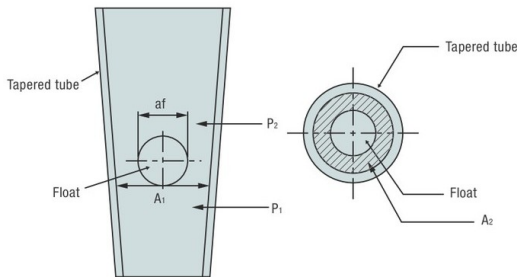


About Variable Flow Meter

Principle of flow meter

As shown in the **figure below**, the variable flow meter contains a float in a conical cylinder (tapered tube) whose upper end spread wider than the lower end. The float moves up/down depending on a degree of flow rate, reading a balanced position to obtain the flow rate.



Now, the symbols and units are determined as follows.

- Vf: Volume of the float [cm³]
- ρf: Density of the float [g/cm³]
- af: Max. cross-sectional area of the float [cm²]
- P₁: Pressure right under the float [Pa]
- P₂: Pressure right above the float [Pa]
- ρ: Density of the fluid [g/cm³]
- U₁: Flow velocity right under the float [cm/sec]
- U₂: Flow velocity in the gap with the float [cm/sec]
- A₁: Cross-sectional area right under the float [cm²]
- A₂: Cross-sectional area of the gap with the float [cm²]
- Q: Flow rate [cm³/sec]
- g: Acceleration of gravity

A float push-up force is af(P₁ - P₂). By subtracting buoyancy, the gravity of the float is Vf(ρf - ρ)g.

The balance formula is;

$$af(P_1 - P_2) = Vf(\rho_f - \rho)g$$

$$P_1 - P_2 = \frac{Vf(\rho_f - \rho)g}{af} \quad (1)$$

Now, based on the flow rate Q = A₁U₁ = A₂U₂;

$$U_1 = \frac{Q}{A_1} \quad U_2 = \frac{Q}{A_2} \quad (2)$$

Now, based on Bernoulli's theorem;

$$\frac{U_1^2}{2} + \frac{P_1}{\rho} = \frac{U_2^2}{2} + \frac{P_2}{\rho}$$

Accordingly;

$$P_1 - P_2 = \frac{\rho}{2} (U_2^2 - U_1^2) \quad (3)$$

Substitute (2) for (3).

$$P_1 - P_2 = \frac{\rho}{2} \left[\left(\frac{Q}{A_2} \right)^2 - \left(\frac{Q}{A_1} \right)^2 \right]$$

Solve this formula.

$$Q = \frac{A_1 A_2}{\sqrt{A_1^2 - A_2^2}} \sqrt{\frac{2(P_1 - P_2)}{\rho}} \quad (4)$$

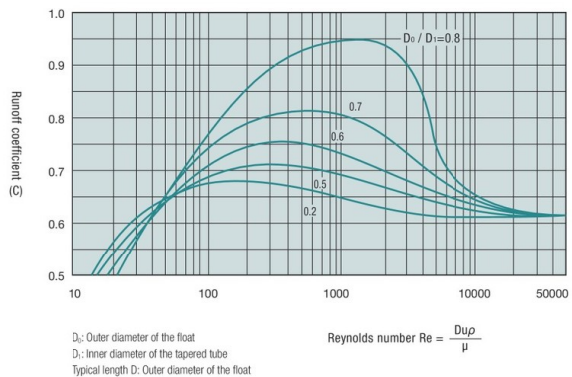
Substitute "P₁ - P₂" of (1) for this.

$$Q = \frac{A_1 A_2}{\sqrt{A_1^2 - A_2^2}} \sqrt{\frac{2g(\rho_f - \rho)}{\rho}} \cdot \frac{Vf}{af}$$

Actually, there is a friction resistance and a general formula will be as follows.

$$Q = C \frac{A_1 A_2}{\sqrt{A_1^2 - A_2^2}} \sqrt{2g \left(\frac{\rho_f - \rho}{\rho} \right) \cdot \frac{Vf}{af}} \quad (5)$$

A₁ and A₂ depend on the float position, and C is a function of Reynolds number using an equivalent diameter of a circular runway. (See the graph)



In Formula (5), A₁, A₂ and af depend on the float position. The summarized result is;

$$Q = C \sqrt{2g \left(\frac{\rho_f - \rho}{\rho} \right) Vf} \quad (6)$$

This is a basic formula for all conditions.

About Variable Flow Meter

[For the liquid]

Formula (6) is valid as it is. If the flow meter for water is used for kerosene with a different specific gravity, its indications change as follows.

$$Q_{H_2O} = C' \sqrt{2g \left(\frac{\rho_f - \rho_{H_2O}}{\rho_{H_2O}} \right) V_f} \dots\dots\dots A$$

$$Q_{oil} = C' \sqrt{2g \left(\frac{\rho_f - \rho_{oil}}{\rho_{oil}} \right) V_f} \dots\dots\dots B$$

By dividing A by B;

$$Q_{oil} = Q_{H_2O} \sqrt{\frac{(\rho_f - \rho_{oil}) \times \rho_{H_2O}}{\rho_{oil} \times (\rho_f - \rho_{H_2O})}}$$

Accordingly;

$$\text{Actual flow rate of kerosene} = \text{Flow rate scale for water when kerosene flows} \times \sqrt{\frac{\left(\frac{\text{Density of float}}{\text{Density of kerosene}} - \frac{\text{Density of kerosene}}{\text{Density of water}} \right) \times \text{Density of water}}{\left(\frac{\text{Density of float}}{\text{Density of kerosene}} - \frac{\text{Density of float}}{\text{Density of water}} \right)}}$$

The actual flow rate is obtained by the above formula.

[For the gas]

For the gas, its density ρ is ignorably low to that of float ρ_f . The formula can be simplified as follows.

$$Q = C' \sqrt{2g \left(\frac{\rho_f}{\rho} \right) V_f}$$

Since the density of float ρ_f and the volume V_f are constant, the formula can be further simplified as follows.

$$Q = C'' \sqrt{\frac{1}{\rho}} \dots\dots\dots (7)$$

As mentioned above, if the Reynolds number is close, C'' is considered constant in the case of gas, determining the flow rate according to the density of gas ρ .

Since the Reynolds number is also a function $\frac{D \rho \mu}{\mu}$ of the density viscosity of gas, however, a considerably complicated analysis is required, if C'' changes and density viscosity conditions differ greatly. The density of gas changes depending on the pressure and temperature as well as the gas type. If the same flow meter is used to measure under different conditions, accordingly, the following flow rate relations are theoretically established.

First, the gas state equation;

$PV = nRT$ results in;

$$P \frac{1}{\rho} = nRT \quad \rho = \frac{P}{nRT}$$

The density is inversely proportional to the absolute temperature T and proportional to the absolute pressure P . Combining this with Formula (7), the following formula is established.

{	Density of gas	ρ_1
	Pressure	Indicated value Q_1 (L/min at 20°C) by the flow meter for P_1
	Temperature	T_1
{	Density of gas	ρ_2
	Pressure	Actual flow rate Q_2 (L/min at 20°C) when measuring the conditions for P_2
	Temperature	T_2

$$Q_2 = Q_1 \times \sqrt{\frac{\rho_1 \times P_2 \times (273 + T_1)}{\rho_2 \times P_1 \times (273 + T_2)}}$$

In the case of the P_1/P_2 gauge pressure;

$$Q_2 = Q_1 \times \sqrt{\frac{\rho_1(0.1 + P_2G)(273 + T_1)}{\rho_2(0.1 + P_1G)(273 + T_2)}}$$

<Absolute pressure = 0.10133 + Gauge pressure(MPa)>

The following shows examples of specific correction formulas.

(Example 1) When the gas type is different

When the flow meter for H_2 is used for He, P_1, P_2, T_1 and T_2 are the same. By substituting the above formula, the following formula results.

$$Q_{He} = Q_{H_2} \sqrt{\frac{\rho_{H_2}}{\rho_{He}}} = Q_{H_2} \sqrt{\frac{2}{4}} \approx 0.7 Q_{H_2}$$

The actual flow rate becomes lower than the indicated graduation.

(Example 2) When the pressure condition is different

When the flow meter with atmospheric scale ($P_1G = 0Pa$) for N_2 is used to conduct measurement of N_2 and 0.3MPa ($= P_2G$), ρ_1, ρ_2, T_1 and T_2 are the same, resulting in the following formula.

$$Q_3 = Q_0 \sqrt{\frac{0.1 + 0.3}{0.1 + 0}} \approx 2 Q_0$$

The actual flow rate becomes higher than the indicated graduation.

(Example 3) When the temperature condition is different

When the flow meter calibrated on the basis of 20°C is used at 25°C;

($T_1 = 20^\circ C$), ($T_2 = 25^\circ C$)

Since ρ_1, ρ_2, P_1 and P_2 are the same, the following formula results.

$$Q_{\text{Actual flow rate}} = Q_{\text{Indicated value}} \sqrt{\frac{273 + 20}{273 + 25}} \approx 0.99 Q_{\text{Indicated value}}$$

The actual flow rate becomes lower than the indicated graduation.

The above-mentioned corrections are based on approximation formulas. A flow rate value may be often inconsistent with a theoretical one under actual conditions. Keeping in mind that a theory may differ from the reality, use the correction formulas.

Unit of flow rate

Generally, the flow meters use the indication of 20°C and 1atm (std, stp, etc.) standard condition or 0°C and 1atm (normal, nor. ntp, etc.) normal condition in many cases. We have defined as follows. As a rule, the flow rate indication in the catalog of our flow meters refers to the standard condition.

Designation	Unit temperature of flow rate	Unit pressure of flow rate	Suffix	Example of indication
Standard condition	20°C	1atm (Atmospheric pressure)	(stp)	L/min(stp) mL/min(stp)
Normal condition	0°C	1atm (Atmospheric pressure)	(ntp)	L/min(ntp) mL/min(ntp)

Calibration fluid

Our flow meters have 7 types of applicable standard gases; Air, N₂, O₂, He, H₂, Ar and CO₂. These actual gases are used to calibrate the scale of the flow meters according to the condition. For other special gases, they are arranged by us or the customer to perform actual calibration or conversion scale calibration is performed with the Air, N₂, etc., using the correction formula in Example 1 on Page 53. In the case of the gas with similar mass and properties, the conversion scale calibration method has hardly problems. Compared with the actual gas scale calibration method, however, there may be bigger errors.

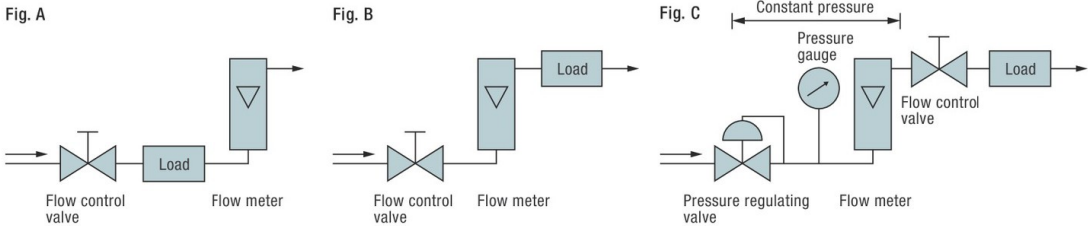
Also, in the cases of the special gases, special materials may be required to use, or crystals, etc. may adhere, disabling measurement. For other gases than standard ones, be sure to consult our sales office beforehand. The flow meters for liquid are, as a rule, calibrated with water (H₂O).

Calibration pressure (for the gases)

As shown in Fig. A, the flow meter is generally used with its outlet opened to the atmosphere or freed from load application (no pressure loss resistance). Such a flow meter is called an "atmospheric pressure scale."

In actual use, however, load pressure resistance is often applied as shown in Fig. B. If it is applied, an indication deviates from an actual flow rate as described in Example 2 on Page 53. There is a method to calculate by this formula to obtain a guide, but there is a gap between a theory and reality, causing an error. This is the case for both pressurization and vacuum pressure.

In such a case, if the pressure applied to the flow meter is known, the scale can be calibrated beforehand in this pressure state. As an example, attach a flow control valve to the outlet of the flow meter as shown in Fig. C and control the pressure applied to the flow meter with a pressure regulating valve to always keep constant pressure application. Then, calibrate the scale under this pressure condition. Such a flow meter scale is called a "load pressure scale."



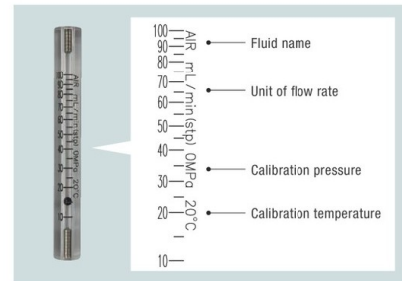
Calibration temperature (for the gases)

As described in Example 3 on Page 53, the density of gas changes depending on the temperature, causing an indication error against the flow meter's graduation. Our flow meters are, as a rule, manufactured at the calibration temperature of 20°C. When there may occur an indication error because of a difference between the calibration temperature and the actual working temperature, carry out a correction calculation as a guide with the correction formula shown in Example 3 on Page 53.

About Variable Flow Meter

■ Notation of the flow rate, calibration pressure and temperature unit on the tapered tube

	Manufacturing condition	Indication on tapered tube
Example of gas	Fluid Air Unit of flow rate Standard condition mL/min Calibration pressure 0MPa(G)(atm) Calibration temperature 20°C	AIR mL/min(stp) 0MPa 20°C
	Fluid N ₂ Unit of flow rate Normal condition L/min Calibration pressure 0.2MPa(G)(Load pressure) Calibration temperature 20°C	N ₂ L/min(ntp) 0.2MPa 20°C
Example of liquid	Fluid H ₂ O Unit of flow rate mL/min Calibration temperature 20°C	H ₂ O mL/min at 20°C



■ Accuracy

The accuracy of the flow meter is indicated with a percent value of an error against the full-scale flow rate (maximum flow rate measurable with that flow meter). In the case of the RK1400 with 100mL/min, for example, the error is ± 2 mL/min because the accuracy is $\pm 2\%$ of

the full scale. Calibration points are specified for each flow rate range. The accuracy is a value at these points. Other points than calibration points are equally distributed. They are also within the accuracy in most cases, but excluded from the warranty.

■ Scale notation on the tapered tube

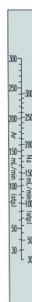
Total length	Flow rate range (example: mL/min)	Scale interval (mL/min)	Indicated numerals (example: mL/min)
L = 80	0.1 to 1 (10 to 100)	1/20 (5)	10, 50, 100
	0.2 to 2 (20 to 200)	1/20 (10)	20, 100, 200
	0.3 to 3 (30 to 300)	1/12 (25)	30, 50, 100, 150, 200, 250, 300
	0.5 to 5 (50 to 500)	1/20 (25)	50, 100, 200, 300, 400, 500
L = 100	0.1 to 1 (10 to 100)	1/20 (5)	10, 20, 30, 40, 50, 60, 70, 80, 90, 100
	0.2 to 2 (20 to 200)	1/20 (10)	20, 40, 60, 80, 100, 120, 140, 160, 180, 200
	0.3 to 3 (30 to 300)	1/30 (10)	30, 50, 100, 150, 200, 250, 300
	0.5 to 5 (50 to 500)	1/25 (20)	50, 100, 200, 300, 400, 500
L = 120	0.1 to 1 (10 to 100)	1/20 (5)	10, 20, 30, 40, 50, 60, 70, 80, 90, 100
	0.2 to 2 (20 to 200)	1/20 (10)	20, 40, 60, 80, 100, 120, 140, 160, 180, 200
	0.3 to 3 (30 to 300)	1/30 (10)	30, 50, 100, 150, 200, 250, 300
	0.5 to 5 (50 to 500)	1/25 (20)	50, 100, 200, 300, 400, 500
L = 150	0.1 to 1 (10 to 100)	1/40 (2.5)	10, 20, 30, 40, 50, 60, 70, 80, 90, 100
	0.2 to 2 (20 to 200)	1/40 (5)	20, 40, 60, 80, 100, 120, 140, 160, 180, 200
	0.3 to 3 (30 to 300)	1/30 (10)	30, 50, 100, 150, 200, 250, 300
	0.5 to 5 (50 to 500)	1/50 (10)	50, 100, 150, 200, 250, 300, 350, 400, 450, 500
L = 200	0.1 to 1 (10 to 100)	1/50 (2)	10, 20, 30, 40, 50, 60, 70, 80, 90, 100
	0.2 to 2 (20 to 200)	1/80 (2.5)	20, 40, 60, 80, 100, 120, 140, 160, 180, 200
	0.3 to 3 (30 to 300)	1/60 (5)	30, 50, 100, 150, 200, 250, 300
	0.5 to 5 (50 to 500)	1/50 (10)	50, 100, 150, 200, 250, 300, 350, 400, 450, 500
L = 250	0.1 to 1 (10 to 100)	1/100 (1)	10, 20, 30, 40, 50, 60, 70, 80, 90, 100
	0.2 to 2 (20 to 200)	1/100 (2)	20, 40, 60, 80, 100, 120, 140, 160, 180, 200
	0.3 to 3 (30 to 300)	1/60 (5)	30, 50, 100, 150, 200, 250, 300
	0.5 to 5 (50 to 500)	1/100 (5)	50, 100, 150, 200, 250, 300, 350, 400, 450, 500

■ Special scales



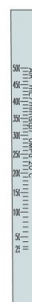
Millimeter scale

Equally spaced scale such as a ruler. It is used with a calibration curve (scale convection line). It is manufactured as a standard flow meter.



Dual scales

Two types of measurements are conducted with one tapered tube. Simultaneous scale is available depending on the gas type, pressure type, temperature type, etc.



1/20 scale

Normally, 10% of the maximum is the minimum measurable flow rate, but special specifications allow scales down to 5% (1/20).



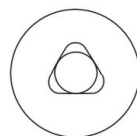
Specially specified scale

The figure shows a single-point specially specified scale. We are ready to respond to your request so please consult our sales office.

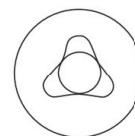
Shape of the tapered tube

The inside of our glass tapered tubes is not a simple cylinder, but features special molded shapes called the tri flat and rib guide types.

The tri flat type is used for a very low flow rate range below the maximum air flow rate of 5mL/min to 500mL/min, and the rib guide type is used for the maximum flow rate range of 1L/min to 50L/min, allowing stable flow rate measurement.



Tri flat type



Rib guide type

Flow meter with valve

KOFLOC is a general manufacturer of precision flow rate measurement and precision flow rate control. With a combination of these two technologies, we manufacture various flow meters with valve. Flow rate control is almost always accompanied by flow rate measurement. There is a merit of easy specification change in separately assembling the valve and the flow meter, and combining them, but the flow meter with valve has more merits such as saving time and labor for piping, securing the space and allowing general coordination.

In response to these needs, **KOFLOC** manufacture many flow meters with valve. Those with valve include different types such as the simple type, precision type, large flow rate type and bellows type, plus the inlet- and outlet-side installation types.

Upper and lower valves

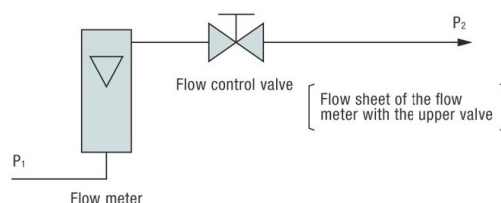
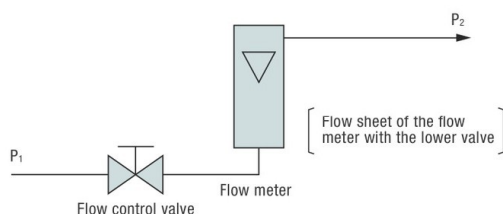
The upper side of the flow meter is outlet and the lower side is inlet. The following figure illustrates the flow sheet of the upper and lower valves. The pressure loss of the flow meter is quite small and not a big deal for the flow meter alone. When it comes to the flow meter with valve, however, what counts is the inlet and outlet pressures. By attaching the valve, pressure loss will result, causing a difference between the inlet and outlet pressures.

As described in Example 2 on Page 53, the flow meter indicates a different value, depending on the applied pressure. When the valve is attached, note particularly how the pressure applied to the flow meter is affected.

For the lower valve, the inlet pressure P_1 is throttled by a needle, resulting in P_2 at the outlet. This P_2 is the pressure applied to the flow meter. In case there is no significant load resistance on the outlet side (similar to being opened to the atmosphere), P_2 is assumed to be

0MPa(G). Accordingly, calibrate with the atmospheric scale, considering that the pressure applied to the flow meter is zero. Since the valve requires the working pressure condition, however, it is necessary to specify P_1 and P_2 at ordering time. When there is load resistance (P_2 pressure), of course, specify P_2 as well.

For the upper valve, the inlet pressure P_1 is applied to the flow meter. P_1 and P_2 are necessary to select the valve as mentioned above, and the scale of the flow meter needs to be the load pressure scale for P_1 . Accordingly, this flow meter is generally used with the pressure regulating valve so that P_1 will not fluctuate. Particularly, in case there is vacuum decompression from outlet side, an indication error may occur in most cases unless the upper valve type is selected.



Selection of the specifications for liquid flow meters

When the fluid is a liquid, note that air bubbles may adhere to the float, failing to obtain precise measurement accuracy. It is recommended to select the upper valve type, because the dissolved air comes out when releasing the pressure of outlet side of the valve.

Also, from the viewpoints of foreign substances and corrosion, when accurate flow rate measurement is required, it is recommended to select the stainless steel as the block material of the flow meter.

About Variable Flow Meter

■ Principle of the flow meters with reed switch

[About the reed switch]

As shown in the **right figure**, the reed switch has a pair of magnetic reeds enclosed in a glass tube with a certain contact gap together with an inactive gas.

By applying a magnetic field to the reed switch from the external, the reeds are magnetized and sucked to each other into contact, closing a circuit.

Once the magnetic field is gone, the circuit is opened by the elasticity of the reeds.

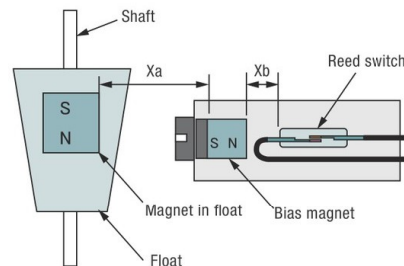
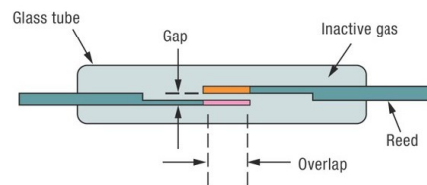
[Operation with our flow meters]

The **right figure** shows the polarity of a magnet in the float and that in the reed switch.

In case the upper side of the magnet incorporated in the float is set to Polarity S, if the float moves up, the magnetic field increases strength at Polarity N of the magnet in the float and Polarity S of the bias magnet incorporated in the reed switch, turning on the switch. If the float moves down to the contrary, Polarity S of the magnet in the float and that of the bias magnet repel each other, weakening the strength of the magnetic field of the reed switch and turning it off. Thus, the reed switch operates differently depending on the polarity of the magnet incorporated in the float.

The sensitivity (operating state) of the reed switch is greatly susceptible to the distance between the magnet in the float and the bias magnet (Xa), and that between the bias magnet and the reed switch (Xb).

Structure of the reed switch



* How to use

Fix the reed switch at the flow rate graduation desired to be detected. There are Contact A which is turned on if the float moves higher than a set point, and Contact B which is turned on if it moves lower than the set point. Once the contact is turned on, a signal continues to be held unless the float moves in the other direction (self-holding switch).

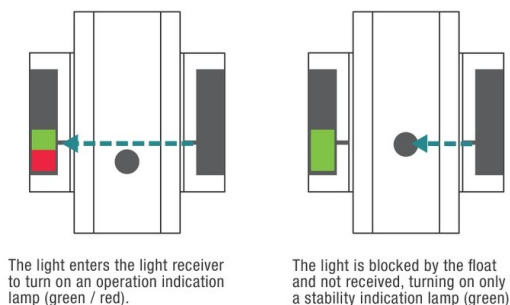
■ Principle of the flow meters with photosensor

[About the transmissive photosensor]

This photosensor has a pair of projector and light receiver facing each other so that the light emitted from the projector hits the light receiver.

It detects an object between the projector and the light receiver when the light from the projector is blocked by the detected object.

Light-on diagram



[Operation with our flow meters]

Light-on:

When the light emitted from the projector enters the light receiver, the operation indication lamp is turned on. (Our standard mode)

Dark-on:

When the light emitted from the projector does not enter the light receiver (blocked by an object), the operation indication lamp is turned on.

Operation indication lamp (green / red):

Turned on if the light enters the light receiver.

(The upper half of the indication lamp is lit up in green and the lower half in red.)

Stability indication lamp (green):

State that the light is blocked by the float and not received. When the lamp is turned on, there is no problem in use. When it is turned off, there may be a misaligned optical axis, contamination, etc. Or, the power is not connected.

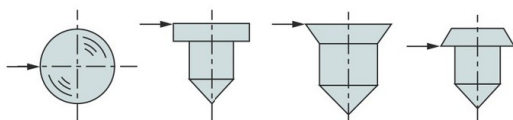
* How to use

Fix the photosensor body at the flow rate graduation desired to be detected. Run a fluid and confirm that the float detects at the sensor position. Adjust the sensitivity with a control knob as required. Different from the reed switch, the photosensor has only a fixed contact.

■ Precautions for handling the flow meter

- Select a low-humidity place and install the flow meter vertically.
- To pipe the flow meter, select an appropriate material and diameter, depending on the fluid, flow rate and pressure.
- Fully clean inside the piping.
- To read the float, see the figure below.

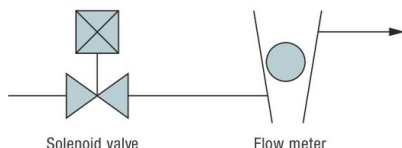
Float reading position



* This figure is intended for showing a scale reading position and does not stipulate the shape and structure of a moving part.

- When measuring a flow rate, **use at 70% or less of the proof pressure in order to prevent damage on the tapered tube.** For the temperature as well, use at 60°C or less in order to prevent damage on the tapered tube and other parts. The tapered tube may be broken due to an abrupt temperature change or a heat shock by the recurring cycles. Avoid applying such a load. Never use any harmful gas or liquid other than the fluids indicated on the tapered tube or at the temperature or pressure beyond the maximum limit. Otherwise, the human body may be hurt.
- If the pressure or flow rate changes abruptly, the float may jump up, breaking the tapered tube. If piped in series with a solenoid valve as illustrated, a considerable amount of fluid runs abruptly even at low pressure. **Take care not to directly apply a pressure change** by installing a regulator.

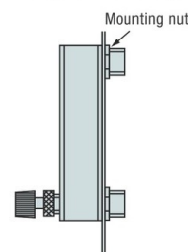
Bad example of use



- Our flow meters have quite a narrow gap between the tapered tube and the float for measuring a very low flow rate. If dust, moisture, etc. are allowed in the flow meter, gap is clogged or it becomes unstable. A filter may be attached to the end of the tapered tube, but use a clean and dry gas, allowing in no dust.
- A needle valve is intended to "control flow rate." It does not assure complete shutoff. When stopping a flow of fluid, you are requested to additionally install a stop valve. Note that if the needle valve is turned more than necessary, the product may be damaged.

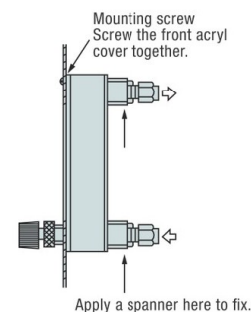
- When mounting the flow meter to the panel surface, use accessory nuts as illustrated. See the dimension drawing for the panel cutting dimensions.

Mounting to the panel surface
<Single-nut mounting>



- When embedding into the panel, use tapped holes in the front of the body as illustrated.

Embedding into the panel



- Tighten nuts and screws with a minimum required force.
- When mounting to the panel or connecting and disconnecting a joint, fix a flow meter joint with a spanner and do work in order to prevent loosening. After mounting, be sure to conduct leak test with soap water, etc.

Flow Meter with Precision Needle Valve

MODEL RK1200 SERIES

Gas

Liquid

With valve

Without valve

Applicable fluids Gas N₂, Air, H₂, He, Ar, O₂, CO₂, etc.**Liquid** H₂O**Max. flow rate** Gas 5mL/min to 100L/min**Liquid** 5mL/min to 2L/min**Accuracy** ±2% F.S.

- Available for a wide range of flow rate from minute flow
- High-accuracy measurement of ±2% F.S. or better
- Superior control performance by non-rotating precision needle valve
- Upper needle valve type available
- Wide variations suitable for various conditions of use



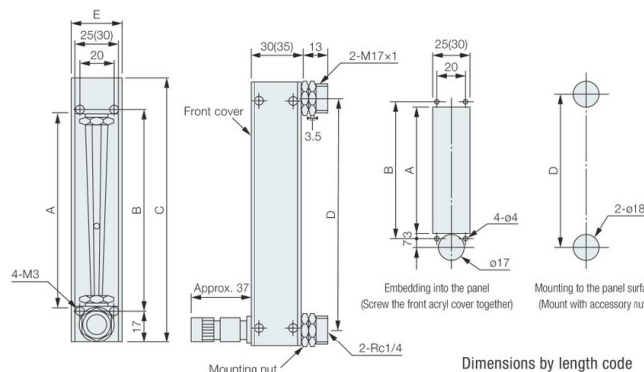
RK1200 (valve at top)

Dimensions

<<Other than right dimension drawing>>

(Cutting dimensions)

<<Air 60 to 100L/min>>

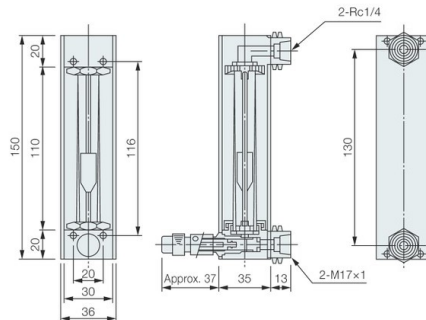


* The figure is for the lower valve. The dimensions are upside down for the upper valve.

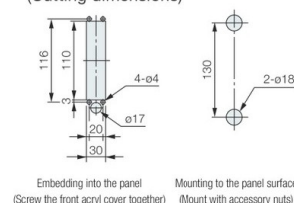
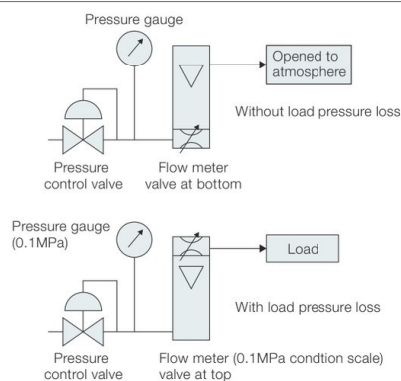
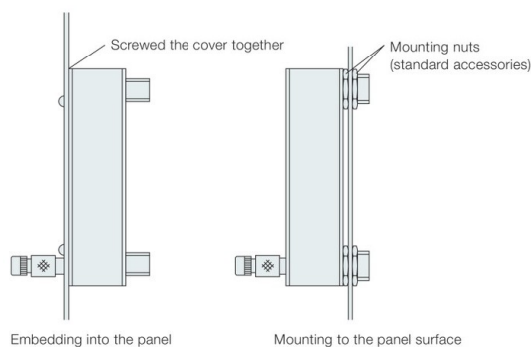
* Dimensions in () are for Air-50L/min and H₂O-2L/min.

Dimensions by length code

Part	Code	12	15	20	25
A		80	110	160	210
B		86	116	166	216
C		120	150	200	250
D		100	130	180	230
E		29(36)	29(36)	31(36)	31(36)



(Cutting dimensions)

**Example of use**

Standard Specifications

MODEL	RK1200	
Applicable fluids	N ₂ , Air, H ₂ , He, Ar, O ₂ , CO ₂ , etc.	H ₂ O
Max. flow rate (Air atm condition for gas)	5mL/min to 100L/min (See the Capacity Table below)	5mL/min to 2L/min (See the Capacity Table below)
Effective scale	10:1	
Accuracy	±2%F.S.	
Proof pressure	100mL/min or less: 1MPa(G) 5L/min or less: 0.7MPa(G) 10L/min or more: 0.5MPa(G)	5mL/min or less: 1MPa(G) 150mL/min or less: 0.7MPa(G) 200mL/min or more: 0.5MPa(G)
Max. working temperature	60°C	
Materials of parts in contact with fluid	SS: SUS316, Hard glass, FKM, PCTFE, (PTFE) B: Brass, Hard glass, NBR, POM, SUS316, (PTFE)	
Connection	Rc1/4	
Weight	Approx. 450g	

* Of the materials of parts in contact with fluid, what is in () depends on the manufacturing specification condition.

Capacity Table

Air (atmospheric pressure)

Max. flow rate	5	10	20	30	50	100	150	200	300	500	1	2	3	5	10	15	20	30	50	100
Total length	mL/min	mL/min	mL/min	mL/min	mL/min	mL/min	mL/min	mL/min	mL/min	mL/min	L/min	L/min	L/min	L/min	L/min	L/min	L/min	L/min	L/min	L/min
120mm	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	—
150mm	—	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
200mm	—	—	—	—	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	—
250mm	—	—	—	—	—	○	○	○	○	○	○	○	○	○	○	○	○	○	○	—

H₂O

Max. flow rate	5	10	20	30	50	100	150	200	300	500	1	2
Total length	mL/min	mL/min	mL/min	mL/min	mL/min	mL/min	mL/min	mL/min	mL/min	mL/min	L/min	L/min
120mm	○	○	○	○	○	○	○	○	○	○	○	—
150mm	○	○	○	○	○	○	○	○	○	○	○	○
200mm	○	○	○	○	○	○	○	○	○	○	○	—
250mm	○	○	○	○	○	○	○	○	○	○	○	—

Ordering

MODEL	Total length	Block material	Connection	Fluid	Max. flow rate	Supply pressure	Outlet pressure	Needle valve	Other options
RK1200	12: 120mm 15: 150mm 20: 200mm 25: 250mm	SS: SUS316 B: Brass	1/4: Rc1/4					D: at bottom U: at top	Accuracy ±1% F.S. * Gases only Dual scales * Gases only 1/20 scale FFKM O-ring
illustrative example RK1200	12	SS	1/4	Air	2L/min	0.2MPa	0MPa	D	

* Possible to manufacture with a scale of 0.5mL/min to 3mL/min (air at atmospheric pressure) only for total length of 120mm.
* No shutting O-ring for FFKM option.

High-precision Flow Meter

MODEL RK1400 SERIES

Applicable fluids **Gas** N₂, Air, H₂, He, Ar, O₂, CO₂, etc. **Liquid** H₂O

Max. flow rate **Gas** 5mL/min to 100L/min **Liquid** 5mL/min to 2L/min

Accuracy ±2% F.S.

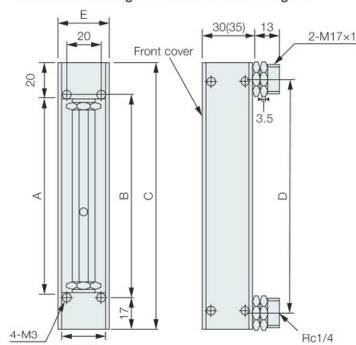
- Available for a wide range of flow rate from minute flow
- High-accuracy measurement of ±2% F.S. or better
- Wide variations suitable for various conditions of use



Variable Flow Meter

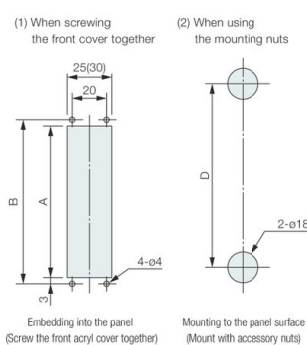
Dimensions

<<Other than right dimension drawing>>

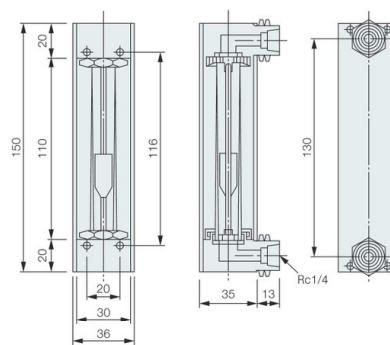


* Dimensions in () are for Air-50L/min.

(Cutting dimensions)



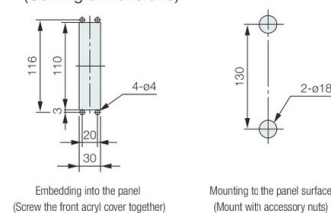
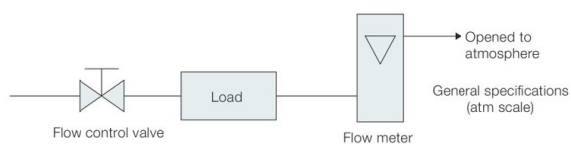
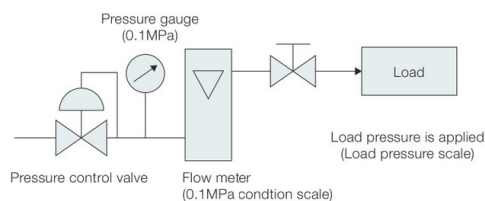
<<Air 60 to 100L/min>>



Dimensions by length code

Part	Code	12	15	20	25
A		80	110	160	210
B		86	116	166	216
C		120	150	200	250
D		100	130	180	230
E		29(36)	29(36)	31(36)	31(36)

(Cutting dimensions)

**Example of use**

Standard Specifications

MODEL	RK1400	
Applicable fluids	N ₂ , Air, H ₂ , He, Ar, O ₂ , CO ₂ , etc.	H ₂ O
Max. flow rate (Air atm condition for gas)	5mL/min to 100L/min (See the Capacity Table below)	5mL/min to 2L/min (See the Capacity Table below)
Effective scale	10:1	
Accuracy	±2%F.S.	
Proof pressure	100mL/min or less: 1MPa(G) 5L/min or less: 0.7MPa(G) 10L/min or more: 0.5MPa(G)	5mL/min or less: 1MPa(G) 150mL/min or less: 0.7MPa(G) 200mL/min or more: 0.5MPa(G)
Max. working temperature	60°C	
Materials of parts in contact with fluid	SS: SUS316, Hard glass, FKM, (PTFE, PCTFE) B: Brass, Hard glass, NBR, SUS316, (PTFE, POM)	
Connection	Rc1/4	
Weight	Approx. 400g	

* Of the materials of parts in contact with fluid, what is in () depends on the manufacturing specification condition.

Capacity Table

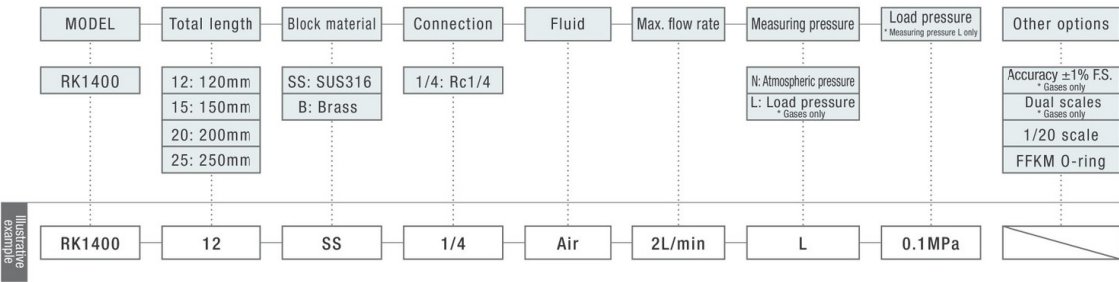
Air (atmospheric pressure)

Max. flow rate Total length	5 mL/min	10 mL/min	20 mL/min	30 mL/min	50 mL/min	100 mL/min	150 mL/min	200 mL/min	300 mL/min	500 mL/min	1 L/min	2 L/min	3 L/min	5 L/min	10 L/min	15 L/min	20 L/min	30 L/min	50 L/min	100 L/min
120mm	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	—
150mm	—	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
200mm	—	—	—	—	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	—
250mm	—	—	—	—	—	○	○	○	○	○	○	○	○	○	○	○	○	○	○	—

H₂O

Max. flow rate Total length	5 mL/min	10 mL/min	20 mL/min	30 mL/min	50 mL/min	100 mL/min	150 mL/min	200 mL/min	300 mL/min	500 mL/min	1 L/min	2 L/min
120mm	○	○	○	○	○	○	○	○	○	○	○	—
150mm	○	○	○	○	○	○	○	○	○	○	○	○
200mm	○	○	○	○	○	○	○	○	○	○	○	—
250mm	○	○	○	○	○	○	○	○	○	○	○	—

Ordering



* Possible to manufacture with a scale of 0.5mL/min to 3mL/min (air at atmospheric pressure) only for total length of 120mm.

Purge Flow Meter with Needle Valve

MODEL RK1600R SERIES



Applicable fluids Gas N₂, Air, H₂, He, Ar, O₂, CO₂, etc.

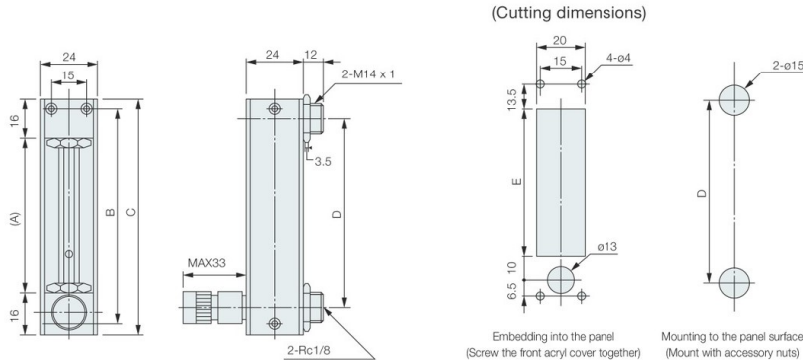
Max. flow rate Gas 1 to 20L/min

Accuracy ±5%F.S.

■ Compact design



Dimensions



Dimensions by length code

Part	Code	08	10	12	15
A		48	63	88	118
B		74	94	114	144
C		80	100	120	150
D		61	81	101	131
E		44	64	84	114

Standard Specifications

MODEL	RK1600R
Applicable fluids	N ₂ , Ar, H ₂ , He, Ar, O ₂ , CO ₂ , etc.
Max. flow rate (Air atm condition)	1, 2, 3, 5, 10, 15, 20L/min
Effective scale	10:1
Accuracy	±5%F.S.
Proof pressure	5L/min or less: 0.7MPa(G) 10L/min or more: 0.5MPa(G)
Max. working temperature	60°C
Materials of parts in contact with fluid	S: SUS304, Hard glass, FKM, PCTFE, SUS316, SUS303, (PTFE) B: Brass, Hard glass, NBR, POM, SUS316, SUS303, (PTFE)
Connection	Rc1/8
Weight	Approx. 250g

* Of the materials of parts in contact with fluid, what is in () depends on the manufacturing specification condition.

Ordering

MODEL	Total length	Block material	Connection	Fluid	Max. flow rate	Supply pressure
RK1600R	08: 80mm 10: 100mm 12: 120mm 15: 150mm	S: SUS304 B: Brass	1/8: Rc1/8			
RK1600R	12	S	1/8	Air	2L/min	0.1MPa

* The needle valve is for flow control, so in order to stop the flow, install a stop valve additionally. If the needle valve is turned more than necessary, the product may be damaged.

* In the case of 2L/min or less, flow rate control may become unstable depending on the pressure condition.

Purge Flow Meter

MODEL RK1000 SERIES



Applicable fluids Gas N₂, Air, H₂, He, Ar, O₂, CO₂, etc.

Max. flow rate Gas 100mL/min to 20L/min

Accuracy ±5%F.S.

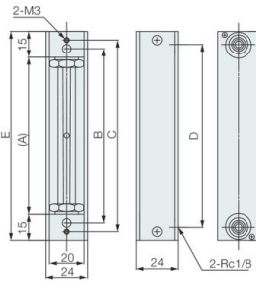
■ Compact design



Variable Flow Meter

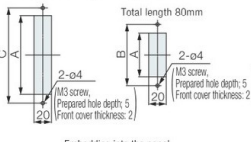
Dimensions

<<Standard>>



(Cutting dimensions)

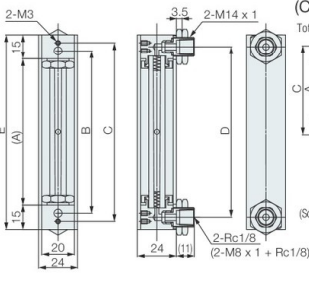
Total length 100mm, 120mm, 150mm



Embedding into the panel
(Screw the front acrylic cover together)

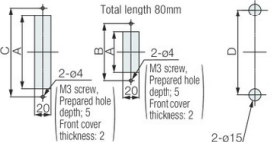
Dimensions by length code		08	10	12	15
Part	Code				
A		50	70	90	120
B		60	80	100	130
C		70	90	110	140
D		65	85	105	135
E		80	100	120	150

<<With mounting nuts>>



(Cutting dimensions)

Total length 100mm, 120mm, 150mm



Embedding into the panel
(Screw the front acrylic cover together)

Mounting to the panel surface
(Mount with accessory nuts)

Standard Specifications

MODEL	RK1000
Applicable fluids	N ₂ , Ar, H ₂ , He, Ar, O ₂ , CO ₂ , etc.
Max. flow rate (Air atm condition)	100, 150, 200, 300, 500mL/min 1, 2, 3, 5, 10, 15, 20L/min
Effective scale	10:1
Accuracy	±5%F.S.
Proof pressure	5L/min or less: 0.7MPa(G) 10L/min or more: 0.5MPa(G)
Max. working temperature	60°C
Materials of parts in contact with fluid	S: SUS304, Hard glass, FKM, SUS316, (PTFE) B: Brass, Hard glass, NBR, SUS316, (PTFE)
Connection	Standard: Rc1/8 Option: Rc1/8 with mounting nuts
Weight	Approx. 200g

* Of the materials of parts in contact with fluid, what is in () depends on the manufacturing specification condition.

Ordering

MODEL	Total length	Block material	Connection	Fluid	Max. flow rate
RK1000	08: 80mm 10: 100mm 12: 120mm 15: 150mm	S: SUS304 B: Brass	1/8: Rc1/8 M8 + 1/8: Rc1/8 with mounting nuts		
RK1000	12	S	1/8	Air	2L/min

Resin Flow Meter

MODEL RK20T SERIES

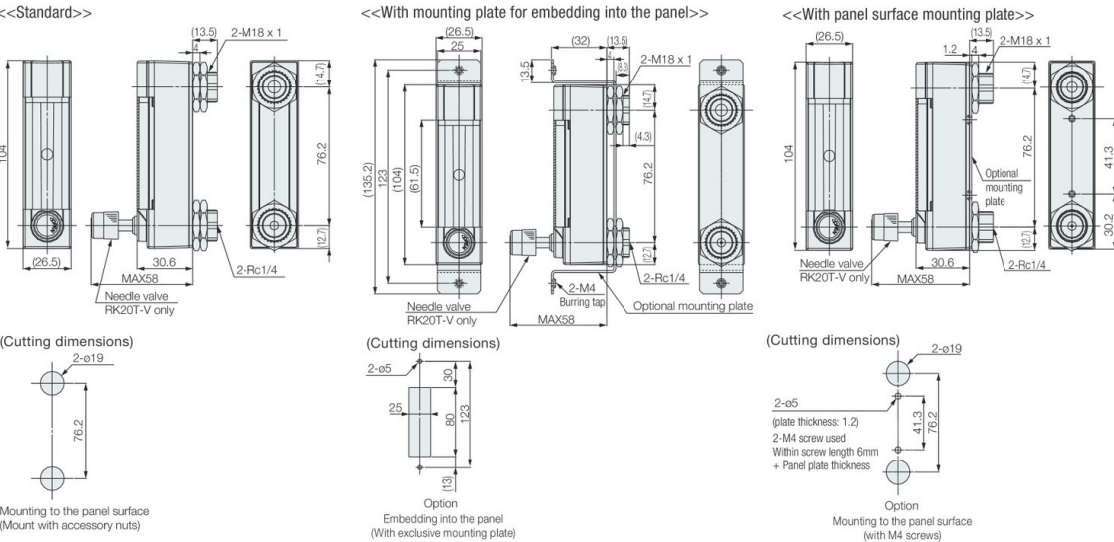


Applicable fluids	Gas Air / N ₂	Liquid WATER
Max. flow rate	Gas 0.5 to 100L/min	Liquid 25 to 2800mL/min
Accuracy	±6%F.S.	

- Low cost
- Quick delivery



Dimensions



Standard Specifications

MODEL	RK20T	
Applicable fluids	Air / N ₂	WATER
Flow rate range (atm condition for gas)	0.05 to 0.5L/min, 0.15 to 1L/min, 0.5 to 5L/min, 1 to 10L/min, 2.5 to 25L/min, 5 to 50L/min, 20 to 100L/min	2.5 to 25mL/min, 30 to 300mL/min, 100 to 800mL/min, 200 to 1600mL/min, 500 to 2800mL/min
Accuracy	±6%F.S.	
Proof pressure	0.7MPa(G)	
Max. working temperature	65°C	
Materials of parts in contact with fluid	ABS, Acryl, SUS303, FKM, POM, (Hard glass, SUS316, SUS304)	
Connection	Rc1/4	
Weight	Approx. 150g	

* Of the materials of parts in contact with fluid, what is in () depends on the manufacturing specification condition.

Ordering

MODEL	Needle valve	Connection	Fluid	Max. flow rate	Other options
RK20T	V: Yes 0: No	1/4: Rc1/4	Air / N ₂ WATER		Panel surface mounting plate Mounting plate for embedding into the panel
RK20T	V	1/4	Air / N ₂	1L/min	

* This product is excluded from our scope of repair.

Resin Flow Meter for Large flow rate

MODEL RK50T SERIES NEW

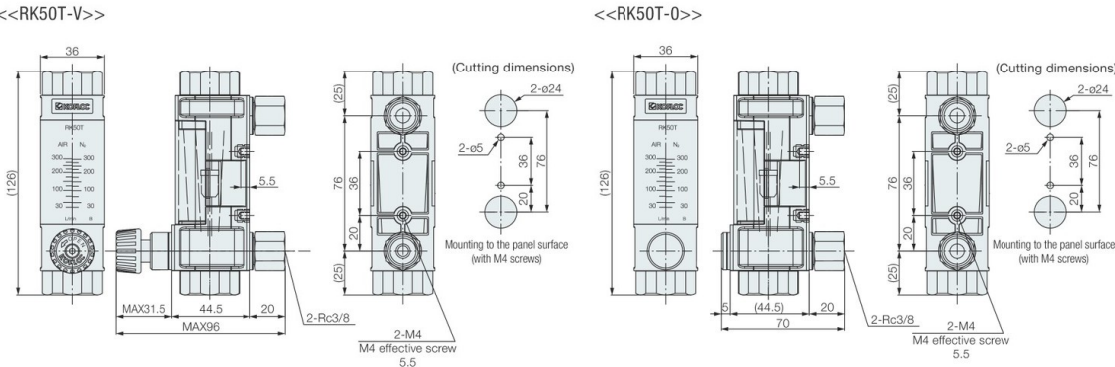


Applicable fluids	Gas Air / N ₂	Liquid WATER
Max. flow rate	Gas 100 to 300L/min	Liquid 3 to 10L/min
Accuracy	±5%F.S.	

- Low cost
- Quick delivery



Dimensions

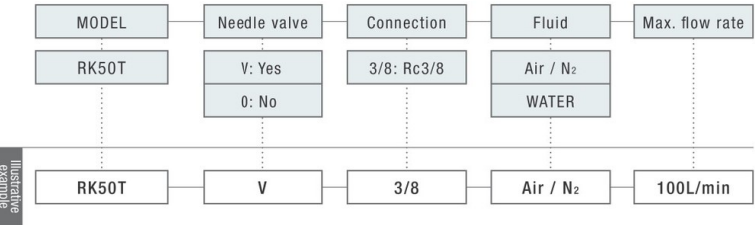


Standard Specifications

MODEL	RK50T	
Applicable fluids	Air / N ₂	WATER
Flow rate range (atm condition for gas)	10 to 100L/min, 20 to 200L/min, 30 to 300L/min	0.3 to 3L/min, 0.5 to 5L/min, 1 to 10L/min
Accuracy	±5%F.S.	
Proof pressure	1MPa(G)	3MPa(G)
Max. working temperature	55°C	
Materials of parts in contact with fluid	Acryl, FKM, SUS303, SUS304, SUS316, (Glass fiber contained nylon)	
Connection	Rc3/8	
Weight	Approx. 350g	

* Of the materials of parts in contact with fluid, what is in () depends on the manufacturing specification condition.

Ordering



* This product is excluded from our scope of repair.

Variable Flow Meter

Resin Flow Meter with Reed Switch

MODEL RK20T-RSW SERIES NEW

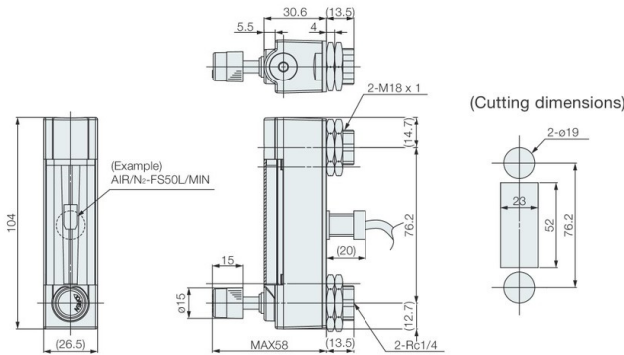


Applicable fluids	Gas	Air / N ₂	Liquid	WATER
Max. flow rate	Gas	10 to 100L/min	Liquid	250 to 2800mL/min
Accuracy	±6%F.S.			

■ Alarm function by reed switch



Dimensions

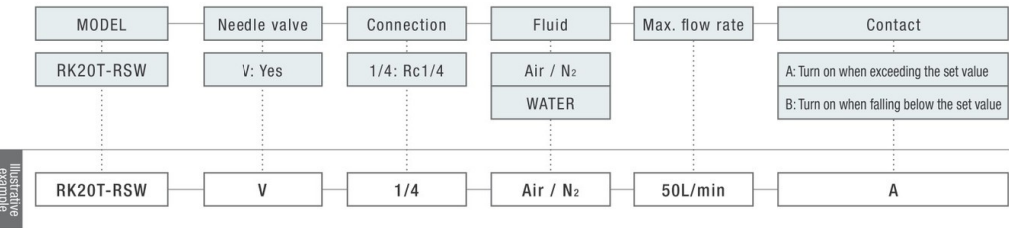


Standard Specifications

MODEL	RK20T-RSW					
Applicable fluids	Air / N ₂			WATER		
Flow rate range (atm condition for gas)	Flow rate range	Alarm setting range		Flow rate range	Alarm setting range	
		Contact A	Contact B		Contact A	Contact B
	4 to 10L/min	6 to 9.5L/min	4.5 to 8.5L/min	—	—	—
	2.5 to 25L/min	8 to 20L/min	5 to 16L/min	20 to 250mL/min	50 to 250mL/min	30 to 230mL/min
	5 to 50L/min	16 to 46L/min	10 to 36L/min	100 to 1500mL/min	300 to 1500mL/min	150 to 1400mL/min
20 to 100L/min	45 to 100L/min	35 to 90L/min	600 to 2800mL/min	900 to 2800mL/min	700 to 2800mL/min	
Accuracy	±6%F.S.					
Proof pressure	0.7MPa(G)					
Working ambient temperature	10°C to 35°C (no dew condensation)					
Materials of parts in contact with fluid	ABS, Acryl, SUS303, FKM, POM, SUS316, (Ferrite magnet, epoxy-coated magnet)					
Connection	Rc1/4					
Contact capacity	DC30V DC10W DC0.5A					
Cable length	65cm					
Weight	Approx. 200g					

* Of the materials of parts in contact with fluid, what is in () depends on the manufacturing specification condition.

Ordering



* This product is excluded from our scope of repair.

Flow Meter for Cylinder Regulator

MODEL RK4400 SERIES



Applicable fluids **Gas** N₂, Air, H₂, He, Ar, O₂, CO₂, etc.

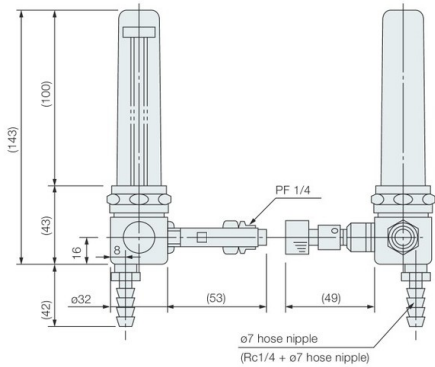
Max. flow rate **Gas** 10mL/min to 20L/min

Accuracy ±2%F.S.

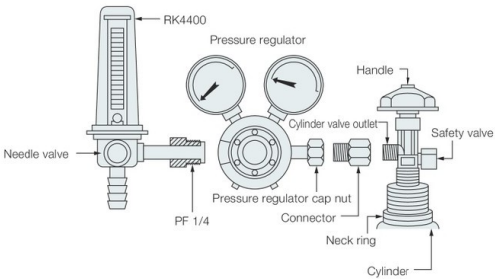
- Capable of attaching a cylinder regulator
- Superior control performance by non-rotating precision needle valve



Dimensions



Example of use

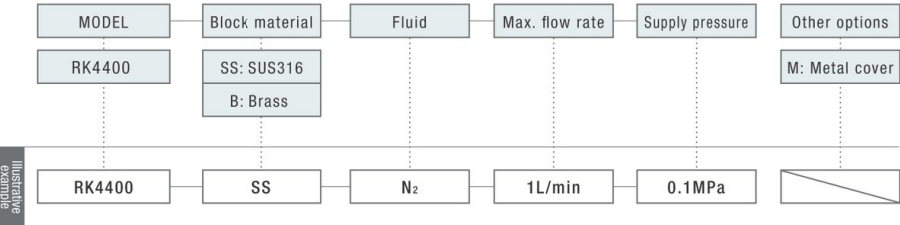


Standard Specifications

MODEL	RK4400
Applicable fluids	N ₂ , Ar, H ₂ , He, Ar, O ₂ , CO ₂ , etc.
Max. flow rate (Air atm condition)	10, 50, 100, 500mL/min 1, 5, 10, 15, 20L/min
Effective scale	10:1
Accuracy	±2%F.S.
Proof pressure	0.3MPa(G)
Max. working temperature	40°C
Materials of parts in contact with fluid	SS: SUS316, Hard glass, FKM, PCTFE, (PTFE) B: Brass, Hard glass, NBR, POM, PCTFE, SUS316, (PTFE)
Connection	Inlet: PF1/4 Outlet: Rc1/4 + ø7 hose nipple
Weight	Approx. 370g

* Of the materials of parts in contact with fluid, what is in () depends on the manufacturing specification condition.

Ordering



Variable Flow Meter

Flow Meter with Reed Switch

MODEL RK1970 / RK1975 / RK1976 SERIES



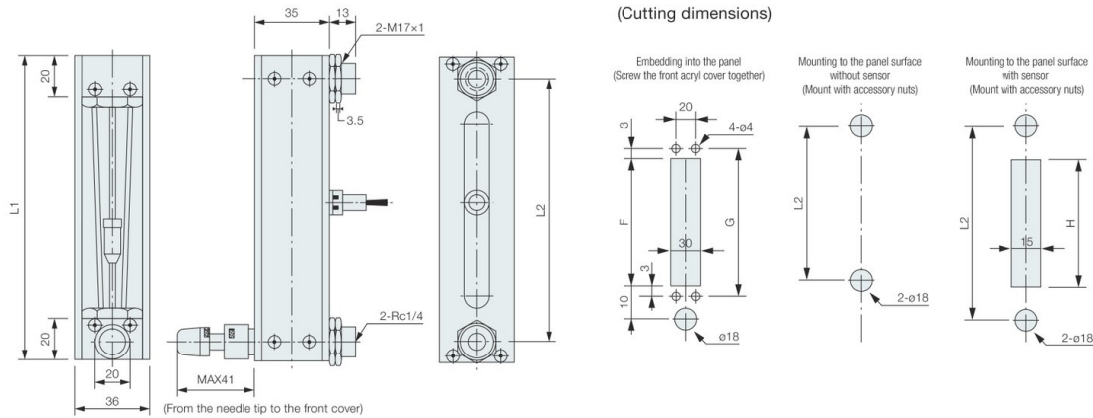
Applicable fluids	Gas	N ₂ , Air, H ₂ , He, Ar, O ₂ , CO ₂ , etc.	Liquid	H ₂ O
Max. flow rate	Gas	30 to 150L/min	Liquid	1 to 5L/min
Accuracy	±5%F.S.			

- Alarm function by reed switch
- Upper needle valve type available



RK1975-VD

Dimensions



Dimensions by length code

Part \ Code	15	20
A	36	36
B	35	35
L1	150	200
L2	130	180
F	110	160
G	116	166
H	100	150

* H exists when the reed switch is included.

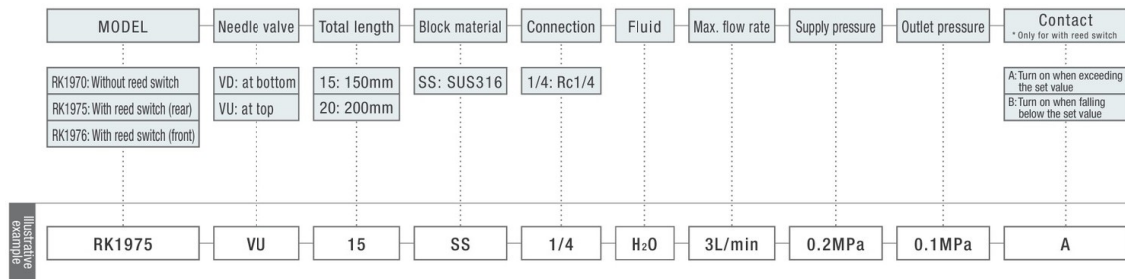
Standard Specifications

MODEL	RK1970, RK1975, RK1976	
Applicable fluids	N ₂ , Air, H ₂ , He, Ar, O ₂ , CO ₂ , etc. (RK1975 and RK1976 not available for H ₂)	H ₂ O
Max. flow rate (Air atm condition for gas)	Total length 150mm: 30, 100, 150L/min Total length 200mm: 100, 150L/min	Total length 150mm: 1, 3, 5L/min Total length 200mm: 3, 5L/min
Effective scale	10:1	
Accuracy	±5%F.S.	
Proof pressure	0.5MPa(G)	
Working ambient temperature	10°C to 35°C (no dew condensation)	
Materials of parts in contact with fluid	SUS316, Hard glass, FKM, POM, (PTFE, nylon)	
Connection	Rc1/4	
Alarm setting range	RK1975, RK1976: 20 to 90%F.S.	
Contact capacity	RK1975, RK1976: 100VAC / 100VDC, AC10VA / DC10W	
Cable length	RK1975, RK1976: 65cm	
Weight	Approx. 600g	

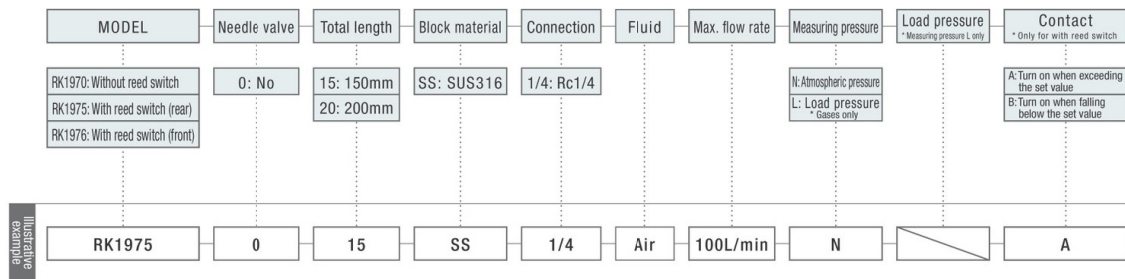
* Of the materials of parts in contact with fluid, what is in () depends on the manufacturing specification condition.

Ordering

<with needle valve type>



<without needle valve type>



Flow Meter for Large flow rate

MODEL RK2000 / RK2005 / RK2006 SERIES

Gas

Liquid

With valve

Without valve

Applicable fluids Gas N₂, Air, H₂, He, Ar, O₂, CO₂, etc. Liquid H₂O**Max. flow rate** Gas 100 to 1000L/min Liquid 10 to 30L/min**Accuracy** ±5%F.S.

- Available for large flow rate
- Upper needle valve type available
- Alarm function by reed switch



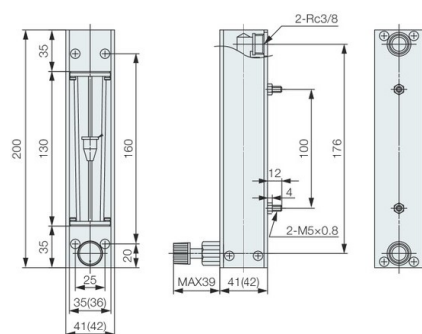
RK2000-0



RK2006-VU

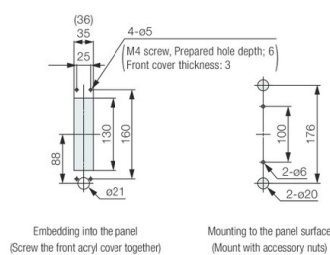
Dimensions

<<100 to 300L/min>>



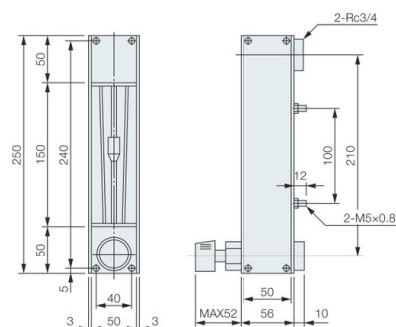
* Dimensions in () are for SUS material.

(Cutting dimensions)

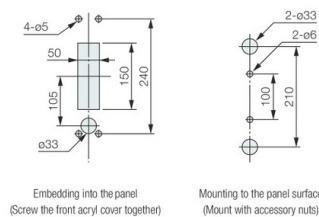


* The RK2005 and RK2006 can only be embedded into the panel.

<<400 to 1000L/min>>



(Cutting dimensions)



* The RK2005 and RK2006 can only be embedded into the panel.

Standard Specifications

MODEL	RK2000, RK2005, RK2006	
Applicable fluids	N ₂ , Air, H ₂ , He, Ar, O ₂ , CO ₂ , etc. (RK2005 and RK2006 not available for H ₂)	H ₂ O
Max. flow rate (Air atm condition for gas)	Total length 200mm: 100, 200, 250, 300L/min Total length 250mm: 400, 500, 700, 1000L/min	Total length 200mm: 10L/min Total length 250mm: 20, 30L/min
Effective scale	10:1	
Accuracy	±5%F.S.	
Proof pressure	0.7MPa(G)	
Max. working temperature	RK2000: 60°C	
Working ambient temperature	RK2005, RK2006: 10°C to 35°C (no dew condensation)	
Materials of parts in contact with fluid	S: SUS304, Hard glass, FKM, (SUS316, PCTFE, PTFE) B: Brass, Hard glass, SUS304, NBR, (SUS316, POM, PTFE)	
Connection	Total length 200mm: Rc3/8 Total length 250mm: Rc3/4	
Alarm setting range	RK2005, RK2006: 20 to 90%F.S.	
Contact capacity	RK2005, RK2006: AC100V / DC100V, AC10VA / DC10W	
Cable length	RK2005, RK2006: 65cm	
Weight	Approx. 1,000g	

* Of the materials of parts in contact with fluid, what is in () depends on the manufacturing specification condition.

Ordering

<with needle valve type>

MODEL	Needle valve	Total length	Block material	Connection	Fluid	Max. flow rate	Supply pressure	Outlet pressure	Contact
RK2000: Without reed switch RK2005: With reed switch (rear) RK2006: With reed switch (front)	VD: at bottom VU: at top	20: 200mm 25: 250mm	S: SUS304 B: Brass	3/8: Rc3/8 3/4: Rc3/4					A: Turn on when exceeding the set value B: Turn on when falling below the set value
RK2005	VD	20	S	3/8	Air	200L/min	0.2MPa	0MPa	A

<without needle valve type>

MODEL	Needle valve	Total length	Block material	Connection	Fluid	Max. flow rate	Measuring pressure	Load pressure	Contact
RK2000: Without reed switch RK2005: With reed switch (rear) RK2006: With reed switch (front)	0: No	20: 200mm 25: 250mm	S: SUS304 B: Brass	3/8: Rc3/8 3/4: Rc3/4			N: Atmospheric pressure L: Load pressure * Gases only	* Measuring pressure L only	A: Turn on when exceeding the set value B: Turn on when falling below the set value
RK2000	0	20	S	3/8	Air	200L/min	N		

* Even in case the maximum gas flow rate exceeds 400L/min, total length could be 200mm depending on the condition.

Flow Meter with Photosensor

MODEL RK1812 / RK1814 SERIES



Applicable fluids **Gas** N₂, Air, H₂, He, Ar, O₂, CO₂, etc. **Liquid** H₂O

Max. flow rate **Gas** 50mL/min to 50L/min **Liquid** 20mL/min to 1L/min

Accuracy ±2% F.S.

- Alarm function by photosensor
- High-accuracy measurement of ±2% F.S. or better
- Superior control performance by non-rotating precision needle valve
- Upper needle valve type available

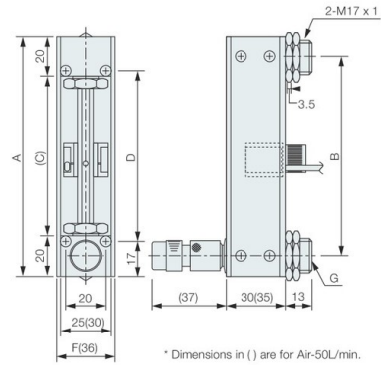


RK1812 (valve at bottom)

RK1814

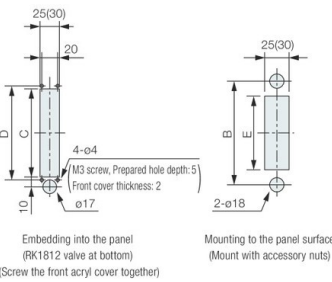
Dimensions

<<RK1812>>



* Dimensions in () are for Air-50L/min.

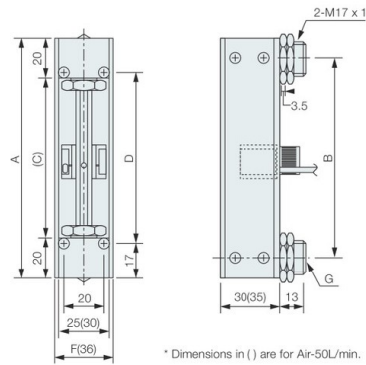
(Cutting dimensions)



Dimensions by length code

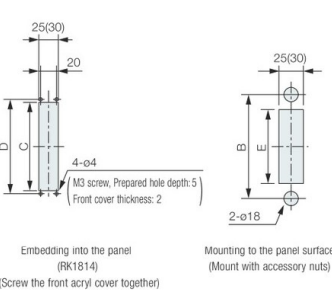
Part	Code	12	15	20	25
A		120	150	200	250
B		100	130	180	230
C		80	110	160	210
D		86	116	166	216
E		70	100	150	200
F		29	29	31	31
G		Rc1/4			

<<RK1814>>



* Dimensions in () are for Air-50L/min.

(Cutting dimensions)



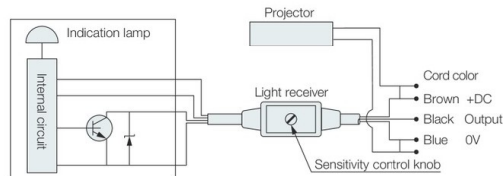
Standard Specifications

MODEL	RK1812, RK1814	
Applicable fluids	N ₂ , Air, H ₂ , He, Ar, O ₂ , CO ₂ , etc	H ₂ O
Max. flow rate (Air atm condition for gas)	50mL/min to 50L/min (See the Capacity Table of RK1200 and RK1400)	20mL/min to 1L/min (See the Capacity Table of RK1200 and RK1400)
Effective scale	10:1	
Accuracy	±2%F.S.	
Proof pressure	100mL/min or less: 1MPa(G) 5L/min or less: 0.7MPa(G) 10L/min or more: 0.5MPa(G)	20mL/min or less: 1MPa(G) 150mL/min or less: 0.7MPa(G) 200mL/min or more: 0.5MPa(G)
Working ambient temperature	5 to 55°C	
Materials of parts in contact with fluid	RK1812	SS: SUS316, Hard glass, FKM, PCTFE, (PTFE) B: Brass, Hard glass, NBR, POM, SUS316, (PTFE)
	RK1814	SS: SUS316, Hard glass, FKM, (PTFE) B: Brass, Hard glass, NBR, SUS316, (PTFE)
Connection	Rc1/4	
Alarm setting range	10 to 90%F.S.	
Weight	Approx. 450g	

* Of the materials of parts in contact with fluid, what is in () depends on the manufacturing specification condition.

Photosensor Specifications

Operating power	24VDC±10%
Power consumption	Projector: 15mA or less Light receiver: 22mA or less
Output mode	NPN open collector, Sink current: Max. 80mA (30VDC)
Operation mode	Light-on
Response time	0.5msec or less
Cord	Projector: 0.15mm ² x 2 cores (2m) Light receiver: 0.15mm ² x 3 cores (2m)
Protective structure	IP64
Manufacturer	Takenaka Electronic Industrial Co., Ltd.
Model	Photoelectric switch incorporating UM-T15TV (24VDC) Provided with relay control knob (on light receiver side)



* When adjusting the photosensor, loosen the sensor fixing knob first. The transmissive projector is omitted here because it has only power input (brown: 24VDC, blue: OV). See the photosensor instruction manual enclosed before use.

Ordering

<RK1812: with needle valve type>

MODEL	Total length	Block material	Connection	Fluid	Max. flow rate	Supply pressure	Outlet pressure	Number of sensors	Needle valve	Other options
RK1812	12: 120mm 15: 150mm 20: 200mm 25: 250mm	SS: SUS316 B: Brass	1/4: Rc1/4						D: at bottom U: at top	Accuracy ±1% F.S. * Gases only Dual scales * Gases only 1/20 scale FFKM O-ring
Illustrative example RK1812	12	SS	1/4	Air	2L/min	0.2MPa	0MPa	1	D	

<RK1814: without needle valve type>

MODEL	Total length	Block material	Connection	Fluid	Max. flow rate	Measuring pressure	Load pressure * Measuring pressure L only	Number of sensors	Other options
RK1814	12: 120mm 15: 150mm 20: 200mm 25: 250mm	SS: SUS316 B: Brass	1/4: Rc1/4			N: Atmospheric pressure L: Load pressure * Gases only			Accuracy ±1% F.S. * Gases only Dual scales * Gases only 1/20 scale FFKM O-ring
Illustrative example RK1814	12	SS	1/4	Air	2L/min	L	0.1MPa	1	

* If you want multiple sensors to be installed, consult our sales office.

Flow Meter with Bellows Needle Valve

MODEL RK1500 SERIES



Applicable fluids **Gas** N₂, Air, H₂, He, Ar, O₂, CO₂, etc. **Liquid** H₂O

Max. flow rate **Gas** 5mL/min to 30L/min **Liquid** 5mL/min to 1L/min

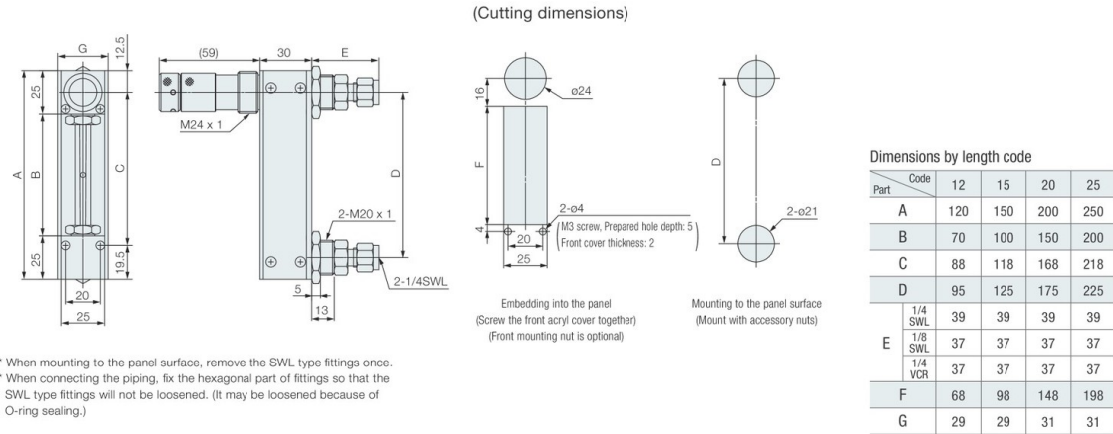
Accuracy ±2% F.S.

- Low leak thanks to bellows sealed needle valve
- Available for minute flow rate as well
- High-accuracy measurement of ±2% F.S. or better
- Superior control performance by non-rotating precision needle valve
- Upper needle valve type available

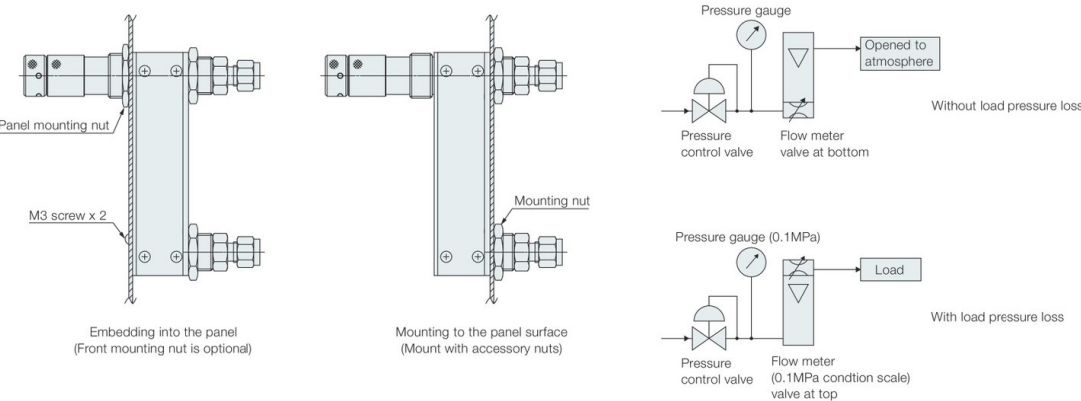


RK1500
(valve at bottom)

Dimensions



Example of use



Standard Specifications

MODEL	RK1500	
Applicable fluids	N ₂ , Air, H ₂ , He, Ar, O ₂ , CO ₂ , etc.	H ₂ O
Max. flow rate (Air atm condition for gas)	5mL/min to 30L/min (See the Capacity Table below)	5mL/min to 1L/min (See the Capacity Table below)
Effective scale	10:1	
Accuracy	±2%F.S.	
Proof pressure	100mL/min or less: 1MPa(G)	5mL/min or less: 1MPa(G)
	5L/min or less: 0.7MPa(G)	150mL/min or less: 0.7MPa(G)
	10L/min or more: 0.5MPa(G)	200mL/min or more: 0.5MPa(G)
Max. working temperature	60°C	
Materials of parts in contact with fluid	SUS316, Hard glass, FKM, PCTFE, (PTFE)	
Connection	Standard: 1/4SWL type	
	Option: 1/8SWL type, 1/4VCR type	
Weight	Approx. 800g	

* Of the materials of parts in contact with fluid, what is in () depends on the manufacturing specification condition.

Capacity Table

Air (atmospheric pressure)

Max. flow rate Total length	5 mL/min	10 mL/min	20 mL/min	30 mL/min	50 mL/min	100 mL/min	150 mL/min	200 mL/min	300 mL/min	500 mL/min	1 L/min	2 L/min	3 L/min	5 L/min	10 L/min	15 L/min	20 L/min	30 L/min
120mm	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
150mm	—	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
200mm	—	—	—	—	○	○	○	○	○	○	○	○	○	○	○	○	○	○
250mm	—	—	—	—	—	○	○	○	○	○	○	○	○	○	○	○	○	○

H₂O

Max. flow rate Total length	5 mL/min	10 mL/min	20 mL/min	30 mL/min	50 mL/min	100 mL/min	150 mL/min	200 mL/min	300 mL/min	500 mL/min	1 L/min
120mm	○	○	○	○	○	○	○	○	○	○	○
150mm	○	○	○	○	○	○	○	○	○	○	○
200mm	○	○	○	○	○	○	○	○	○	○	○
250mm	○	○	○	○	○	○	○	○	○	○	○

Ordering

MODEL	Total length	Block material	Connection	Fluid	Max. flow rate	Supply pressure	Outlet pressure	Needle valve	Other options
RK1500	12: 120mm 15: 150mm 20: 200mm 25: 250mm	SS: SUS316	1/4SW: 1/4SWL type 1/8SW: 1/8SWL type 1/4VCR: 1/4VCR type					D: at bottom U: at top	Accuracy ±1% F.S. * Gases only Dual scales * Gases only 1/20 scale FFKM O-ring
Illustrative example RK1500	12	SS	1/4SW	Air	2L/min	0.2MPa	0MPa	D	

* Possible to manufacture with a scale of 0.5mL/min to 3mL/min (air at atmospheric pressure) only for total length of 120mm.

* No shutting O-ring for FFKM option.

* If you need the front panel mounting nut, let us know at ordering time.

* 'SWL type' and 'VCR type' are shortened to SW and VCR in Ordering code.

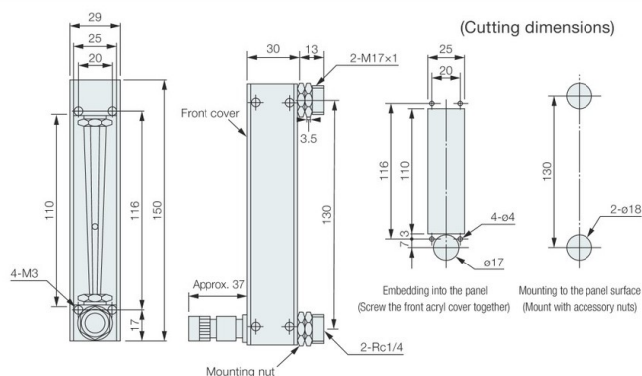
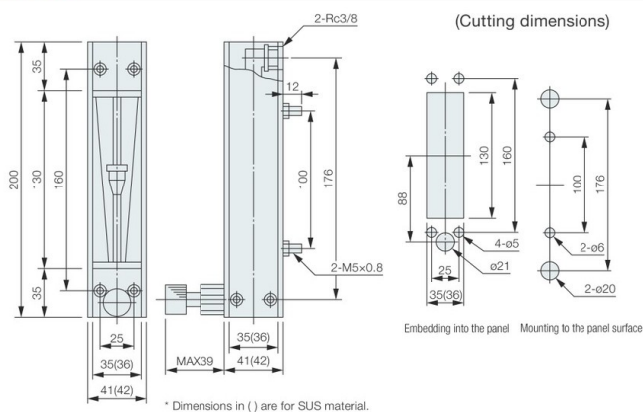
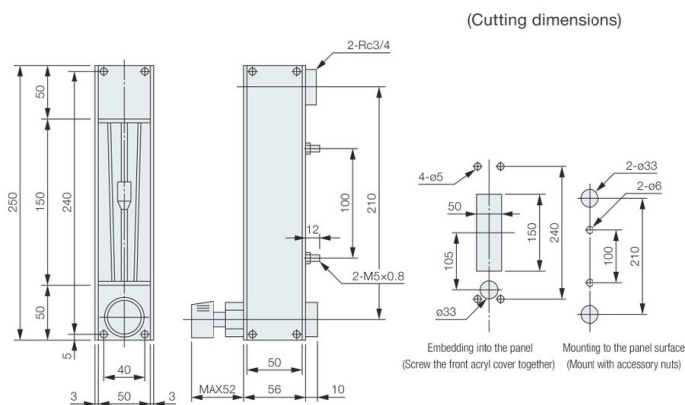
Low pressure Flow Meter

MODEL RK130 / RK230 / RK260 SERIESApplicable fluids **Gas** Air, O₂, LNG, C₃H₈Max. flow rate **Gas** 10 to 1000L/minAccuracy RK130: $\pm 2\%$ F.S. RK230, RK260: $\pm 5\%$ F.S.

■ Available for use at low pressure

■ Available for large flow rate

Variable Flow Meter

RK130**Dimensions****RK230****Dimensions****RK260****Dimensions**

Standard Specifications

MODEL	RK130
Accuracy	±2%F.S.
Proof pressure	0.5MPa(G)
Max. working temperature	50°C
Materials of parts in contact with fluid	SS: SUS316, Hard glass, FKM, PCTFE B: Brass, Hard glass, NBR, SUS316, PCTFE
Connection	Rc1/4

Differential pressure range (Air atmospheric pressure)

10L/min	1.6 to 4kPa
20L/min	2.5 to 5kPa
30L/min	5 to 10kPa

* When the pressure is relatively high, the RK1200 is recommended from a viewpoint of flow rate control.

Flow rate range (atmospheric pressure)

Flow rate range (L/min)				Pressure loss (kPa)	Float material
Air	O ₂	LNG	C ₂ H ₄		
1 to 10	1 to 10	1 to 10	0.8 to 8	0.6	Hard glass
2 to 20	2 to 20	2 to 20	1.5 to 15	1.4	
3 to 30	3 to 30	3 to 30	2.5 to 25	3.5	SUS316

* The pressure loss is the result of measurement with no load applied to the fittings and piping.

Ordering

MODEL	Block material	Connection	Fluid	Max. flow rate	Supply pressure * Pressure loss + 1kPa at least	Outlet pressure	Needle valve
RK130	SS: SUS316 B: Brass	1/4: Rc1/4				0kPa	D: at bottom
RK130	SS	1/4	Air	10L/min	1.6kPa	0kPa	D

Standard Specifications

MODEL	RK230
Accuracy	±5%F.S.
Proof pressure	0.5MPa(G)
Max. working temperature	50°C
Materials of parts in contact with fluid	S: SUS304, Hard glass, SUS316, FKM, PCTFE, PTFE, POM B: Brass, Hard glass, SUS316, NBR, PTFE, SUS304, POM
Connection	Rc3/8

Differential pressure range (Air atmospheric pressure)

30L/min	1.5 to 3kPa
50L/min	2 to 5kPa
100L/min	2.5 to 15kPa

* When the pressure is relatively high for 100L/min, the RK2000 is recommended from a viewpoint of flow rate control.

Flow rate range (atmospheric pressure)

Flow rate range (L/min)				Pressure loss (kPa)	Float material
Air	O ₂	LNG	C ₂ H ₄		
3 to 30	3 to 30	4 to 40	2.5 to 25	0.5	POM (polyacetal, white)
5 to 50	5 to 50	8 to 60	4 to 40	0.7	
10 to 100	10 to 90	20 to 120	10 to 80	1.5	

* The pressure loss is the result of measurement with no load applied to the fittings and piping.

Ordering

MODEL	Block material	Connection	Fluid	Max. flow rate	Supply pressure * Pressure loss + 1kPa at least	Outlet pressure	Needle valve
RK230	S: SUS304 B: Brass	3/8: Rc3/8				0kPa	D: at bottom
RK230	S	3/8	Air	100L/min	2.5kPa	0kPa	D

Standard Specifications

MODEL	RK260
Accuracy	±5%F.S.
Proof pressure	0.5MPa(G)
Max. working temperature	50°C
Materials of parts in contact with fluid	S: SUS304, Hard glass, FKM, PTFE, (POM) B: Brass, Hard glass, NBR, PTFE, SUS304, (POM)
Connection	Rc3/4

* Of the materials of parts in contact with fluid, what is in () depends on the manufacturing specification condition.

Differential pressure range (Air atmospheric pressure)

100L/min	1.6 to 3.5kPa	500L/min	7 to 40kPa
200L/min	2.2 to 10kPa	800L/min	18 to 50kPa
300L/min	3.6 to 20kPa	1000L/min	30 to 50kPa

* When the pressure is relatively high for 500L/min, the RK2000 is recommended from a viewpoint of flow rate control.

Flow rate range (atmospheric pressure)

Flow rate range (L/min)				Pressure loss (kPa)	Float material
Air	O ₂	LNG	C ₂ H ₄		
10 to 100	10 to 100	20 to 130	10 to 80	0.6	POM (polyacetal, white)
20 to 200	20 to 190	25 to 250	20 to 150	1.2	
50 to 300	50 to 300	70 to 400	50 to 250	2.6	
100 to 500	100 to 450	150 to 600	80 to 400	5.5	
80 to 800	80 to 750	—	80 to 600	15	SUS304
100 to 1000	100 to 1000	100 to 1000	80 to 800	23	

* The pressure loss is the result of measurement with no load applied to the fittings and piping.

Ordering

MODEL	Block material	Connection	Fluid	Max. flow rate	Supply pressure * Pressure loss + 1kPa at least	Outlet pressure	Needle valve
RK260	S: SUS304 B: Brass	3/4: Rc3/4				0kPa	D: at bottom
RK260	S	3/4	Air	1000L/min	30kPa	0kPa	D

Flexible Flow Meter

MODEL RK1100 SERIES



Applicable fluids Gas N₂, Air, H₂, He, Ar, O₂, CO₂, etc.

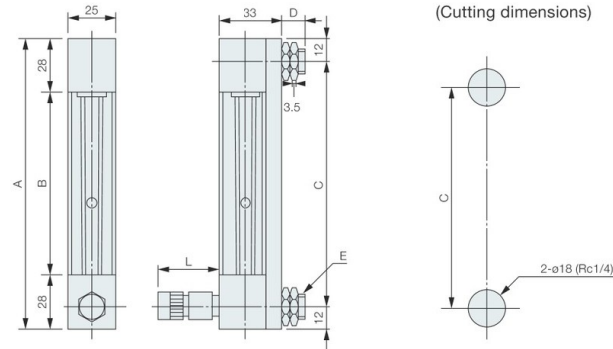
Max. flow rate Gas 10mL/min to 20L/min

Accuracy ±2% F.S.

- Possible to disassemble and reassemble
- Capable of selecting a non-rotating precision needle valve
- Upper needle valve type available

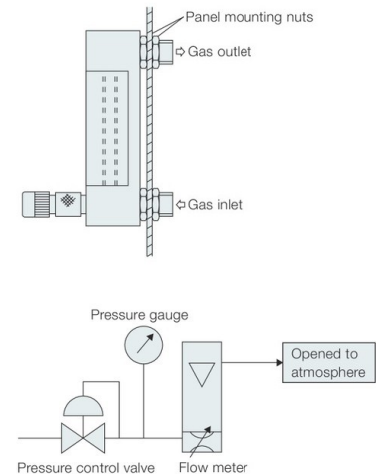


Dimensions

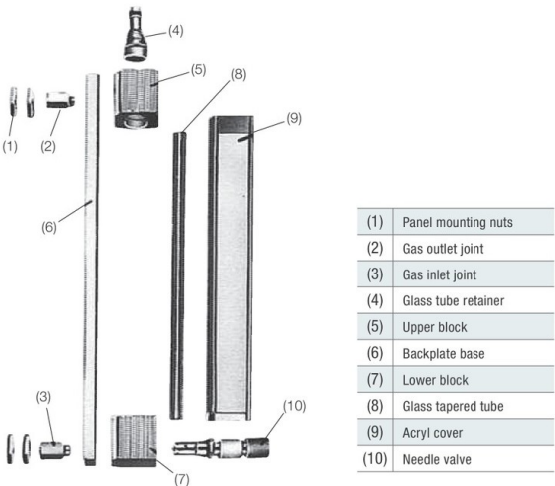


Dimensions by length code					
Part	Code	12	15	20	25
A		120	150	200	250
B		64	94	144	194
C		96	126	176	226
D	Rc1/4	14	14	14	14
E	Rc1/4	M17×1	M17×1	M17×1	M17×1
MODEL		L			
RK1100-0		0			
RK1100-V		33MAX			
RK1100-PV		40			

Example of use



Disassembled parts



Standard Specifications

MODEL	RK1100
Applicable fluids	N ₂ , Ar, H ₂ , He, Ar, O ₂ , CO ₂ , etc.
Max. flow rate (Air atm condition)	0, P/V: 10mL/min to 20L/min V: 1 to 20L/min (See the Capacity Table below)
Effective scale	10:1
Accuracy	±2%F.S.
Proof pressure	0.5MPa(G)
Max. working temperature	60°C
Materials of parts in contact with fluid	S: SUS304, Hard glass, SUS316, FKM, (SUS303, PCTFE, PTFE, nylon) A: Al, Brass, Hard glass, SUS316, NBR, (SUS303, POM, PTFE, nylon)
Connection	Rc1/4
Weight	Approx. 400g

* Of the materials of parts in contact with fluid, what is in () depends on the manufacturing specification condition.

Capacity Table

Air (atmospheric pressure)

Max. flow rate	10	20	30	50	100	150	200	300	500	1	2	3	5	10	15	20
Total length	mL/min	mL/min	mL/min	mL/min	mL/min	mL/min	mL/min	mL/min	mL/min	L/min	L/min	L/min	L/min	L/min	L/min	L/min
120mm	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
150mm	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
200mm	—	—	—	○	○	○	○	○	○	○	○	○	○	○	○	○
250mm	—	—	—	—	—	—	○	○	○	○	○	○	○	○	○	○

Ordering

<with needle valve type>

MODEL	Needle valve	Total length	Block material	Connection	Fluid	Max. flow rate	Supply pressure	Outlet pressure	Other options
RK1100	VD: at bottom VU: at top PVD: Precision, at bottom PVU: Precision, at top	12: 120mm 15: 150mm 20: 200mm 25: 250mm	S: SUS304 A: Al	1/4: Rc1/4					Accuracy ±1% F.S. 1/20 scale
illustrative example RK1100	PVD	12	S	1/4	Air	2L/min	0.1MPa	0MPa	

<without needle valve type>

MODEL	Needle valve	Total length	Block material	Connection	Fluid	Max. flow rate	Measuring pressure	Load pressure	Other options
RK1100	0: No	12: 120mm 15: 150mm 20: 200mm 25: 250mm	S: SUS304 A: Al	1/4: Rc1/4			N: Atmospheric pressure L: Load pressure	* Measuring pressure L only	Accuracy ±1% F.S. 1/20 scale
illustrative example RK1100	0	12	S	1/4	Air	2L/min	L	0.1MPa	

Flow Meter with Stand

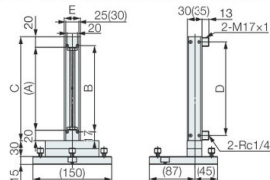
MODEL RK1310 SERIES **NEW**Applicable fluids **Gas** N₂, Air, H₂, He, Ar, O₂, CO₂, etc.**Liquid** H₂OMax. flow rate **Gas** 5mL/min to 100L/min**Liquid** 5mL/min to 2L/minAccuracy $\pm 2\%$ F.S.

- With stand
- Available for minute flow rate as well
- High-accuracy measurement of $\pm 2\%$ F.S. or better
- Superior control performance by non-rotating precision needle valve
- Upper needle valve type available

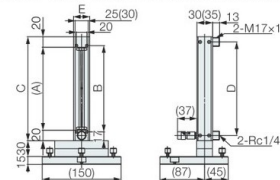


Dimensions

<<RK1310-0, Air atm, 10mL/min to 50L/min>>



<<RK1310-V, Air atm, 10mL/min to 50L/min>>

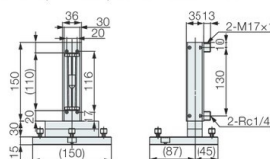


Dimensions by length code

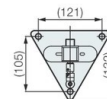
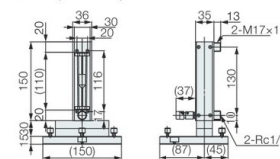
Part	Code	12	15	20	25
A		80	110	160	210
B		86	116	166	216
C		120	150	200	250
D		100	130	180	230
E		29(36)	29(36)	31(36)	31(36)

* Dimensions in () are for Air-50L/min and H₂O-2L/min.

<<RK1310-0, Air atm, 60 to 100L/min>>



<<RK1310-V, Air atm, 60 to 100L/min>>



* Dimensions of the stand are common.

Standard Specifications

MODEL	RK1310	
Applicable fluids	N ₂ , Air, H ₂ , He, Ar, O ₂ , CO ₂ , etc.	H ₂ O
Max. flow rate (Air atm condition for gas)	5mL/min to 100L/min (See the Capacity Table of RK1200 and RK1400)	5mL/min to 2L/min (See the Capacity Table of RK1200 and RK1400)
Effective scale	10:1	
Accuracy	$\pm 2\%$ F.S.	
Proof pressure	100mL/min or less: 1MPa(G) 5L/min or less: 0.7MPa(G) 10L/min or more: 0.5MPa(G)	5mL/min or less: 1MPa(G) 150mL/min or less: 0.7MPa(G) 200mL/min or more: 0.5MPa(G)
Max. working temperature	60°C	
Materials of parts in contact with fluid	SS: SUS316, Hard glass, FKM, PCTFE, (PTFE) B: Brass, Hard glass, NBR, POM, SUS316, (PTFE)	
Connection	Rc1/4	

* Of the materials of parts in contact with fluid, what is in () depends on the manufacturing specification condition.

Ordering

<with needle valve type>

MODEL	Needle valve	Total length * Stand not included	Block material	Connection	Fluid	Max. flow rate	Supply pressure	Outlet pressure
RK1310	VD: at bottom VU: at top	12: 120mm 15: 150mm 20: 200mm 25: 250mm	SS: SUS316 B: Brass	1/4: Rc1/4				
RK1310	VD	20	SS	1/4	N ₂	10L/min	0.1MPa	0MPa

<without needle valve type>

MODEL	Needle valve	Total length * Stand not included	Block material	Connection	Fluid	Max. flow rate	Measuring pressure	Load pressure
RK1310	0: No	12: 120mm 15: 150mm 20: 200mm 25: 250mm	SS: SUS316 B: Brass	1/4: Rc1/4			N: Atmospheric pressure L: Load pressure	
RK1310	0	20	SS	1/4	N ₂	10L/min	L	0.1MPa

Multiple Flow Meter with Needle Valve

MODEL RK120X SERIES


Applicable fluids Gas N₂, Air, H₂, He, Ar, O₂, CO₂, etc.

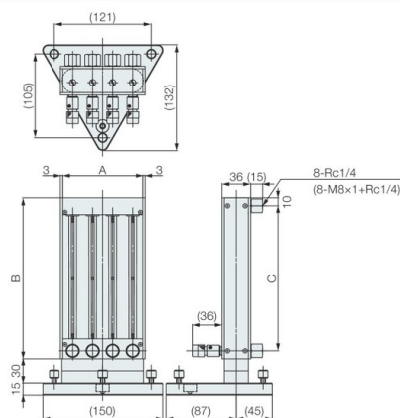
Max. flow rate Gas 5mL/min to 20L/min

Accuracy ±2% F.S.

- Capable of gas measurement and control up to 4 lines with one unit
- Stand installable
- Available for minute flow rate as well
- High-accuracy measurement of ±2% F.S. or better
- Superior control performance by non-rotating precision needle valve
- Upper needle valve type available


 RK1202
(Valve at bottom, with stand)

Dimensions



Dimensions of each part

MODEL	A	B	C	D
RK1202	50	120	150	200
RK1203	75	120	150	200
RK1204	100	120	150	200

C
B=120 100
B=150 130
B=200 180
B=250 230

Standard Specifications

MODEL	RK1202, RK1203, RK1204
Applicable fluids	N ₂ , Ar, H ₂ , He, Ar, O ₂ , CO ₂ , etc.
Max. flow rate (Air atm condition)	5mL/min to 20L/min (See the Capacity Table of RK1200)
Effective scale	10:1
Accuracy	±2% F.S.
Proof pressure	0.5MPa(G)
Max. working temperature	60°C
Materials of parts in contact with fluid	SS: SUS316, Hard glass, FKM, PCTFE, (PTFE, nylon) B: Brass, Hard glass, SUS316, NBR, POM, (PTFE, nylon)
Connection	Rc1/4

* Of the materials of parts in contact with fluid, what is in () depends on the manufacturing specification condition.

Ordering

MODEL	Total length * Stand not included	Block material	Connection	Fluid	Max. flow rate	Supply pressure	Outlet pressure	Needle valve	Stand	Other options	
RK1202: 2 glass tubes RK1203: 3 glass tubes RK1204: 4 glass tubes	12: 120mm 15: 150mm 20: 200mm 25: 250mm	SS: SUS316 B: Brass	1/4: Rc1/4					D: at bottom U: at top	O: No S: Yes	Accuracy ±1%F.S. 1/20 scale	
illustrative example	RK1204	12	SS	1/4	Air	1L/min	0.2MPa	0.1MPa	U	S	
					Air	2L/min	0.2MPa	0.1MPa			
					N ₂	10L/min	0.2MPa	0.1MPa			
					N ₂	20L/min	0.2MPa	0.1MPa			

* For the fluid, Max. flow rate, supply pressure and outlet pressure, specify them in order of ascending flow rate from the left as you face for the number of glass tubes.

Multiple Flow Meter

MODEL RK140X SERIES


Applicable fluids Gas N₂, Air, H₂, He, Ar, O₂, CO₂, etc.

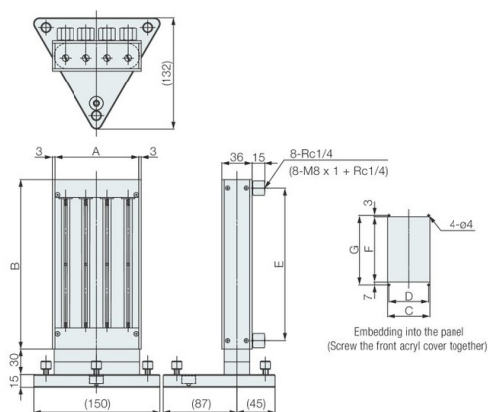
Max. flow rate Gas 5mL/min to 20L/min

Accuracy ±2% F.S.

- Capable of gas measurement up to 4 lines with one unit
- Stand installable
- Available for minute flow rate as well
- High-accuracy measurement of ±2% F.S. or better

RK1402
(with stand)

Dimensions



Dimensions of each part

MODEL	A	B				C	D
RK1402	50	120	150	200	250	50	44
RK1403	75	120	150	200	250	75	69
RK1404	100	120	150	200	250	100	94

	E	F	G
B = 120	100	74	84
B = 150	130	104	114
B = 200	180	154	164
B = 250	230	204	214

Standard Specifications

MODEL	RK1402, RK1403, RK1404
Applicable fluids	N ₂ , Air, H ₂ , He, Ar, O ₂ , CO ₂ , etc
Max. flow rate (Air atm condition)	5mL/min to 20L/min (See the Capacity Table of RK1400)
Effective scale	10:1
Accuracy	±2% F.S.
Proof pressure	0.5MPa(G)
Max. working temperature	60°C
Materials of parts in contact with fluid	SS: SUS316, Hard glass, FKM, (PTFE, nylon) B: Brass, Hard glass, NBR, SUS316, (PTFE, nylon)
Connection	Rc1/4

* Of the materials of parts in contact with fluid, what is in () depends on the manufacturing specification condition.

Ordering

MODEL	Total length * Stand not included	Block material	Connection	Fluid	Max. flow rate	Measuring pressure	Load pressure * Measuring pressure L only	Stand	Other options
RK1402: 2 glass tubes RK1403: 3 glass tubes RK1404: 4 glass tubes	12: 120mm 15: 150mm 20: 200mm 25: 250mm	SS: SUS316 B: Brass	1/4: Rc1/4			N: Atmospheric pressure L: Load pressure		0: No S: Yes	Accuracy ±1% F.S. 1/20 scale
illustrative example RK1404	12	SS	1/4	Air Air N ₂ N ₂	1L/min 2L/min 10L/min 20L/min	L	0.1MPa 0.1MPa 0.1MPa 0.1MPa	S	

* For the fluid, maximum flow rate and pressure condition, specify them in order of ascending flow rate from the left as you face for the number of glass tubes.

Multiple Flow Meter for Gas Mixing

MODEL RK120XM SERIES



Applicable fluids Gas N₂, Air, H₂, He, Ar, O₂, CO₂, etc.

Max. flow rate Gas 50mL/min to 10L/min (Max. 10L/min for 1 line, Max. 20L/min in total)

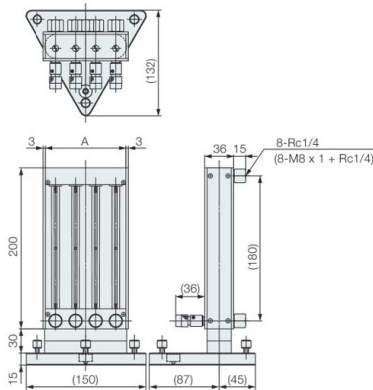
Accuracy ±2% F.S.

- Capable of simple gas mixing up to 4 lines
- Stand installable
- High-accuracy measurement of ±2% F.S. or better
- Superior control performance by non-rotating precision needle valve



RK1202M
(with stand)

Dimensions



Dimensions of each part

MODEL	A
1202M	50
1203M	75
1204M	100

Standard Specifications

MODEL	RK1202M, RK1203M, RK1204M
Applicable fluids	N ₂ , Air, H ₂ , He, Ar, O ₂ , CO ₂ , etc
Max. flow rate (Air atm condition)	50mL/min to 10L/min (Max. 10L/min for 1 line, Max. 20L/min in total) (See the Capacity Table of RK1200)
Effective scale	10:1
Accuracy	±2% F.S.
Proof pressure	0.5MPa(G)
Max. working temperature	60°C
Materials of parts in contact with fluid	SS: SUS316, Hard glass, FKM, PCTFE, (PTFE, nylon) B: Brass, Hard glass, NBR, POM, SUS316, (PTFE, nylon)
Connection	Rc1/4

* Of the materials of parts in contact with fluid, what is in () depends on the manufacturing specification condition.

Ordering

MODEL	Total length * Stand not included	Block material	Connection	Fluid	Max. flow rate	Supply pressure	Outlet pressure	Needle valve	Stand	Other options
RK1202M: 2 glass tubes RK1203M: 3 glass tubes RK1204M: 4 glass tubes	20: 200mm	SS: SUS316 B: Brass	1/4: Rc1/4					D: at bottom	0: No S: Yes	Accuracy ±1% F.S. 1/20 scale
Illustration example	RK1203M	20	SS	1/4	Air Air N ₂	1L/min 2L/min 10L/min	0.2MPa 0.2MPa 0.2MPa	0.1MPa 0.1MPa 0.1MPa	D	S

* For the fluid, maximum flow rate, supply pressure and outlet pressure, specify them in order of ascending flow rate from the left as you face for the number of glass tubes.

Variable Flow Meter

Flow Meter for Large flow rate

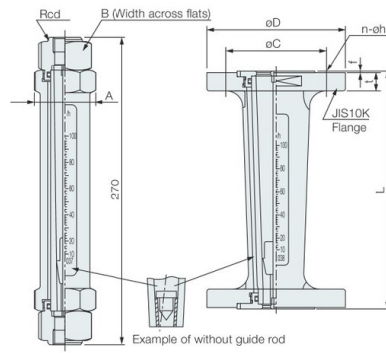
MODEL RK1950AP SERIESApplicable fluids **Gas** Air**Liquid** H₂O**Max. flow rate** **Gas** 80L/min to 25m³/min**Liquid** 1.5 to 900L/min**Accuracy** ±2%F.S.

■ Available for large flow rate



Threaded type

Flange type

Dimensions

Dimensions of each part

Bore	d	A	B
10A	3/8	52	41
15A	1/2	52	41
20A	3/4	62	46
25A	1	73	41*

* Width across flats

Dimensions of each part

JIS10kg/cm ² RF							
Bore	L	øD	øC	f	t	n-øh	mm
10A		90	65	1	14	4-15	
15A		95	70	1	16	4-15	
20A		100	75	1	18	4-15	
25A		125	90	1	18	4-19	
32A	220	135	100	2	20	4-19	
40A		140	105	2	20	4-19	
50A		155	120	2	20	4-19	
65A		175	140	2	22	4-19	
80A		185	150	2	22	8-19	
100A	250	210	175	2	24	8-19	

Standard Specifications

MODEL	RK1950AP			
Applicable fluids	Air		H ₂ O	
Max. flow rate (Air atm condition for gas)	10A: 80 to 350L/min 20A: 80 to 1000L/min 32A: 2 to 5m ³ /min 50A: 2.5 to 9m ³ /min 80A: 8 to 15m ³ /min	15A: 80 to 500L/min 25A: 0.4 to 3m ³ /min 40A: 2.5 to 6m ³ /min 65A: 8 to 15m ³ /min 100A: 12 to 25m ³ /min	10A: 1.5 to 10L/min 20A: 1.5 to 30L/min 32A: 60 to 150L/min 50A: 80 to 300L/min 80A: 250 to 500L/min	15A: 1.5 to 15L/min 25A: 9 to 100L/min 40A: 90 to 200L/min 65A: 250 to 500L/min 100A: 400 to 900L/min
Accuracy	±2%F.S.			
Max. working pressure	40A or less: 1MPa(G) 50A or more: 0.8MPa(G)			
Max. working temperature	120°C			
Materials of parts in contact with fluid	SUS304, Polysulphone resin (amber, transparent), NBR			
Connection	25A or less: JIS10K RF flange or thread 32A or more: JIS10K RF flange			

Ordering

MODEL	Material	Fluid	Max. flow rate	Connection	Supply pressure	Calibration temperature (working temperature)	Measuring pressure
RK1950AP	S: SUS304						N: Atmospheric pressure L: Load pressure * Gases only
RK1950AP	S	H ₂ O	150L/min	32A Flange	0.2MPa	20°C	N

* Specifying pressure condition is necessary to check whether the required pressure is satisfied for the desired specifications, prevent hunting, and for calibration.