

## KF Series

## Liquid Level Indicating Controller

## Model KFLB

**OVERVIEW**

The KF Series instruments are field-mounted type pneumatic indicating controllers which are used to measure and control various types of process variables such as temperature, pressure, flow and liquid level.

Indicating transmitters and indicating controllers with transmitters are also available as well as indicating controllers. The controllers are available either in a local type to set the set-point value manually with a knob on the instrument or in a cascade type (remote type) to set the set-point value with a pneumatic set-point signal. Model KFLB Liquid Level Indicating Controllers are displacement type instruments for the measurement and control of such process variables as liquid levels, boundary surfaces, and specific gravities.

**FEATURES**

- A wide variety of elements materials and control mechanisms are available to meet various applications.
- The unit has a pneumatic circuit board and a sturdy, heat-resistant weatherproof case, thereby greatly improving durability and reliability.
- The pneumatic circuit board system allows the user to readily add or eliminate control mechanisms and units, thereby enhancing system modification and expansion flexibility.
- Interchangeable parts are used to the maximum practical extent, thereby reducing the number of spare parts to be kept in stock.
- Able to cover wide ranges of temperatures, pressure, and specific gravities.

**APPLICATIONS**

- To a level measurement of the reaction, the distillation, the drying and the recovery unit.
- Boundary surfaces and specific gravity measurement.
- To the measurement in the cryogenic services (liquefied gas etc. of min.  $-196^{\circ}\text{C}$ ) and high temperature (max.  $+400^{\circ}\text{C}$ ) services.
- To the measurement in high vacuum (min.  $-101.3\text{ kPa}$ ) and high pressure (max.  $15\text{ MPa}$ ) services.

## STANDARD SPECIFICATIONS

### Range of standard measuring setting range

Range (mm)	Range of measuring setting range (mm)
0 - 300	Set applicable within left side range.
0 - 350	
0 - 400	
0 - 450	
0 - 500	
0 - 600	
0 - 700	
0 - 800	
0 - 1000	
0 - 1200	
0 - 1500	
0 - 2000	

### Specific-gravity

- Use as level instrument, 0.1 to 1.6 in specific gravity.
- Use as boundary surface are as following.

If the specific gravity of upper layer liquid is  $\gamma_2$ , the lower layer liquid one is  $\gamma_3$ , it becomes  $\gamma_2 < \gamma_3$ ,  $0.4 \leq \gamma_2, \gamma_3 \leq 1.6$ , and  $0.1 \leq \gamma_3 - \gamma_2 \leq 1.2$

Please refer to Figure 1.

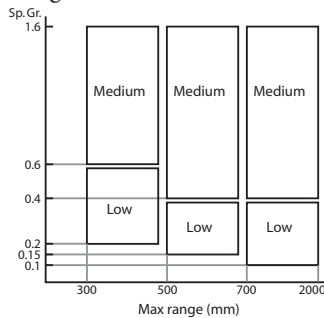


Figure 1. Specific-gravity (0.1 to 1.6)

Medium specific gravity :

It is possible to correspond to JIS 63K or ANSI / JPI 600 as standard.

Low specific gravity :

It is possible to correspond to JIS 30K or ANSI / JPI 300 as standard.

Please consult to our sales, except for the above-mentioned. Please refer to Table 1 for details.

Table 1. Float test pressure (Material: SUS316L)

Model	Measuring range (mm)	Medium specific gravity (KFLB_ - 61)			Low specific gravity (KFLB_ - 62)		
		Float diameter (mm)	Over load pressure (MPa)	Flange pressure rating float diameter	Float diameter (mm)	Over load pressure (MPa)	Flange pressure rating float diameter
03	0-300	55	15.0	Max. JIS63K, ANSI/JPI600	95	7.8	Max. JIS30K, ANSI/JPI300
A3	0-350						
04	0-400						
A4	0-450						
05	0-500	45	15.0	Max. JIS63K, ANSI/JPI600	85	3.2	Max. JIS10K, ANSI/JPI150
06	0-600						
07	0-700						
08	0-800						
10	0-1000	30	15.0	Max. JIS63K, ANSI/JPI600	65	3.2	Max. JIS10K, ANSI/JPI150
12	0-1200						
15	0-1500						
20	0-2000						

Float weight : 3 kg (Medium specific gravity type)

(The weight difference depending on the specific gravity in case of the medium specific gravity type and the low specific gravity type in boundary surface meter as the specific gravity measurement type.)

### Working pressure range

It is possible to use from -101.3 kPa up to each flange pressure rating.

(Maximum JIS63K or ANSI/JPI600#), for ANSI/JPI900# is also available with some condition.

### Process connection

Flange connections

#### External chamber type

##### Connection

Side-side flanged,  
Side-bottom flanged,  
Top-side flanged,  
Top-bottom flanged

##### Flange size

2 inches or 1-1/2 inch RF,  
2 inches or 1-1/2 inch RTJ (for ANSI / JPI 600#)

#### Internal float type

##### Connection

Top flanged

##### Flange size

3 inches RF, 4 inches RF, 5 inches RF,  
3 inches or 1-1/2 inch RTJ (for ANSI / JPI 600#)

### Materials

Refer to "Table 2 Material" on page 3

### Meter specification

Refer to "Table 3 Meter specification" on page 3

### Mounting

Direct mount to the process with flanges

### Weight

Approx. 45 kg.

Table 2. Material

Parts	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	
Torque tube		Inconel	Inconel	Inconel	SUS316L	SUS316L	
Bonnet / Chamber		Carbon steel (SFVC2A), SUS304, SUS316, SUS316L *2					
Float		SUS316L					
Bolts		Chromium-molybdenum steel (SNB7)				SUS304	
Gasket		Spiral type (semi-metallic, filler material: asbestos)					
Radiating fins		Provided			Non provided		

Note) \*1 The maximum temperature is available up to 200°C.

\*2 If the optional code is "D", it is not selectable carbon steel.

Table 3. Meter specification

Item		Specification	
Indicator section	Indicating angle	44 deg.	
	Scale length	150 mm	
	Pointers	PV: Red, SV: Green	
	Output gauge	Scale: 0 to 200 kPa, Indicating accuracy: ± 3% F.S.	
Setting section	Local setting	Internal or external setting with a setting dial.	
	Remote setting	With pneumatic signal of 20 to 100 kPa	
	Setting range	0 to 100% F.S.	
Controller section	Control actions	P + Manual reset, PI, PID, PD + Manual reset, PI + Batch, on-off, Differential gap, P + External reset, PD + External reset	
	Proportional band (P)	5 to 500% (Direct or reverse action)	
	Internal time (I)	0.05 to 30 min.	
	Derivative time (D)	0.05 to 30 min.	
	Differential gap	1 to 100% F.S., adjustable	
	Batch setting pressure	60 to 110 kPa, adjustable	
	External reset pressure	20 to 110 kPa, adjustable	
	Manual reset pressure	0 to 100% F.S., adjustable (by pneumatic pressure setting)	
Standard specification	Output	20 to 100 kPa, 0 or corresponding to supply air pressure (on-off, differential gap)	
	Minimum load	I.D. 4 mm × 3 m + 20 cm <sup>2</sup>	
	Supply air pressure	140 ± 14 kPa	
	Air consumption (50% output balanced)	Indicating transmitter: 5 L/min (N)      Indication only: 5 L/min (N) Indicating controller: 5 L/min (N)      Indication only: 5 L/min (N) Indicating transmitting and controller: 9 L/min (N)	
	Saturated air supply capacity	Transmitter output: 40 L/min (N), Controller output: 40 L/min (N), Manual control output: 30 L/min (N)	
	Air piping connections	Rc1/4 (PT1/4 internal thread) or 1/4NPT internal thread	
	Ambient temperature	-30 to +80°C, refer to Table 4.	
	Relative humidity	10 to 90% RH	
	Case and door	Enclosure :	Waterproof and dust tight, meets JIS F8001 class 3 splash-proof, NEMA3, IEC IP54
		Material :	Case ..... Diecast aluminum Door..... Polyester with fiberglass Door-glass . Reinforced glass (3 mm thick)
Case finish :		Baked acrylic finish (for corrosion-resistant or silver finish, refer to "Optional specifications")	
Color of finish :		Dark beige (Munsell 10YR 4.7/0.5)	

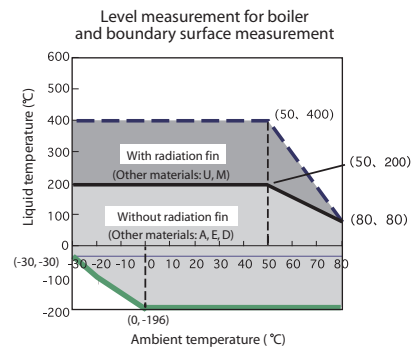
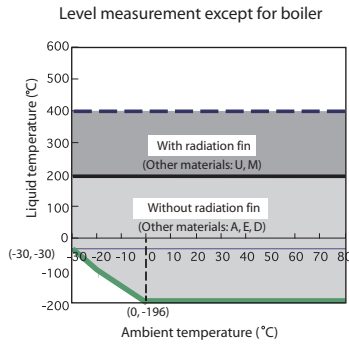


Table 4. Operating temperature range (°C)

	Standard operating range	Normal operating range	Limit operating range	Transportation storing range
Ambient temperature	23 ±2	-30 to +80	-40 to +85	-40 to +85
Liquid temperature	23 ±2	-196 to +400	-196 to +400	-40 to +85

## PERFORMANCE

### Standard characteristic (within the range of specific gravity in Figure 1, under standard operating condition)

- Transmission accuracy : ± 0.5% F.S.
- Indication accuracy : ± 1.0% F.S.
- Repeatability : 0.3% F.S.
- Dead Band : ± 0.1% F.S.

## Optional specifications

### Internal manual loader (with auto/manual transfer switch)

Consists of a manual control regulator, a two-position transfer switch and a balance check button.

### With external manual SP setting knob

A setting knob is mounted on the door. SP can be adjusted externally.

### Water and oil free treatment (Only the SUS material) Range 1000 mm or less

Remove the moisture and the oil from the wetted part.

### Oil free treatment (Only the SUS material) Range 1000 mm or less

Remove the oil from the wetted part.

## Test report

The result of visual checks and input output characteristics etc. for test (three points) of the level instrument is described and submitted.

## Five point check

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

## Mil sheet

Test result of the chemical composition, the heat treatment condition, and the mechanical property of the element material (torque tube housing, bonnet, and chamber) with charge number of material is submitted.

## With air set

Regulator with the filter + φ 40 pressure gauge is supplied. (Supply pressure; 200 to 970 kPa, output 140 kPa and pressure gauge; 0 to 200 kPa)

## Dye check

The result of testing for the penetrant inspection in the weld of the element material (bonnet and chamber) is submitted.

## Without Float

The float is not supplied. Please specify if the existing float of our company KQP□1□, or KFL□00 - □1, or NQP31□ or NQP21□ is reused.

## Without chamber

The chamber is not supplied. Please specify if the existing chamber of our company KQP□1□, or KFL□00 - □1, or NQP31□ or NQP21□ is reused.

## Optional semi-standard and special specifications

### Stainless steel bolts (Y131)

SUS304 bolts are used for the main body assembling. The connection standard based on High-pressure gas regulation goods with JIS10K, ANSI150, and JPI150 it becomes a special requirement. Please consult to our sales.

### Corrosion-prevention and silver painting (Y138)

#### Prevent corrosion (acrylic baking) finishing (Y138A)

Resistant against corrosive atmosphere

#### Preventive corrosion resistant (epoxy baking) finishing (Y138B)

Resistant against corrosive liquid.

#### Silver general (acrylic baking) finish (Y138C)

Resistant of heating up of equipment by direct sunshine or radiant heat.

#### Silver preventive corrosion (acrylic baking) finishing (Y138D)

Protection of heating up of equipment and corrosive atmosphere.

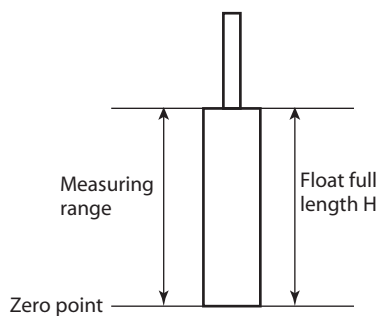
*Note) The silver finishing is not suitable for alkaline atmosphere.*

## ATTENTION

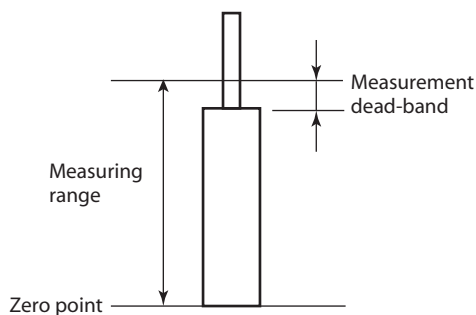
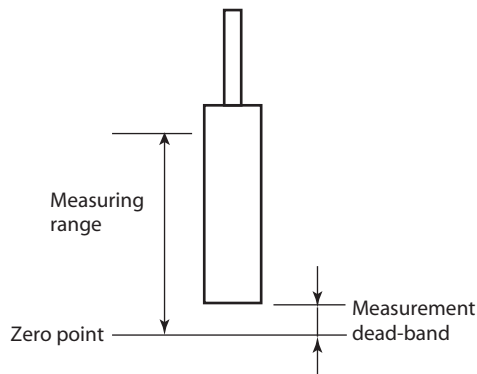
### Attention in usage

- In the following cases, our standard displacement type level instrument might be unsuitable to the usage because it produces it with measuring range = float length H. 0% or around 100% levels are detected in the normal operation. When output signals are the continuous output signals of 4mA or less or 20mA or more.
- Set the float bottom to the zero point when you execute the actual liquid adjustment after the displacement type level instrument is installed at the job site. The output change doesn't generate if the measurement fluid does not contact with the float on the structure of the instrument. Might it cause in the lower limit or the upper limit of the measuring range when setting it to the zero point excluding the float bottom and trouble be caused in the measurement dead-band or characteristic of the linearity.

**An appropriate adjusting method: Set the float bottom to the zero point.**



**An improper adjusting method: Set it to the zero point excluding the float bottom.**



### Attention in installation

#### ⚠ WARNING

- When install it, the gasket of process connection is required to set without rum off the edge.
- It causes a liquid leakage and the output error. Please do not use it excluding pressure, the temperature, and connected standard for which this specification sheet specified. It might cause a big accident because of damage and a liquid leakage.

#### ⚠ CAUTION

- Please do not use this instrument for the work stand etc. after install it. The equipment might be damaged and it causes the injury.
- Please do not appropriate the tool etc. to the glass part of the display. It is likely to injure damaging the glass.
- Please set it up correctly. When the installation is insufficient, it might violate the output error and the corresponding rule.
- Because this instrument is a heavy lift, the work stand is noted, and the safety shoe is worn. Please do and do the installation operation.

### Ordering information

- 1) Model number (At the specific gravity measurement... 'Z' is filled in on a basic model number end.)
- 2) Name of gas, liquid name, and type of gas, design temperatures, and pressures (Especially, for the High pressure gas recognition equipment.)
- 3) Specific gravity, pressure, and temperature of liquid
- 4) Dimension to the upper part of float lower side of the flange (L1) mm
- 5) The specific gravity measurement (range of specific gravity)
- 6) For the boundary surface measurement (specific gravity of upper layer liquid and lower liquid)
- 7) Optional specification

# MODEL SELECTION

Model KFL\_\_ - I II III - IV V VI VII VIII IX X XI XII XIII XIV - Options \*9

		Basic model no. *7		Selections										Options					
		KFL																	
		KFL																	
Model	Torque tube	KFL																X	No options
Function	Indicating transmitter		B	0														M	Internal manual loader (with A/M switch)
	Indicating controller (local type)		B	1														K	With external manual SP setting knob
	Indicating transmitter and controller (local type)		B	2														4	Water and oil free treatment (only the SUS material) Range 1000 mm or less
	Indicating controller (cascade type)		B	3														5	Oil free treatment (only the SUS materials) Range 1000 mm or less
	Indicating transmitter and controller (cascade type)		B	4														6	Test report *10
	No selection				0													7	Five point check *10
	P + Manual reset				1													8	Mil sheet
	PI				2													9	With air set
	PID				3													B	Dye check
	PD + Manual reset				4													C	Without float *5
	PI + Batch				5													D	Without chamber *6
	On-Off				6														
	Differential gap				7														
	P + External reset				8														
PD + External reset				9															
Specific gravity	For medium specific gravity			6	1														
	For low specific gravity *1			6	2														
Range of standard measuring setting range (mm)	0 - 300 (0.2 ≤ low sp.gr. < 0.6, 0.6 ≤ medium sp.gr. ≤ 1.6)					0	3												
	0 - 350 (0.2 ≤ low sp.gr. < 0.6, 0.6 ≤ medium sp.gr. ≤ 1.6)					A	2												
	0 - 400 (0.2 ≤ low sp.gr. < 0.6, 0.6 ≤ medium sp.gr. ≤ 1.6)					0	4												
	0 - 450 (0.2 ≤ low sp.gr. < 0.6, 0.6 ≤ medium sp.gr. ≤ 1.6)					A	4												
	0 - 500 (0.15 ≤ low sp.gr. < 0.4, 0.4 ≤ medium sp.gr. ≤ 1.6)					0	5												
	0 - 600 (0.15 ≤ low sp.gr. < 0.4, 0.4 ≤ medium sp.gr. ≤ 1.6)					0	6												
	0 - 700 (0.1 ≤ low sp.gr. < 0.4, 0.4 ≤ medium sp.gr. ≤ 1.6)					0	7												
	0 - 800 (0.1 ≤ low sp.gr. < 0.4, 0.4 ≤ medium sp.gr. ≤ 1.6)					0	8												
	0 - 1000 (0.1 ≤ low sp.gr. < 0.4, 0.4 ≤ medium sp.gr. ≤ 1.6)					1	0												
	0 - 1200 (0.1 ≤ low sp.gr. < 0.4, 0.4 ≤ medium sp.gr. ≤ 1.6)					1	2												
	0 - 1500 (0.1 ≤ low sp.gr. < 0.4, 0.4 ≤ medium sp.gr. ≤ 1.6)					1	5												
	0 - 2000 (0.1 ≤ low sp.gr. < 0.4, 0.4 ≤ medium sp.gr. ≤ 1.6)					2	0												
	Other					X	X												
	Process connection	External chamber type, side-side flanged (S-S)						1											
External chamber type, side-bottom flanged (S-B)							2												
External chamber type, top-bottom flanged (T-B)							3												
External chamber type, top-side flanged (T-S)							4												
Internal float type, top flanged (T) L1 dimensions must be specified.							5												
Other							X												
Element materials	Bonnet / Chamber (B & C)	Torque tube housing (TH)																	
	Carbon steel	Carbon steel					1												
	SUS304	SCS13A					2												
	SUS316	SCS14A					3												
	SUS316L	SCS16A					4												
	Other						X												
Other materials *3 (Temperature range *2)	Torque tube: Inconel (350 to 400°C) (with radiation fin)																	U	
	Torque tube: Inconel (200 to 350°C) (with radiation fin)																	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	
	Other																	X	
Working pressure range *8	JIS 10K						1												
	JIS 20K						2												
	JIS 30K						3												
	JIS 63K						4												
	ANSI 150 (RF smoothness)						A												
	ANSI 150 (RF serration)						B												
	ANSI 300 (RF smoothness)						C												
	ANSI 300 (RF serration)						D												
	ANSI 600 (RF smoothness)						E												
	ANSI 600 (RT)						F												
	JPI 150						G												
	JPI 300						H												
	JPI 600						J												
	JPI 600 (RT)						K												
Other *4							X												
Flange size	1-1/2 inch (40 mm) (Applicable to external chamber type)																	1	
	2 inches (50 mm) (Applicable to external chamber type)																	2	
	3 inches (80 mm) (Applicable to internal chamber type) (only medium specific gravity)																	3	
	4 inches (100 mm) (Applicable to internal chamber type)																	4	
	5 inches (125 mm) (Applicable to internal chamber type) (only low specific gravity) *1																	5	
	Other																	X	
Air piping connections	Rc1/4 (PT1/4 internal thread) (Nameplate: Japanese)																	A	
	1/4NPT internal thread (Nameplate: English)																	B	
Unit / Pneumatic signal	kgf/cm <sup>2</sup> / 0.2-1 kgf/cm <sup>2</sup>																	1	
	PSI/ 3-15 PSI																	2	
	bar/ 0.2-1.0 bar																	3	
	Pa/ 20-100 kPa																	4	
	Pa/ 19.6-98.1 kPa																	8	

Note) \*1~10: refer to next page.

**Note**

- \*1) Pressure rating “4”, “E”, “F”, “J”, and “K” cannot be selected for 5 inches/125 mm or the low density.
- \*2) When other material is “D”
  - ① Even 0-200°C can be used.
  - ② The element materials “1” cannot be selected.
- \*3) The float material is as follows.

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

Bolt/nut material is as follows.

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

*Note)\* If Y131 is specified, bolt/nut material of the sign \* is changeable to SUS304/SUS304.*

- \*4) Class900 is required consultation with our sales. Class1500 or more cannot be produced.
- \*5) Please specify the float model number if reusing an existing Azbil Corporation float, model NQI, KFLB, KQP, or NQP. Please note the following :
  - (1)The selectable precondition as optional specification “C” for the existing product, “liquid level measurement specification: medium specific gravity”. Model number shall be NQI31□, NQI21□, KQP□1□, KFL□00-□1, NQP31□ or NQP21□ without Z.
  - (2)Note that the existing float diameter smaller than the standard specification
  - (3)Please confirm the dimensions of the existing float, and confirm the accuracy of measurement using the following formula.
    - Characteristics of the standard model KFLB

	Weight “Mf” of the measured fluid which is displaced by the float		
	Mf ≥ 400	400 > Mf ≥ 200	200 > Mf
Accuracy (%FS)	±0.5	±1.0	Accuracy is not guaranteed

*Note) \*This accuracy table is common for all KFLB models regardless of liquid level measurement, interface measurement or gravity measurement specifications.*

- Formula for checking accuracy

$$Mf = \frac{\pi/4 \times D^2 \times H \times \gamma \times \rho_{std} \times 10^3}{1 + 2.04 \times 10^7 \times \pi \times D^2 \times \gamma \times \rho_{std}} \text{ (g)}$$

Where D : Float diameter (mm)  
 H: Measuring range (float length, mm)  
 γ : Specific gravity  
 ρstd : Standard density, ρstd = 1 (g/cm<sup>3</sup>)  
 π : Circular constant

- Reference: Formula for Genesis buoyant by float  
 $F = \rho \times V \times G = Mf \times G$   
 Where ρ : Density of the ambient fluid (measuring fluid)  
 V : Volume of the ambient fluid (measuring fluid) which the float displaced  
 G : Gravitational acceleration  
 Mf : Weight of the measuring fluid, which is displaced by the float

- \*6) Please specify the existing chamber model number. However, the following attention is needed. The replaced model number must be without “Z” of our model KQP□1□, KFL□00-□1, and NQP31□ and NQP21□. If “Z” included in the model number, the connection standard of the chamber and the bonnet are required ANSI / JPI 50, 300, 600 RF and the flange size (nominal size) is 3 inches respectively. Refer to the SLX series (No. SS2-SLX100-0100) for notes if the existing one is replaced and modified.
- \*7) Please fill in “Z” on a basic model number end, and specified the range at the specific gravity measurement.
- \*8) It is JIS and JPI (JPI 600 RTJ is excluded) is RF flange.
- \*9) If included semi-standard specification (Y□) Please fill in the “Y” sign on a basic model number end, and put Y number other. Please consult to our sales if required the combination of two Y spec. or more.
- \*10)Specify option code “7”, if expand the measuring point of input output characteristics described to the test report from 3 points (0,50,100%) to 5 points (0,25,50,75,100%). Option code “7” cannot be specified alone.

- \* Please specify the following when you order.

• Model number  
 KFLB□□ - □□□□□□□□□□□□ - □

- Liquid name =
- Type of gas =

• Specific gravity (fill in below the decimal point 3 digit.)  
 For level meter =  
 For boundary surface meter: Upper layer liquid =  
 Lower layer liquid =  
 For specific gravity meter :  
 the range of the specific gravity of the measurement.=

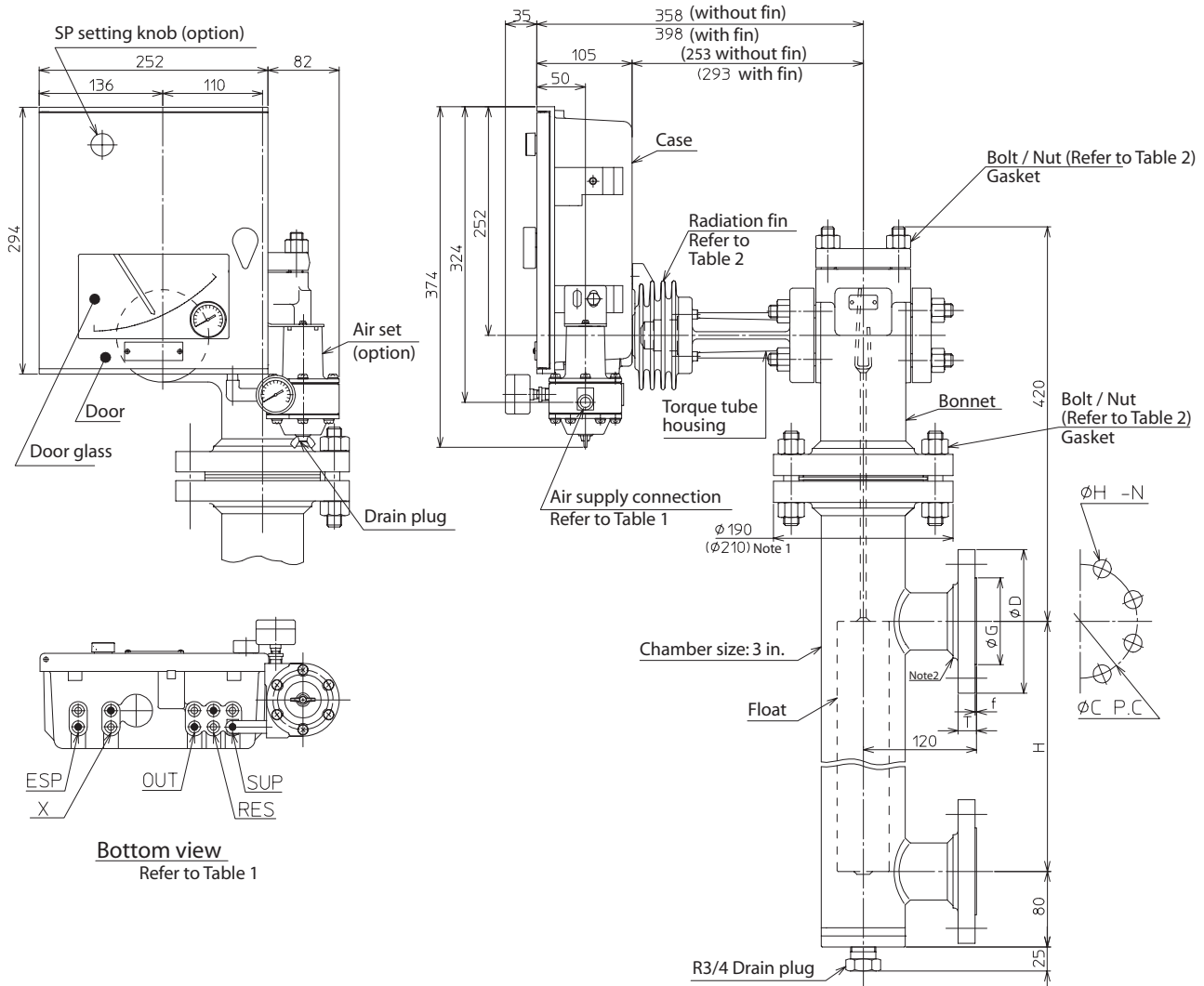
- Temperature Normal = °C  
 MIN= °C  
 Design temperature = °C
- Pressure Normal = MPa  
 MAX= MPa  
 Design pressure = MPa

• The dimension from the lower side of the bonnet flange to upper part of float (L1) =  
 Round off below the decimal point, and fill it in by the unit of mm.  
 Please consult to our sales separately for L1 > 1500 mm.

□□□□□□□□□□ : Specify, and fill in.

**DIMENSIONS**

[Unit: mm]



**Bottom view**  
Refer to Table 1

**Table 1:**  
Air piping connection \*a

Symbol	Description
⊙	Rc1/4
⊕	1/4NPT internal thread
ESP	External SP
X	Transmitting signal
OUT	Controlled signal
RES	External reset signal
SUP	Supply air pressure

\*a) In case of manual reset, the piping for "SUP" and "RES" are pre-connected.

**Table 2:**  
Bolt / Nut material

Code	Bolt / Nut material	Radiation fin
U,M	SNB7/S45C *b	With
A,E	SNB7/S45C *b	Without
D	SUS304/SUS304	Without

\*b) If it is specified "Y131" marked \*b is SUS304 / SUS304.

**Table 4: Size H**

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

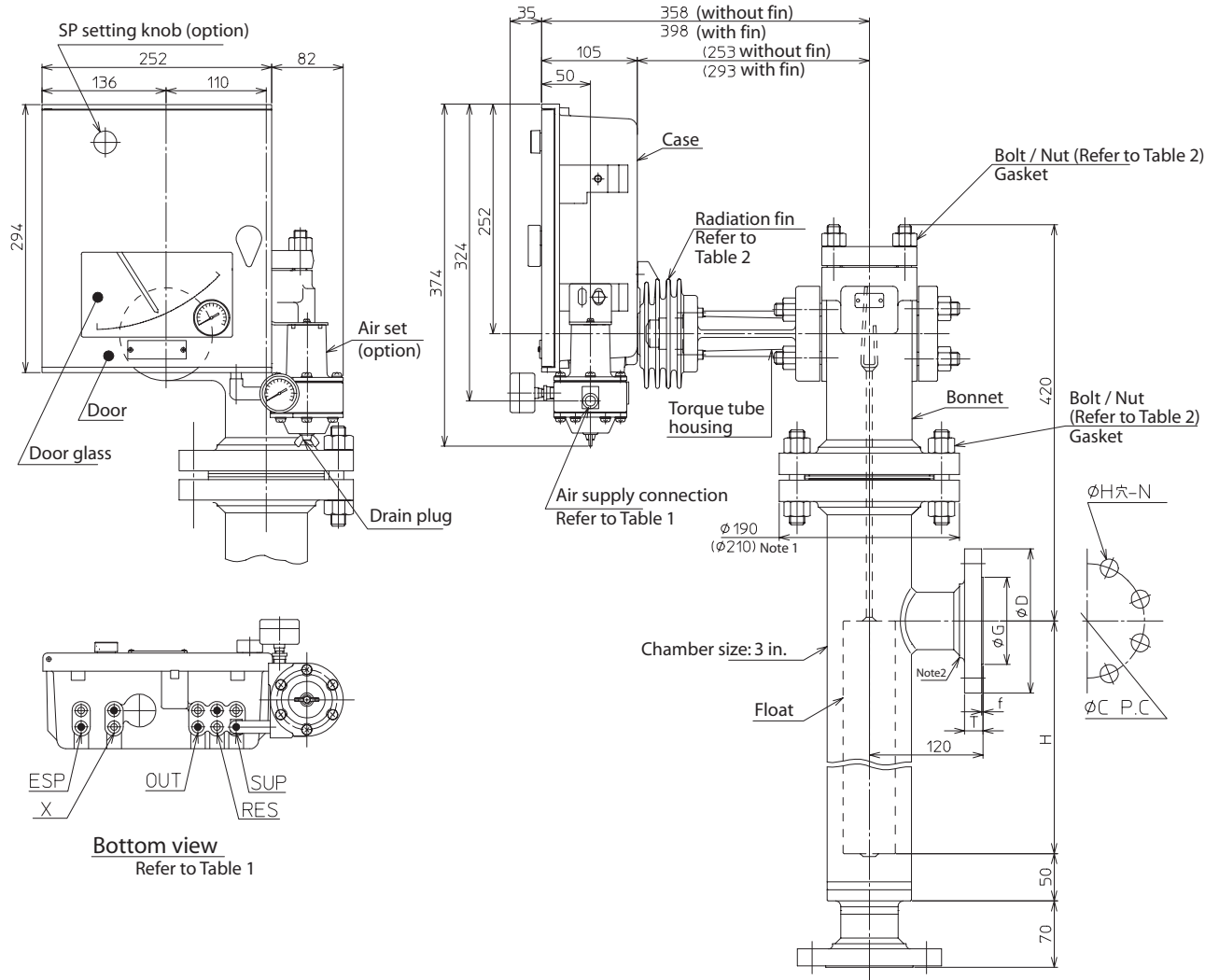
**Table 3: Connecting flange size**

Flange		φD	φG	T	f	φC	φH-N
40A	JIS10K RF	140	81	16	2	105	19-4
50A		155	96	16	2	120	19-4
1 1/2 B	JPI ANSI 150 RF	127	73.2	18	1.6	98.6	16-4
2B		152	91.9	19.5	1.6	120.6	19-4
40A	JIS20K RF	140	81	18	2	105	19-4
50A		155	96	18	2	120	19-8
40A	JIS30K RF	160	90	22	2	120	23-4
50A		165	105	22	2	130	19-8
1 1/2 B	JPI ANSI 300 RF	155	73.2	21	1.6	114.3	22-4
2B		165	91.9	22.5	1.6	127	19-8

Note) 1. ( ) dimension and shows pressure rating JIS 20K, JIS 30K, JPI 300, ANSI 300.

2. The flange of pressure rating JIS 10K is not provided a hub.





Bottom view  
Refer to Table 1

Table 1:  
Air piping connection \*a

Symbol	Description
⊙	Rc1/4
⊙	1/4NPT internal thread
ESP	External SP
X	Transmitting signal
OUT	Controlled signal
RES	External reset signal
SUP	Supply air pressure

\*a) In case of manual reset, the piping for "SUP" and "RES" are pre-connected.

Table 2:  
Bolt / Nut material

Code	Bolt / Nut material	Radiation fin
U,M	SNB7/S45C *b	With
A,E	SNB7/S45C *b	Without
D	SUS304/SUS304	Without

\*b) If it is specified "Y131" marked \*b is SUS304 / SUS304.

Table 4: Size H

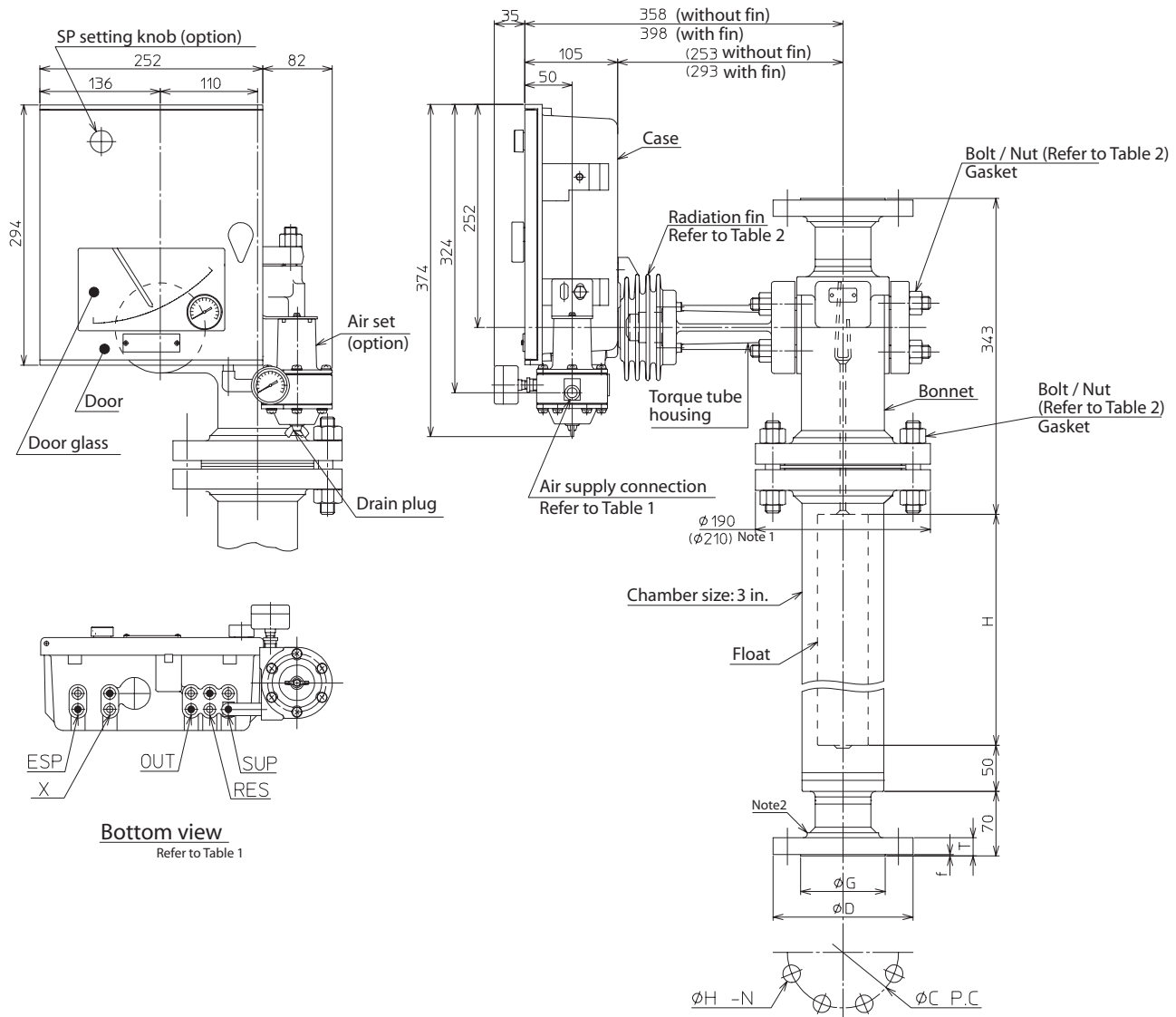
Measuring range (mm)	H
0~300	300
0~350	350
0~400	400
0~500	500
0~600	600
0~700	700
0~800	800
0~1000	1000
0~1200	1200
0~1500	1500
0~2000	2000

Table 3: Connecting flange size

Flange		$\phi D$	$\phi G$	T	f	$\phi C$	$\phi H-N$
40A	JIS10K RF	140	81	16	2	105	19-4
50A		155	96	16	2	120	19-4
1 1/2 B	ANSI 150 RF	127	73.2	18	1.6	98.6	16-4
2B		152	91.9	19.5	1.6	120.6	19-4
40A	JIS20K RF	140	81	18	2	105	19-4
50A		155	96	18	2	120	19-8
40A	JIS30K RF	160	90	22	2	120	23-4
50A		165	105	22	2	130	19-8
1 1/2 B	ANSI 300 RF	155	73.2	21	1.6	114.3	22-4
2B		165	91.9	22.5	1.6	127	19-8

Noted 1. ( ) dimension and shows pressure rating JIS 20K, JIS 30K, JPI 300, ANSI 300.

2. The flange of pressure rating JIS 10K is not provided a hub.



**Bottom view**  
Refer to Table 1

**Table 1:**  
Air piping connection \*a

Symbol	Description
⊙	Rc1/4
⊙	1/4NPT internal thread
ESP	External SP
X	Transmitting signal
OUT	Controlled signal
RES	External reset signal
SUP	Supply air pressure

\*a) In case of manual reset, the piping for "SUP" and "RES" are pre-connected.

**Table 2:**  
Bolt / Nut material

Code	Bolt / Nut material	Radiation fin
U,M	SNB7/S45C *b	With
A,E	SNB7/S45C *b	Without
D	SUS304/SUS304	Without

\*b) If it is specified "Y131" marked \*b is SUS304 / SUS304.

**Table 4: Size H**

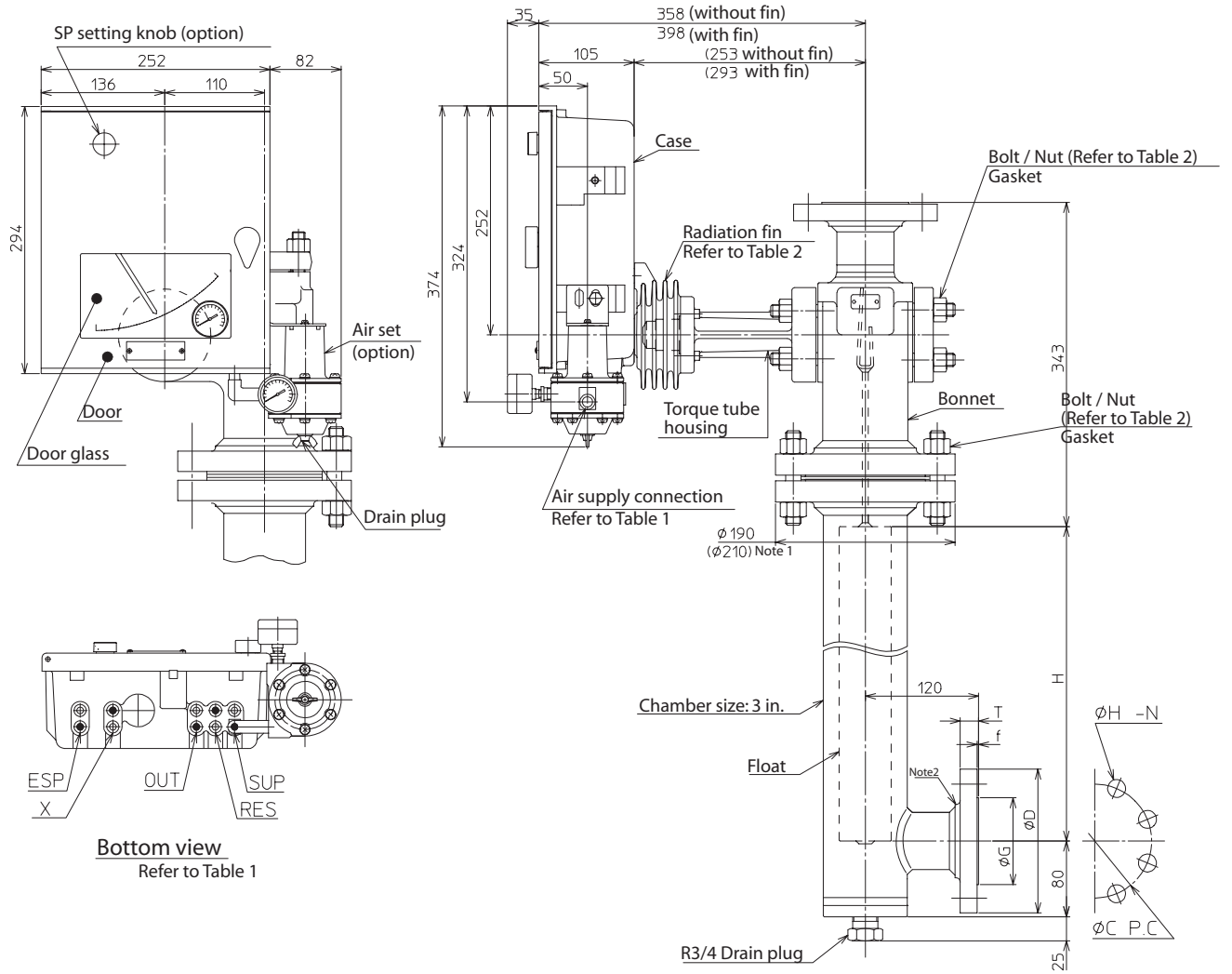
Measuring range (mm)	H
0-300	300
0-350	350
0-400	400
0-500	500
0-600	600
0-700	700
0-800	800
0-1000	1000
0-1200	1200
0-1500	1500
0-2000	2000

**Table 3: Connecting flange size**

Flange	φD	φG	T	f	φC	φH-N
40A JIS10K RF	140	81	16	2	105	19-4
50A JIS10K RF	155	96	16	2	120	19-4
1 1/2 B JPI ANSI 150 RF	127	73.2	18	1.6	98.6	16-4
2 B JPI ANSI 150 RF	152	91.9	19.5	1.6	120.6	19-4
40A JIS20K RF	140	81	18	2	105	19-4
50A JIS20K RF	155	96	18	2	120	19-8
40A JIS30K RF	160	90	22	2	120	23-4
50A JIS30K RF	165	105	22	2	130	19-8
1 1/2 B JPI ANSI 300 RF	155	73.2	21	1.6	114.3	22-4
2 B JPI ANSI 300 RF	165	91.9	22.5	1.6	127	19-8

Note) 1. ( ) dimension and shows pressure rating JIS 20K, JIS 30K, JPI 300, ANSI 300.

2. The flange of pressure rating JIS 10K is not provided a hub.



**Bottom view**  
Refer to Table 1

**Table 1:**  
Air piping connection \*a

Symbol	Description
⊙	Rc1/4
⊙	1/4NPT internal thread
ESP	External SP
X	Transmitting signal
OUT	Controlled signal
RES	External reset signal
SUP	Supply air pressure

\*a) In case of manual reset, the piping for "SUP" and "RES" are pre-connected.

**Table 2:**  
Bolt / Nut material

Code	Bolt / Nut material	Radiation fin
U,M	SNB7/S45C *b	With
A,E	SNB7/S45C *b	Without
D	SUS304/SUS304	Without

\*b) If it is specified "Y131" marked \*b is SUS304 / SUS304.

**Table 4: Size H**

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

**Table 3: Connecting flange size**

Flange	$\phi D$	$\phi G$	T	f	$\phi C$	$\phi H-N$	
40A	JIS10K RF	140	81	16	2	105	19-4
50A		155	96	16	2	120	19-4
1 1/2 B	JPI 150 RF	127	73.2	18	1.6	98.6	16-4
2B		152	91.9	19.5	1.6	120.6	19-4
40A	JIS20K RF	140	81	18	2	105	19-4
50A		155	96	18	2	120	19-8
40A	JIS30K RF	160	90	22	2	120	23-4
50A		165	105	22	2	130	19-8
1 1/2 B	JPI 300 RF	155	73.2	21	1.6	114.3	22-4
2B		165	91.9	22.5	1.6	127	19-8

Note) 1. ( ) dimension and shows pressure rating JIS 20K, JIS 30K, JPI 300, ANSI 300.

2. The flange of pressure rating JIS 10K is not provided a hub.

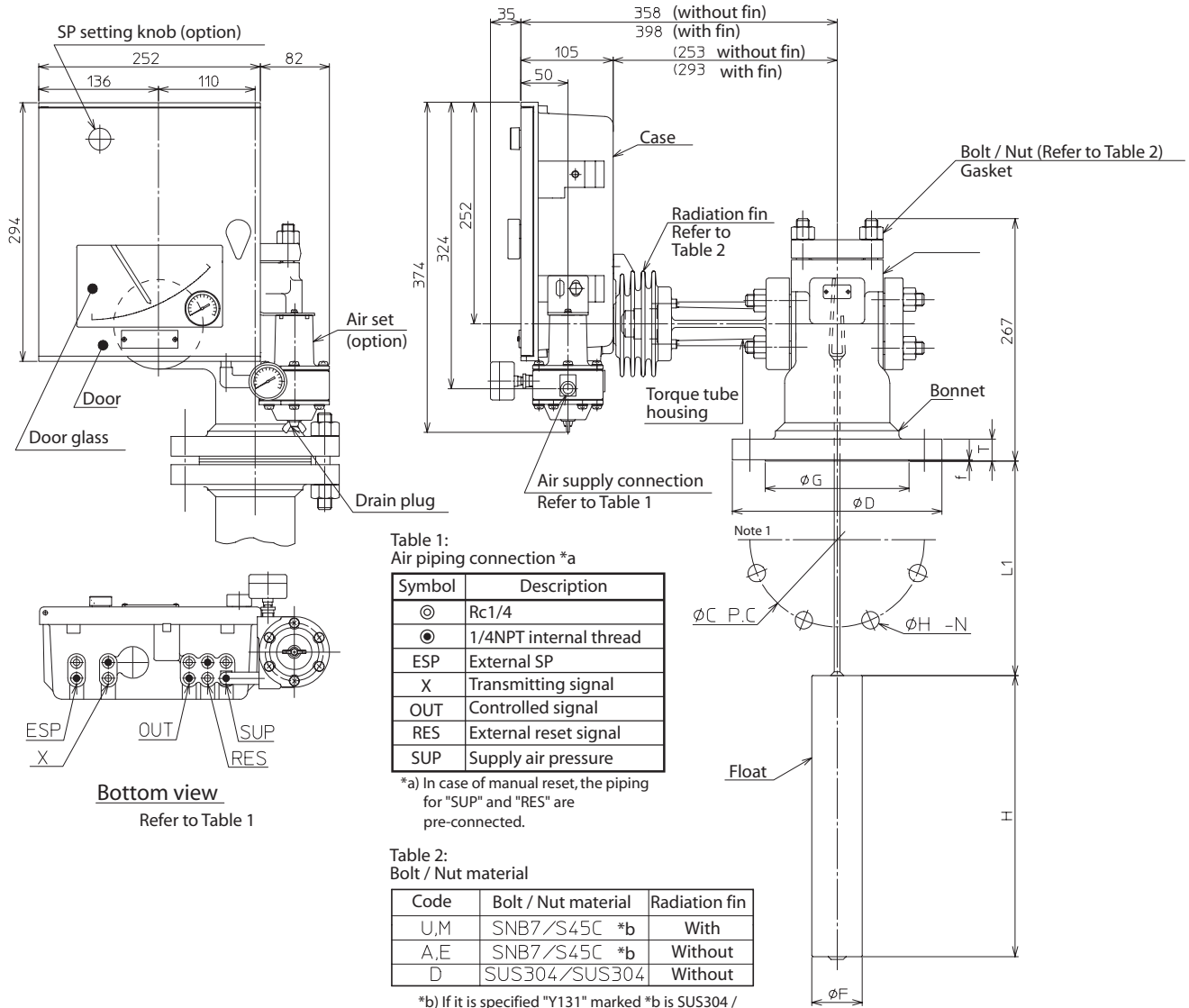


Table 1: Air piping connection \*a

Symbol	Description
⊙	Rc1/4
⊙	1/4NPT internal thread
ESP	External SP
X	Transmitting signal
OUT	Controlled signal
RES	External reset signal
SUP	Supply air pressure

\*a) In case of manual reset, the piping for "SUP" and "RES" are pre-connected.

Table 2: Bolt / Nut material

Code	Bolt / Nut material	Radiation fin
U,M	SNB7/S45C *b	With
A,E	SNB7/S45C *b	Without
D	SUS304/SUS304	Without

\*b) If it is specified "Y131" marked \*b is SUS304 / SUS304.

Table 3: Connecting flange size

Flange		φD	φG	T	f	φC	φH-N
80A	JIS10K RF	185	126	18	2	150	19-8
100A		210	151	18	2	175	19-8
125A		250	182	20	2	210	23-8
3B	JPI ANSI 150 RF	190	127	24	1.6	152.4	19-4
4B		229	157.2	24	1.6	190.5	19-8
5B		254	185.6	24	1.6	215.9	22-8
80A	JIS20K RF	200	132	22	2	160	23-8
100A		225	160	24	2	185	23-8
125A		270	195	26	2	225	25-8
80A	JIS30K RF	210	140	28	2	170	23-8
100A		240	160	32	2	195	25-8
125A		275	195	36	2	230	25-8
3B	JPI ANSI 300 RF	210	127	28.5	1.6	168.1	22-8
4B		254	157.2	32	1.6	200.2	22-8
5B		279	185.6	35.5	1.6	235	22-8

Note) 1. The flange of pressure rating JIS 10K is not provided a hub.

Table 4: Size H

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

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.



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/>

1st edition: Dec. 2002  
 5th edition: Dec. 2017

No part of this publication may be reproduced or duplicated without the prior written permission of Azbil Corporation.