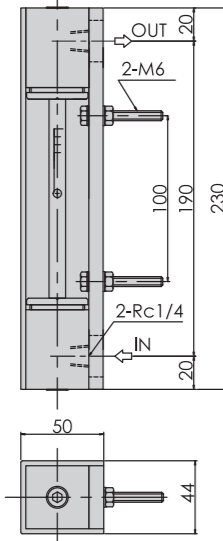


# FLO-PL9

(Existing (previous) model: FLO-PL-4S)



This product is designed for measuring extremely low flow rates. The front three surfaces are protected by an acrylic cover.

\* Please contact us for the following models:  
w/ valve (Previous model: FLO-PL-18S)  
w/ base (Model: FLO-L-65S)  
w/ base and valve (FLO-L-68S)

## Standard flow rate of PL9

Type No.	WATER(mL/min)	AIR*(NmL/min)
0	0.1 ~ 1	1 ~ 10
1	0.2 ~ 2	2 ~ 20
2	0.5 ~ 5	5 ~ 50
3	1 ~ 10	10 ~ 100
4	2 ~ 20	20 ~ 200
5	3 ~ 30	30 ~ 300
6	5 ~ 50	50 ~ 500
7	10 ~ 100	100 ~ 1000

## Specifications of PL9

Fluids to be measured	Liquid (water, coolant, transparent liquids) Gas (air, nitrogen, argon, carbon, dioxide, etc.)
Scale range	10 : 1
Float material	Ruby, etc.
Connection method	Rc connection
Bore	Rc 1/4
Flow rate accuracy	Within ±2% FS
Installation direction	Vertical
Maximum working pressure	0.5MPa
Maximum working temperature	80°C (depending on materials) Thermal shock 50°C or below

\* For fluids, flow rate ranges, or units other than the ones shown in the above table, please contact us.

\* The flow rates indicated are the values obtained by running 20°C air and converting the measured values to normal condition of 0°C and 1 atm (0.101 MPa (A)) (Unit: NL/min).

\* Upon request, we can make flowmeters corrected to the standard condition (20°C, 1 atm) (Unit: SmL/min).

## Type code chart for PL-9 model (Please inform us of the code when contacting.)

	Flow direction	Fluid	Type	Material of main component	Valve	Material of gasket	Flow rate range, Working temperature.
FLO-PL-9	- □	- □	-0 □	-T □	-V □	-P □	
	1 [Back botm→Back top]	A [AIR]	0	BS	N [None] *	1 [NBR (Nitrile)]	
			1	SU304	U [Upper par]		
	2 [Back botm→Directly above]	W [WATER]	2	SS	D [Lower part]	2 [CR (Neoprene)]	
		Optional fluid	3			3 [FKM (Viton)]	
			4				
			5				
			6				
			7				

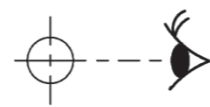
\* The valve type -VU is not available when flow direction 2 is selected.

Entry example of type code: FLO-PL9-4-A-05-TBS-VN-P1; 30-300 NmL/min, 20°C, pressure 0.101 MPa (A), accessories not required

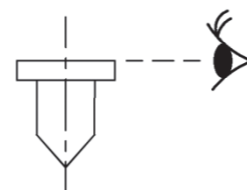
\* The type with a base is FLO-L-65S. The type with a base and a valve is FLO-L-68S.

## Float shapes

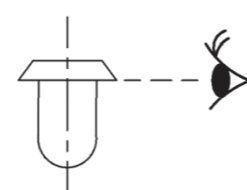
Ball-shape for extremely low flow rate



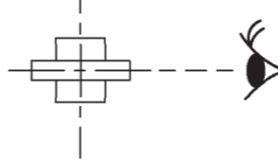
Conical shape for general applications



Umbrella-shape for high viscosity



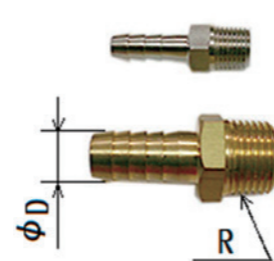
Spinning top shape for low pressure loss



## Optional accessories

(\* The upper images are for SUS products and the lower images are for brass products.)

Hose nipple

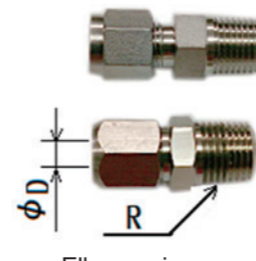


Hose nipple with special bore size  
(For dimensions and other information, please contact us.)

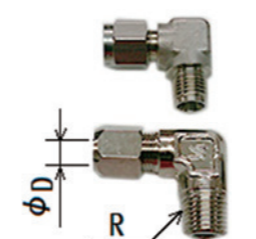


Model No.	R	ϕD
HN8-6.5		6.5
HN8-8	1/4	8
HN8-10		10
HN8-12		12
HN10-10	3/8	10
HN10-12		12
HN10-15		15
HN15-12	1/2	12
HN15-15		15
HN15-18		18
HN20-15	3/4	15
HN20-18		18
HN20-20		20
HN25-18	1	18
HN25-20		20
HN25-25		25

Half union



Elbow union



Model No.	R	ϕD
6-6	1/8	6
6-8		8
6-10		10
6-12		12
8-6	1/4	6
8-8		8
8-10		10
8-12		12
10-6	3/8	6
10-8		8
10-10		10
10-12		12
15-6	1/2	6
15-8		8
15-10		10
15-12		12

Half union (The letters "HU" are added before the model No.)  
Elbow union (The letters "EU" are added before the model No.)

## Electrical contact

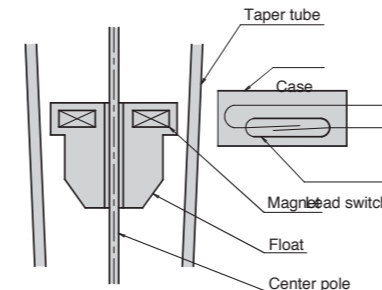
(for applications with warning buzzer, lamp indication, and electromagnetic valve control)

Electrical contacts allow output of ON and OFF signals at predetermined flow rates.

### ① Lead switch

- For liquids, the switch can be installed in specifications with a flow rate range 0.3-3 L/min or more.
- For gases, the switch can be installed in specifications with a flow rate range 3-30 NL/min or more at 0.101 MPa (A), 20°C
- Number of electroactuation: 20 times/second
- Operation life: 1,000,000 times
- Contact capacity: 100 VAC, 0.1 A
- Withstand voltage: 300 VDC

② For photoelectric sensor types, please contact us.



## Questions regarding specifications

(For inquiries on repeat purchase, please inform us of our production code, described by FM○○○... (○ are 5 or 6 digits), and the model year.)

- |  |                                   |                              |
|--|-----------------------------------|------------------------------|
| ① Name of fluid                                | ④ Viscosity                       | ⑦ Bore and connection method |
| ② Flow rate range (maximum, minimum, constant) | ⑤ Temperature (maximum, constant) | ⑧ Material                   |
| ③ Specific gravity or density of fluid         | ⑥ Pressure* (maximum, constant)   |                              |

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Our company doesn't have dealings directly with foreign countries. Please contact the trading company in Japan.

# RYUKI

Variable area flowmeter for instrument panel

# FLO-PL series

PL-1  
PL-2  
PL-3  
PL-4  
PL-9  
L-65  
L-68

## Tokyo Ryuki Kogyo. Co., Ltd

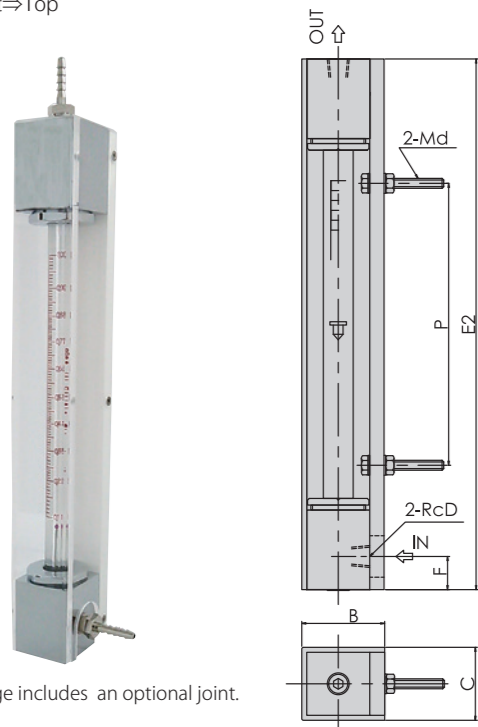
Manufacturer of variable area flowmeter, differential pressure flowmeter, and flow switch

HP : <http://www.ryuki.jp> E-mail : [ryuki@ryuki.jp](mailto:ryuki@ryuki.jp)

- Tokyo Office: Dai-2 Meiji Building, 3-2-7, Irifune, Chuo-ku, 1040042 Tokyo, Japan
- Osaka Office: Juraku Building, 3-8 Togano-cho, Kita-ku, Osaka-shi, 5300056 Osaka, Japan
- Head Office: 3rd floor, Glendhu, 2-2-15, Sakai, Musashino-shi, 1800022 Tokyo, Japan
- Ise Plant: 1020-2 Yuta, Obata-cho, Ise-shi, 5190506 Mie, Japan

## FLO-PL1 (Flow direction can be selected)

Flow direction can be matched to the design of the instrument panel.  
(Flow direction inside the glass tube is from bottom to top.)  
For more information, please contact us.  
\* Example of flow direction (seen from front)  
\* Front bottom⇒Top  
\* Bottom right⇒Top

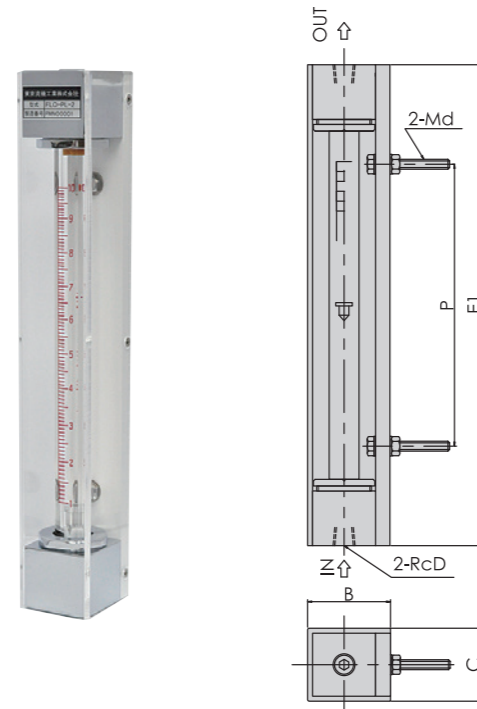


The above image includes an optional joint.

## FLO-PL2 (Flow direction: Bottom⇒Top)

If installed to a panel, piping comes to the front, allowing easy fitting and removal.

\* Due to structural restriction, a needle valve cannot be fitted.

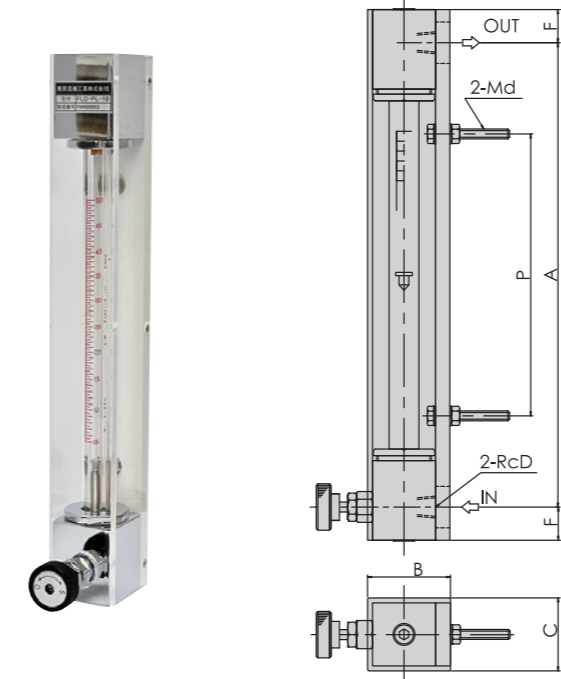


## FLO-PL4 model with valve

• • Existing (previous) model: FLO-PL-18UV, FLO-PL-18DV

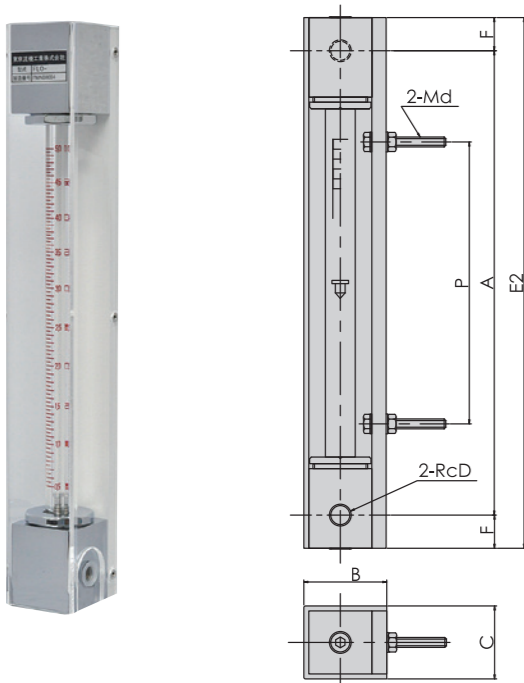
This is the same type as the FLO-PL4 model with a needle valve. Flow rate can be controlled.

(Flow direction: Back bottom⇒Back top)



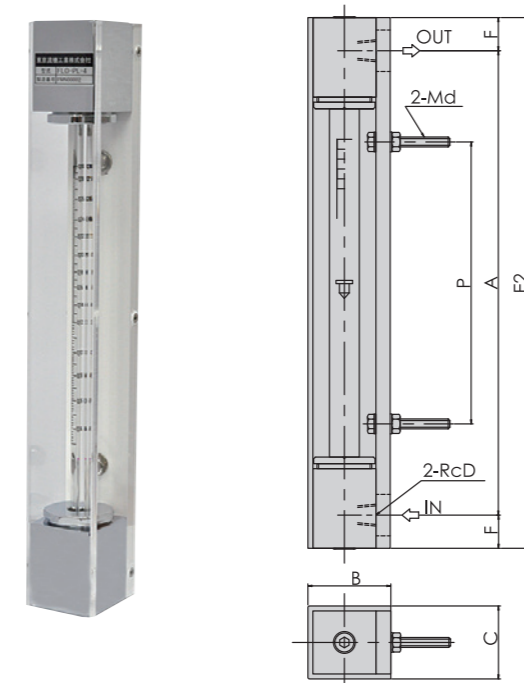
## FLO-PL3 (Flow direction: Side bottom⇒Side top)

Flowmeters can be built according to your request with the flow direction seen from the front to be side bottom (right or left) to side top (right or left).  
A rubber hose or vinyl hose is recommended.  
Because the inlet/outlet is located at the side, total length of the panel can be shortened.



## FLO-PL4 (Flow direction: Back bottom⇒Back top)

Flow direction seen from the front is back bottom to back top. Piping comes to the backside of the panel, so the indicator section for measurement can be designed simple.  
Permanent piping using copper pipes, etc., is recommended.



### ■ Dimensions and flow rates: FLO-PL, L-65, and L-68

(Unit: mm)

Type No.	WATER	AIR *	D	E1	E2	A	B	C	P	F	d
	MAX.(L/min)	MAX.(NL/min)									
0	0.01	0.1	1/4	290	320	280	50	44	170	20	6
1	0.5	5	1/4	290	320	280	50	44	170	20	6
2	2	50	1/4	290	320	280	50	44	170	20	6
3	5	150	1/4	290	320	280	50	44	170	20	6
4	10	200	1/2	290	320	280	62	56	170	20	6
5	20	400	3/4	410	450	390	75	66	230	30	6
6	40	600	1	470	530	450	85	76	230	40	6
7	70	900	1	480	540	450	95	86	230	45	6

\* For fluids, flow rate ranges, or units other than the ones shown in the above table, please contact us.

\* The flow rates indicated are the values obtained by running 20°C air and converting the measured values to normal condition of 0°C and 1 atm (0.101 MPa (A)) (Unit: NL/min).

\* Upon request, we can make flowmeters corrected to the standard condition (20°C, 1 atm) (Unit: SL/min).

### ■ Type code chart for FLO-PL models (Please inform us of the code when contacting.)

	Flow direction	Fluid	Type	Material of main component	Valve	Material of gasket	Warning output	Flow rate range, Working temperature.
FLO-PL	- □	- □	-0 □	-T □	-V □	-P □	- □	
	1 [Special]	A [AIR]	0	BS	N [None]	1 [NBR (Nitrile)]	0-Not provided	
	2 [Bottom to top]		1	SU304	U [Upper part]			
	3 [Side bottom to Side top] (please select right or left)	W [WATER]	2	SS	D [Lower part]	2 [CR (Neoprene)]	1-Provided (under specific conditions)	
			3					
	4 [Back bottom to Back top]	Optional fluid	4			3 [FKM (Viton)]		
			5					
			6					
			7					

\* Valves cannot be installed in some cases

\* The PL-2 model is not provided with a valve

Example of type code: FLO-PL-4-A-05-TBS-VN-P1-0; 30-300 NL/min, 20°C, 0.101 MPa (A), accessories not required)

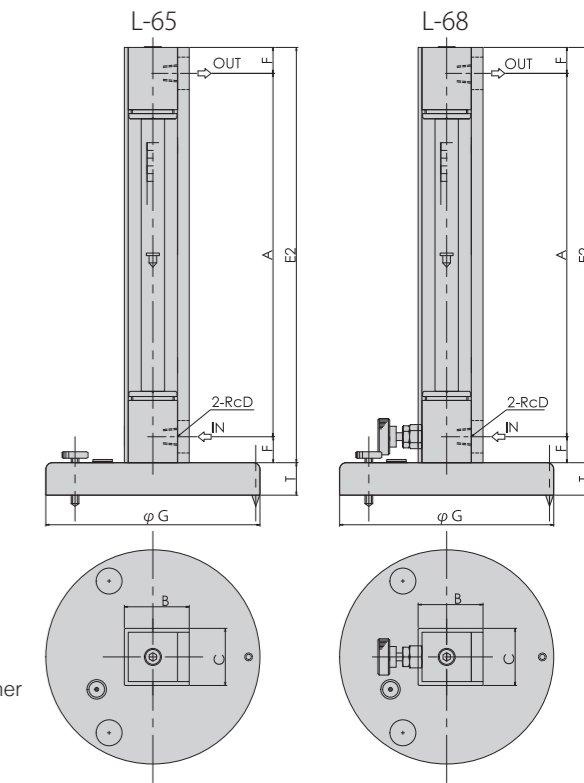
## FLO-L65

(w/o valve)



## FLO-L68

(w/ valve)



This is a variable area flowmeter with a base (level).  
This specification includes a base and a level fitted to FLO-PL4 and other models.  
It allows flow rate measurement in testing and research laboratories.  
\* For details, see dimension and flow rate chart in the previous page.

### ■ Type code chart for L-65 and L-68 models (Please inform us of the code when contacting.)

	Flow direction	Fluid	Type	Material of main component	Valve	Material of gasket	Warning output	Flow rate range, Working temperature.
L-□	- □	- □	-0 □	-T □	-V □	-P □	- □	
L-65	1 [Special]	A [AIR]	0	BS	N [None]	1 [NBR (Nitrile)]	0-Not provided	
L-68	2 [Side bottom(right)to side top(left)]		1	SU304	U [Upper part]			
	3 [Side bottom(right)to side top(right)]	W [WATER]	2	SS	D [Lower part]	2 [CR (Neoprene)]	1-Provided (under specific conditions)	
	4 [Back bottom to back top]		3					
			4					
			5					
		Optional fluid	6			3 [FKM (Viton)]		
			7					

\* L-65 : w/o valve

\* L-68 : w/ valve

Example of type code : FLO-L65-4-A-02-TBS-VN-P1-0 2 ~ 20NL/min, 20°C, 0.101MPa (A)

FLO-L68-4-A-02-TBS-VD-P1-0 2 ~ 20SL/min, 20°C, 0.2MPa (G)

### ■ Specifications of FLO-PL, L-65, and L-68

Fluids to be measured	Liquid (water, coolant, transparent liquids) Gas (air, nitrogen, argon, carbon dioxide, etc.)
Scale range	10:1
Float material	Liquid SUS304 SUS316 Gas Aluminum
Connection method	Rc connection
Flow rate accuracy	Within ±2% FS
Installation direction	Vertical
Maximum working pressure	0.5MPa
Maximum working temperature	80°C (depending on materials) Thermal shock 50°C or below

### ■ Base dimensions (L-65 and L-68) (Unit: mm)

Model No.	φG	T	L-65, L-68 Type No.
B-0-3	160	25	0,1,2,3
B-4-5	200	30	4,5
B-6-7	250	25	6,7
B-8-9	300	25	Special

\* We can also make flowmeters with a pressure gauge or thermometer.  
(Mode:FLO-L-70)

• Common to all products in this catalog: The front three surfaces are protected by an acrylic cover, allowing check on fluid flow from all directions.