	152.4	4	19					
	JPI 300-3 in.	210	28.5	168.1	8	22					
4 in./100mm	JIS 10K-100mm	210	18	175	8	19	157	95±1	23	90.4	
	JIS 20K-100mm	225	24	185	8	23					
	JIS 30K-100mm	240	32	195	8	25					
	ANSI 150-4 in.	229	24	190.5	8	19					
	ANSI 300-4 in.	254	32	200.2	8	22					
	JPI 150-4 in.	229	24	190.5	8	19					
JPI 300-4 in.	254	32	200.2	8	22						

- i. Wetted parts material is Hastelloy C and fill fluid is for regular, high-temperature, oxygen, or chlorine service: B=43

2 in wafer bottom diaphragm.

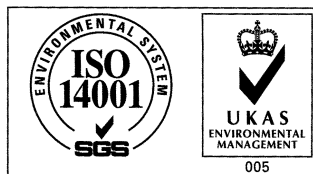


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