

Smart Displacement type Level Transmitter

model SLX

OVERVIEW

The SLX series is a complete line of highly accurate and reliable high-performance torque tube type displacement level transmitters for the measurement.

The model SLX is able to calculate boundary surface levels, specific gravity as well as liquid level.

These microprocessor-based instruments have two-way communication capabilities that makes possible communication with the communicator with a SLX data base. Tasks such as self-diagnosis or range or zero/span adjustment can, thus, be performed remotely.

FEATURES

Economical replacement

- The model SLX can be fitted with a existing chamber and float making it an economic investment.

Wide selection of element material

- Select from various kinds of materials for wetted parts to best suit your individual application.
- A wide range of allowable operating pressures and specific gravities is available to choose from.

High performance and highly reliable

- Specific gravity for the process fluid can be set from the communicator.
- The effect of transient temperature is minimal.

Easy to adjust and maintain

- Remote setting of range, self-diagnosis, zero/span adjustment can be made from the communicator.
- Exact, dumping and zero/span adjustments can be made by just using a screwdriver without having to open the meter cover.
- An LCD display indicator makes it easier to monitor liquid level and output.

Compatible housing and parts

- Field proven chamber and float
- The transmitter housing is common use with our differential pressure transmitter.
- Highly resistant to vibration



APPLICATIONS

- Reactor, distillation, drum, recovery level measurement
- Boundary surface, specific gravity measurement
- Cryogenic (-196 °C liquefied gas etc.) and high-temperature (+ 400 °C) applications
- High-vacuum (-101.3 kPa) and high-pressure (15 MPa) applications

OPERATION PRINCIPLE

One side of the torque tube is fixed onto the torque tube housing with screw. And the other side of the torque tube is assembled with torque arm, which is supported at the knife-edge supporting point. When installing or using the level measurement, suspend the float on the edge of the torque arm, and then the torque tube will be twisted by the float's weight. Use the level measurement in this condition.

When process liquid level changes, buoyancy will generate on the float according to the "Principle of Archimedes". (Displacement type float is heavy. Therefore, float displacement may not change the level despite of the liquid level change. In general, it is designed as to be "generated buoyancy of liquid level at 100 % < float mass"). The proportionally generated buoyancy to the level, converts into torque by torque arm/knife-edge which suspends the float, and to the torque tube. Torque tube functions as to enclose the process liquid and as torsion spring function, and converts torque into angle displacement. This angle displacement transfers through torque rod and coupling, and detected by the angle displacement sensor. Then, it will be converted into liquid level signal by A/D converter, and sent it to CPU.

In case the process liquid contacts with torque tube, the shearing module of the torque tube material will be changed by liquid temperature, and then changes the torsional spring constant, and generates the output shift. To compensate the output shift, which generates by liquid temperature, temperature around the torque tube is detected by the temperature sensor, converted into temperature signal by A/D converter and then sent to CPU.

These liquid level signal and temperature signal are computed by CPU, and become digital signal based on each configured range by the communicator. This computed value will be converted into 4 to 20 mA DC analog signal with D/A converter and will be output.

Moreover, model SLX is provided parameters to compensate the output shift which generates by liquid temperature. (Default parameters are set at shipment, can be set using the communicator later.)

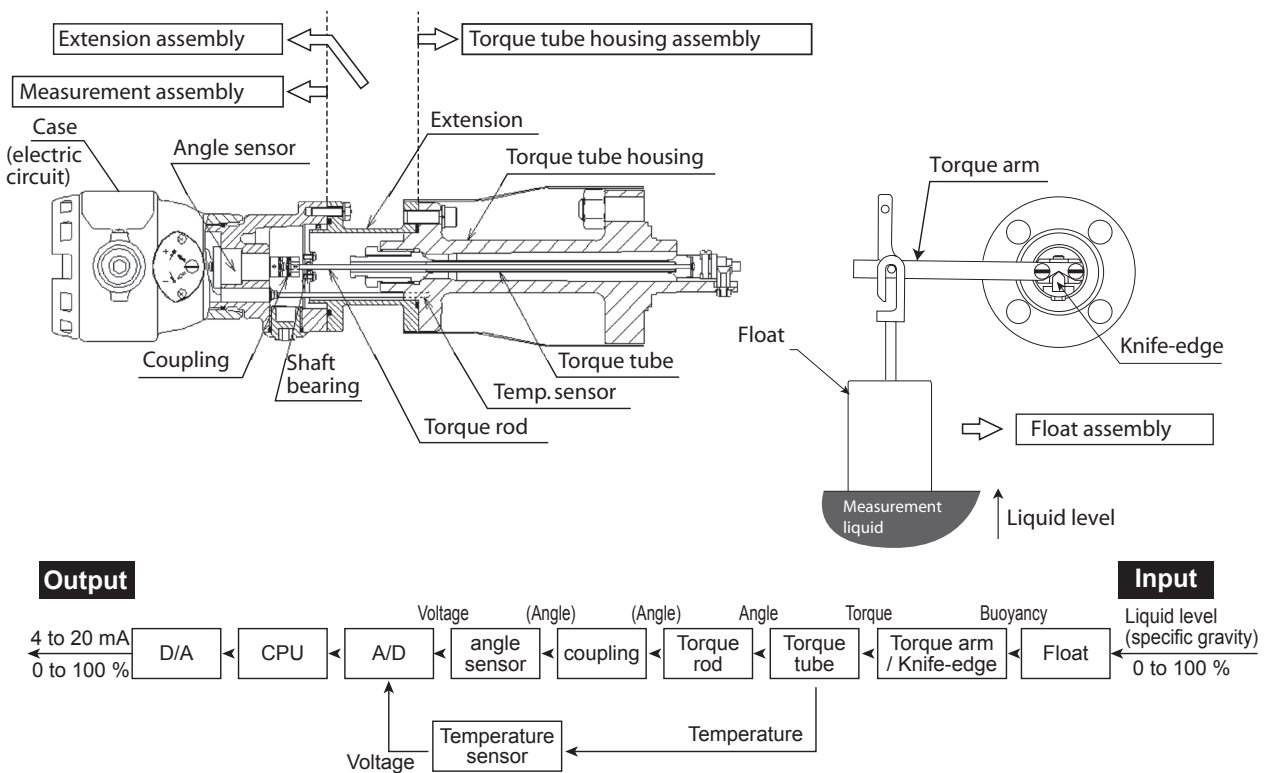


Figure 1. Model SLX - Structure of signal route and signal block diagram

FUNCTIONAL SPECIFICATIONS

Measuring range.

Table 1. Model SLX measuring ranges

Range (mm)	Measuring and setting range (mm)
0 to 300	Set applicable within the range shown left
0 to 350	
0 to 400	
0 to 450	
0 to 500	
0 to 600	
0 to 700	
0 to 800	
0 to 1000	
0 to 1200	
0 to 1500	
0 to 2000	↓

Range of specific gravity

- 1) For level measurement: 0.1 to 1.6
- 2) For boundary surface measurement, see the following.

When the specific gravity of upper layer liquid is γ_2 , and lower layer liquid is γ_3 ,

$$\gamma_2 < \gamma_3, \quad 0.4 \leq \gamma_2, \gamma_3 \leq 1.6, \quad 0.1 \leq \gamma_3 - \gamma_2 \leq 1.2 \text{ See Figure 2.}$$

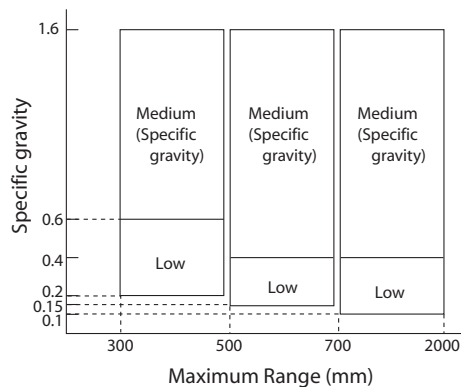


Figure 2. Range of Specific gravity

Medium: Up to JIS 63K, ANSI/JPI600 are available as standard
 Low: Up to JIS 30K, ANSI/JPI300 are available as standard

If a range beyond those listed here is required, please consult an Azbil Corp. sales representative.

For details, see Table 4 and Table 5.

Output / Communication

Analog output (4 to 20 mA DC, min. 3.8 mA, max. 20.8 mA)

Burn-out on failure

(Three optional directions can be selected)

No output burnout

Output burnout to upscale (over 20.8 mA)

Output burnout to down-scale (under 3.8 mA)

Supply voltage and load resistance

18.5 to 45 V DC. A load resistance of 250 Ω or more is necessary in a loop. See Figure 3.

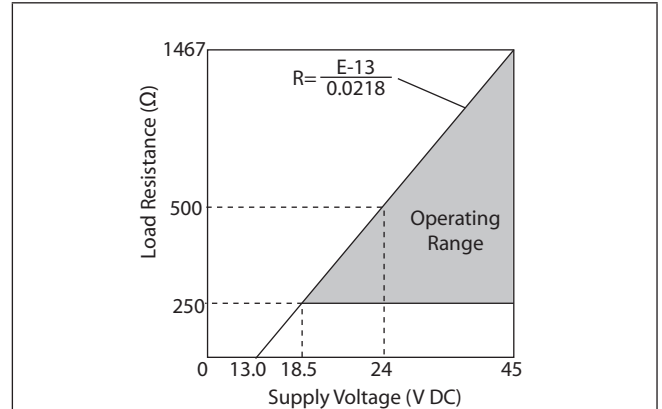


Figure 3. Power supply voltage / load resistance

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

Stability against supply voltage change

± 0.005 % F.S./V

Damping time

Selectable from 0 to 100 sec. in increments of ten
 0,0.5,1,2,3,4,5,10,50,100 sec (factory default: 2 sec)

Lightening protection characteristics

Voltage surge wave, maximum: 12 kV

Current surge wave, maximum: 1000 A

Operating pressure

-101.3 kPa to each flange rating

Pressure (U_p to JIS 63K, ANSI/JPI600#, can be extended to ANSI/JIS 1900# with certain conditions)

See Table 4 and Table 5.

Operating humidity

5 to 100 %RH

Operating temperatures

Table 2. Operating temperatures (°C)

	Ambient temperature	Fluid temperature
Standard operation	23±2	23±2
Normal operation	-30 to +80	-196 to +400
Operative limits	-40 to +85	-196 to +400
Transportation/storage	-40 to +85	-40 to +85

For explosion-proof type or with these having the digital meter option, the temperature ranges are as follows:

With digital indicator (option):

Normal operating range: -20 to +70 °C

Operative limits: -30 to +80 °C

TIIS/KOSHA/NEPSI flameproof type:

Ambient temperature: -20 to +55 °C

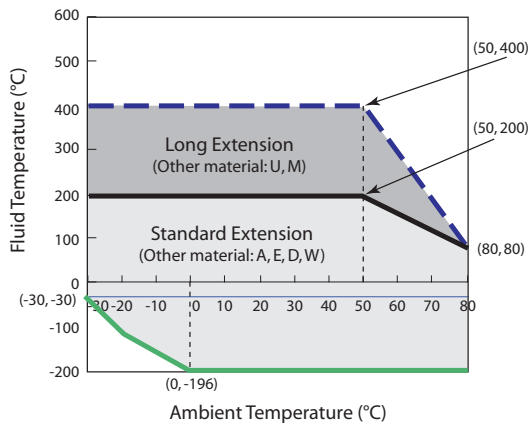


Figure 4. For liquid level of boiler application and boundary surface measurement

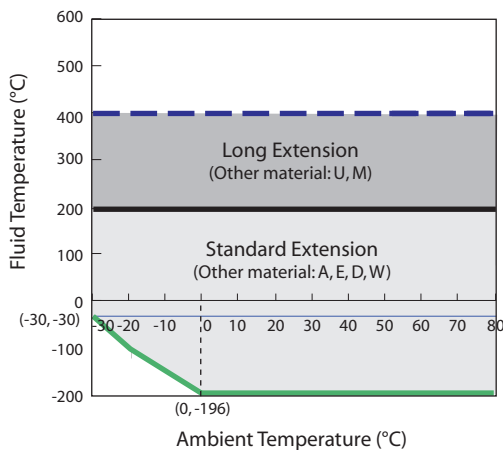


Figure 5. For liquid level measurement other than boiler application

PHYSICAL SPECIFICATIONS

Material

See "Table 6 Material" on page 5.

Case finish

Case

Silver (Munsell N8.2)

Cover

Azbil red (Munsell 2.5R 2.25/5)

Corrosion-resistant finish

Standard Corrosion-resistant finish

Baked acrylic finish

Corrosion-proof finish

Baked epoxy finish, fungus-proof finish

Weight

Approx. 28 kg (For model SLX110-10551E131-11X-X)

Enclosure rating

Equivalent IEC IP66 / NEMA 4X / JIS C 0920 Watertight

Explosion proof

TIIS flameproof (Exd IIC T3, Exd IIC T4, Exd IIC T5, Exd IIC T6)

KOSHA flameproof (Exd IIC T3, Exd IIC T4, Exd IIC T5, Exd IIC T6)

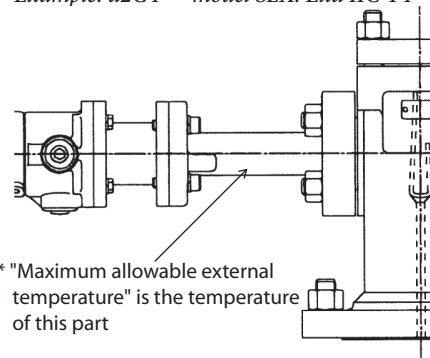
NEPSI flameproof (Exd IIC T3, Exd IIC T4, Exd IIC T5, Exd IIC T6)

Table 3. Temperature classifications for explosion-proof

Temperature level	Maximum allowable external temperature*	Atmospheric ignition temperature
T3	135 °C to 200 °C	Over 200 °C
T4	100 °C to 135 °C	Over 135 °C
T5	85 °C to 100 °C	Over 100 °C
T6	85 °C or less	Over 85 °C

Note) 1. When selecting explosion-proof specifications, please carefully read the following:
Industrial Safety Laboratory's Technical Guideline/ Factory Explosion-proof Electric Facility Guide (Gas Explosion Proofing 1994), published by Industrial Safety Engineering Institute

2. When making changes to an existing facility, abide by the explosion proofing construction of the existing devices.
Example: d2G4 → model SLX: Exd IIC T4



* "Maximum allowable external temperature" is the temperature of this part

Figure 6. Allowable external temperature

Table 4. Float test pressure - Material: SUS316L

Model No.	Measuring range (mm)	Medium specific gravity (model SLX110)				Low specific gravity (model SLX120)				
		Float dia. (mm)	Weight (Kg)	With standing pressure (MPa)	Flange rating	Float dia. (mm)	Weight (kg)	With standing pressure (MPa)	Flange pressure rating (MPa)	
03	0 to 300	55	1.8	15.0	Up to JIS 63K, ANSI / JPI 600	95	3.4	7.8	Up to JIS 30K, ANSI / JPI 300	
A3	0 to 350		2.2				3.8			
04	0 to 400		2.2				4.2			
A4	0 to 450		2.2				4.2			
05	0 to 500		2.6				4.6			
06	0 to 600	45	2.2			85	3.4	3.2		Up to JIS 10K, ANSI / JPI 150
07	0 to 700		2.2				3.8			
08	0 to 800		2.6				4.2			
10	0 to 1000		3.0				5.0			
12	0 to 1200	30	1.8			65	3.8			
15	0 to 1500		2.2	4.2						
20	0 to 2000		3.0	4.2	55		4.2			

Note) The float weight in the above table is for liquid level application.

For interface or hydrometer applications, below conditions will apply:

Table 5. Material

Part	Model (temp. range)	U	M	A	E	D
		(350 to 400 °C)	(200 to 350 °C)	(0 to 200 °C)	(0 to 200 °C)	(-196 to 0 °C)*1
Housing	Aluminum alloy					
Torque tube	inconel			SUS316L		
Bonnet / chamber	Carbon steel (SFVC2A), SUS304, SUS316, SUS316L*2					
Float	SUS316L					
Bolt	Chromium-Molybdenum steel (SNB7)				SUS304	
Gasket	Spring type (Semi-metallic, Filler material: Graphite)					
Extension	SUS304 (Long)			SUS304 (Standard)		
Sensor housing	Aluminum alloy casting					

Note) *1. Available at the range of 0 to 200 °C.

*2. If the optional code is "D", carbon steel cannot be selected.

INSTALLATION

Electrical conduit

G1/2 internal thread, 1/2NPT internal thread (TIIS flame-proof is not applicable)

Grounding

Resistance 100 Ω max.

Wiring connection

Wiring terminals screw (M4, SUS304)

Process connection

Flange

External chamber type

Connection

Side - Side
Side - Bottom
Top - Side
Top - Bottom

Flange size

2 in. or 1-1/2 in. RF (ANSI / JPI 600)
2 in. or 1-1/2 in. RTJ (ANSI/JPI 600)

Internal float type

Connection

Top

Flange size

3, 4, or 5 in. RF (ANSI/JPI 600)
3 or 4 in. RTJ (ANSI/JPI 600)

PERFORMANCE

Accuracy rating

(at load correction under standard operating condition)
+/-0.5 % F.S. (for specific gravity, see Figure 2)

Ambient temperature characteristics

(Ambient temperature range: -30 to +80 °C, note1)
Zero shift: ± (1.5 × α) % F.S. / 55 °C
Span shift: ± (1.5 × α) % F.S. / 55 °C

Fluid temperature characteristics

(Fluid temperature range: -196 to +400 °C, note 1 and 2)
Zero shift: ± (1.5 × α) % F.S. / 55 °C
Span shift: ± (1.0 × α) % F.S. / 55 °C

Note) 1. Correction factor "α" changes depending on the mass of measured fluid displaced by float "Mf" when liquid level changes from 0 to 100%. (In case model number is model SLX110, and its measurement range is 300 mm, and specific gravity is 1, "α" will be 1.)

$$\alpha = \frac{709}{Mf}$$

$$Mf = \frac{(\pi/4) \times D^2 \times H \times \gamma \times \rho_{std} \times 10^{-3}}{1 + 5.76 \times 10^{-7} \times \pi \times D^2 \times \gamma \times \rho_{std}} \text{ (g)}$$

Wherein:

D: Float diameter (mm)
H: measuring range (Float length is standard, mm)
γ: Specific gravity of measuring liquid
ρ_{std}: Standard density, ρ_{std} = 1 (g/cm³)
π: Circle ratio

Note) 2. Only for liquid surface measurement, when temperature correction coefficient: a variable parameter to reduce the operating influence from the process temperature, is 1.0 (default value at shipment) (Not applicable for boundary surface level measurement)

OPTIONAL SPECIFICATIONS

Built-in indicator

- Digital LCD indicator (optional)
- Digital actual scale (SI unit) available
- Liquid level display (% , mm)
- Specific gravity display
- Available to set from -3000 to +3100 (limit of resolution is 0.1) (4.5 digits) arbitrary.
- Actual scale range
- Actual scale unit (mm)

Each setting are executed using the communicator.

Elbow

This is an adaptor to match the electric conduit connection to field wiring conditions, from horizontal to vertical visa versa. One or two can be selected depending on the field installation requirements.

Oil-free / Water-free treatment (only for SUS material)

Measuring range of 1000 mm or less:
Delivered after eliminating oil and water from wetted surface.

Oil-free treatment (only for SUS material)

Measuring range of 1000 mm or less:
Delivered after eliminating oil from wetted surface.

Test report

This report gives the results of testing, including the external appearance of the liquid level meter, input / output characteristics (3 points), insulation resistance and withstanding voltage tests.

Five points check

The measuring point of input / output characteristics described on the test report is changed from 3 points (0, 50, 100 %) to 5 points (0, 25, 50, 75, 100 %)

Traceability certificate

This report consists of three parts; a traceability certificate, a traceability system chart and a test report.

Mil sheet

Test results of chemical composition, heat treating conditions and mechanical properties of main materials (torque tube housing, bonnet, chamber) will be submitted as certificate.

Color check

Result of color check penetration test for welding faults on main materials (bonnet, chamber) will be submitted as certificate.

Without float

(Please contact to sales representative)

Float will not be provided.

Please specify if reusing an existing Azbil Corporation's float having the model number NQ_31_, NQI21_, KQP_1_, KFL_ _ _ _1, NQP31_ or NQP21_.

Without chamber

(Please contact to sales representative)

Chamber will not be provided.

Please specify if reusing an existing chamber having the model number NQI31_, NQI21_, KQP_1_, KFL_ _ _ _1, NQP31_ or NQP21_.

SEMI-STANDARD SPECIFICATIONS

1. Stainless steel bolt (Y131):

For this feature, SUS304 bolts are used for main body assembly.

Attention in usage

- Azbil Corporation's standard Displacement type level transmitter measurement range is set equivalent to float length H. Therefore, it will be unsuitable when detecting the levels around 0 % or 100 % (at normal operation), or when continuous output of 4 mA or less or 20 mA or more is needed.
- When conducting the actual liquid adjustment (filling adjustment) after installing the displacement type level transmitter at the job site, be sure to set the float bottom to zero point (reference point at 0 % liquid level). (Structurally, if the measurement fluid is not in contact with float, output will not change.)

If other than the float bottom is set to zero point (reference point at 0 % liquid level), it may cause the measurement dead-band at the measurement range of lower limit (or upper limit), or may cause output linearity error.

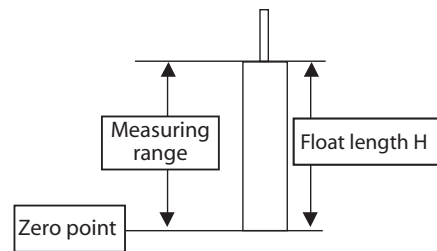


Figure 7. Appropriate way of adjustment: Set float bottom at zero point

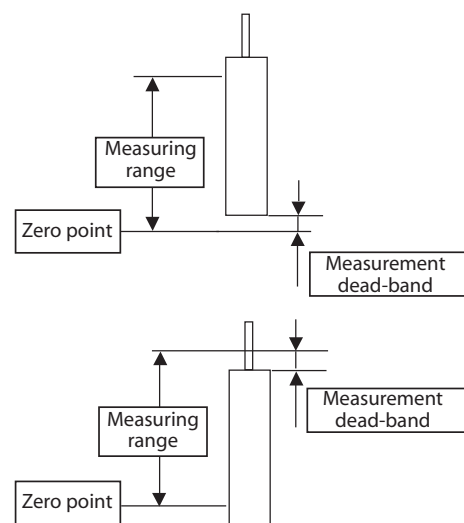


Figure 8. Inappropriate way of adjustment: set other than the float bottom at zero point

Communicator Operation

Parameter setting

- (1) Damping: 0 to 100 sec.
- (2) Specific gravity: 0.1 to 1.6 **Note*
- (3) Burnout: NON, UP, DOWN
- (4) Span: Set freely within specified range

Note) Change of specific gravity range

Calibration

1. Zero adjustment *1
2. Span adjustment
3. Exact adjustment *2

Note *1. Make sure that this is done after completing installation at the site.

*2. Match the liquid level measurement output with what is being indicated in the glass gauge. Zero can be adjusted to be set to a point anywhere between 0-100% of the range to match.

Display on communicator screen

1. Input liquid level
2. PV value
3. Torque tube temperature
4. Instrument temperature

Calibration

Proofing by the communicator using a weight is possible.

Others

Self-diagnostic functions

External adjustment

Use screwdriver (flat screwdriver) from external side of instrument. Zero, span and damping adjustments are possible. Built-in indicator must be selected to use this adjustment.

- It is necessary to define the specific gravity of the liquid to be measured in order to manufacture the model SLX correctly. However, range change with the communicator will suffice for range setting change for the ranges listed below.
- The scope of range change by the communicator depends on the float size for medium specific gravity range (model SLX110) / or low specific gravity range (model SLX120).

Also, note that there is a limitation on boundary surface measurement (hydrometer) specifications for the low specific gravity meter (model SLX120).

1. Medium specific gravity (model SLX110):

- 1-1. For liquid level measurement specifications, range change is possible within the 'Specific Gravity Range' as given in Table 8 below.

Table 6. Specific gravity range 1

Measuring range (mm)	Allowable specific gravity range γ change by communicator
300 to 499	$0.6 \leq \gamma \leq 1.6$
500 to 2000	$0.4 \leq \gamma \leq 1.6$

- 1-2. For an boundary surface measurement (hydrometer), range change is possible within the scope given in Figure 2 "Range of Specific gravity".

Table 7. Specific gravity range 2

Measuring range (mm)	Allowable differential specific gravity range $\Delta\gamma$ change by communicator	Range of γ_3 (or γ_5)
300 to 499	$0.6 \leq \Delta\gamma \leq 1.6$	$\gamma_3(\text{or } \gamma_5) \leq 1.6$
500 to 2000	$0.4 \leq \Delta\gamma \leq 1.6$	$\gamma_3(\text{or } \gamma_5) \leq 1.6$

The parameters are as follows:

- Boundary surface measurement: $\Delta\gamma = \gamma_3 - \gamma_2, \gamma_3 > \gamma_2$

Whereas: γ_2 : Specific gravity of upper layer liquid

γ_3 : Specific gravity of lower layer liquid

- Hydrometer: $\Delta\gamma = \gamma_5 - \gamma_4, \gamma_5 > \gamma_4$

Whereas: γ_4 : Upper limit of specific gravity measurement

γ_5 : Lower limit of specific gravity measurement

2. Low specific gravity meter (model SLX120)

- 2-1. Range change of liquid level meter specification is allowable within the "Range of Specific gravity", as given in Figure 2.

Table 8.

Measuring range (mm)	Allowable specific gravity range γ change by communicator
300 to 499	$0.2 \leq \gamma < 0.6$
500 to 699	$0.15 \leq \gamma < 0.4$
700 to 2000	$0.1 \leq \gamma < 0.4$

- 2-2. Boundary surface measurement (hydrometer) specifications have following limitations on range change:

Table 9.

Measuring range (mm)	Range change parameter $\gamma_2, (\gamma_4)$	Range change parameter $\gamma_3, (\gamma_5)$
300 to 2000	Up to +10 % of specified initial setting value	Up to +5 % of initial setting value

- Input $\Delta\gamma$ from the the communicator.
- The result of specific gravity range change may fall outside of SS specifications, thereby accuracy cannot be achieved. The accuracy of the meter after range change can be verified by substituting specific gravity γ , with the differential specific gravity $\Delta\gamma$ in the verification equation on page 12.

MODEL SELECTION

Basic model number

Medium type for specific gravity (0.4 to 1.6)	SLX110
Low type for specific gravity (0.1 to 0.4)	SLX120 *1

Selections

I	II	III	IV	V	VI	VII	VIII
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Options

IX	X	XI	XII
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Selections

				I	II	III	IV	V	VI	VII	VIII	
I	Output/ Communication	Analog 4 to 20 mA output (Standard)		1								
II	Measuring range (mm)	0 to 300		0	3							
		0 to 350		A	3							
		0 to 400		0	4							
		0 to 450		A	4							
		0 to 500		0	5							
		0 to 600		0	6							
		0 to 700		0	7							
		0 to 800		0	8							
		0 to 1000		1	0							
		0 to 1200		1	2							
		0 to 1500		1	5							
		0 to 2000		2	0							
		Others		X	X							
III	Connection	External type Side – Side					1					
		External type Side – Bottom					2					
		External type Top – Bottom					3					
		External type Top – Side					4					
		Internal Top L1 length is required when ordering					5					
		Others					X					
IV	Main Materials	Bonnet/ Chamber	Torque tube Housing (TH)									
		Carbon steel	Carbon steel (unavailable when temperature 0 °C or lower)					1				
		SUS304	SCS13A					2				
		SUS316	SCS14A					3				
		SUS316L	SCS16A					4				
		Others							X			
V	Other materials *3 (Temperature range *2)	Torque tube: Inconel (350 to 400 °C)						U				
		Torque tube: Inconel (200 to 350 °C)						M				
		Torque tube: Inconel (0 to 200 °C)						A				
		Torque tube: SUS316L (0 to 200 °C)						E				
		Torque tube: SUS316L (-196 to 0 °C) *2						D				
		Torque tube: Hastelloy C (-40 to +200 °C) Selection of "4" must be given for "IV material"						W				
		Others							X			
VI	Pressure rating (Type of Joint) *9 *10	JIS 10K (RF)								1		
		JIS 20K (RF)									2	
		JIS 30K (RF)										3
		JIS 63K (RF)										4
		ANSI150 (RF smoothing)										A
		ANSI150 (RF serration)										B
		ANSI300 (RF smoothing)										C
		ANSI300 (RF serration)										D
		ANSI600 (RF smoothing)										E
		ANSI600 (RTJ)										F
		JPI150 (RF)										G
		JPI300 (RF)										H
		JPI600 (RF)										J
		JPI600 (RTJ)										K
		Others *4										X
VII	Flange size	1-1/2 in. (40 mm)	For external type								1	
		2 in. (50 mm)	For external type								2	
		3 in. (80 mm)	For internal type (medium type only)								3	
		4 in. (100 mm)	For internal type								4	
		5 in. (125 mm) *1	For internal type (low type only)								5	
		Others										X
VIII	Meter body	Left side									1	
		Right side									2	

(Continued)

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Options

IX	Electrical conduit / Explosion-proof approvals	G1/2 / Watertight	X
		G1/2 / TIIS Flameproof (Exd IIC T3) with 1 pc. of cable gland G1/2 / KOSHA Flameproof (Exd IIC T3) with 1 pc. of cable gland	1
		G1/2 / TIIS Flameproof (Exd IIC T4) with 1 pc. of cable gland G1/2 / KOSHA Flameproof (Exd IIC T4) with 1 pc. of cable gland	2
		G1/2 / TIIS Flameproof (Exd IIC T5) with 1 pc. of cable gland G1/2 / KOSHA Flameproof (Exd IIC T5) with 1 pc. of cable gland	3
		G1/2 / TIIS Flameproof (Exd IIC T6) with 1 pc. of cable gland G1/2 / KOSHA Flameproof (Exd IIC T6) with 1 pc. of cable gland	4
		G1/2 / TIIS Flameproof (Exd IIC T3) with 2 pcs. of cable gland G1/2 / KOSHA Flameproof (Exd IIC T3) with 2 pcs. of cable gland	A
		G1/2 / TIIS Flameproof (Exd IIC T4) with 2 pcs. of cable gland G1/2 / KOSHA Flameproof (Exd IIC T4) with 2 pcs. of cable gland	B
		G1/2 / TIIS Flameproof (Exd IIC T5) with 2 pcs. of cable gland G1/2 / KOSHA Flameproof (Exd IIC T5) with 2 pcs. of cable gland	C
		G1/2 / TIIS Flameproof (Exd IIC T6) with 2 pcs. of cable gland G1/2 / KOSHA Flameproof (Exd IIC T6) with 2 pcs. of cable gland	D
		1/2 NPT / NEPSI Flameproof (Exd IIC T3) without cable gland *5	E
		1/2 NPT / NEPSI Flameproof (Exd IIC T4) without cable gland *5	F
		1/2 NPT / NEPSI Flameproof (Exd IIC T5) without cable gland *5	G
		1/2 NPT / NEPSI Flameproof (Exd IIC T6) without cable gland *5	H
		1/2 NPT/ Watertight	5
X	Built-in Indicator	None (without external adjustment switch / without explosion-proof)	X
		Scale in % (0 to 100 % liner scale) *5	1
		Engineering unit scale (only “ mm ” unit) *5	2
XI	Finish	Standard corrosion-resistant finish	X
		Corrosion-proof finish	H
XII	No option		X
	One elbow (left) *5		1
	One elbow (right) *5		2
	Two elbows *5		3
	Oil-free treatment / water-free treatment (only for SUS material) range = 1000 mm or less		4
	Oil-free treatment (only for SUS material) range = 1000 mm or less		5
	Test report *6		6
	Five points check *6		7
	Material certificate		8
	Traceability certificate *6		A
	Color check		B
Without float (using existing 3 kg float) *7		C	
Without chamber (for external float type) *8		D	

Note) *1 to 8: Refer to page 11.

Note) *1. For low specific gravity applications or 5B/125A, pressure ratings 4, E, F, J and K cannot be selected.

- *2. When other material is "D",
 - 1) Temperature 0 to 200 °C is available
 - 2) Element material "1" cannot be selected.

*3. Float materials are as follows:

Other material	Float material
U, M, A, E, D	SUS316L

Bolt and nut materials are as follows:

Other material	Bolt / nut material
U, M, A, E	SNB7 / S45C *
D	SUS304 / SUS304

* If Y131 is specified bolt / nut material with * mark can be changed to SUS304 / SUS304

- *4. For class 900, contact the Azbil Group representative. Also, class 1500 or higher cannot be manufactured.
- *5. For the NEPSI flameproof model, only the model codes with the Built-in Indicator are available. However, the codes with the elbow are not available.
- *6. When changing measurement point of input / output characteristic written on test report from 3 points (0, 50, 100 %) to 5 point (0, 25, 50, 75, 100 %), select "7" for option together. Option "7" cannot be selected by itself.
- *7. Specify when reusing Azbil Corporation's existing float. Pay attention to the following matters:
 - 1) Additional specification C can be selected only if the current product is Azbil NQI310, NQI210, KQP_10, KFL_ _ _ _ _1, NQP310, or NQP210 without the suffix Z and if it is a liquid level meter for medium specific gravity with a flange pressure rating of 300# or under (JPI, ANSI) or JIS 30K or under.
 - 2) Small diameter float may be delivered due to special design outside of SS specification selection.
 - 3) Please make sure that you confirm the diameter of the existing float to ensure accuracy.

• Standard characteristics of model SLX

	Mass of measured fluid displaced by float Mf		
	Mf ≥ 400	400 > Mf ≥ 200	200 > Mf
Accuracy	+/- 0.5	+/- 1.0	Outside of guaranteed accuracy

* The model SLX offers consistent accuracy regardless of liquid level measurement, boundary surface measurement or hydrometer applications

• Equation to calculate meter accuracy:

$$Mf = \frac{(\pi/4) \times D^2 \times H \times \gamma \times \rho_{std} \times 10^{-3}}{1 + 5.76 \times 10^{-7} \times \pi \times D^2 \times \gamma \times \rho_{std}} \text{ (g)}$$

Wherein:

- D: Float diameter (mm)
- H: Measuring range (float length, mm)
- γ : Specific gravity
- ρ_{std}: Standard density, ρ_{std} = 1 (g/cm³)
- π : Circle ratio

Reference: Equation to calculate buoyancy by float

$$F = \rho \times V \times G = Mf \times G$$

Whereas:

- ρ: Density of surrounding (measured) fluid,
- V: Volume of surrounding (measured) fluid displaced by float,
- G: Gravity acceleration,
- Mf: Mass weight of fluid displaced by float

*8. Specify when reusing a chamber. Pay particular attention to the following matters:
Please ensure that the model number is one of the following Azbil Corporation's models: NQI310, NQI210, KQP_10, KFL_ _ _ _ _1, NQP310 or NQP210 without suffix "Z". If suffix "Z" is specified, the chamber and bonnet connecting size should be 3 in. (nominal) ANSI/JPI50, 300, 600 RF.

* When ordering, specify the following:

Model SLX1_0- _ _ _ _ _ - _ _ _ _ _
--

Name of fluid =
Type of gas =

Specific gravity (enter to third decimal point) For liquid level meter = For boundary surface measurement: Upper level liquid(specific gravity-1) = Lower level liquid(specific gravity-2) = For hydrometer: Range of specific gravity measurement =
--

Temperature: Normal = °C
 Min. = °C
 Design temperature = °C

Pressure: Normal = MPa
 Max = MPa
 Design pressure = MPa

Dimension from the bottom of flange to top of float (L1) = Round off after the decimal point and specify using "mm" unit.
--

☐ : Make sure to specify the necessary information in the box.

*9. Select a pressure rating by referring to the flange pressure rating graphs on p. 21, which show the relationship between pressure and temperature. Ex.: A JIS 10K flange cannot be used at a temperature exceeding 300 °C.


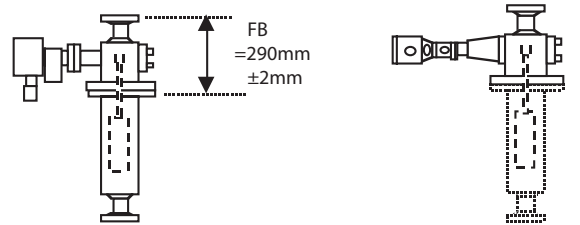
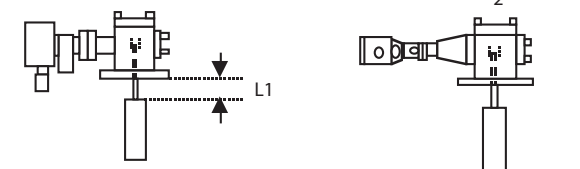
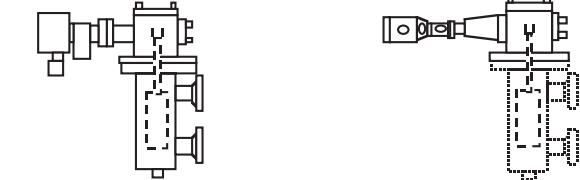
*10 Select a pressure rating by referring to Table 4, "Float Test Pressure," on p. 5.

Notes for replacement

Notes for replacement of an Azbil product with the SLX *5 *6

Products to be replaced: NQI310, NQI210 *1 *3

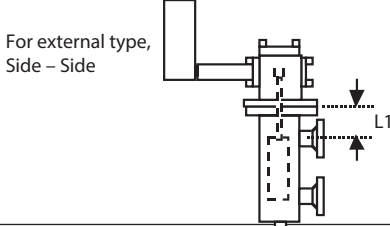
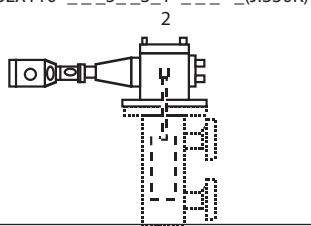
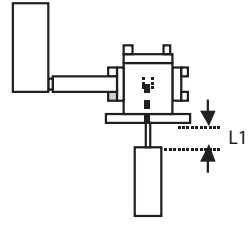
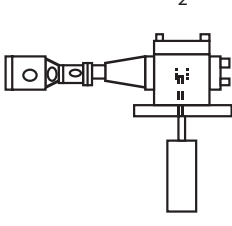
KQP_10, KFL_ _ _ _ 1, NQP310, NQP210 *1 *2 *3

When reusing the current chamber	Connection type	SIS/SIB	<p>Notes when selecting an SLX model</p> <ol style="list-style-type: none"> Select option D, "Without chamber." Select the instrument's position (1, "Left side," or 2, "Right side") considering the space of the installation location. Other specifications must be the same as for the NQI. <p>Model number of the current meter NQI310-1- _ _ _ _ - _</p> <p>SLX model number SLX110- _ _ 1 _ _ 1- _ _ -D 2</p> <p>For external type, Side - Side</p> 
		TIB/TIS	<p>Notes when selecting an SLX model</p> <ol style="list-style-type: none"> Select option D, "Without chamber." Select the instrument's position (1, "Left side," or 2, "Right side") considering the space of the installation location. Other specifications must be the same as for the NQI. <p>Requirements</p> <ul style="list-style-type: none"> · FB must be 290 mm ± 2 mm · If FB is not 290 mm ± 2 mm, please contact the Azbil Group.*4 <p>Model number of the current meter NQI310-3- _ _ _ _ - _</p> <p>SLX model number SLX110- _ _ 3 _ _ 1- _ _ -D 2</p> <p>For external float type (Top - Bottom)</p> 
		T	<p>Notes when selecting an SLX model</p> <ol style="list-style-type: none"> Select connection type 5, "Internal Top." Do not select option D, "Without chamber." Select the instrument's position (1, "Left side," or 2, "Right side") considering the space of the installation location. Other specifications must be the same as for the NQI. <p>Requirement</p> <ul style="list-style-type: none"> · Be sure to specify dimension L1 <p>Model number of the current meter NQI310-5- _ _ _ _ - _</p> <p>SLX model number SLX110- _ _ 5 _ _ 1- _ _ - _ 2</p> 
		When replacing with an internal oat (top) model	<p>Notes when selecting an SLX model</p> <ol style="list-style-type: none"> Select option C, "Without oat" and D, "Without chamber." Select the instrument's position (1, "Left side," or 2, "Right side") considering the space of the installation location. Other specifications must be the same as for the NQI. <p>Requirement</p> <ul style="list-style-type: none"> · If the connection type is Internal Top, be sure to specify dimension L1. <p>Model number of the current meter NQI310-1- _ _ _ _ - _</p> <p>SLX model number SLX110- _ _ 1 _ _ 1- _ _ -CD 2</p> <p>For external type, Side - Side</p> 

- Note) *1. If the model number includes "Z," check that the chamber and bonnet are connected with ANSI/JPI Class 150, 300, or 600 RF flanges with an inner (nominal) diameter of 3B. If another type of flange is used, please contact us.
- *2. If a liquid level meter with control functions (KFLB models, for example) is to be replaced with the SLX, please note that the SLX does not have such functions.
- *3. For interface level measurement and specific gravity measurement applications, please contact the Azbil Group.
- *4. If FB is not 290 mm ± 2 mm, please inform us of the production and model numbers of the current meter.
- *5. The length of L1 (from the bottom of the bonnet flange to the top of the float) is based on the production drawing of the float that we delivered. If the chamber has been specially calibrated for your use, please measure and specify the precise length of L1.
- *6. If there is an elevation or suppression setting for the current meter, or if the measurement range differs from the height of the float, measure and specify the precise length of L1.

Notes for replacement of an Azbil product with the SLX *5 *6

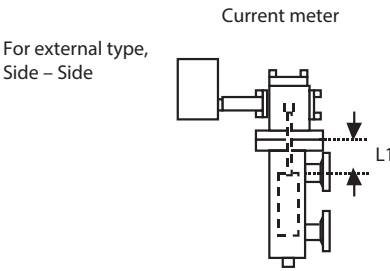
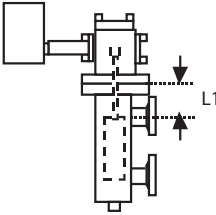
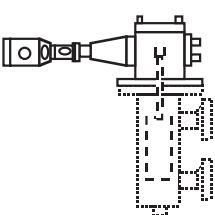
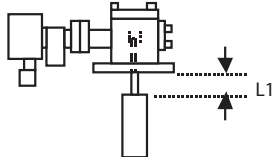
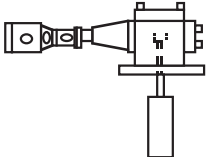
Products to be replaced: "782" models *1 *2 *4

When reusing the current chamber	Connection type SIS/SIB	<p>Notes when selecting an SLX model</p> <ol style="list-style-type: none"> 1. Select connection type 5, "Internal Top." 2. Do not select option D, "Without chamber." 3. Select pressure rating 1, (JIS 10K) or 3 (JIS 30K). 4. Select a flange size that is appropriate for the chamber pipe outer diameter of the 782 model. 5. Select the instrument's position (1, "Left side," or 2, "Right side") considering the space of the installation location. 6. For other model numbers, check the specifications of the 782 meter and select the appropriate numbers. If there are customized specifications that are not indicated by the model number, please inform us of the specifications. <p>Requirements</p> <ul style="list-style-type: none"> · Be sure to measure and specify dimension L1. · For interface level measurement and specific gravity measurement applications, please contact the Azbil Group. *3 <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Model number of the current meter 782 _ _ _ _ _ 1 _ _ _</p> <p>For external type, Side - Side</p>  </div> <div style="text-align: center;"> <p>SLX model number SLX110- _ _ _ 5 _ 1 _ 1 - _ _ _ (JIS10K) 2 SLX110- _ _ _ 5 _ 3 _ 1 - _ _ _ (JIS30K) 2</p>  </div> </div>
When replacing with an internal oat (top) model	Connection type T	<p>Notes when selecting an SLX model</p> <ol style="list-style-type: none"> 1. Select connection type 5, "Internal Top." 2. Do not select option D, "Without chamber." 3. Select the instrument's position (1, "Left side," or 2, "Right side") considering the space of the installation location. 4. For other model numbers, check the specifications of the 782 meter and select the appropriate numbers. If there are customized specifications that are not indicated by the model number, please inform us of the specifications. <p>Requirements</p> <ul style="list-style-type: none"> · Be sure to measure and specify dimension L1. · For interface level measurement and specific gravity measurement applications, please contact the Azbil Group. *3 <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Model number of the current meter 782 _ _ _ _ _ 5 _ _ _</p>  </div> <div style="text-align: center;"> <p>SLX model number SLX110- _ _ _ 5 _ _ 1 - _ _ _ - _ 2</p>  </div> </div>

- Note) *1. If a liquid level meter with control functions (KFLB models, for example) is to be replaced with the SLX, please note that the SLX does not have such functions.
- *2. For interface level measurement and specific gravity measurement applications, please contact the Azbil Group.*3
- *3. If FB is not 290 mm ±2 mm, please inform us of the production and model numbers of the current meter.
- *4. The old float cannot be reused.
- *5. The length of L1 (from the bottom of bonnet flange to the top of the float) is based on the production drawing of the float that we delivered. If the chamber has been specially calibrated for your use, please measure and specify the precise length of L1.
- *6. If elevation or suppression is set for the current meter, or if the measurement range differs from the height of the float, measure and specify the precise length of L1.

Notes when replacing a product made by other manufacturers *3 *4

Products to be replaced: Other manufacturer's product (replacement is possible if (1) the pressure rating and flange diameter of the SLX internal top models are appropriate for the flanges between the chamber and bonnet, and (2) dimension L1 can be specified. If the conditions cannot be satisfied, please contact us.) *1 *2

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">When reusing the current chamber</p>	<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Connection type</p>	<p>SIS/SIB</p> <p>Notes when selecting an SLX model</p> <ol style="list-style-type: none"> 1. Select connection type 5, "Internal Top." 2. Do not select option D, "Without chamber." 3. Select the instrument's position (1, "Left side," or 2, "Right side") considering the space of the installation location. <p>Requirements</p> <ul style="list-style-type: none"> · Check and specify the pressure rating and flange diameter. · Check the flange standard from the marking on the current meter. · If the flange and gasket between the chamber and bonnet are of a standard other than JIS, ANSI, or JPI, check and specify the structure. · Be sure to specify dimension L1. · For interface level measurement and specific gravity measurement applications, please contact the Azbil Group. *1 <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>For external type, Side - Side</p>  </div> <div style="text-align: center;"> <p>Current meter</p>  </div> <div style="text-align: center;"> <p>SLX model number SLX110-__5__1-__-__ 2</p>  </div> </div>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">When replacing with an internal oat (top) model</p>	<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Connection type</p>	<p>T</p> <p>Notes when selecting an SLX model</p> <ol style="list-style-type: none"> 1. Select connection type 5, "Internal Top." 2. Do not select option D, "Without chamber." 3. Select the instrument's position (1, "Left side," or 2, "Right side") considering the space of the installation location. <p>Requirements</p> <ul style="list-style-type: none"> · Check and specify the pressure rating and flange diameter on the dimensional drawing of the current meter. · Be sure to specify dimension L1. · For interface level measurement and specific gravity measurement applications, please contact the Azbil Group. *1 <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>Current meter</p>  </div> <div style="text-align: center;"> <p>SLX model number SLX110-__5__1-__-__ 2</p>  </div> </div>

- Note) *1. Please prepare documents that describe the specifications, structure and dimensions of the current liquid level meter and the measurement conditions for the fluid.
- *2. The old float cannot be reused.
- *3. L1 will be based on the manufacturer's specifications for the product. If the chamber has been specially calibrated for your use, please measure and specify the precise length of L1.
- *4. If there is an elevation or suppression setting for the current meter, or if the measurement range differs from the height of the float, measure and specify the precise length of L1.

DIMENSIONS

External Float type

S-S: Side - Side

[Unit: mm]

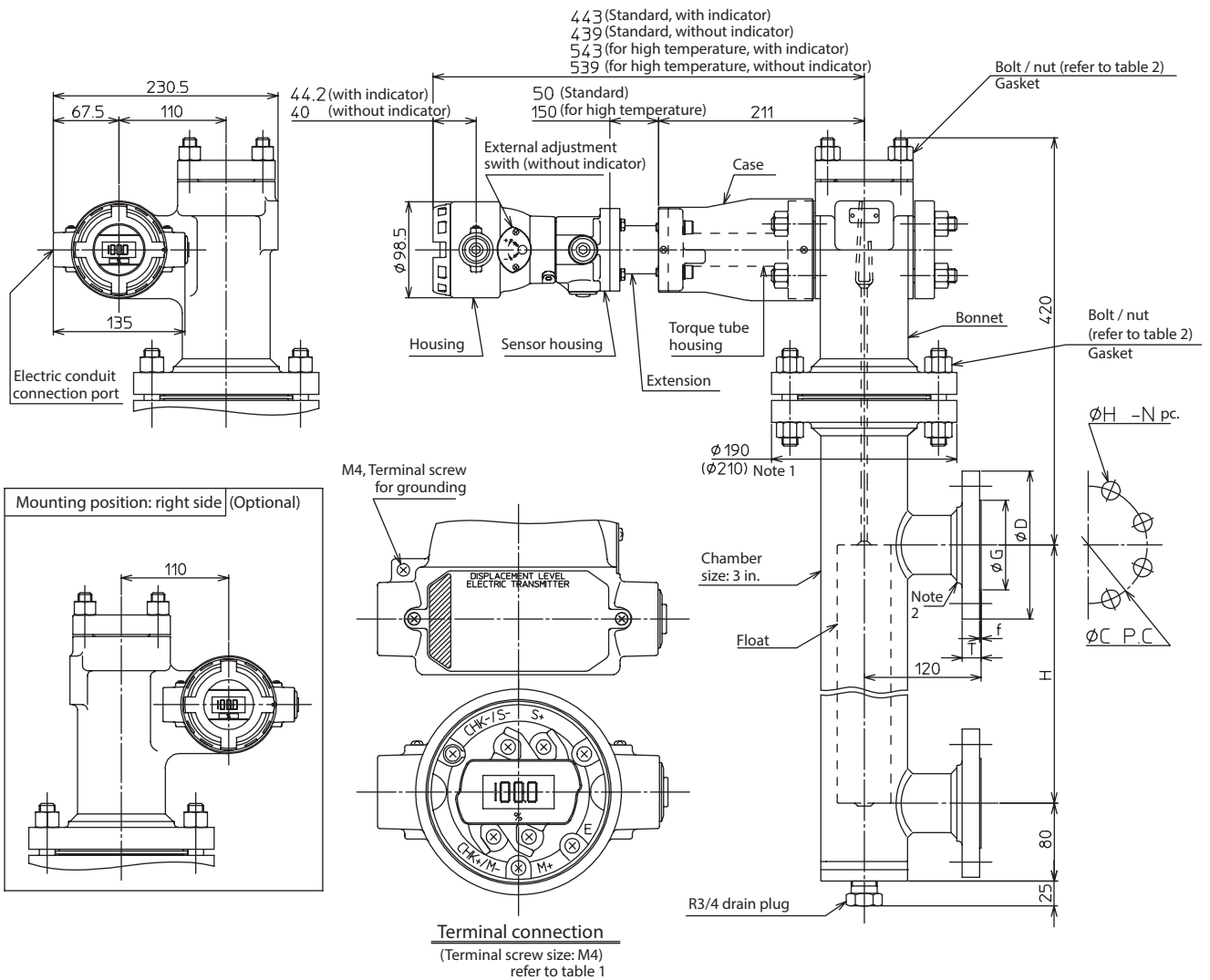


Table 1. Terminal

Symbol	Description
S+, S-	Power supply and output signal terminal
CHK+, CHK-	Terminal for check meter
M+, M-	Terminal for ammeter installed outside
E	Ground terminal

Table 2. Bolt / nut material

	Bolt / nut material
U, M, A, E	SNB7 / S45C *
D	SUS304 / SUS304

* When Y131 is specified, bolt / nut material shall be SUS304 / SUS304.

Table 4. Size H

Measuring range (mm)	H
0 to 300	300
0 to 350	350
0 to 400	400
0 to 450	450
0 to 500	500
0 to 600	600
0 to 700	700
0 to 800	800
0 to 1000	1000
0 to 1200	1200
0 to 1500	1500
0 to 2000	2000

Table 3. Connecting flange size

Flange rating		φ D	φ G	T	f	φ C	φ H-N
40 mm	JIS 10 K RF	140	81	16	2	105	19-4
50 mm		155	96	16	2	120	19-4
1-1/2 in.	JPI 150 RF	127	73.2	18	1.6	98.6	16-4
2 in.		152	91.9	19.5	1.6	120.6	19-4
40 mm	JIS 20 K RF	140	81	18	2	105	19-4
50 mm		155	96	18	2	120	19-8
40 mm	JIS 30 K RF	160	90	22	2	120	23-4
50 mm		165	105	22	2	130	19-8
1-1/2 in.	JPI 300 RF	155	73.2	21	1.6	114.3	22-4
2 in.		165	91.9	22.5	1.6	127	19-8

Note) 1. Dimensions shown inside the bracket is for pressure rating of JIS 20K, JIS 30K, JPI 300 and ANSI 300.

2. When pressure rating is JIS 10K, hub shown in the figure above will not be provided.

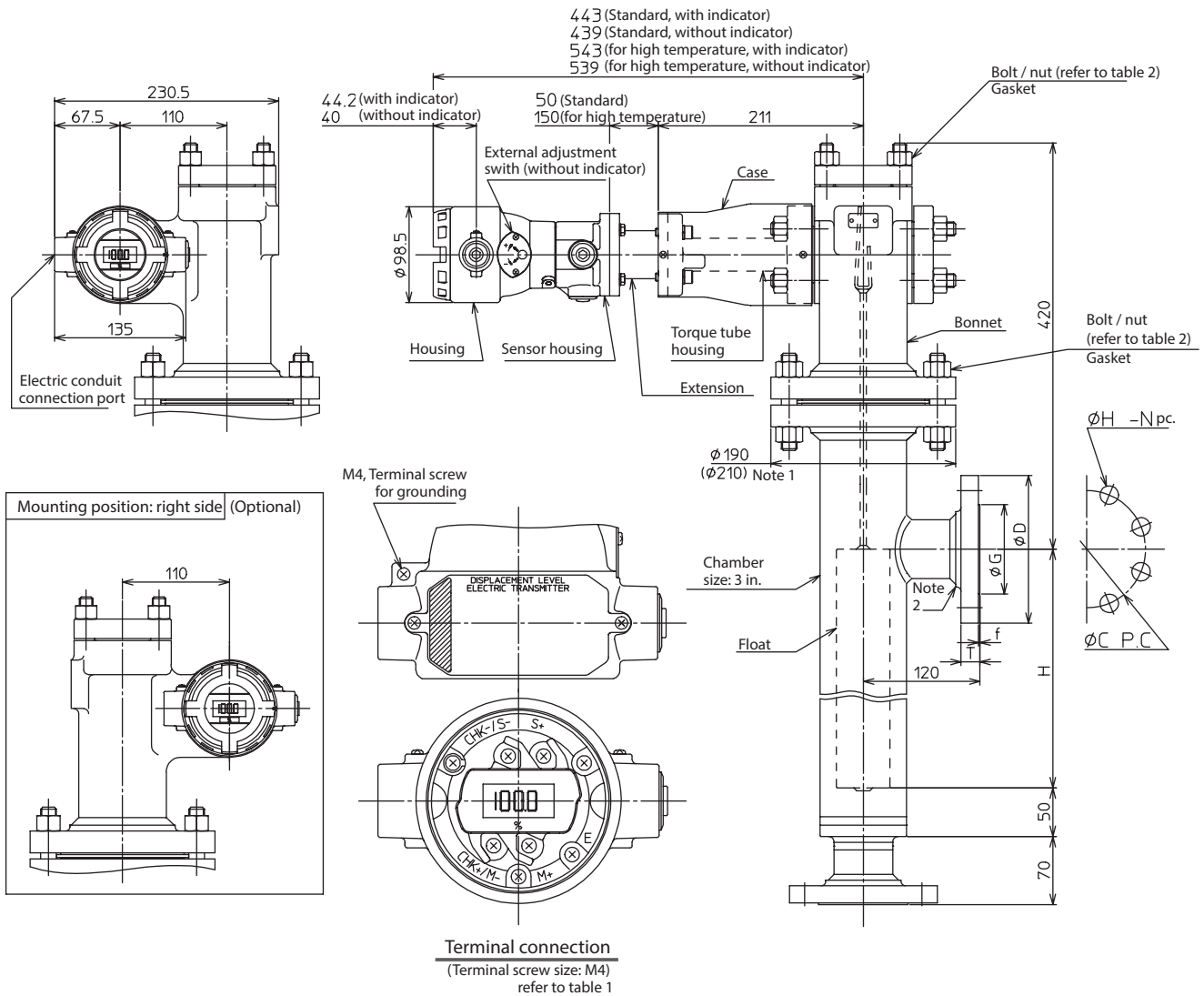


Table 1. Terminal

Symbol	Description
S+, S-	Power supply and output signal terminal
CHK+, CHK-	Terminal for check meter
M+, M-	Terminal for ammeter installed outside
E	Ground terminal

Table 2. Bolt / nut material

	Bolt / nut material
U, M, A, E	SNB7 / S45C *
D	SUS304 / SUS304

* When Y131 is specified, bolt / nut material shall be SUS304 / SUS304.

Table 4. Size H

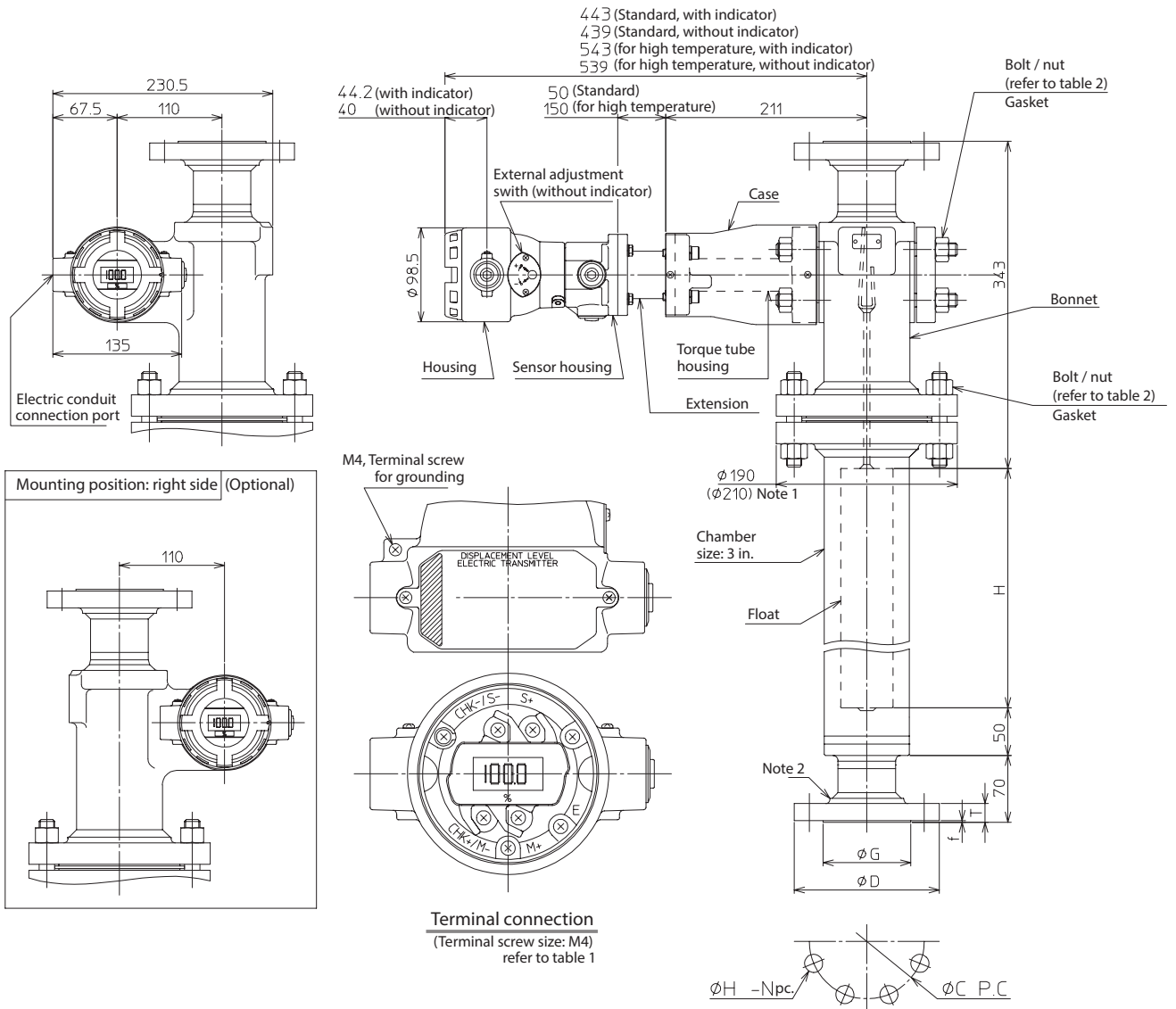
Measuring range (mm)	H
0 to 300	300
0 to 350	350
0 to 400	400
0 to 450	450
0 to 500	500
0 to 600	600
0 to 700	700
0 to 800	800
0 to 1000	1000
0 to 1200	1200
0 to 1500	1500
0 to 2000	2000

Table 3. Connecting flange size

Flange rating		φ D	φ G	T	f	φ C	φ H-N
40 mm	JIS 10 K RF	140	81	16	2	105	19-4
50 mm		155	96	16	2	120	19-4
1-1/2 in.	JPI 150 RF	127	73.2	18	1.6	98.6	16-4
2 in.		152	91.9	19.5	1.6	120.6	19-4
40 mm	JIS 20 K RF	140	81	18	2	105	19-4
50 mm		155	96	18	2	120	19-8
40 mm	JIS 30 K RF	160	90	22	2	120	23-4
50 mm		165	105	22	2	130	19-8
1-1/2 in.	JPI 300 RF	155	73.2	21	1.6	114.3	22-4
2 in.		165	91.9	22.5	1.6	127	19-8

Note) 1. Dimensions shown inside the bracket is for pressure rating of JIS 20K, JIS 30K, JPI 300 and ANSI 300.

2. When pressure rating is JIS 10K, hub shown in the figure above will not be provided.



Terminal connection
(Terminal screw size: M4)
refer to table 1

Table 1. Terminal

Symbol	Description
S+, S-	Power supply and output signal terminal
CHK+, CHK-	Terminal for check meter
M+, M-	Terminal for ammeter installed outside
E	Ground terminal

Table 2. Bolt / nut material

	Bolt / nut material
U, M, A, E	SNB7 / S45C *
D	SUS304 / SUS304

*When Y131 is specified, bolt / nut material shall be SUS304 / SUS304.

Table 4. Size H

Measuring range (mm)	H
0 to 300	300
0 to 350	350
0 to 400	400
0 to 450	450
0 to 500	500
0 to 600	600
0 to 700	700
0 to 800	800
0 to 1000	1000
0 to 1200	1200
0 to 1500	1500
0 to 2000	2000

Table 3. Connecting flange size

Flange rating		ϕD	ϕG	T	f	ϕC	$\phi H-N$
40 mm	JIS 10 K RF	140	81	16	2	105	19-4
50 mm		155	96	16	2	120	19-4
1-1/2 in.	JPI 150 RF	127	73.2	18	1.6	98.6	16-4
2 in.		152	91.9	19.5	1.6	120.6	19-4
40 mm	JIS 20 K RF	140	81	18	2	105	19-4
50 mm		155	96	18	2	120	19-8
40 mm	JIS 30 K RF	160	90	22	2	120	23-4
50 mm		165	105	22	2	130	19-8
1-1/2 in.	JPI 300 RF	155	73.2	21	1.6	114.3	22-4
2 in.		165	91.9	22.5	1.6	127	19-8

Note) 1. Dimensions shown inside the bracket is for pressure rating of JIS 20K, JIS 30K, JPI 300 and ANSI 300.

2. When pressure rating is JIS 10K, hub shown in the figure above will not be provided.

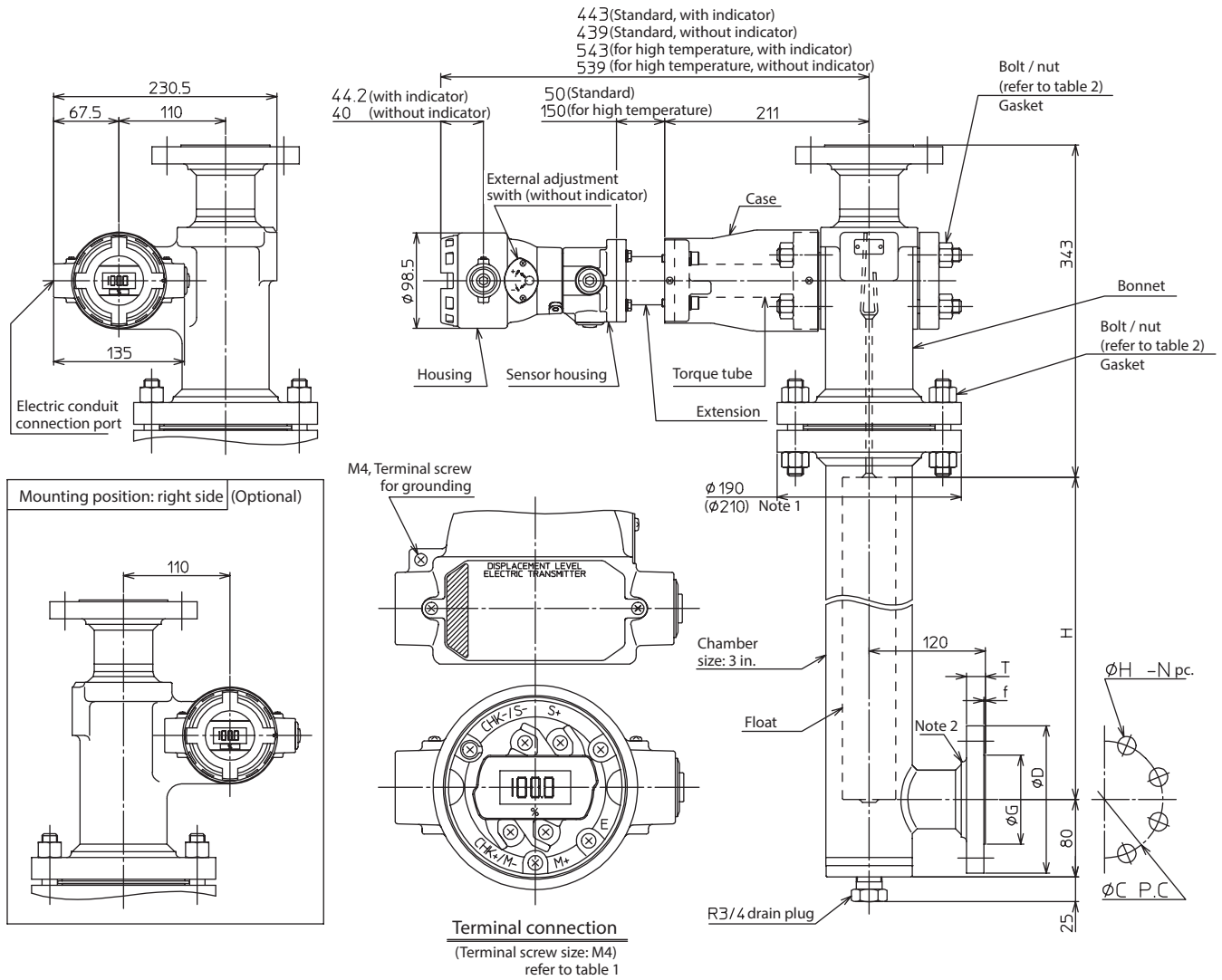


Table 1. Terminal

Symbol	Description
S+, S-	Power supply and output signal
CHK+, CHK-	Terminal for check meter
M+, M-	Terminal for ammeter installed outside
E	Ground terminal

Table 2. Bolt / nut material

	Bolt / nut material
U, M, A, E	SNB7 / S45C *
D	SUS304 / SUS304

* When Y131 is specified, bolt / nut material shall be SUS304 / SUS304.

Table 4. Size H

Measuring range (mm)	H
0 to 300	300
0 to 350	350
0 to 400	400
0 to 450	450
0 to 500	500
0 to 600	600
0 to 700	700
0 to 800	800
0 to 1000	1000
0 to 1200	1200
0 to 1500	1500
0 to 2000	2000

Table 3. Connecting flange size

Flange rating		ϕD	ϕG	T	f	ϕC	$\phi H-N$
40 mm	JIS 10 K RF	140	81	16	2	105	19-4
50 mm		155	96	16	2	120	19-4
1-1/2 in.	JPI 150 RF	127	73.2	18	1.6	98.6	16-4
2 in.		152	91.9	19.5	1.6	120.6	19-4
40 mm	JIS 20 K RF	140	81	18	2	105	19-4
50 mm		155	96	18	2	120	19-8
40 mm	JIS 30 K RF	160	90	22	2	120	23-4
50 mm		165	105	22	2	130	19-8
1-1/2 in.	JPI 300 RF	155	73.2	21	1.6	114.3	22-4
2 in.		165	91.9	22.5	1.6	127	19-8

Note) 1. Dimensions shown inside the bracket is for pressure rating of JIS 20K, JIS 30K, JPI 300 and ANSI 300.

2. When pressure rating is JIS 10K, hub shown in the figure above will not be provided.

Internal float type

T: Top connection

[Unit: mm]

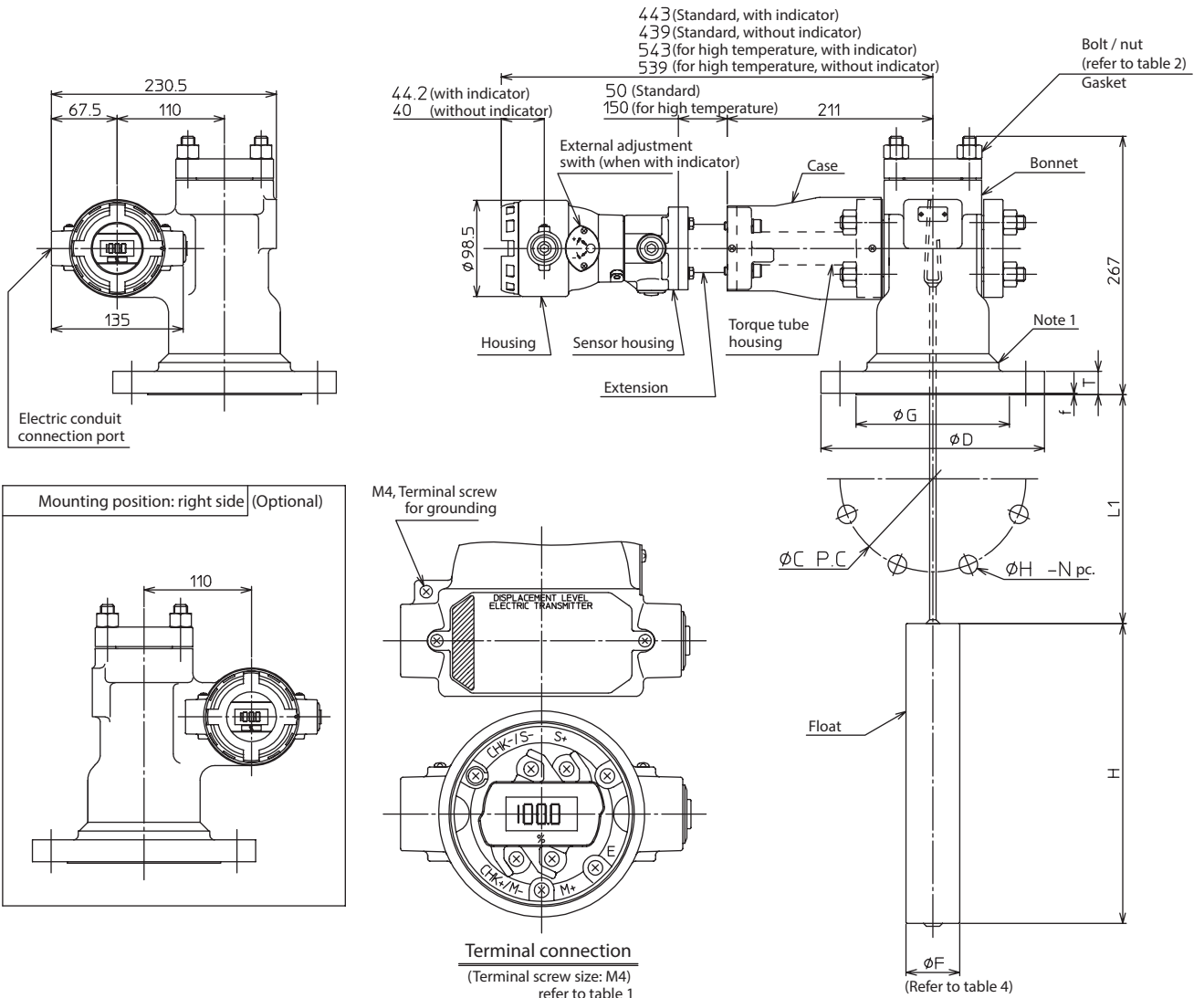


Table 1. Terminal

Symbol	Description
S+, S-	Power supply and output signal terminal
CHK+, CHK-	Terminal for check meter
M+, M-	Terminal for ammeter installed outside
E	Ground terminal

Table 2. Bolt / nut material

	Bolt / nut material
U, M, A, E	SNB7 / S45C *
D	SUS304 / SUS304

* When Y131 is specified, bolt / nut material shall be SUS304 / SUS304.

Table 4. Size H

Measuring range (mm)	H
0 to 300	300
0 to 350	350
0 to 400	400
0 to 450	450
0 to 500	500
0 to 600	600
0 to 700	700
0 to 800	800
0 to 1000	1000
0 to 1200	1200
0 to 1500	1500
0 to 2000	2000

Table 3. Connecting flange size

Flange rating	ϕD	ϕG	T	f	ϕC	$\phi H-N$
80 mm	185	126	18	2	150	19-8
100 mm	210	151	18	2	175	19-8
125 mm	250	182	20	2	210	23-8
3 in.	190	127	24	1.6	152.4	19-4
4 in.	229	157.2	24	1.6	190.5	19-8
5 in.	254	185.6	24	1.6	215.9	22-8
80 mm	200	132	22	2	160	23-8
100 mm	225	160	24	2	185	23-8
125 mm	270	195	26	2	225	25-8
80 mm	210	140	28	2	170	23-8
100 mm	240	160	32	2	195	25-8
125 mm	275	195	36	2	230	25-8
3 in.	210	127	28.5	1.6	168.1	22-8
4 in.	254	157.2	32	1.6	200.2	22-8
5 in.	279	185.6	35.5	1.6	235	22-8

Note) 1. When pressure rating is JIS 10K, hub shown in the figure above will not be provided.

Cautions for handling the product

In order to ensure maximum performance from the product's functions, please handle it properly while paying attention to the following precautions. Please make sure that you read the instruction manual of this product before use.

Cautions for installation

WARNING

- When installing, make sure that the gasket between process connections (flange connections) does not protrude; otherwise fluid leakage or output error may occur.
- Do not operate the instrument beyond the specified pressure, temperature or conditions. Could result in damage to the instrument or fluid leakage which may lead to a serious accident.
- Wiring installation in an explosion-proof area must be done in accordance with the procedures stated in the explosion-proof guideline. For an explosion-proof model with explosion-proof cable gland adaptor, make sure that an Azbil Corporation-made certified explosion-proof cable gland adaptor is used. The cable for wiring should have a 60 °C withstanding temperature or higher.*1

Note) *1. *If temperature class is as listed below, use cables with higher allowable temperature rating:*

Temp. class	Maximum allowable temperature
T3	70°C
T4	65°C

CAUTION

- Do not use this instrument as a step or scaffold after installation. The instrument may be damaged and this may result in injury.
- Do not hit indicator's glass window with any tool or hard object. Broken glass may cause the injury.
- Make sure that installation has been performed properly. If not, it may result in output error or violation of industry regulations.
- This instrument is heavy. Be careful on scaffold and wear safety shoes.

WARNING

- Do not perform wiring with wet hands or while the power supply is on. This may result in electric shock.

CAUTION

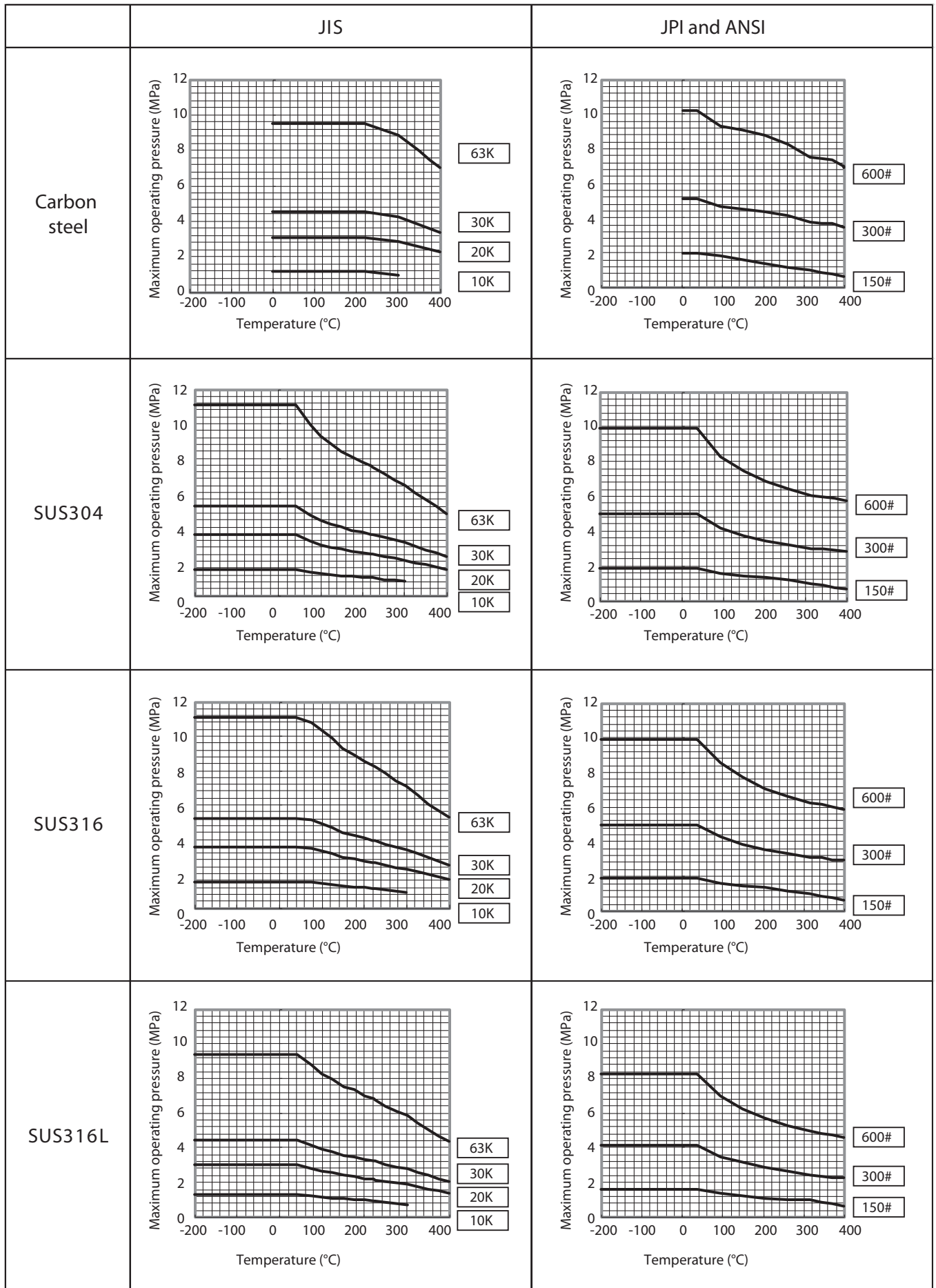
- Make sure that wiring is done properly and checked thoroughly. Incorrect wiring may damage the instrument.
- Make sure that the power supply conforms to specifications and is used properly. An incorrect power supply will damage the instrument.

When ordering, please specify each of the following:

- 1) Model number (attach suffix "Z" to the end of basic model number for hydrometer.
- 2) Name of gas or fluid, type of gas, design temperature, pressure (in particular instrument for High Pressure Gas Law certification).
- 3) Specific gravity of fluid, its pressure, temperature.
- 4) Dimension from bottom of flange to top of float (L1)
- 5) For hydrometer application (range of specific gravity measurement)
- 6) For interface measurement application (specific gravities of upper and lower fluid)
- 7) Additional specifications.

Flange pressure rating (operating pressure range)

- Note: 1. As shown in the graphs below, the maximum operating pressure depends on the pressure rating and material of the flange and the operating temperature.
2. A minimum temperature of -200 °C is indicated in the graphs, but the exact allowed minimum operating temperature is -196 °C.



Please read "Terms and Conditions" from the following URL
before ordering and use.
<http://www.azbil.com/products/factory/order.html>

Newly manufactured products are gradually acquiring our new "azbil"
company logo, but for optimum use of resources and minimal environmental
impact, etc., some products continue to be manufactured with the old "Y" logo.
Delivered products may bear either the new logo or the old one.

The logo for Azbil Corporation, featuring the word "azbil" in a bold, lowercase, sans-serif font.

Specifications are subject to change without notice.

Azbil Corporation
Advanced Automation Company

1-12-2 Kawana, Fujisawa
Kanagawa 251-8522 Japan
URL: <http://www.azbil.com/>

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