

# CKD

# F.R.L. unit modular type



**CKD Corporation**

CC-738EU-GB

# A BASIC CONCEPT

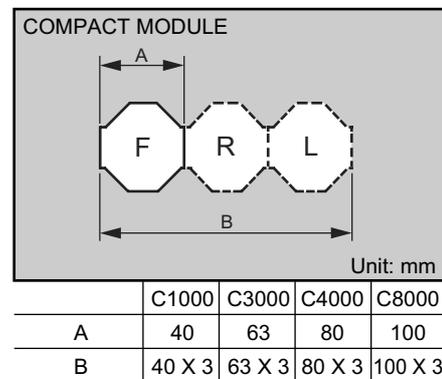
Pursuing high performance for all aspects, functionality, operability, serviceability, and safety.

Compressed air filter, regulator, lubricator, and other devices

## FUNCTIONAL FEATURES

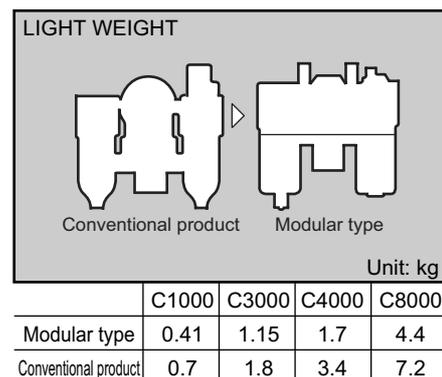
- Compact module

The main dimensions (width and depth) of F.R.L. devices have been integrated into a compact module. Accurate assembly dimensions are obtained with simple calculation.



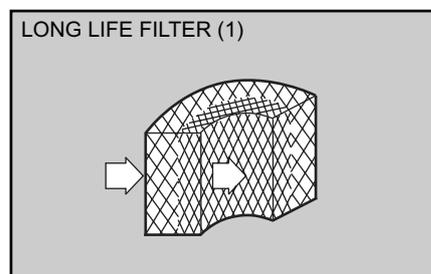
- Weight reduction (half compared to conventional model)

The hybrid material (body: aluminum die cast, cover: resin) provides strength, and reduces weight by 50% compared to the conventional type. (C4000 comparison)



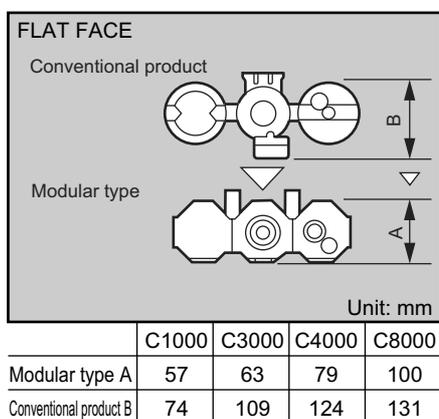
- Long-life element

This element incorporates CKD's original chemical fiber structure (patent pending), which has a rough surface and gradually becomes finer toward the inside. Clogging is greatly reduced, and the element life is greatly extended. There is no worry of rust forming.



- Embedded pressure gauge for saving space

The conventional protruding pressure gauge wasted space on the front, and endangered personnel. A neat design and safety have been realized by embedding the pressure gauge into the body.



- Mechanism to prevent oil dripping during primary side pressure drop

Oil dripping caused by reverse flow when pressure is released with the shut-off valve, etc., is suppressed.

- Corrosion resistant bowl guard

A very safe and corrosion resistant bowl guard is integrated.

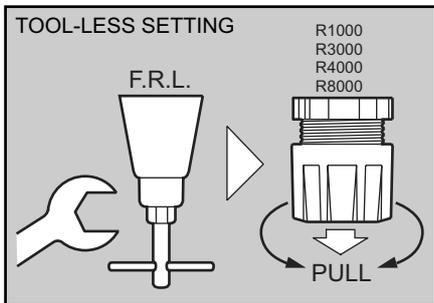
- Gauge plug

The gauge plug is sealed even without a pipe plug.

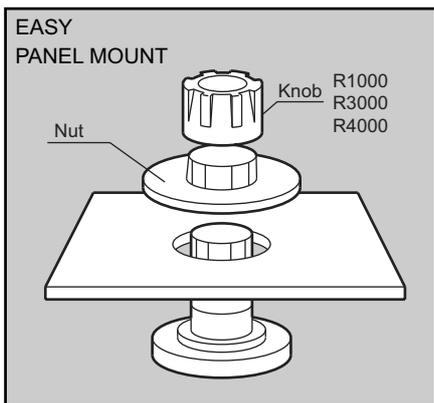


# OPERATIVE FEATURES

**• Adjust pressure without tools**  
Pressure is adjusted with one hand. The knob is locked with a single push, and easily operated when setting pressure.

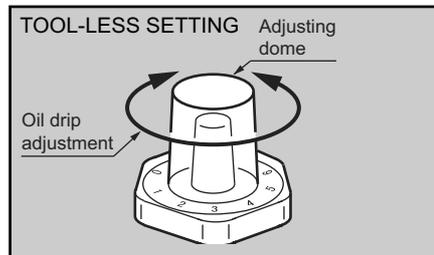


**• Easily install in panels**  
When the panel mounting nut is loosened, the nut acts as a jack and allows the knob to be removed easily. Fix the nut to mount in the panel.  
When the L-type bracket is used, the body is fixed securely.  
\* Excluding 8000 Series

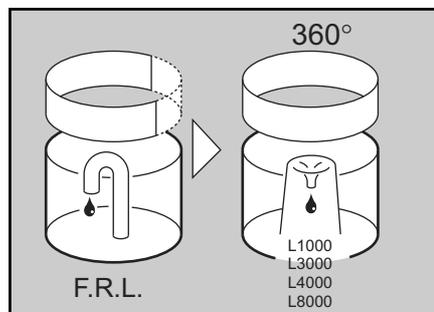


Note: Install the nut before installing the knob.

**• Oil drip adjustment knob with lock**  
Oil drips are adjusted easily by hand without using tools. A stopper is provided in the opening direction to function as a lock, and increase safety. The numbers on the dial are used as a guide after adjusting dripping.  
\* Adjust the oil drip to 0.5 N·m or less.



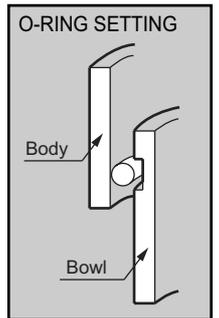
**• Double plastic structure**  
A double plastic structure is adopted, so oil dripping can be confirmed from 360°.



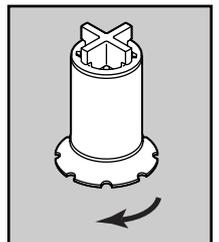
**• One-touch integrated attachment**  
The integrated bowl and bowl guard are easily attached and removed by operating the latch. The 1000 Series has no latch.  
\* Confirm that pressure has been released before mounting or removing the bowl and bowl guard.

**• O-ring drop prevention**

An O-ring slot is provided on the bowl side to prevent problems caused if the O-ring falls off during bowl attachment and removal. The O-ring does not fall off during maintenance, and a safe and accurate seal is attained.



**• One-touch integrated filter element**  
The integrated element is removed by turning the baffle 45° to the left (only 1000 Series).



# Series variation



## Overview

F.R.L module unit is a standard series that the major dimensions (width / depth) are compactly designed and unified per filter (F), regulator (R), and lubricator (L), etc, seeking ultimate performance in all of functionality, operation, maintainability, and safety, etc.

## Features

### (1) Standard modular design

Compact modular design whose major dimensions such as filters, regulators, and lubricator, etc. are unified.

### (2) Hybrid materials

Aluminum is used for the body, while resin is used for the cover. Light weight and also durable.

### (3) Supplying various clean air.

Supplying clean air and oil free air, etc. according to applications / purposes.

### (4) Long service life element is used.

Clogging is dramatically eliminated due to original chemical fiber structure.

### (5) Embedded pressure gauge for space saving.

Simple front surface design.

## [Combination]

Series	
<ul style="list-style-type: none"> <li>F.R.L. combination P1 = 7 bar P2 = 5 bar △P2 = 1 bar</li> </ul>	
<ul style="list-style-type: none"> <li>W.L. combination P1 = 7 bar P2 = 5 bar △P2 = 1 bar</li> </ul>	

## [Unit]

Series	
<ul style="list-style-type: none"> <li>Filter / regulator P1 = 7 bar P2 = 5 bar △P2 = 1 bar</li> </ul>	
<ul style="list-style-type: none"> <li>Air Filter P1 = 7 bar △P = 0.2 bar</li> </ul>	
<ul style="list-style-type: none"> <li>Oil mist filter P1 = 7 bar △P = 0.1 bar</li> </ul>	
<ul style="list-style-type: none"> <li>Regulator</li> <li>Reverse Regulator P1 = 7 bar P2 = 5 bar △P2 = 1 bar</li> </ul>	
<ul style="list-style-type: none"> <li>Lubricator P1 = 5 bar △P = 0.3 bar</li> </ul>	

## AUXILLIARY COMPONENTS INDEX

• Shut-off valve	47
• Lockout valve (OSHA conformed)	51
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Please contact CKD for 2000 and 6000 series.

\*P1= primary pressure P2= secondary pressure ΔP2= differential pressure

	Configuration					Model no.	Port size						Max. flow rate ℓ/min (ANR) (References)	Page
	F	R	L	W	M		1/8	1/4	3/8	1/2	3/4	1		
	Filter 5 μm	Regulator	Lubricator	Filter / regulator	Oil mist filter									
	●	●	●			C1000	●	●					450/630	<b>1</b>
						C3000		●	●				1278/1740	
						C4000		●	●	●			1428/2400/3000	
						C8000					●	●	7020/7500	
				●	●	C1010	●	●					450/630	<b>7</b>
						C3010		●	●				1278/1740	
						C4010		●	●	●			1428/2400/3000	
						C8010					●	●	7020/7500	

	Configuration					Model no.	Port size						Max. flow rate ℓ/min (ANR) (References)	Page
	F	R	L	W	M		1/8	1/4	3/8	1/2	3/4	1		
	Filter 5 μm	Regulator	Lubricator	Filter / regulator	Oil mist filter									
				●		W1000	●	●					840/1140	<b>11</b>
						W3000		●	●				2148/2430	
						W4000		●	●	●			2502/4350/4740	
						W8000					●	●	10020	
	●					F1000	●	●					460.2/600	<b>17</b>
						F3000		●	●				1230/1500	
						F4000		●	●	●			1320/2140/3000	
						F8000					●	●	6420/6780	
					●	M1000	●	●					150	<b>23</b>
						M3000		●	●				450	
						M4000		●	●	●			1002	
						M8000					●	●	2898	
		●				R1000	●	●					768/1350	<b>29</b>
						R1100								
						R3000		●	●				1998/2598	
						R3100								
						R4000		●	●	●			2502/4398/4998	
						R4100								
						R8000					●	●	13980/10980	
				●		L1000	●	●					540/702	<b>41</b>
						L3000		●	●				1098/2250	
						L4000		●	●	●			1002/1698/2700	
						L8000					●	●	6300/10020	



# F.R.L. combination

C1000, C3000, C4000, C8000

Filter, regulator, and lubricator integrated into a compact module unit. This is a space saving standard unit.



Please see CKD website or Digital Catalogue CD for CAD data.

Model	Port size						Max. flow rate (references) ℓ/min (ANR)			Drain capacity *1 cm <sup>3</sup>
	G1/8	G1/4	G3/8	G1/2	G3/4	G 1	1	600	7500	
C1000 	●						450			12
		●					630			
C3000 		●					1278			45
			●				1740			
C4000 		●					1428			80
			●				2400			
				●			3000			
C8000 					●		7020			80
						●	7500			

The max. flow rate applies where the primary pressure is 7 bar, set pressure is 5 bar and pressure drop is 1 bar.

Descriptions	Specifications
Working fluid	Compressed air
Max. working pressure	10 bar
Withstanding pressure	15 bar
Ambient temperature range	5 to 60°C
Set pressure range	0.5 to 8.5 bar
Relief mechanism	Provided
Filtration rating	5 μm
Lubricant	Turbine oil Class 1, ISO VG32 (spindle oil not available)

# F.R.L Combination

Specification / Model No.

	Min. dosing air flow rate *2 ℓ/min (ANR)	Oil capacity cm <sup>3</sup>	Product mass kg	Model no.	
				Manual drainage	Automatic drainage *3
	15	20	0.41	<b>C1000-6G</b>	—
				<b>C1000-8G</b>	—
	34.8	85	1.15	<b>C3000-8G</b>	<b>C3000-8G-F</b>
				<b>C3000-10G</b>	<b>C3000-10G-F</b>
	64.8	170	1.7	<b>C4000-8G</b>	<b>C4000-8G-F</b>
				<b>C4000-10G</b>	<b>C4000-10G-F</b>
				<b>C4000-15G</b>	<b>C4000-15G-F</b>
	64.8	170 (MAX 360)	4.4	<b>C8000-20G</b>	<b>C8000-20G-F</b>
				<b>C8000-25G</b>	<b>C8000-25G-F</b>

\*1 Applies for manual drainage. Exhaust drain manually if required. For automatic drain, when the full drain level is reached, the drain is exhausted automatically.

\*2 Flow rate applies where 5 drops of turbine oil per min. is dosed at the primary pressure 5 bar.

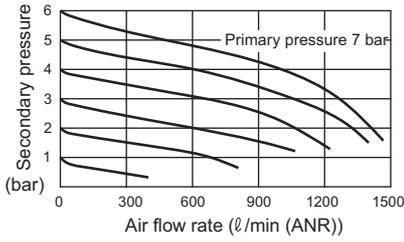
\*3 Drain can be discharged manually.

Min. working pressure is 1 bar. Air is exhausted with initially generated drain until pressure rising to 1 bar.

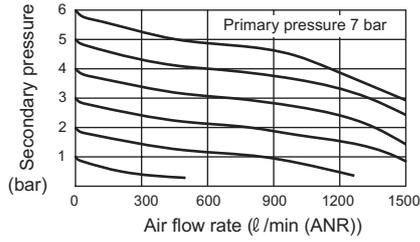
# F.R.L Combination

## Flow characteristics

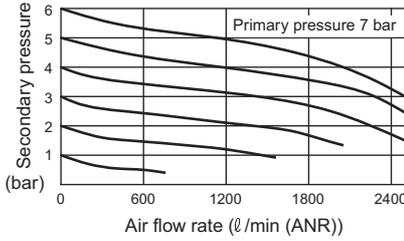
• C1000-6G



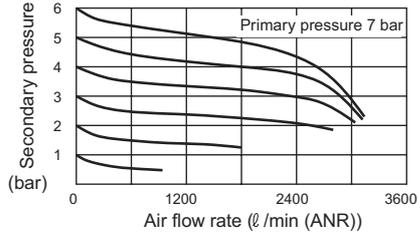
• C1000-8G



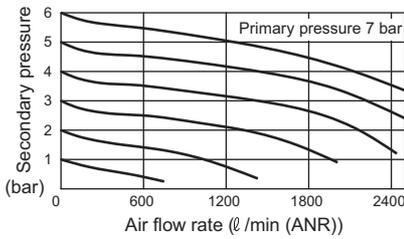
• C3000-8G



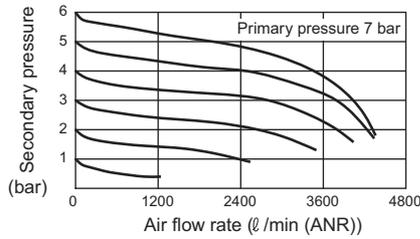
• C3000-10G



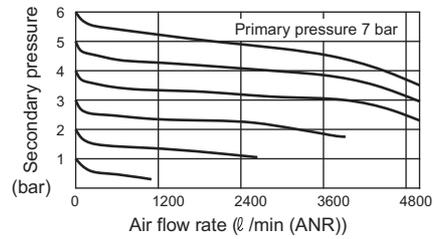
• C4000-8G



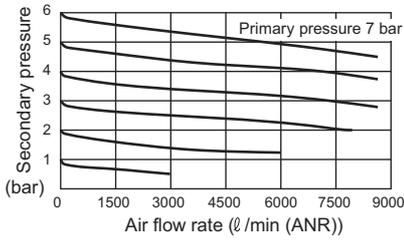
• C4000-10G



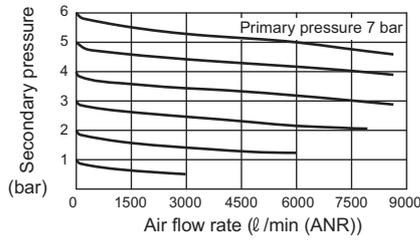
• C4000-15G



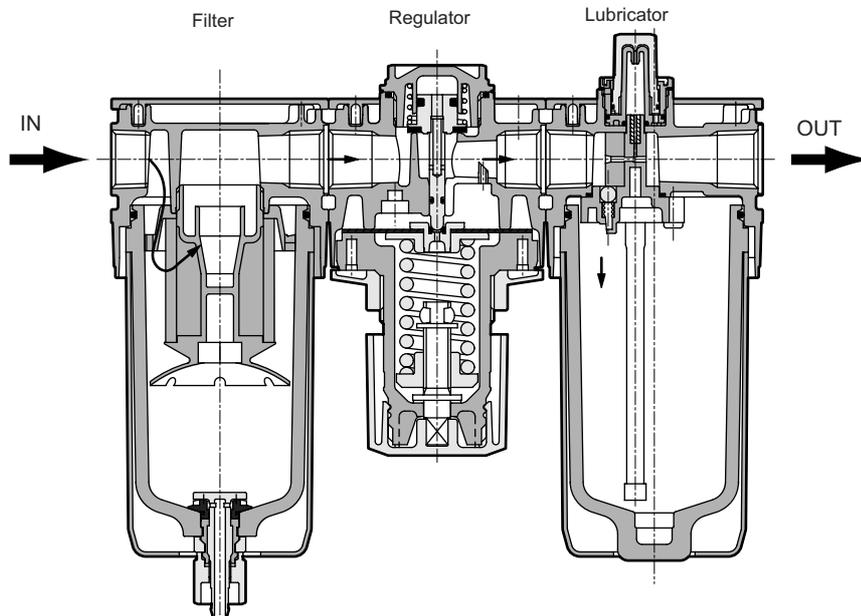
• C8000-20G



• C8000-25G



## Internal structure





# F.R.L Combination

## Dimensions

### • C4000

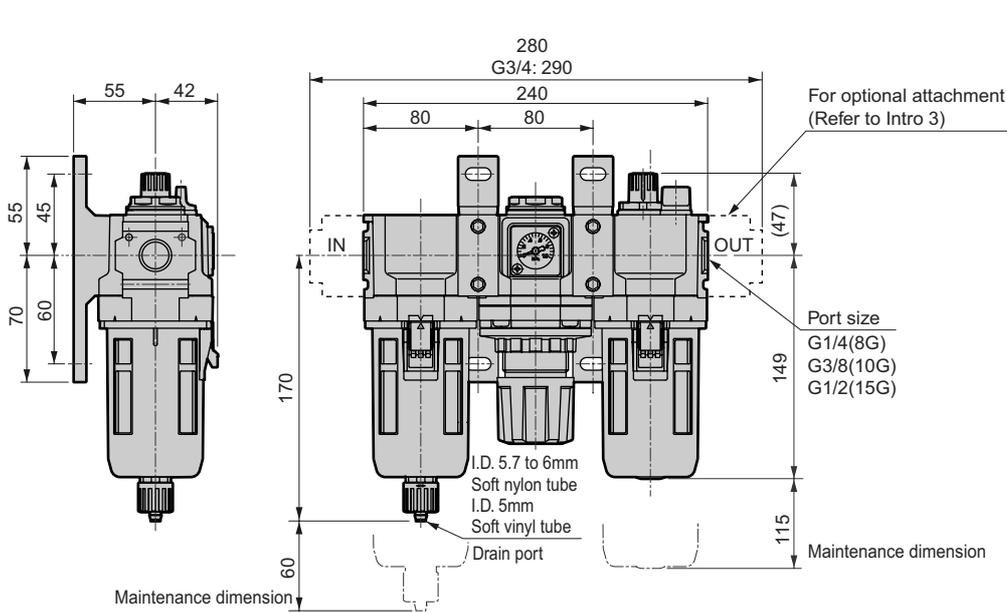


Figure of magnified bracket section

• Refer to filter section on Page 22 and lubricator section on Page 46 for metal bowl optional dimensions.

### • C8000

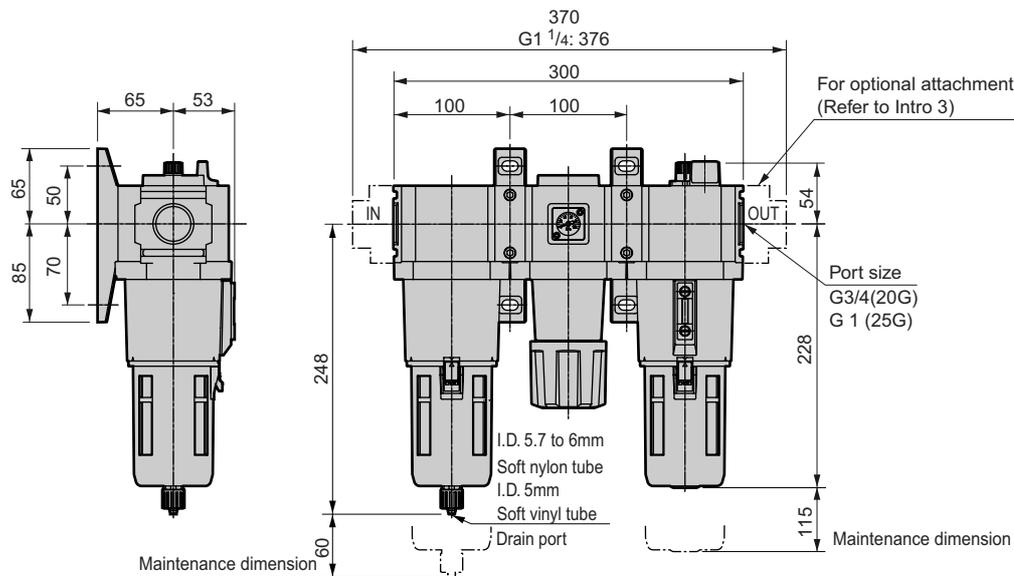


Figure of magnified bracket section

• Refer to filter section on Page 22 and lubricator section on Page 46 for metal bowl optional dimensions.

# W.L. combination

C1010, C3010, C4010, C8010

Filter, regulator, and lubricator integrated into a compact module unit. This is a space saving standard unit.



Please see CKD website or Digital Catalogue CD for CAD data.

Model	Port size						Max. flow rate (references) ℓ/min (ANR)			Drain capacity *1 cm <sup>3</sup>
	G1/8	G1/4	G3/8	G1/2	G3/4	G 1	1	600	7500	
C1010 	●							450		12
		●						630		
C3010 		●						1278		45
			●					1740		
C4010 		●						1428		80
			●					2400		
				●				3000		
C8010 					●			7020		80
						●		7500		

The max. flow rate applies where the primary pressure is 7 bar, set pressure is 5 bar and pressure drop is 1 bar.

Descriptions	Specifications
Working fluid	Compressed air
Max. working pressure	10 bar
Withstanding pressure	15 bar
Ambient temperature range	5 to 60°C
Set pressure range	0.5 to 8.5 bar
Relief mechanism	Provided
Filtration rating	5 μm
Lubricant	Turbine oil Class 1, ISO VG32 (spindle oil not available)

# W.L Combination

Specification / Model No.

	Min. dosing air flow rate *2 ℓ/min (ANR)	Oil capacity cm <sup>3</sup>	Product mass kg	Model no.	
				Manual drainage	Automatic drainage *3
	15	20	0.41	<b>C1010-6G</b>	—
				<b>C1010-8G</b>	—
	34.8	85	1.15	<b>C3010-8G</b>	<b>C3010-8G-F</b>
				<b>C3010-10G</b>	<b>C3010-10G-F</b>
	64.8	170	1.7	<b>C4010-8G</b>	<b>C4010-8G-F</b>
				<b>C4010-10G</b>	<b>C4010-10G-F</b>
				<b>C4010-15G</b>	<b>C4010-15G-F</b>
	64.8	170 (MAX 360)	4.4	<b>C8010-20G</b>	<b>C8010-20G-F</b>
				<b>C8010-25G</b>	<b>C8010-25G-F</b>

\*1 Applies for manual drainage. Exhaust drain manually if required. For automatic drain, when the full drain level is reached, the drain is exhausted automatically.

\*2 Flow rate applies where 5 drops of turbine oil per min. is dosed at the primary pressure 5 bar.

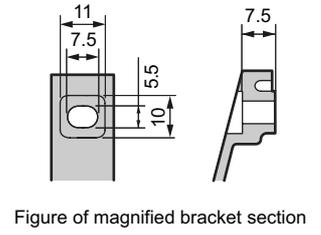
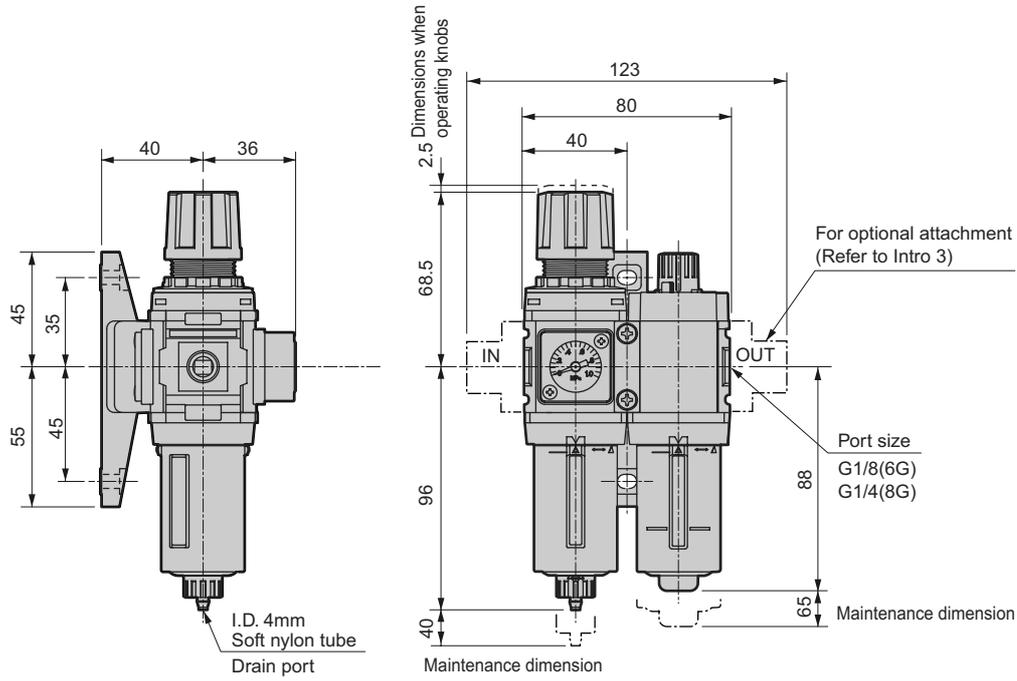
\*3 Drain can be discharged manually.

Min. working pressure is 1 bar. Air is exhausted with initially generated drain until pressure rising to 1 bar.

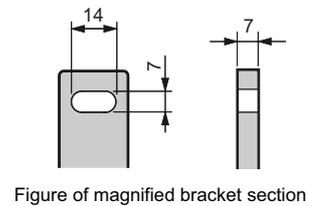
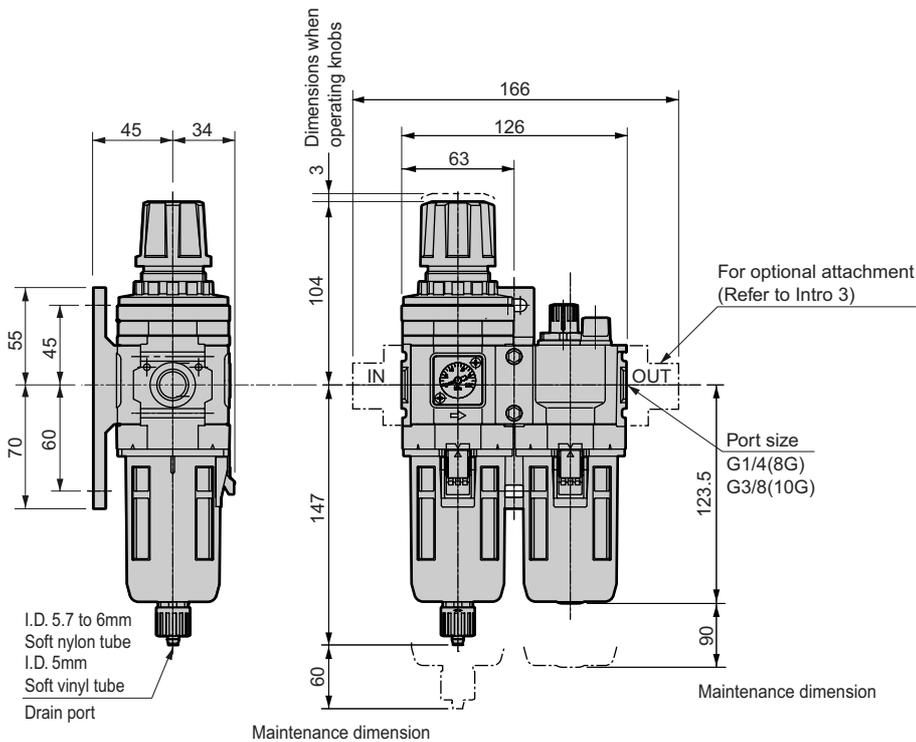
# W.L Combination

## Dimensions

### • C1010



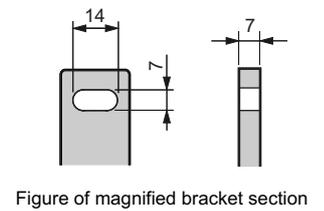
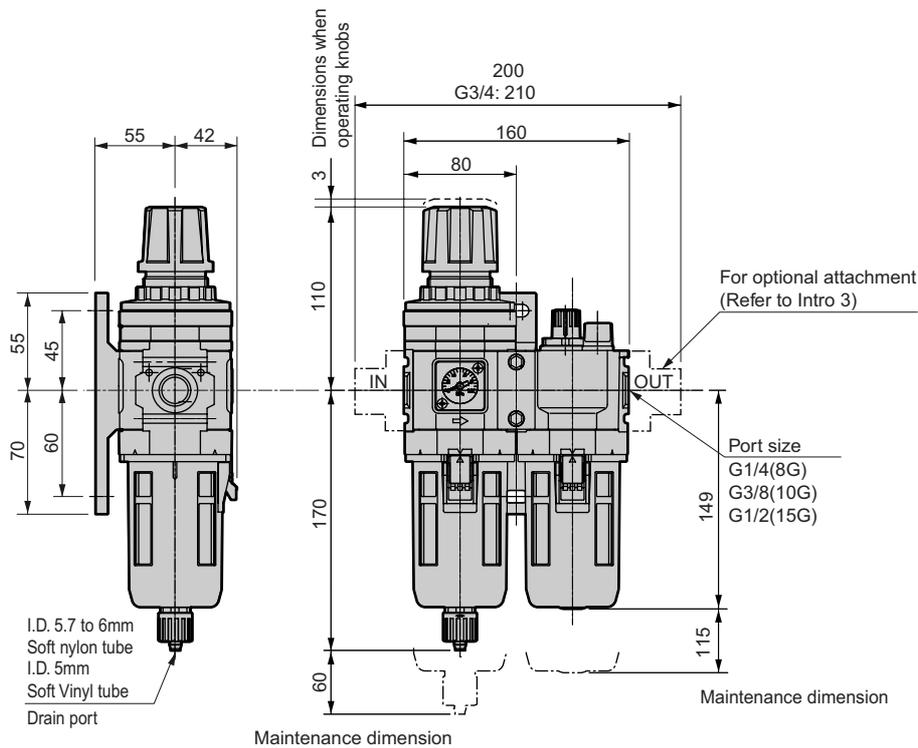
### • C3010



• Refer to filter / regulator section on Page 16 and lubricator section on Page 46 for metal bowl optional dimensions.

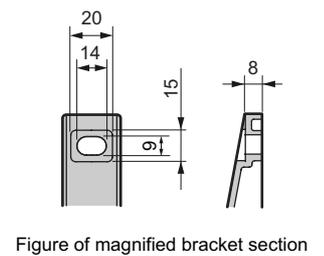
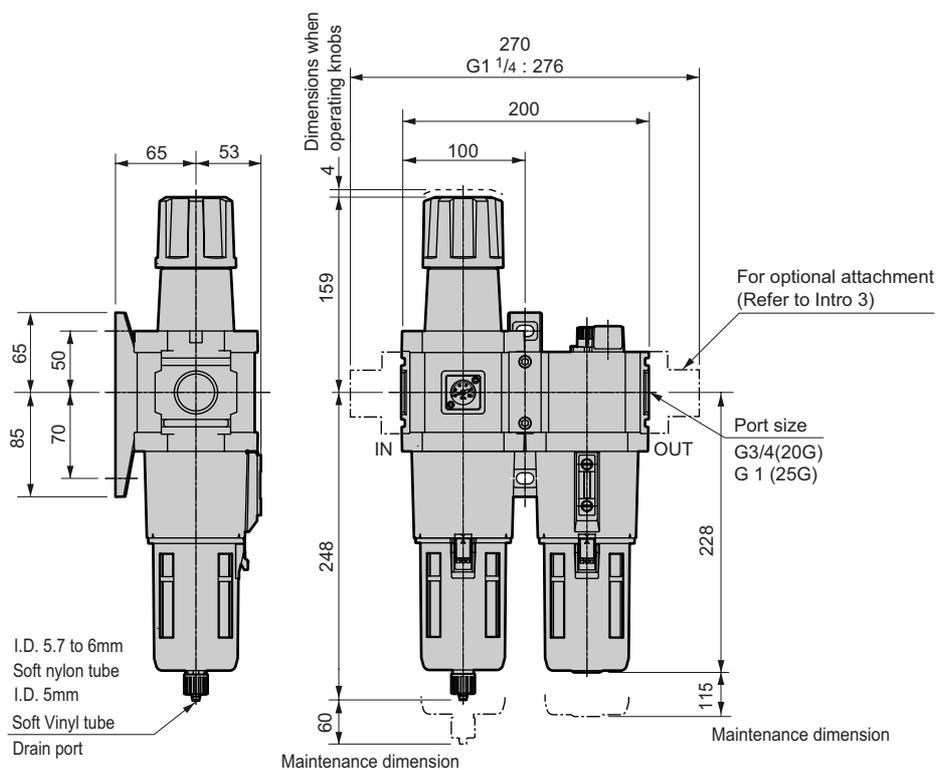
### Dimensions

- C4010



- Refer to filter / regulator section on Page 16, and lubricator section on Page 46 for metal bowl optional dimensions.

- C8010



- Refer to the filter / regulator section on Page 16 and the lubricator section on Page 46 for metal bowl optional dimensions.



# Filter / regulator

W1000, W3000, W4000, W8000

Air filter and regulator integrated compact unit.



Please see CKD website or Digital Catalogue CD for CAD data.

Model	Port size						Max. flow rate (references) ℓ/min (ANR)			Drain capacity *1 cm <sup>3</sup>	Product mass *2 kg
	G1/8	G1/4	G3/8	G1/2	G3/4	G 1	1	600	7500		
W1000 	●							840		12	0.175
		●						1140			
W3000 		●						2148		45	0.6 (0.7)
			●					2430			
W4000 		●						2502		80	0.9 (1.0)
			●					4350			
				●				4740			
W8000 					●			10020		80	2.0 (2.1)
						●		10020			

The max. flow rate applies where the primary pressure is 7 bar, set pressure is 5 bar and pressure drop is 1 bar.

Descriptions	Specifications
Working fluid	Compressed air
Max. working pressure	10 bar
Withstanding pressure	15 bar
Ambient temperature range	5 to 60°C
Set pressure range	0.5 to 8.5 bar
Relief mechanism	Provided
Filtration rating	5 μm

# Filter / regulator

Specification / Model No.

	Bracket model no. *3	Model no.							
		Standard (transparent plastic bowl)				Option (metal bowl type)			
		Manual drainage		Automatic drainage *4		Manual drainage		Automatic drainage *4	
		0-10 bar gauge	No gauge *5	0-10 bar gauge	No gauge *5	0-10 bar gauge	No gauge *5	0-10 bar gauge	No gauge *5
	B120 (B130)	W1000-6G	W1000-6G-T	—	—	—	—	—	—
		W1000-8G	W1000-8G-T	—	—	—	—	—	—
	B320 (B330)	W3000-8G	W3000-8G-T	W3000-8G-F	W3000-8G-FT	W3000-8G-M1	W3000-8G-M1T	W3000-8G-FM1	W3000-8G-FM1T
		W3000-10G	W3000-10G-T	W3000-10G-F	W3000-10G-FT	W3000-10G-M1	W3000-10G-M1T	W3000-10G-FM1	W3000-10G-FM1T
	B420 (B430)	W4000-8G	W4000-8G-T	W4000-8G-F	W4000-8G-FT	W4000-8G-M1	W4000-8G-M1T	W4000-8G-FM1	W4000-8G-FM1T
		W4000-10G	W4000-10G-T	W4000-10G-F	W4000-10G-FT	W4000-10G-M1	W4000-10G-M1T	W4000-10G-FM1	W4000-10G-FM1T
		W4000-15G	W4000-15G-T	W4000-15G-F	W4000-15G-FT	W4000-15G-M1	W4000-15G-M1T	W4000-15G-FM1	W4000-15G-FM1T
	B820	W8000-20G	W8000-20G-T	W8000-20G-F	W8000-20G-FT	W8000-20G-M1	W8000-20G-M1T	W8000-20G-FM1	W8000-20G-FM1T
		W8000-25G	W8000-25G-T	W8000-25G-F	W8000-25G-FT	W8000-25G-M1	W8000-25G-M1T	W8000-25G-FM1	W8000-25G-FM1T

\*1 Applies for manual drainage. Exhaust drain manually if required. For automatic drain, when the full drain level is reached, drain is discharged automatically.

\*2 Mass in ( ) is for optional metal bowl.

\*3 Model no. applies for C type bracket. Model no. in ( ) is for L type bracket. If a bracket is required, place an order separately.

\*4 Drainage can be discharged manually.

Min. working pressure is 1 bar. Air is exhausted with initially generated drain until pressure rising to 1 bar.

\*5 With G1/4 plug (sealed). The plug is removed and the direction of gasket is changed to open the port.

**Also available with 0.3µm element. (W1000 series excluded)**

**Add "Y" at the end of the item code.**

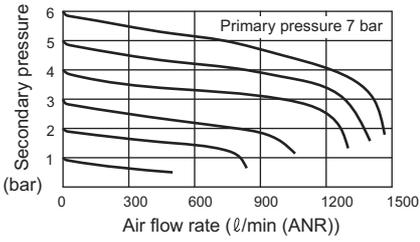
When "T" symbol is included, indicate "Y" before "T".

ex. W3000-10G-FM1Y, W3000-10G-FYT

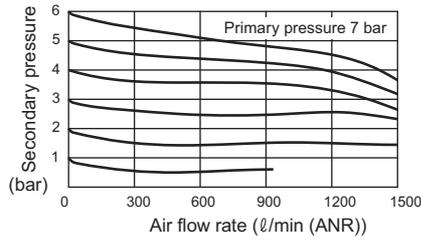
# Filter/Regulator Series

## Flow characteristics

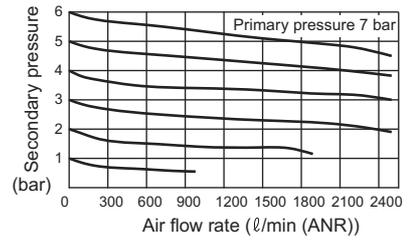
• W1000-6G



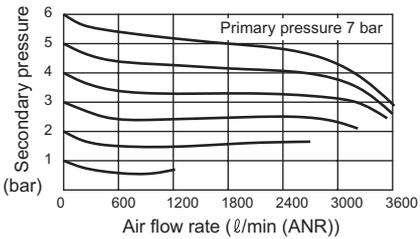
• W1000-8G



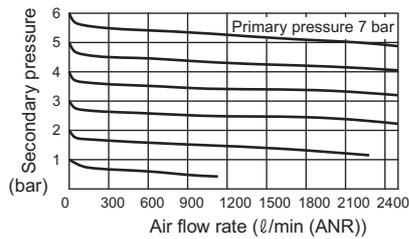
• W3000-8G



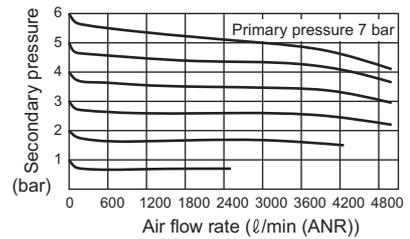
• W3000-10G



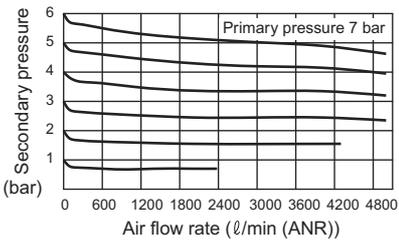
• W4000-8G



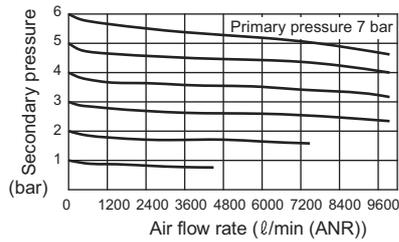
• W4000-10G



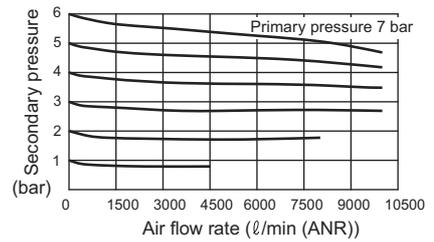
• W4000-15G



• W8000-20G

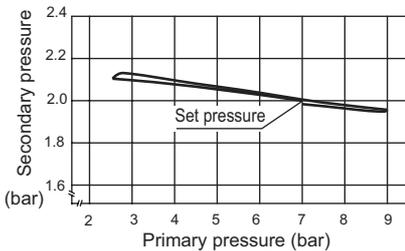


• W8000-25G

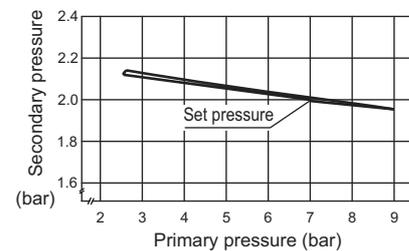


## Pressure characteristics

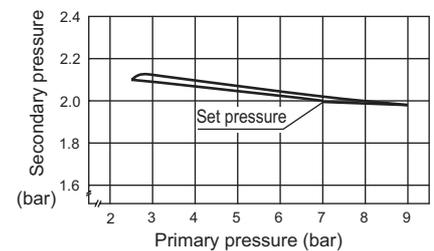
• W1000



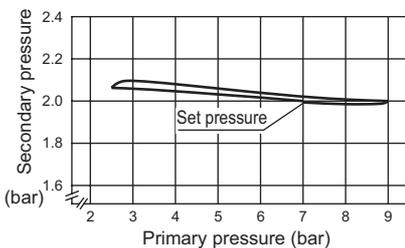
• W3000



• W4000



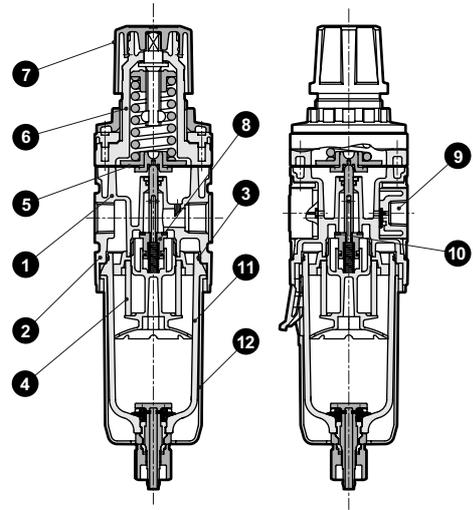
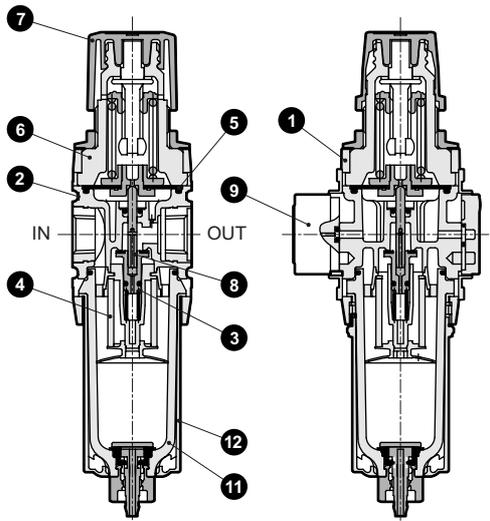
• W8000



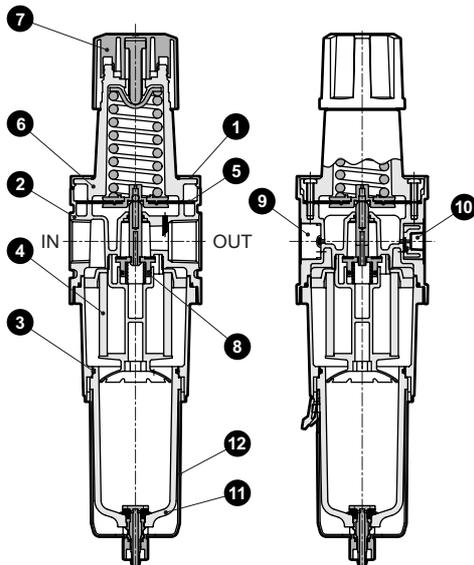
### Internal structure and parts list

• W1000

• W3000 / W4000



• W8000



No.	Part name	Material			
		W1000	W3000	W4000	W8000
1	Plate cover	ABS resin			
2	Body	Polyamide resin and steel	Aluminum ally die casting		
3	O ring	Note 2	Special nitrile rubber		
4	Element	Note 1	Polypropylene		
5	Diaphragm assembly	Polyacetal resin Polypropylene	Zinc alloy die-casting / nitrile rubber		
6	Cover	Polyamide resin	PBT resin	Aluminum ally die casting	
7	Knob	Polyacetal resin			
8	Valve assembly	Brass and nitrile rubber			
9	Pressure gauge assembly	PBT resin, polyacetal resin, polycarbonate resin, nitrile rubber, brass and steel			
10	Gauge plug assembly	—	Polyamide resin, nitrile rubber and steel		
	Blanking plug assembly	PBT resin, nitrile rubber and steel	—		
11	Bowl assembly	Polycarbonate resin, polyacetal resin and urethane rubber resin			
12	Bowl guard	Polyamide resin	Polyamide resin		

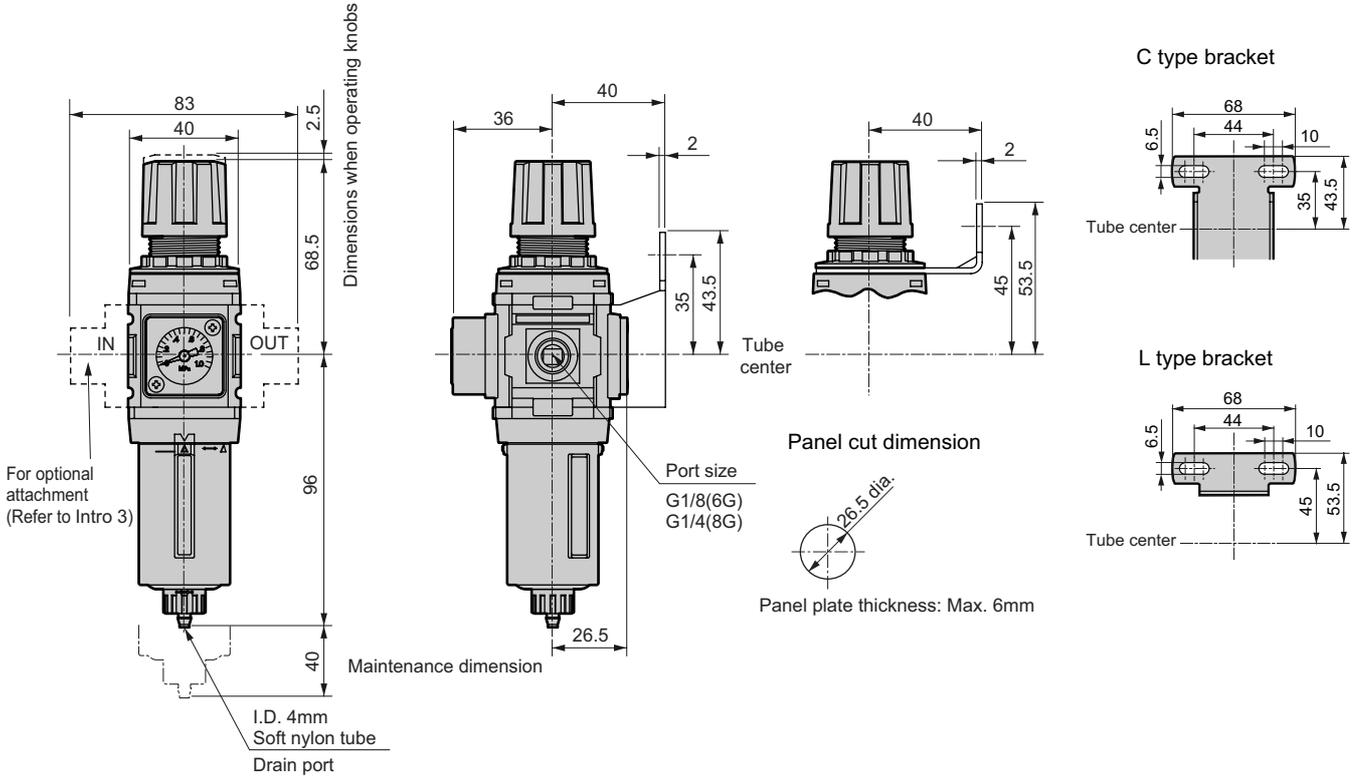
Note 1: An element assembly is provided for W1000.

Note 2: O ring of W1000 has the special shape.

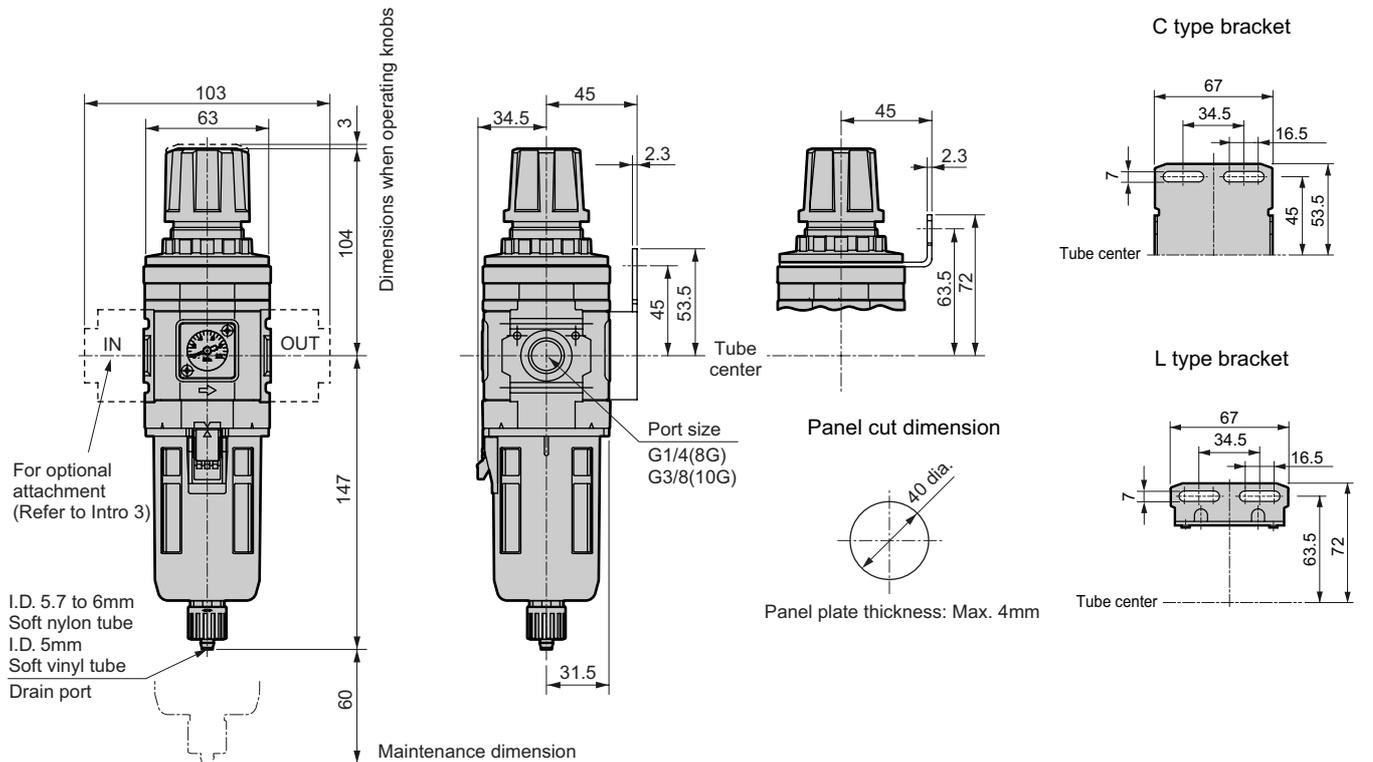
# Filter/Regulator Series

## Dimensions

### • W1000



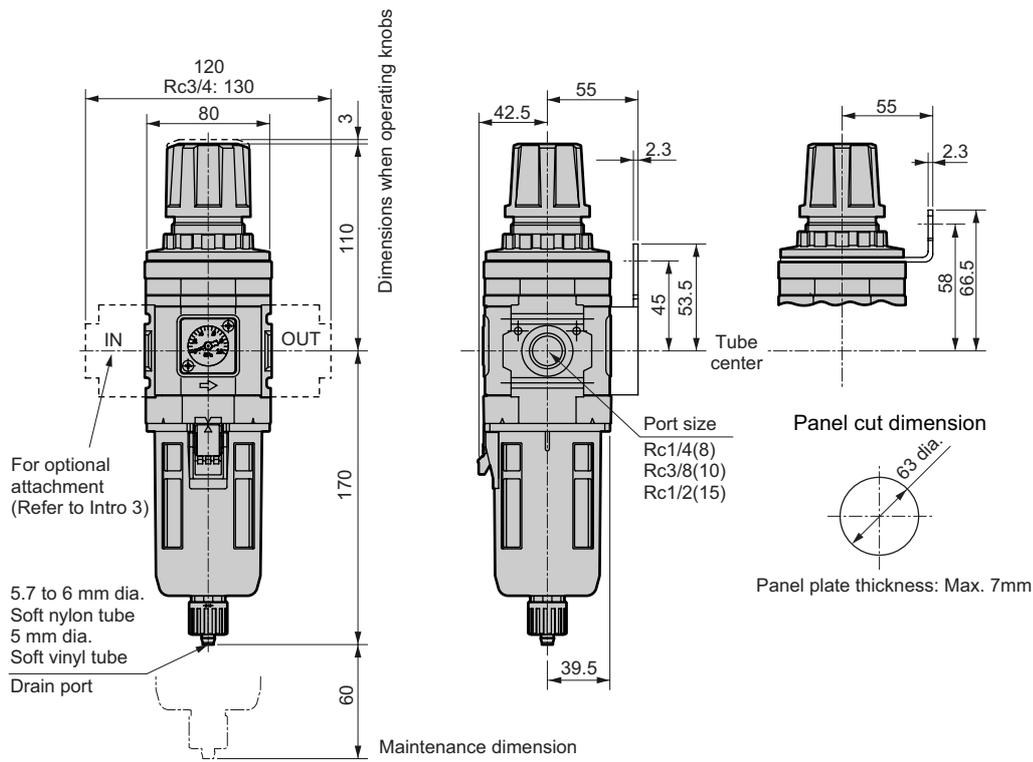
### • W3000



• Dimensions of manual cock and automatic drain are same for a plastic bowl.

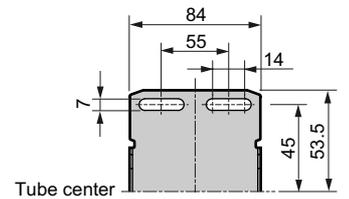
### Dimensions

#### • W4000

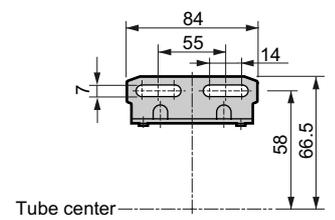


• Dimensions of manual cock and automatic drain are same for a plastic bowl.

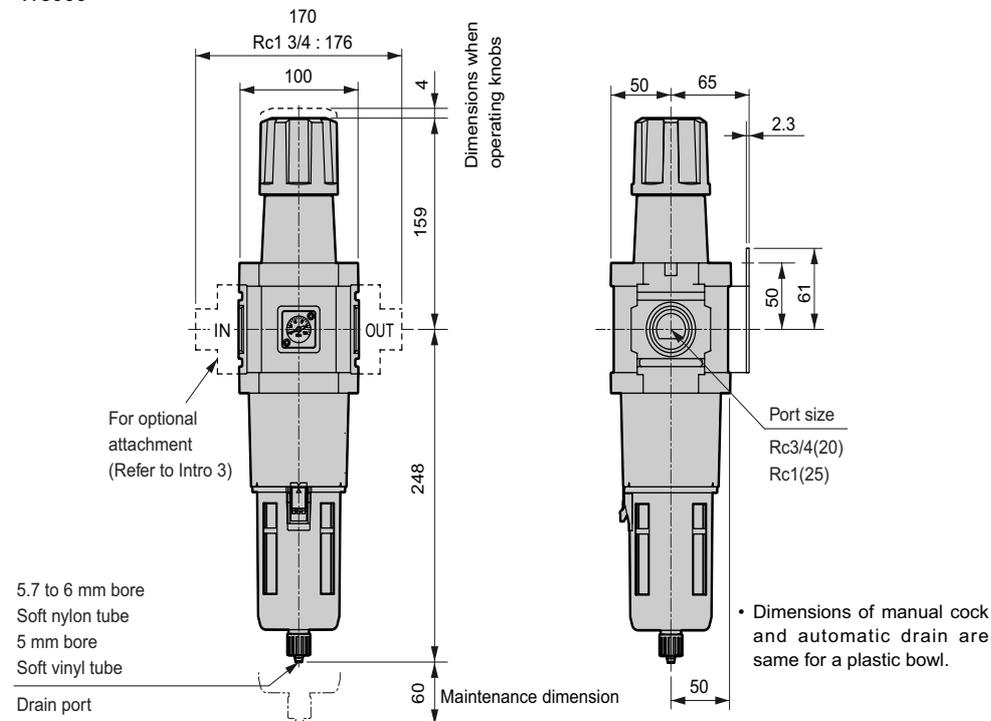
#### C type bracket



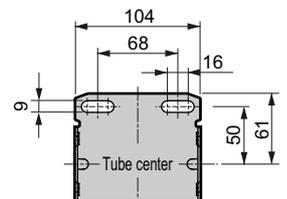
#### L type bracket



#### • W8000

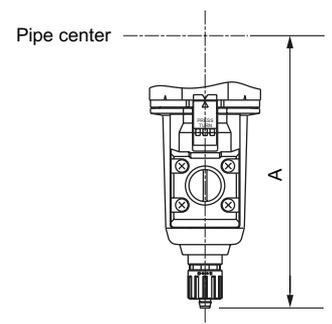


#### C type bracket



### Optional dimensions

- Metal bowl (option)  
(W3000-4000-8000)



Model	A
W3000	154
W4000	177
W8000	255



# Air filter

F1000, F3000, F4000, F8000

For removing impurities (water or solid foreign matter, etc.) in compressed air.



Please see CKD website or Digital Catalogue CD for CAD data.

Model	Port size						Max. flow rate (references) ℓ/min (ANR)			Drain capacity *1 cm <sup>3</sup>
	G1/8	G1/4	G3/8	G1/2	G3/4	G 1	1	600	7500	
F1000 	●						460.2			12
		●					600			
F3000 		●					1230			45
			●				1500			
F4000 		●					1320			80
			●				2140.2			
				●			3000			
F8000 					●		6420			80
						●	6780			

The max. flow rate applies where primary pressure is 7 bar and pressure drop is 0.2 bar.

Descriptions	Specifications
Working fluid	Compressed air
Max. working pressure	10 bar
Withstanding pressure	15 bar
Ambient temperature range	5 to 60°C
Filtration rating	5 μm

	Product mass *2 kg	Bracket model no. *3	Model no.			
			Standard (transparent plastic bowl)		Option (metal bowl type)	
			Manual drainage	Automatic drainage *4	Manual drainage	Automatic drainage *4
0.087	B120	<b>F1000-6G</b>	—	—	—	
		<b>F1000-8G</b>	—	—	—	
0.25 (0.35)	B320	<b>F3000-8G</b>	<b>F3000-8G-F</b>	F3000-8G-M1	F3000-8G-FM1	
		<b>F3000-10G</b>	<b>F3000-10G-F</b>	F3000-10G-M1	F3000-10G-FM1	
0.45 (0.55)	B420	<b>F4000-8G</b>	<b>F4000-8G-F</b>	F4000-8G-M1	F4000-8G-FM1	
		<b>F4000-10G</b>	<b>F4000-10G-F</b>	F4000-10G-M1	F4000-10G-FM1	
		<b>F4000-15G</b>	<b>F4000-15G-F</b>	F4000-15G-M1	F4000-15G-FM1	
1.16 (1.26)	B820	<b>F8000-20G</b>	<b>F8000-20G-F</b>	F8000-20G-M1	F8000-20G-FM1	
		<b>F8000-25G</b>	<b>F8000-25G-F</b>	F8000-25G-M1	F8000-25G-FM1	

\*1 Applies for manual drainage. Exhaust drain manually if required. For automatic drain, when the full drain level is reached, drain is automatically discharged.

\*2 Mass in ( ) is for optional metal bowl.

\*3 If a bracket is required, place an order separately.

\*4 Drainage can be discharged manually.

Min. working pressure is 1 bar. Air is exhausted with initially generated drain until pressure rising to 1 bar.

Also available with 0.3µm element. (F1000 series excluded)

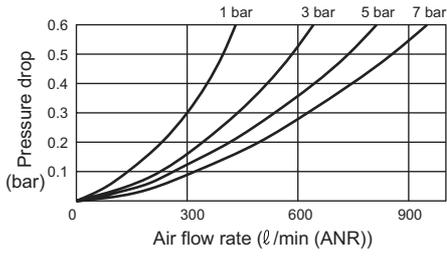
Add "Y" at the end of the item code.

ex. F3000-10G-FM1Y

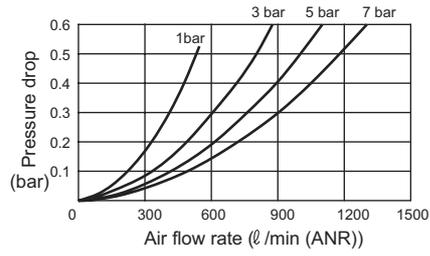
# Air Filter Series

## Flow characteristics

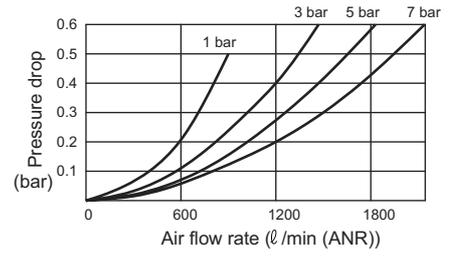
• F1000-6G



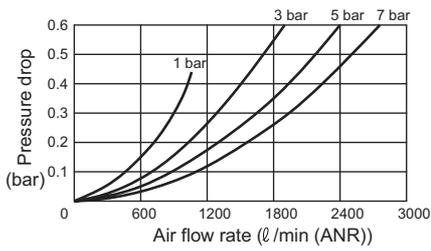
• F1000-8 G



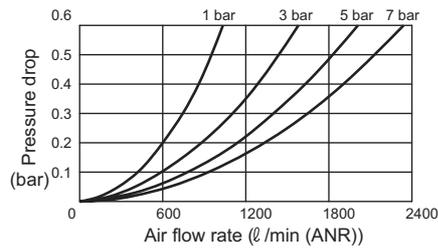
• F3000-8G



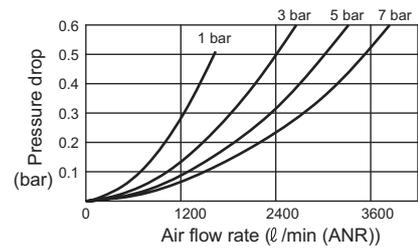
• F3000-10G



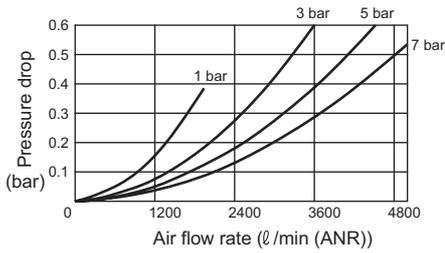
• F4000-8G



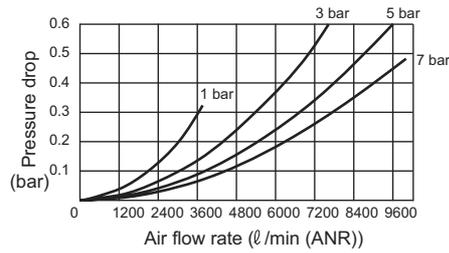
• F4000-10G



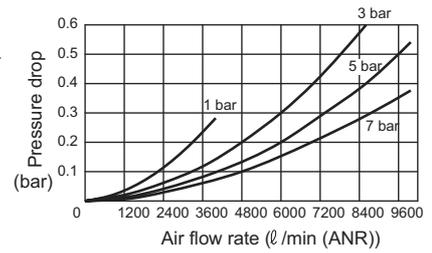
• F4000-15G



• F8000-20G



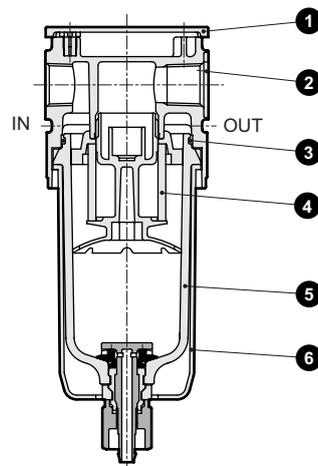
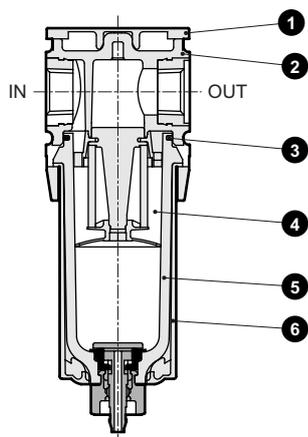
• F8000-25G



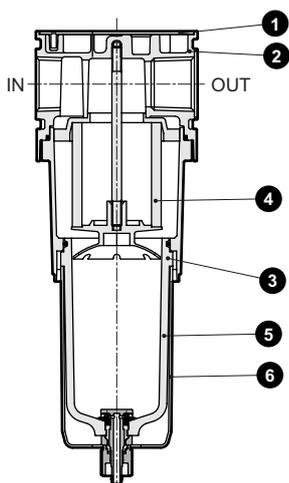
### Internal structure and parts list

• F1000

• F3000 / F4000



• F8000



No.	Part name	Material			
		F1000	F3000	F4000	F8000
1	Plate cover	ABS resin			
2	Body	Polyamide resin and steel	Aluminum ally die casting		
3	O ring	Note 1	Special nitrile rubber		
4	Element (5 $\mu\text{m}$ )	Note 2	Polyacetal resin polypropylene	Polypropylene	
	Element (0.3 $\mu\text{m}$ )		—	—	
5	Bowl assembly	Polycarbonate resin, polyacetal resin and urethane rubber resin			
6	Bowl guard	Polyamide resin	Polyamide resin and steel		

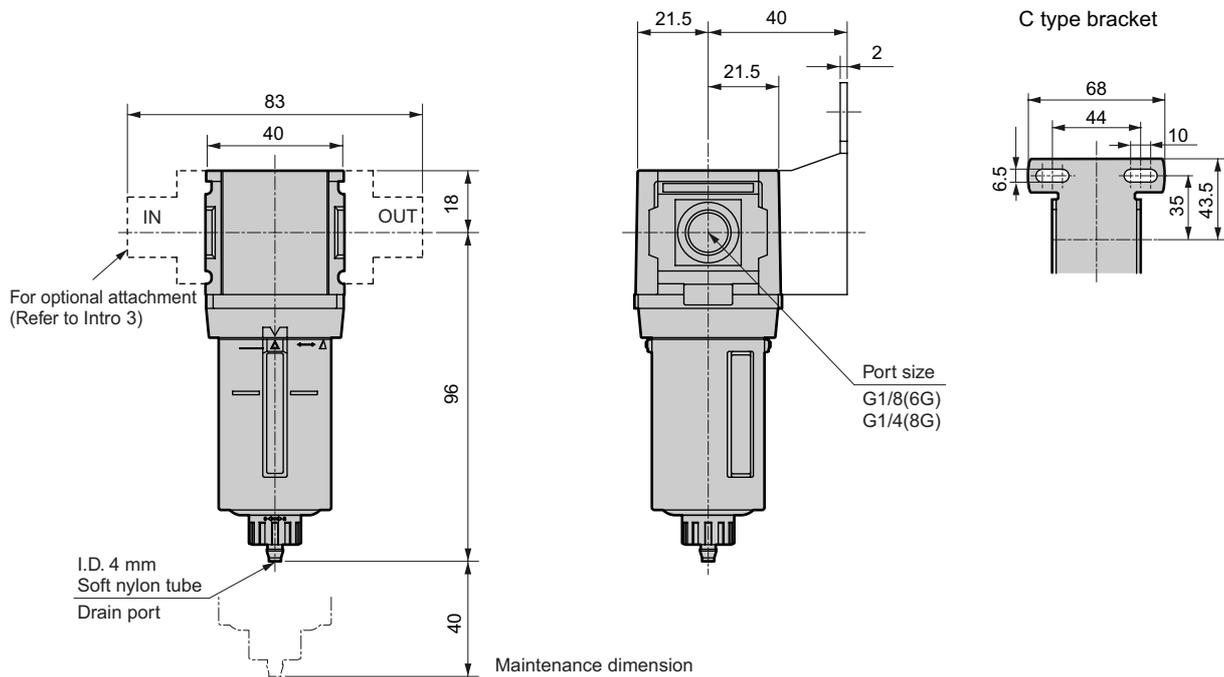
Note 1: O ring of F1000 has the special shape.

Note 2: An element assembly is provided for an element of F1000.

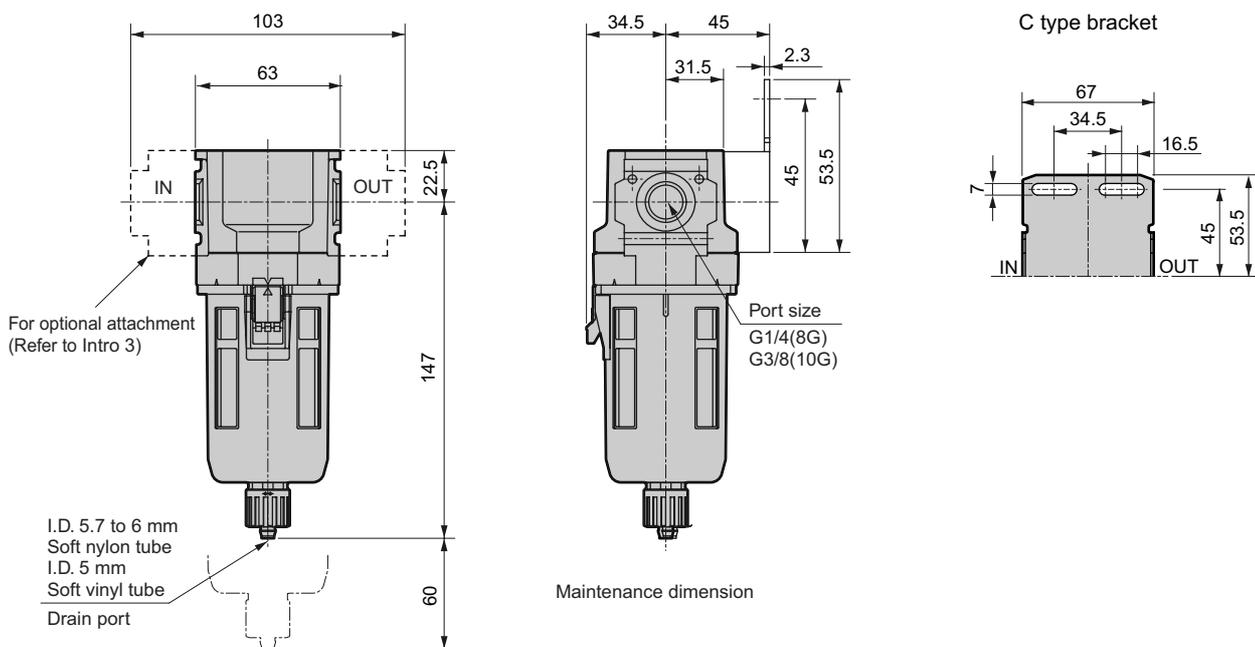
# Air Filter Series

## Dimensions

### • F1000



### • F3000

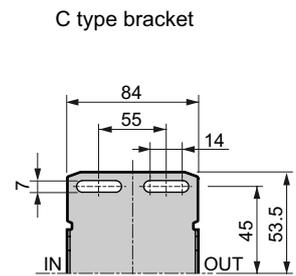
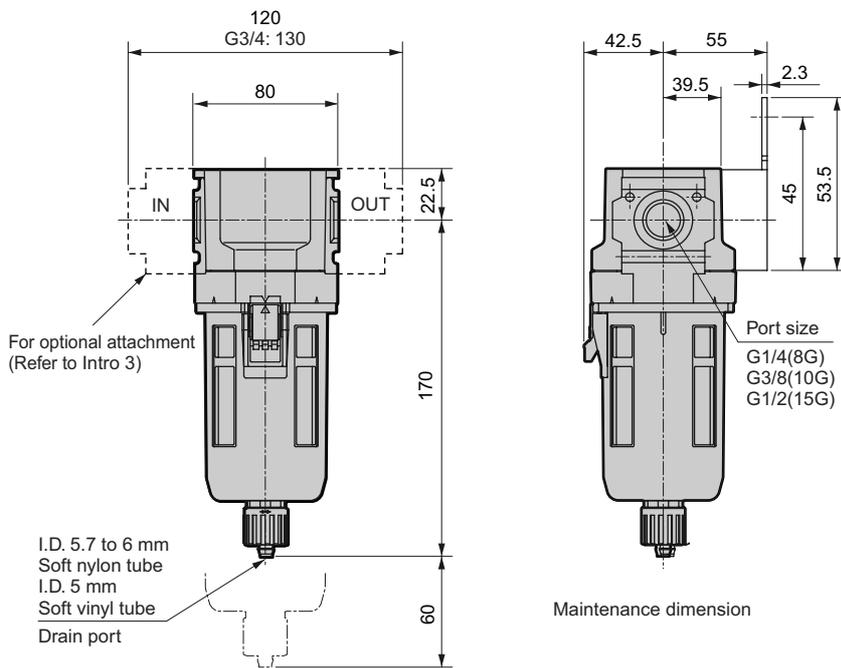


- Types with manual cock and automatic drain are same dimensions for a plastic bowl.

Note: C type bracket and piping adapter set can not be used together.

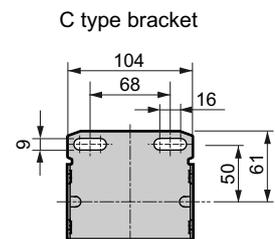
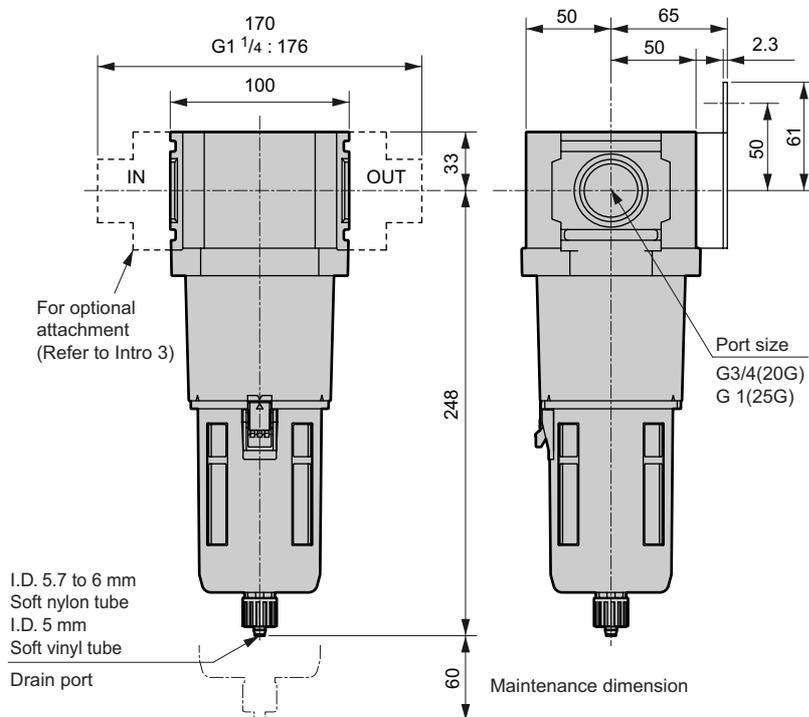
### Dimensions

• F4000



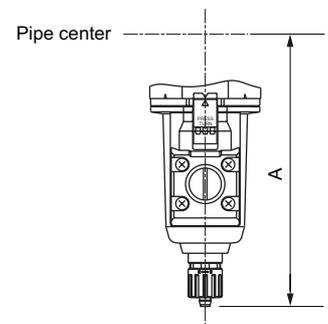
• Types with manual cock and automatic drain are same dimensions for a plastic bowl.

• F8000



### Optional dimensions

• Metal bowl (option)  
(F3000-4000-8000)



Model	A
F3000	154
F4000	177
F8000	255

• Types with manual cock and automatic drain are same dimensions for a plastic bowl.

Note: C type bracket and piping adapter set can not be used together.



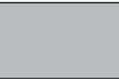
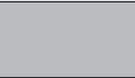
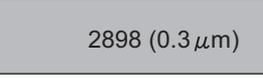
# Oil mist filter

M1000, M3000, M4000, M8000

Easily removing oil mist in compressed air to supply oil-free air.



Please see CKD website or Digital Catalogue CD for CAD data.

Model	Port size						Max. flow rate (references) ℓ/min (ANR)			Drain capacity *1 cm <sup>3</sup>	Product mass *2 kg
	G1/8	G1/4	G3/8	G1/2	G3/4	G 1	1	600	7500		
M1000 	●							150 (0.01 μm)		3	0.096
		●						150 (0.3 μm)			
M3000 		●						360 (0.01 μm)		45	0.28 (0.38)
			●					450 (0.3 μm)			
M4000 		●						825 (0.01 μm)		80	0.52 (0.62)
			●					1002 (0.3 μm)			
				●							
M8000 					●			2598 (0.01 μm)		80	1.35 (1.45)
						●		2898 (0.3 μm)			

The max. flow rate applies where primary pressure is 7 bar.

Descriptions	Specifications	
	0.01 μm element	0.3 μm element
Working fluid	Compressed air	
Max. working pressure	10 bar	
Withstanding pressure	15 bar	
Ambient temperature range	5 to 60°C	
Filtration rating	0.01 μm, (nominal)	0.3 μm
Secondary side oil content density	0.1mg/m <sup>3</sup>	1.0mg/m <sup>3</sup>
Mantle (element) service life	1 year (6,000 hours) or pressure drop 1 bar	

The secondary side oil content density applies where the primary side oil content density is 30mg/m<sup>3</sup>.

# Oil mist filter

Specification / Model No.

	Bracket model no. *3	Model no.							
		Standard (transparent plastic bowl)				Option (metal bowl type)			
		Manual drainage		Automatic drainage *4		Manual drainage		Automatic drainage *4	
		0.01 $\mu$ element	0.3 $\mu$ element	0.01 $\mu$ element	0.3 $\mu$ element	0.01 $\mu$ element	0.3 $\mu$ element	0.01 $\mu$ element	0.3 $\mu$ element
	B120	M1000-6G	M1000-6G-S	—	—	—	—	—	—
		M1000-8G	M1000-8G-S	—	—	—	—	—	—
	B320	M3000-8G	M3000-8G-S	M3000-8G-F1	M3000-8G-F1S	M3000-8G-M1	M3000-8G-M1S	M3000-8G-F1M1	M3000-8G-F1M1S
		M3000-10G	M3000-10G-S	M3000-10G-F1	M3000-10G-F1S	M3000-10G-M1	M3000-10G-M1S	M3000-10G-F1M1	M3000-10G-F1M1S
	B420	M4000-8G	M4000-8G-S	M4000-8G-F1	M4000-8G-F1S	M4000-8G-M1	M4000-8G-M1S	M4000-8G-F1M1	M4000-8G-F1M1S
		M4000-10G	M4000-10G-S	M4000-10G-F1	M4000-10G-F1S	M4000-10G-M1	M4000-10G-M1S	M4000-10G-F1M1	M4000-10G-F1M1S
		M4000-15G	M4000-15G-S	M4000-15G-F1	M4000-15G-F1S	M4000-15G-M1	M4000-15G-M1S	M4000-15G-F1M1	M4000-15G-F1M1S
	B820	M8000-20G	M8000-20G-S	M8000-20G-F1	M8000-20G-F1S	M8000-20G-M1	M8000-20G-M1S	M8000-20G-F1M1	M8000-20G-F1M1S
		M8000-25G	M8000-25G-S	M8000-25G-F1	M8000-25G-F1S	M8000-25G-M1	M8000-25G-M1S	M8000-25G-F1M1	M8000-25G-F1M1S

\*1 Applies for manual drainage. Exhaust drain manually if required. For automatic drain, when the full drain level is reached, drain is automatically discharged.

\*2 Mass in ( ) is for optional metal bowl.

\*3 If a bracket is required, place an order separately.

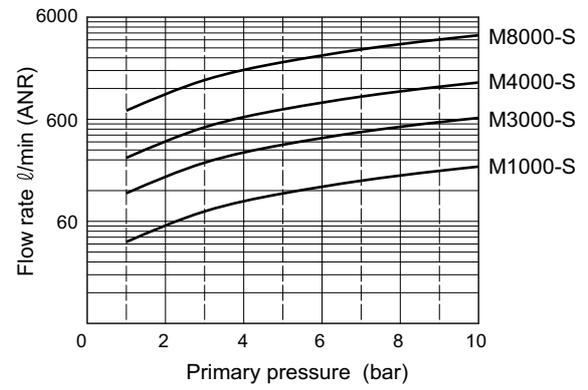
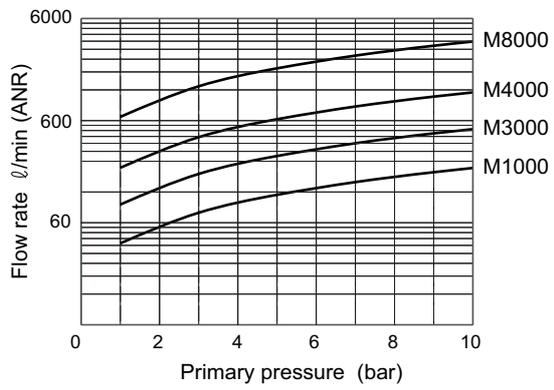
\*4 Drainage can be discharged manually. Min. working pressure is 1.5 bar.  
Min. working pressure is 1.5 bar.

# Oil Mist Filter Series

## Flow characteristics (max. flow rate)

• M \* 00

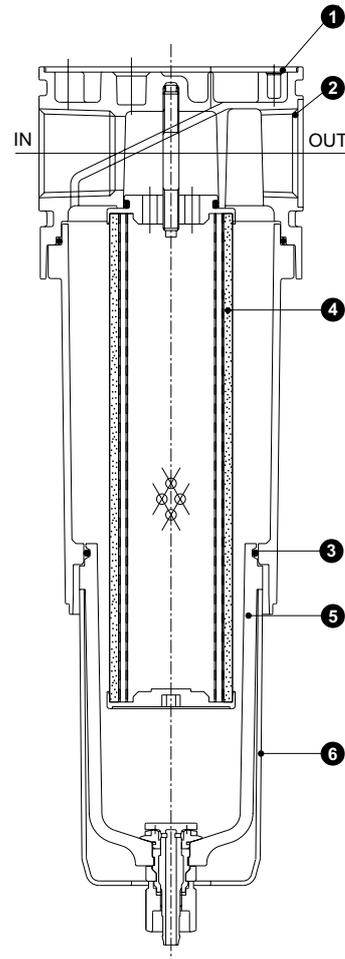
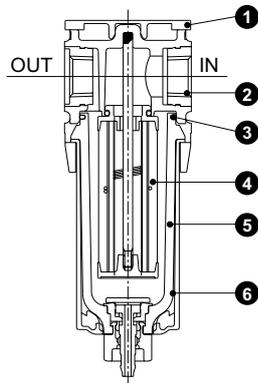
• M \* 00-S



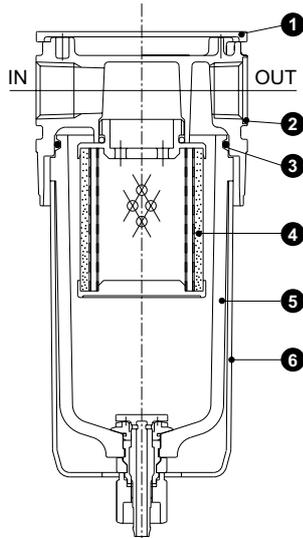
### Internal structure and parts list

• M1000

• M8000



• M3000 / M4000



No.	Part name	Material			
		M1000	M3000	M4000	M8000
1	Plate cover	ABS resin			
2	Body	Polyamide resin	Aluminum ally die casting		
3	O ring <small>Note 1</small>	Special nitrile rubber			
4	Mantle assembly	—			
5	Bowl assembly	Polycarbonate resin, polyacetal resin and urethane rubber resin			
6	Bowl guard	Polyamide resin	Polyamide resin		

Note 1: O ring of M1000 has the special shape.

# Oil Mist Filter Series

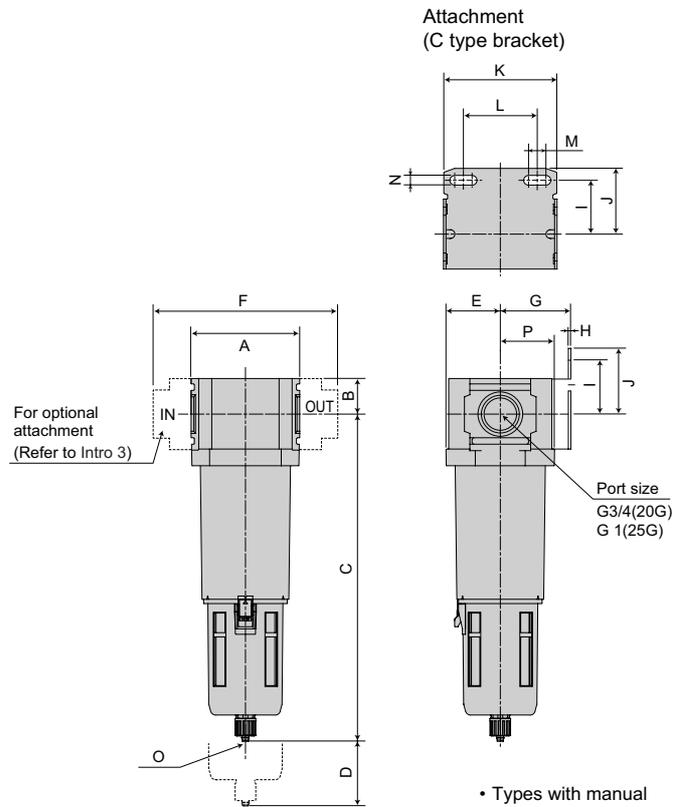
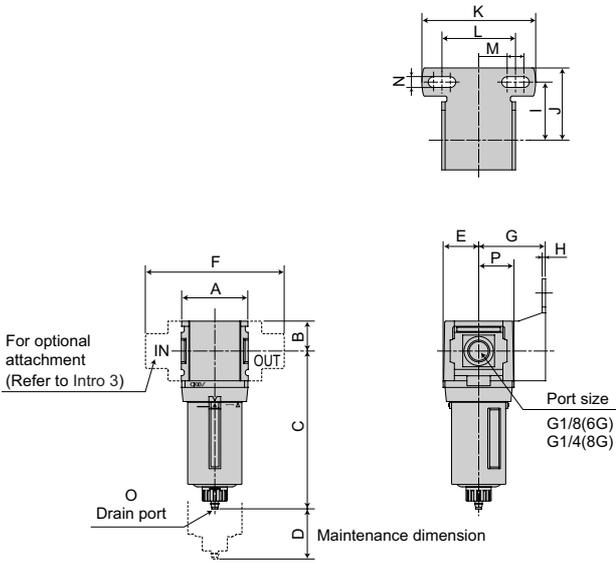
## Dimensions

• M1000

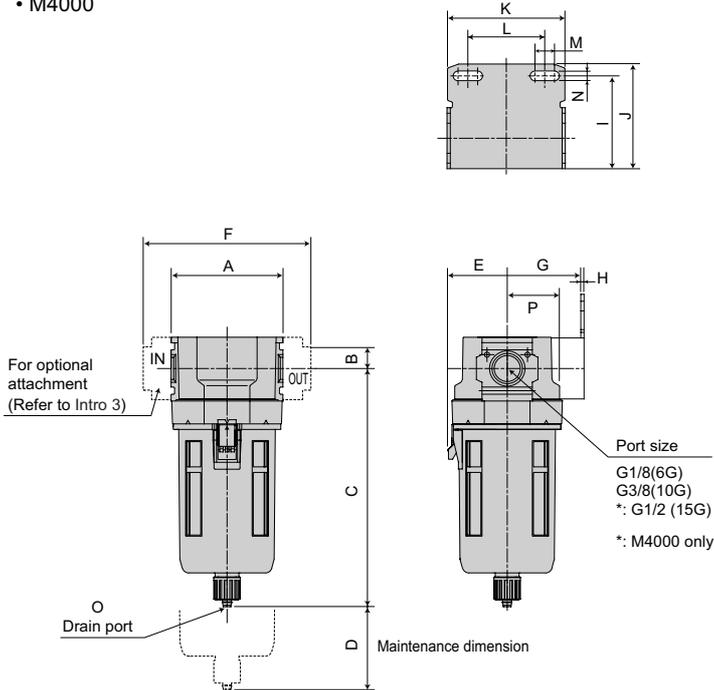
Attachment  
(C type bracket)

• M8000

Attachment  
(C type bracket)



• M3000  
• M4000



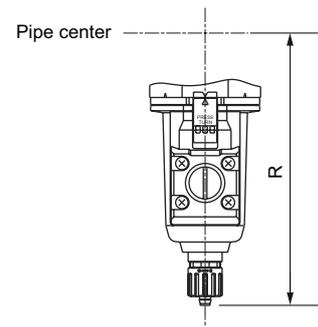
• Types with manual cock and automatic drain are same dimensions for a plastic bowl.

• Types with manual cock and automatic drain are same dimensions for a plastic bowl.

Note: C type bracket and piping adapter set can not be used together.

## Optional dimensions

• Metal bowl (option)  
(M3000-4000-8000)



Model	R
M3000	154
M4000	177
M8000	308

## Dimensions table

Model No.	A	B	C	D	E	F	Bracket dimension								O (barbed joint applicable tube)	P
							G	H	I	J	K	L	M	N		
M1000	40	18	96	60	21.5	83	40	2	35	43.5	68	44	10	6.4	4 mm dia. Soft nylon tube	21.5
M3000	63	22.5	147	60	34.5	103	45	2.3	45	53.5	67	34.5	16.5	7	Inner diameter 5, 7 to 8 dia.	31.5
M4000	80	22.5	170	60	42.5	120 G1/4 130	55	2.3	45	53.5	84	55	14	7	Soft nylon tube 5 mm dia.	37.5
M8000	100	33	301	200	50	170 G1/4 176	65	2.3	50	61	104	68	16	9	Soft vinyl tube	50



# Regulator

R1000, R3000, R4000, R8000

Supplying constant depressurized compressed air.



Please see CKD website or Digital Catalogue CD for CAD data.

Model	Port size						Max. flow rate (references) ℓ/min (ANR)			Product mass kg
	G1/8	G1/4	G3/8	G1/2	G3/4	G 1	1	600	7500	
R1000 	●						768			0.16
		●					1350			
R3000 		●					1998			0.45
			●				2598			
R4000 		●					2502			0.7
			●				4398			
				●			4998			
R8000 					●		13980			1.6
						●	10980			

The max. flow rate applies where the primary pressure is 7 bar, set pressure is 5 bar and pressure drop is 1 bar.

Descriptions	Specifications
Working fluid	Compressed air
Max. working pressure	10 bar
Withstanding pressure	15 bar
Ambient temperature range	5 to 60°C
Relief mechanism	Provided

	Bracket model no. *1	Model no.			
		Standard set pressure (0.5 bar to 8.5 bar)		Low pressure set pressure (0.5 bar to 3.5 bar)	
		0-10 bar gauge	No gauge *2	0-4 bar gauge	No gauge *2
	B120 (B130)	R1000-6G	R1000-6G-T	R1000-6G-L	R1000-6G-LT
		R1000-8G	R1000-8G-T	R1000-8G-L	R1000-8G-LT
	B320 (B330)	R3000-8G	R3000-8G-T	R3000-8G-L	R3000-8G-LT
		R3000-10G	R3000-10G-T	R3000-10G-L	R3000-10G-LT
	B420 (B430)	R4000-8G	R4000-8G-T	R4000-8G-L	R4000-8G-LT
		R4000-10G	R4000-10G-T	R4000-10G-L	R4000-10G-LT
		R4000-15G	R4000-15G-T	R4000-15G-L	R4000-15G-LT
	B820	R8000-20G	R8000-20G-T	R8000-20G-L	R8000-20G-LT
		R8000-25G	R8000-25G-T	R8000-25G-L	R8000-25G-LT

\*1 Model no. applies for C type bracket. Model no. in ( ) is for L type bracket. If a bracket is required, place an order separately.

\*2 With G1/4 (sealed) plug. The plug is removed and the direction of gasket is changed to open the port.

**Also available with non-relieving diaphragm.**

**Add "N" at the end of the item code.**

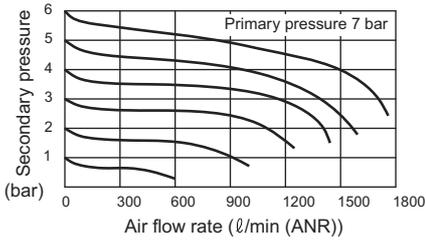
**When "T" symbol is included, indicate "N" before "T".**

ex. R3000-10G-LN, R3000-10G-LNT

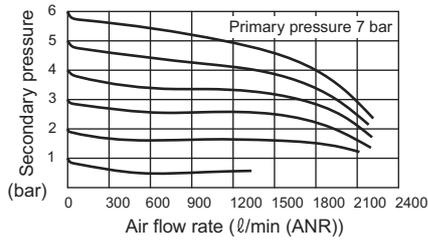
# Regulator Series

## Flow characteristics

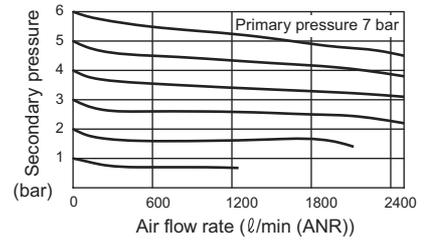
• R1000-6G



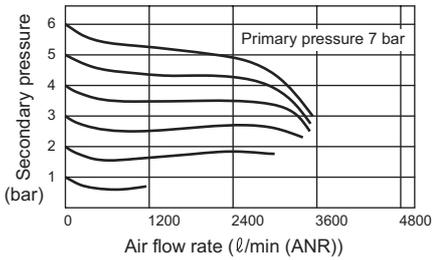
• R1000-8G



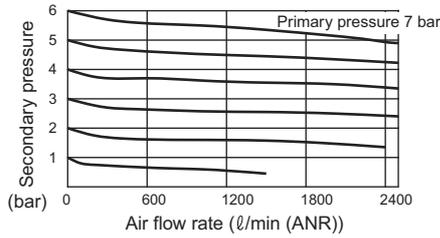
• R3000-8G



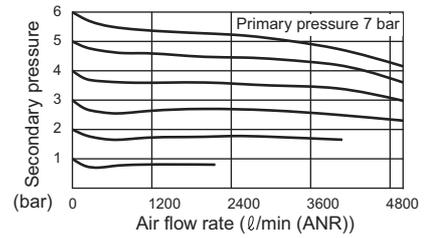
• R3000-10G



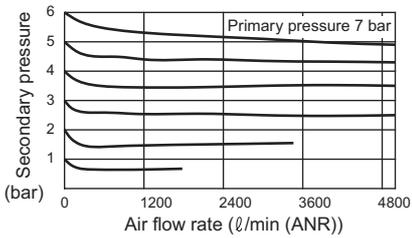
• R4000-8G



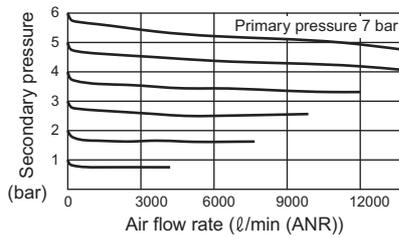
• R4000-10G



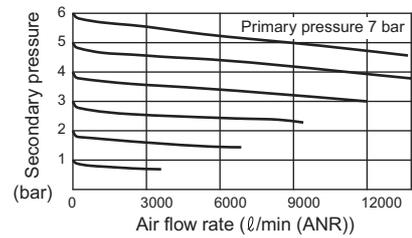
• R4000-15G



• R8000-20G

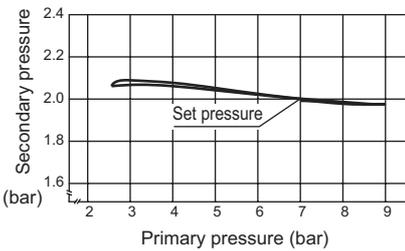


• R8000-25G

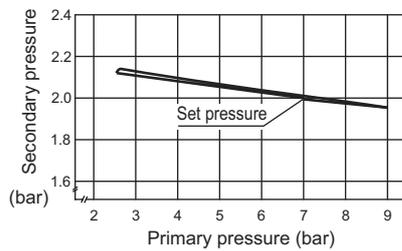


## Pressure characteristics

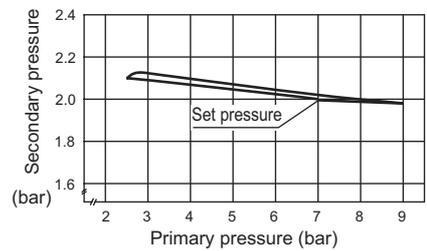
• R1000



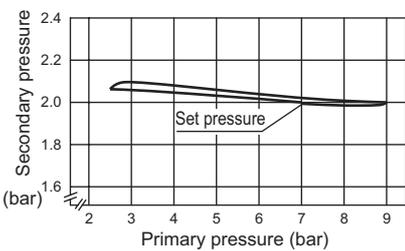
• R3000



• R4000



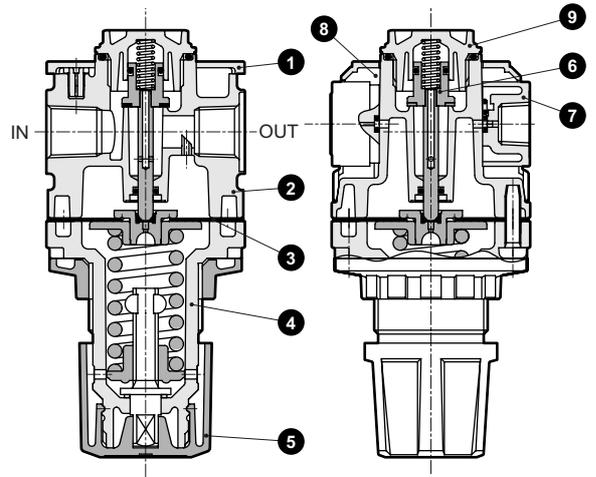
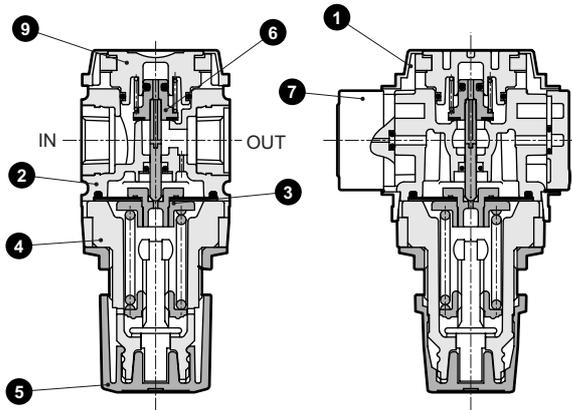
• R8000



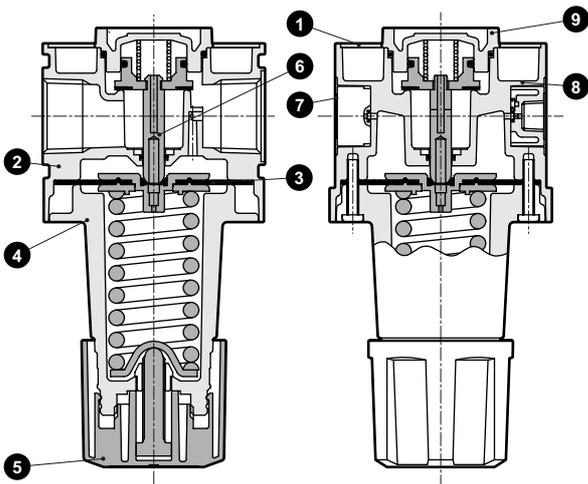
## Internal structure and parts list

• R1000

• R3000 / R4000



• R8000



No.	Part name	Material			
		R1000	R3000	R4000	R8000
1	Plate cover	ABS resin			
2	Body	Polyamide resin and steel	Aluminum ally die casting		
3	Diaphragm assembly	Polyacetal resin Nitrile rubber	Zinc alloy die-casting and nitrile rubber		
4	Cover	Polyamide resin	PBT resin		Aluminum ally die casting
5	Knob	Polyacetal resin			
6	Valve assembly	Brass and nitrile rubber			
7	Pressure gauge assembly	PBT resin, nitrile rubber, polyacetal resin, polycarbonate resin, brass and steel			
8	Gauge plug assembly	—	Polyamide resin, nitrile rubber and steel		
	Blanking plug assembly Note 1	PBT resin Nitrile rubber and copper	—		
9	Bottom plug	Polyacetal resin			Aluminum ally die casting

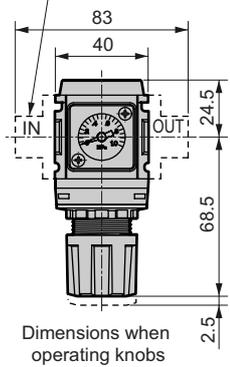
Note 1: A blanking plug is attached to R1000 standard type.

# Regulator Series

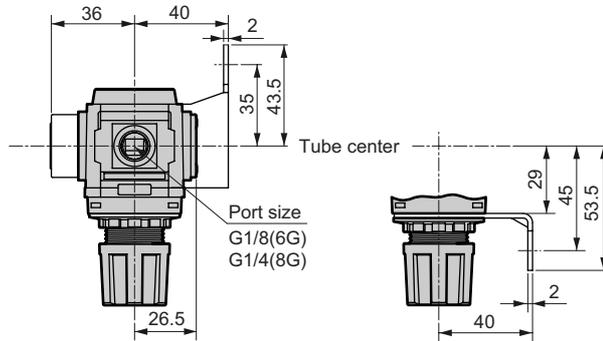
## Dimensions

• R1000

For optional attachment  
(Refer to Intro 3)



Dimensions when operating knobs

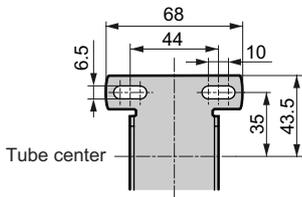


Panel cut dimension

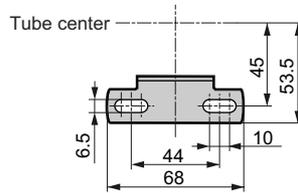


Panel plate thickness: Max. 6mm

Attachment (C type bracket)

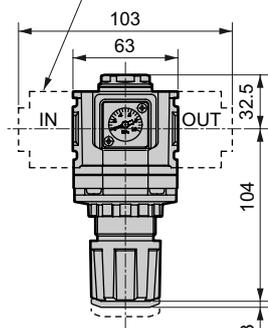


Attachment (L type bracket)

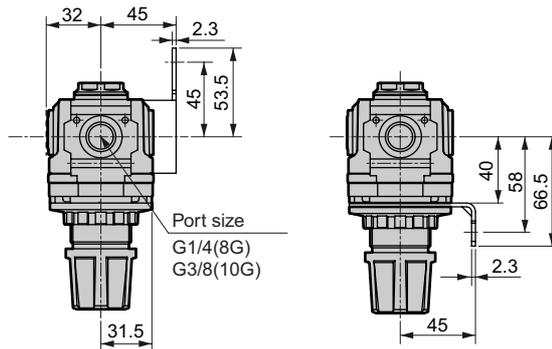


• R3000

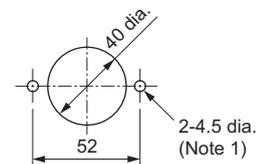
For optional attachment  
(Refer to Intro 3)



Dimensions when operating knobs

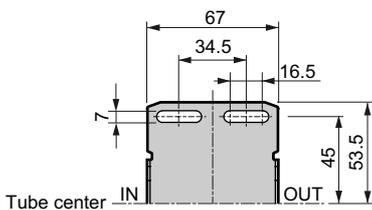


Panel cut dimension

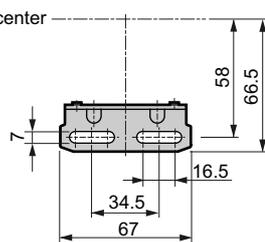


Panel plate thickness: Max. 7mm

Attachment (C type bracket)



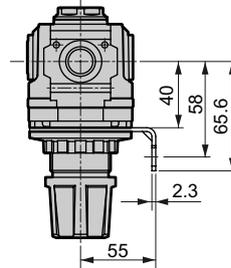
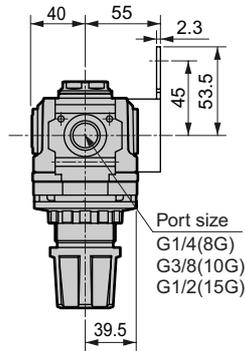
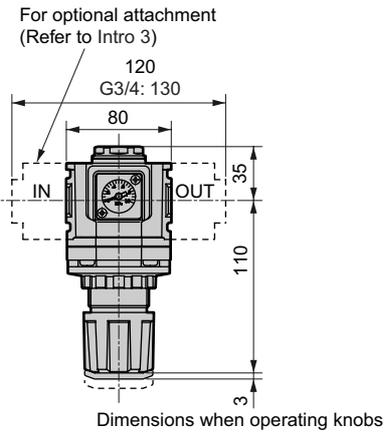
Attachment (L type bracket)



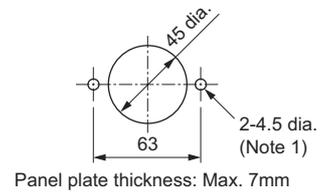
Note 1: Non-rotating fixing can be done by M4 screw. Screw length is to be plate thickness + 8mm or less, and can be screwed in without female thread machining.

## Dimensions

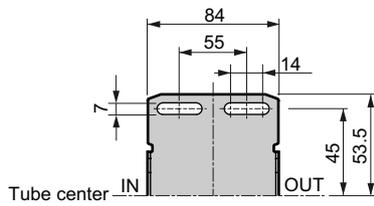
### • R4000



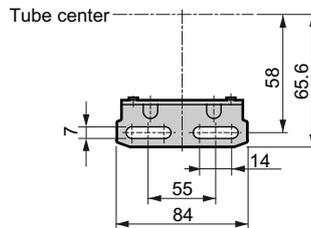
### Panel cut dimension



### Attachment (C type bracket)

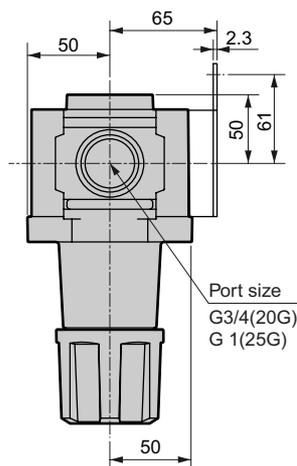
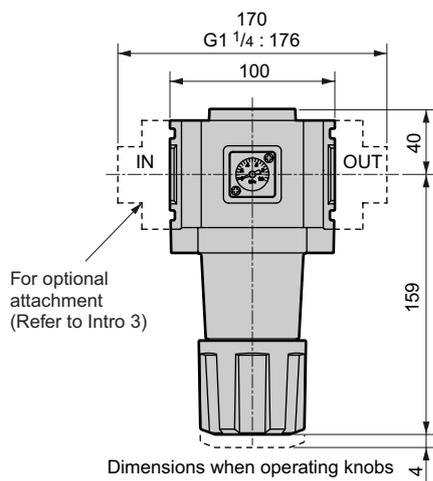


### Attachment (L type bracket)

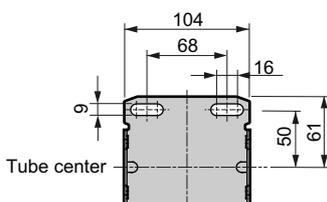


Note 1: Non-rotating fixing can be done by M4 screw. Screw length is to be plate thickness + 8mm or less, and can be screwed in without female thread machining.

### • R8000



### Attachment (C type bracket)





# Reverse Regulator

R1100, R3100, R4100, R8100

Supplying constant depressurized compressed air.

Reverse flow function integrated

Secondary pressure to primary side



Please see CKD website or Digital Catalogue CD for CAD data.

Model	Port size						Max. flow rate (references) ℓ/min (ANR)			Product mass kg
	G1/8	G1/4	G3/8	G1/2	G3/4	G 1	1	600	7500	
R1100 	●						768			0.16
		●					1350			
R3100 		●					1998			0.45
			●				2598			
R4100 		●					2502			0.7
			●				4398			
				●			4998			
R8100 					●		13980			1.6
						●	10980			

The max. flow rate applies where the primary pressure is 7 bar, set pressure is 5 bar and pressure drop is 1 bar.

Descriptions	Specifications
Working fluid	Compressed air
Max. working pressure	10 bar
Withstanding pressure	15 bar
Ambient temperature range	5 to 60°C
Relief mechanism	Provided

# Reverse Regulator

Specification / Model No.

	Bracket model no. *1	Model no.			
		Standard set pressure (0.5 bar to 8.5 bar)		Low pressure set pressure (0.5 bar to 3.5 bar)	
		0-10 bar gauge	No gauge *2	0-4 bar gauge	No gauge *2
	B120 (B130)	R1100-6G	R1100-6G-T	R1100-6G-L	R1100-6G-LT
		R1100-8G	R1100-8G-T	R1100-8G-L	R1100-8G-LT
	B320 (B330)	R3100-8G	R3100-8G-T	R3100-8G-L	R3100-8G-LT
		R3100-10G	R3100-10G-T	R3100-10G-L	R3100-10G-LT
	B420 (B430)	R4100-8G	R4100-8G-T	R4100-8G-L	R4100-8G-LT
		R4100-10G	R4100-10G-T	R4100-10G-L	R4100-10G-LT
		R4100-15G	R4100-15G-T	R4100-15G-L	R4100-15G-LT
	B820	R8100-20G	R8100-20G-T	R8100-20G-L	R8100-20G-LT
		R8100-25G	R8100-25G-T	R8100-25G-L	R8100-25G-LT

\*1 Model no. applies for C type bracket. Model no. in ( ) is for L type bracket. If a bracket is required, place an order separately.

\*2 With G1/4 (sealed) plug. The plug is removed and the direction of gasket is changed to open the port.

**Also available with non-relieving diaphragm.**

**Add "N" at the end of the item code.**

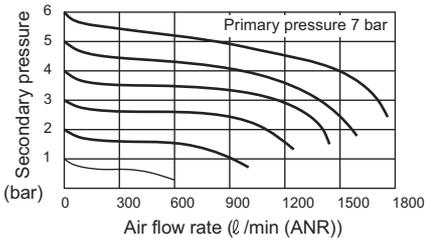
**When "T" symbol is included, indicate "N" before "T".**

ex. R3100-10G-LN, R3100-10G-LNT

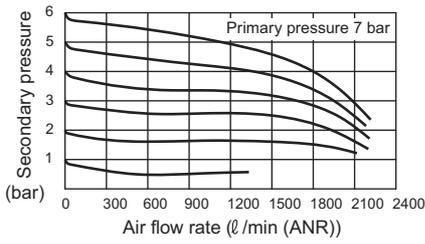
# Reverse Regulator Series

## Flow characteristics

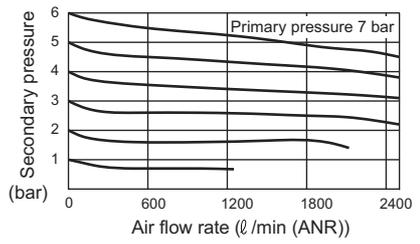
• R1100-6G



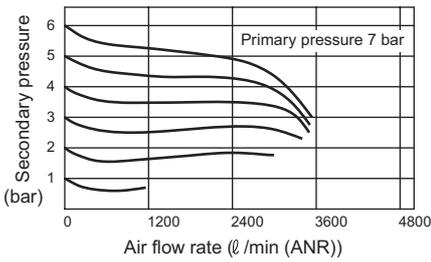
• R1100-8G



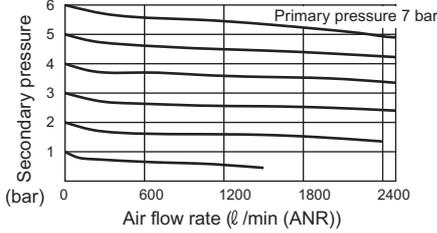
• R3100-8G



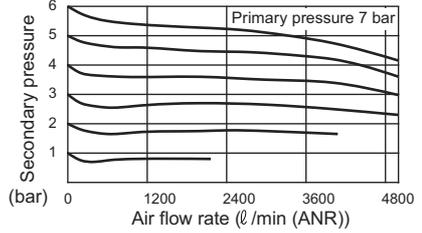
• R3100-10G



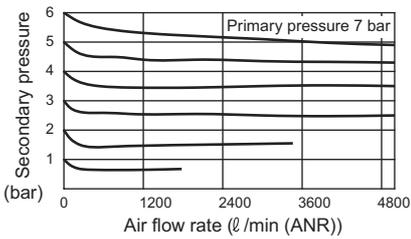
• R4100-8G



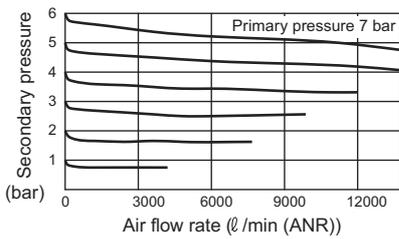
• R4100-10G



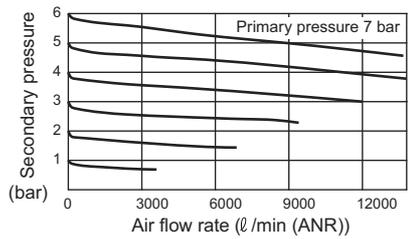
• R4100-15G



• R8100-20G

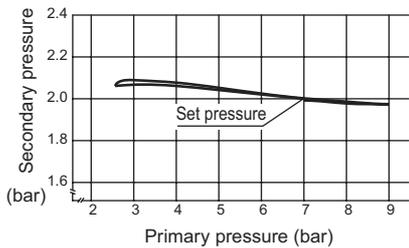


• R8100-25G

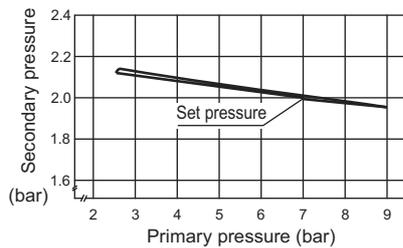


## Pressure characteristics

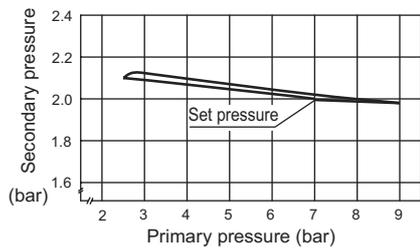
• R1100



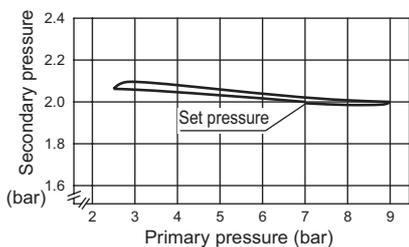
• R3100



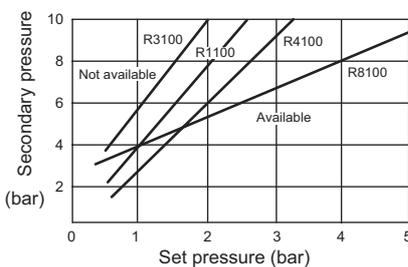
• R4100



• R8100



• Set pressure range for back pressure



Note: This product can not be used in the upper area of graph, while can be used in the lower area.

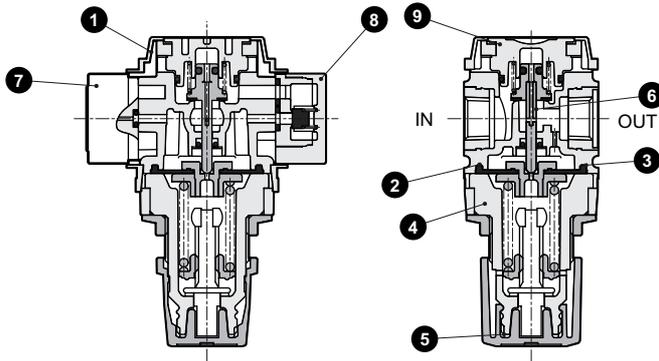
E.g: For model R4100, if the set pressure is 2 bar, and secondary side back pressure is 6 bar and over, the secondary pressure never achieves to the primary side.

# Reverse Regulator Series

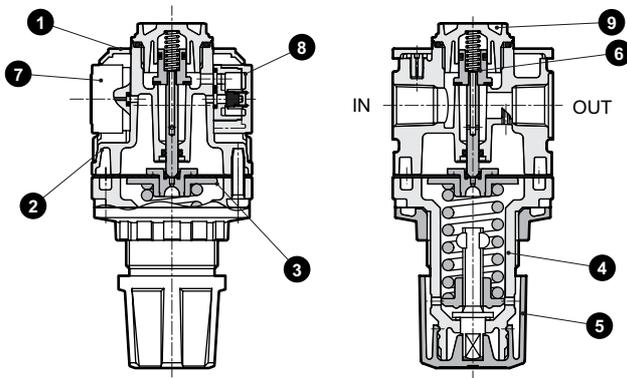
Internal structure and parts list

## Internal structure and parts list

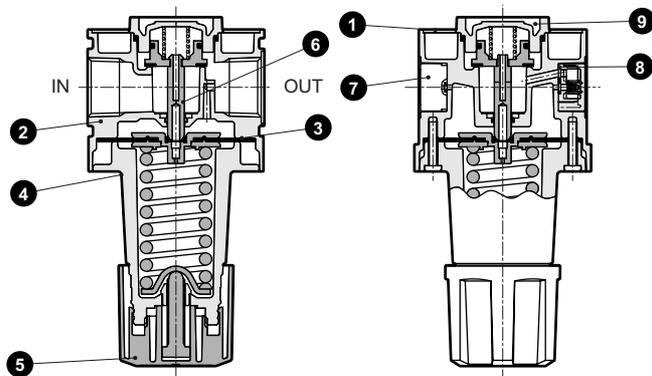
• R1100



• R3100 / R4100



• R8100

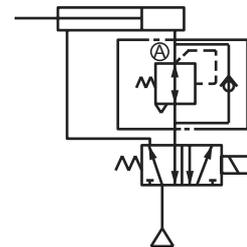


## Functional explanation

If the primary pressure is applied from IN side, since the check valve closes due to the primary pressure and spring load, this regulator functions as a normal regulator. However, if the primary pressure is exhausted by a switching valve such as shut-off valve, etc., the check valve is opened immediately due to the secondary pressure, then the pressure drops by exhausting the pressure in the diaphragm room. The diagram is lowered by the adjusting spring, and the main valve will open to exhaust the air to OUT side.

### • Circuit diagram

When head side and rod side pressure of a cylinder differ.



Note: If the primary pressure is released, the back pressure for the set pressure of regulator is not to be greater than Graph A; "set pressure range for back pressure".

No.	Part name	Material			
		R1100	R3100	R4100	R8100
1	Plate cover	ABS resin			
2	Body	Polyamide resin and steel	Aluminum ally die casting		
3	Diaphragm assembly	Polyacetal resin Nitrile rubber	Zinc alloy die-casting and nitrile rubber		
4	Cover	Polyamide resin	PBT resin		Aluminum ally die casting
5	Knob	Polyacetal resin			
6	Valve assembly	Brass and nitrile rubber			
7	Pressure gauge assembly	PBT resin, nitrile rubber, polyacetal resin, polycarbonate resin, brass and copper			
8	Check valve total assembly	PBT resin, nitrile rubber, stainless steel wire and steel			
9	Bottom plug	Polyacetal resin			Aluminum ally die casting

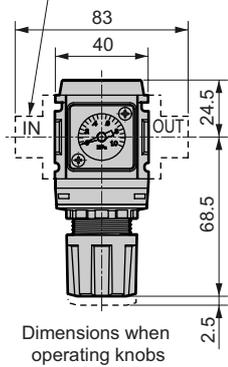
Note 1: Refer to Page 62 for repair kits.

# Reverse Regulator Series

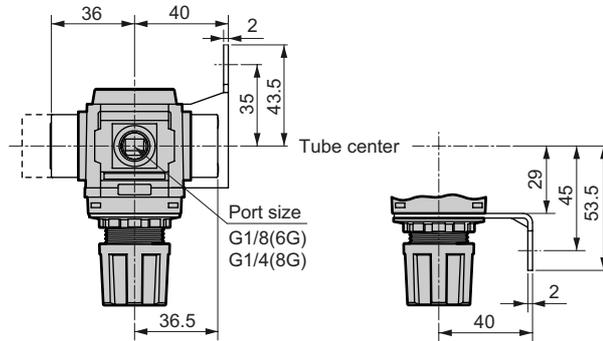
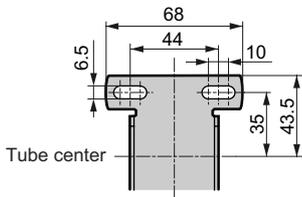
## Dimensions

• R1100

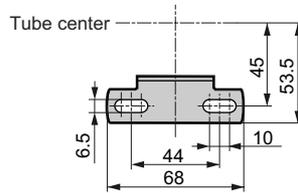
For optional attachment  
(Refer to Intro 3)



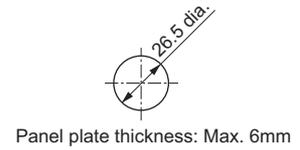
Attachment (C type bracket)



Attachment (L type bracket)

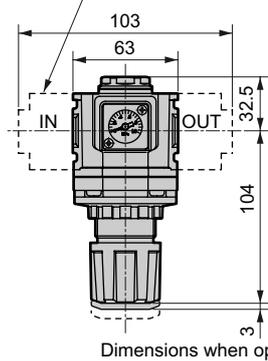


Panel cut dimension

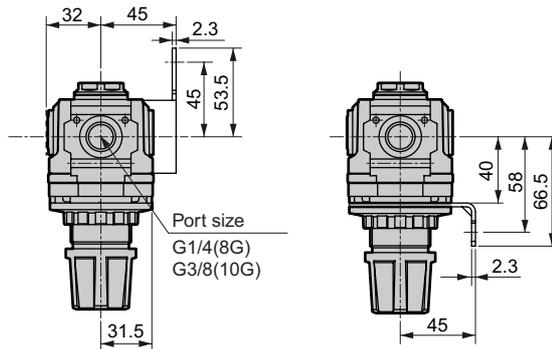
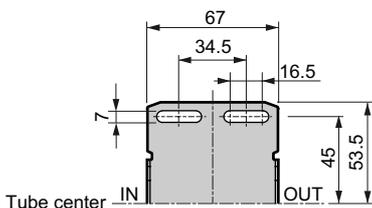


• R3100

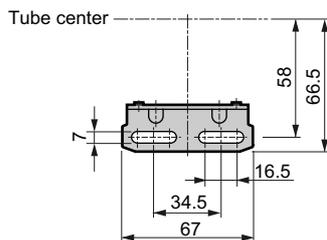
For optional attachment  
(Refer to Intro 3)



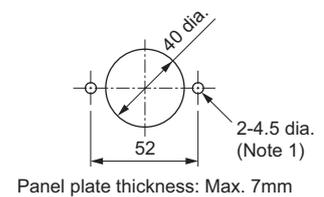
Attachment (C type bracket)



Attachment (L type bracket)



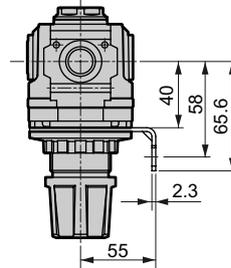
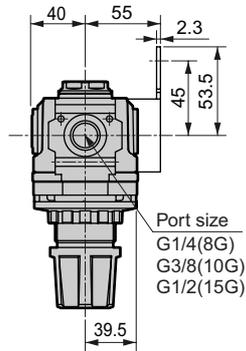
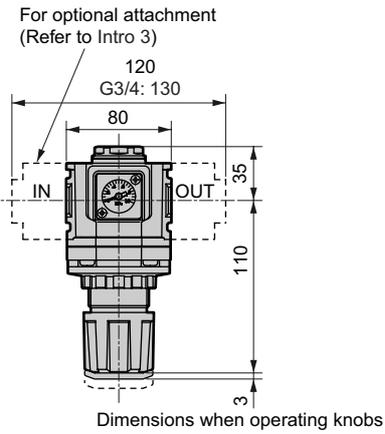
Panel cut dimension



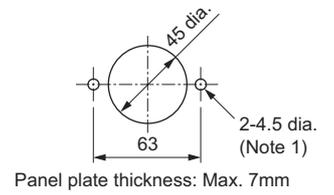
Note 1: Non-rotating fixing can be done by M4 screw. Screw length is to be plate thickness + 8mm or less, and can be screwed in without female thread machining.

### Dimensions

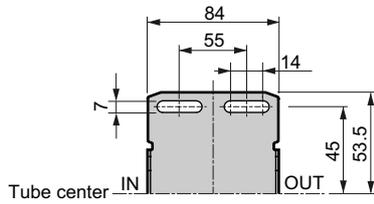
• R4100



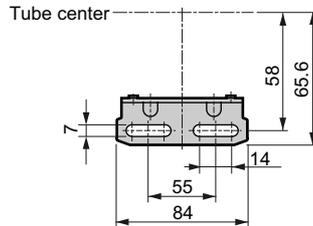
Panel cut dimension



Attachment (C type bracket)

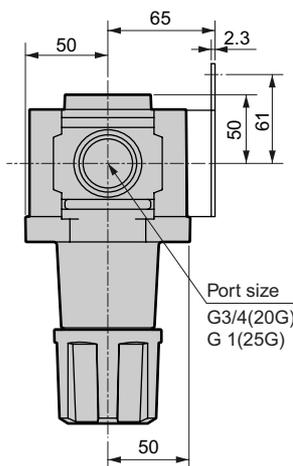
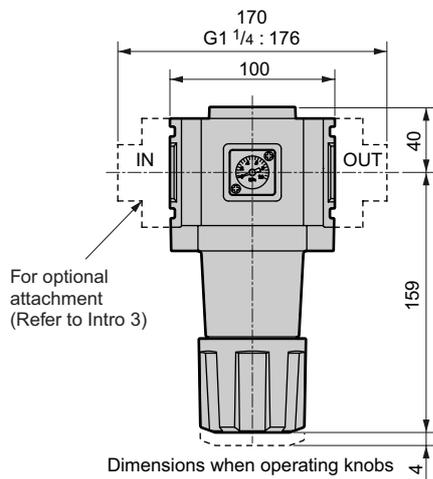


Attachment (L type bracket)

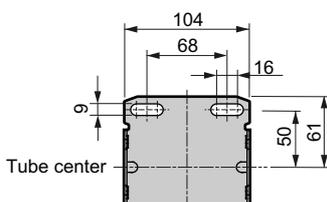


Note 1: Non-rotating fixing can be done by M4 screw. Screw length is to be plate thickness + 8mm or less, and can be screwed in without female thread machining.

• R8100



Attachment (C type bracket)





# Lubricator

L1000, L3000, L4000, L8000

Supplying oil mist to compressed air for pneumatics actuators.



Please see CKD website or Digital Catalogue CD for CAD data.

Model	Port size						Max. flow rate (references) ℓ/min (ANR)			Min. dosing air flow rate *1 ℓ/min (ANR)
	G1/8	G1/4	G3/8	G1/2	G3/4	G 1	1	600	7500	
L1000 	●						540			15
		●					702			
L3000 		●					1098			34.8
			●				2250			
L4000 		●					1002			64.8
			●				1698			
				●			2700			
L8000 					●		6300			64.8
						●	10020			

The max. flow rate applies where primary pressure is 5 bar and pressure drop is 0.3 bar.

Descriptions	Specifications
Working fluid	Compressed air
Max. working pressure	10 bar
Withstanding pressure	15 bar
Ambient temperature range	5 to 60°C
Lubricant	Turbine oil Class 1, ISO VG32 (spindle oil not available)

	Oil capacity cm <sup>3</sup>	Product mass *2 kg	Bracket model no. *3	Model	
				Standard (transparent plastic bowl)	Option (metal bowl type)
	20	0.1	B120	<b>L1000-6G</b>	—
				<b>L1000-8G</b>	—
	85	0.28 (0.38)	B320	<b>L3000-8G</b>	L3000-8G-CM1
				<b>L3000-10G</b>	L3000-10G-CM1
	170	0.45 (0.55)	B420	<b>L4000-8G</b>	L4000-8G-CM1
				<b>L4000-10G</b>	L4000-10G-CM1
				<b>L4000-15G</b>	L4000-15G-CM1
	170 (MAX 360)	1.40 (1.5)	B820	<b>L8000-20G</b>	L8000-20G-CM1
				<b>L8000-25G</b>	L8000-25G-CM1

\*1 Flow rate applies where primary pressure is 5 bar and 5 drops of turbine oil per min. is dosed.

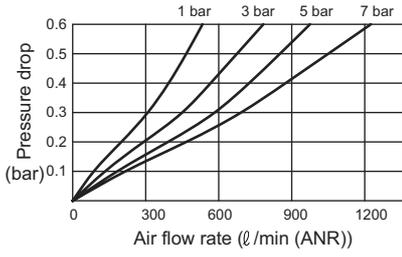
\*2 Mass in ( ) is for optional metal bowl.

\*3 If a bracket is required, place an order separately.

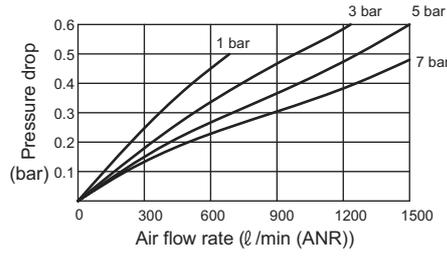
# Lubricator Series

## Flow characteristics

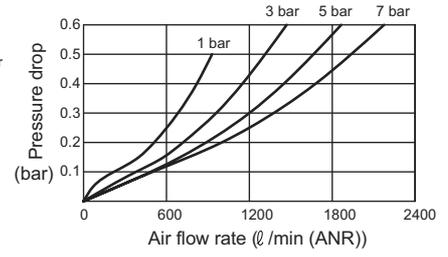
• L1000-6G



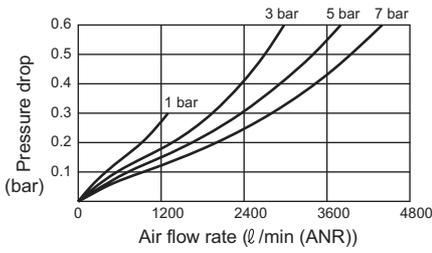
• L1000-8G



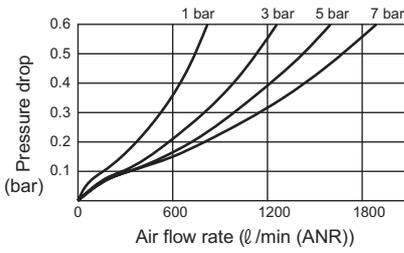
• L3000-8G



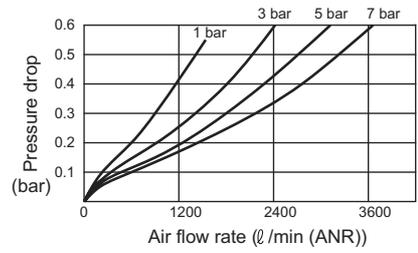
• L3000-10G



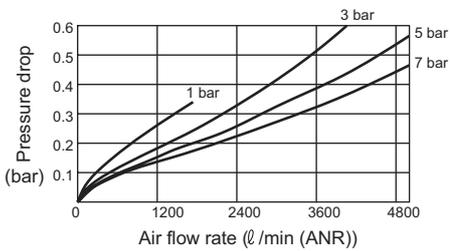
• L4000-8G



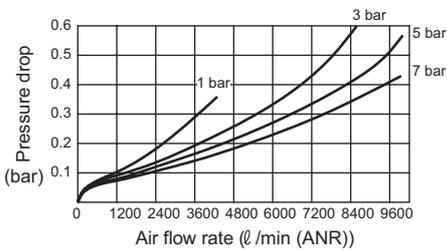
• L4000-10G



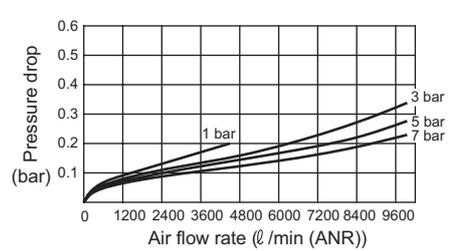
• L4000-15G



• L8000-20G

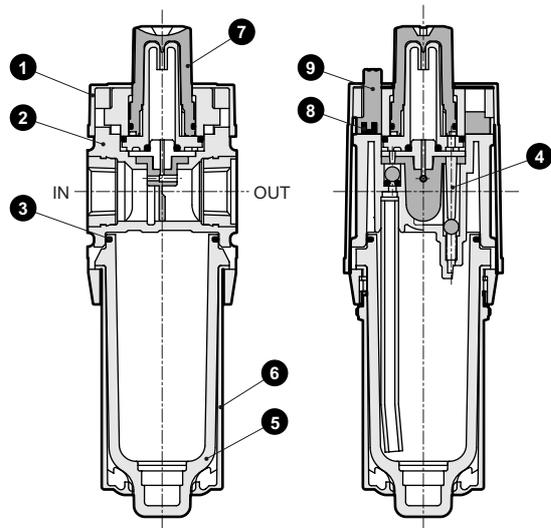


• L8000-25G

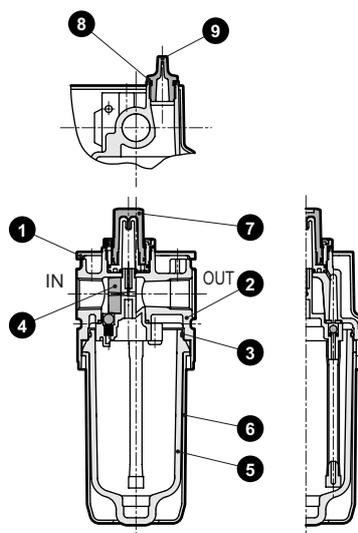


## Internal structure and parts list

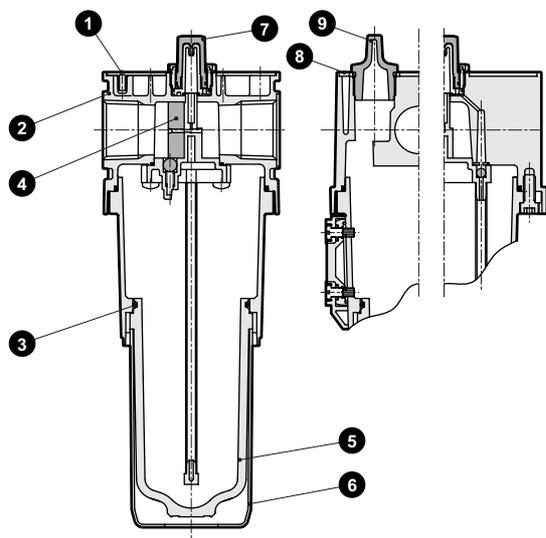
• L1000



• L3000 / L4000



• L8000



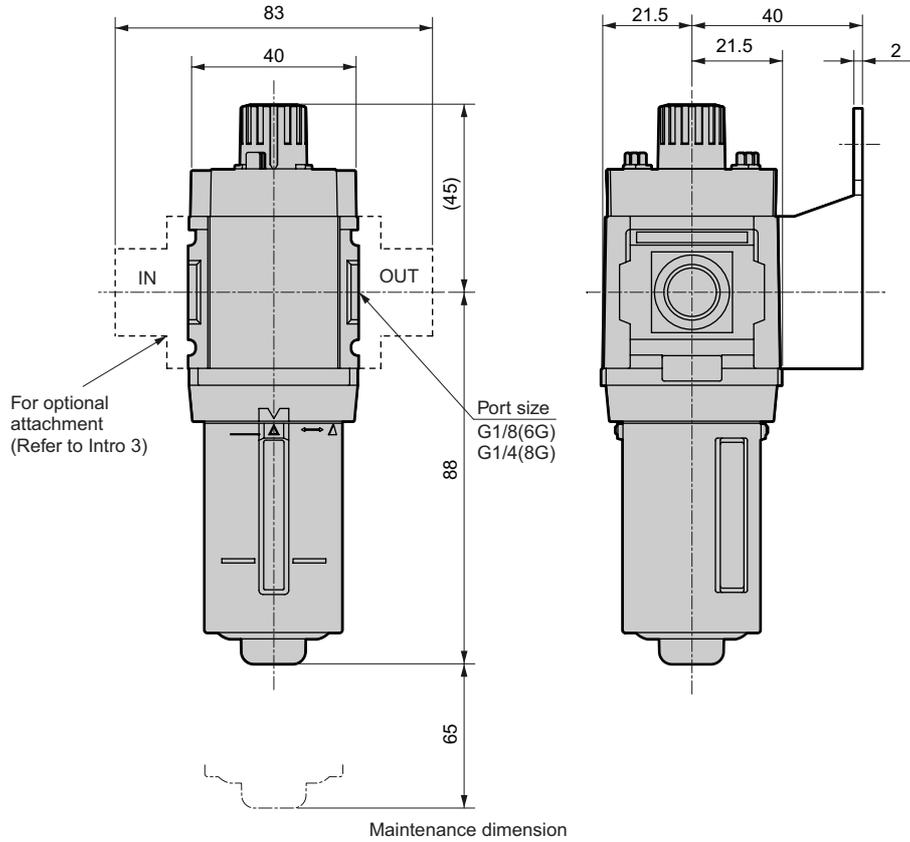
No.	Part name	Material			
		L1000	L3000	L4000	L8000
1	Plate cover	ABS resin			
2	Body	Polyamide resin and steel	Aluminum ally die casting		
3	O ring	Note 1	Special nitrile rubber		
4	Flow guide	Urethane rubber resin		Nitrile rubber	
5	Bowl	Polycarbonate resin			
6	Bowl guard	Polyamide resin	Polyamide resin and steel		
7	Adjusting dome	Polycarbonate resin			
8	O ring	Nitrile rubber			
9	Filling plug	Polyacetal resin			

Note 1: O ring of L1000 has the special shape.

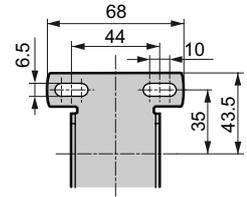
# Lubricator Series

## Dimensions

### • L1000

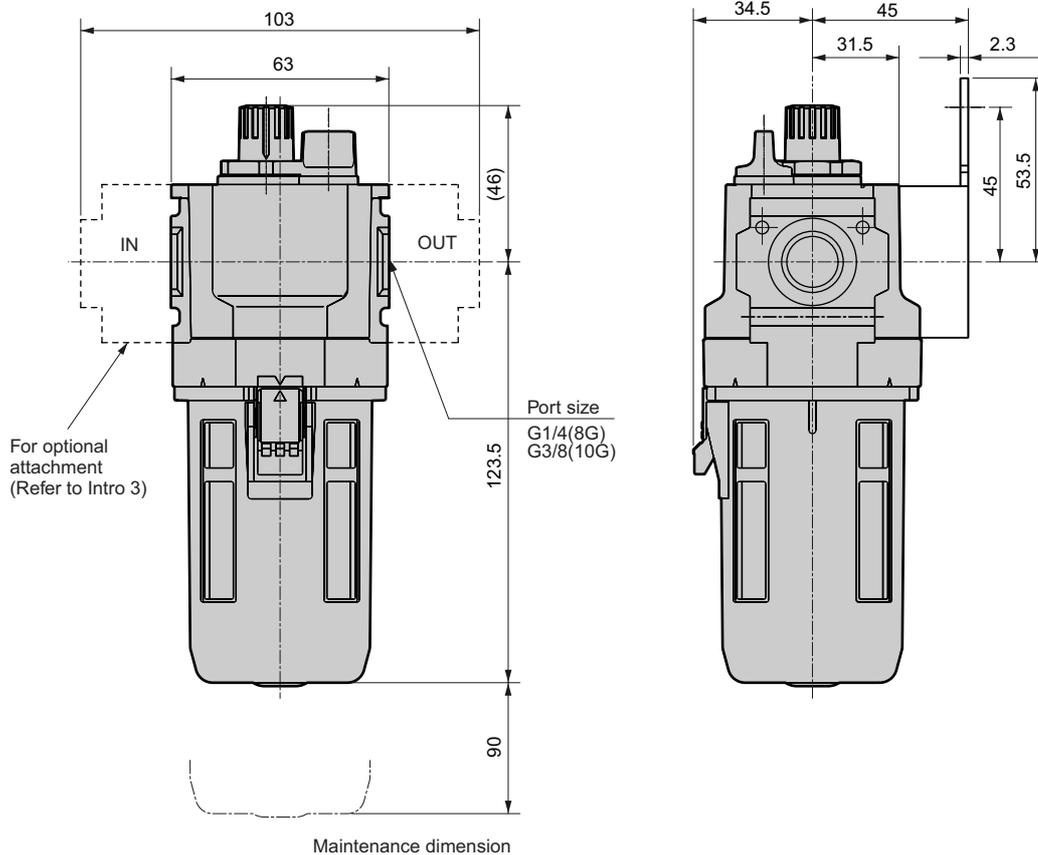


### Attachment (C type bracket)

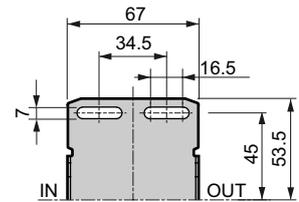


Note: In attachments, C type bracket and piping adapter set can not be used together.

### • L3000



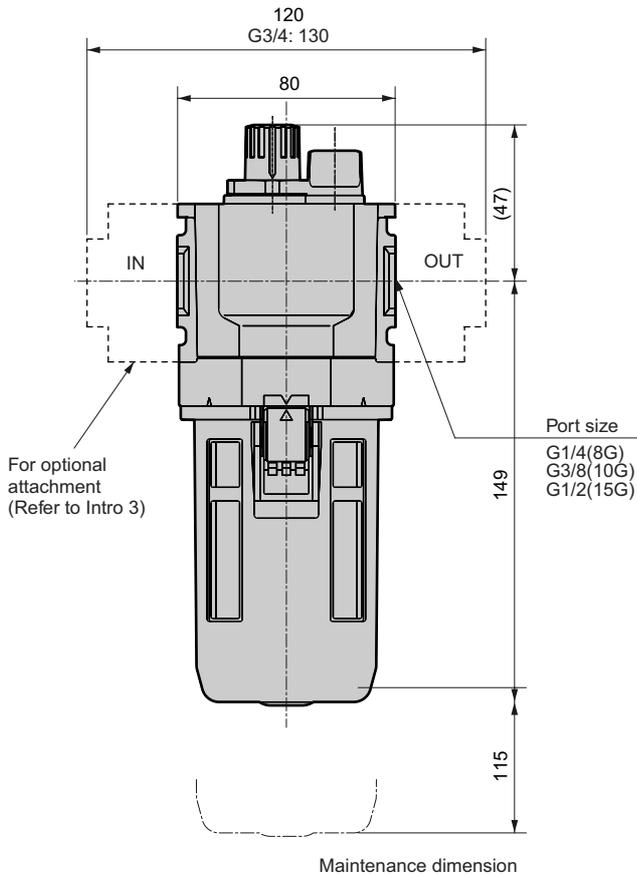
### Attachment (C type bracket)



Note: In attachments, C type bracket and piping adapter set can not be used together.

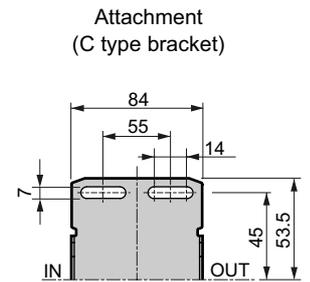
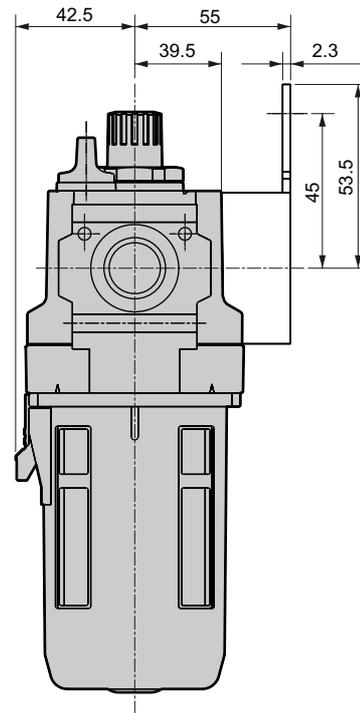
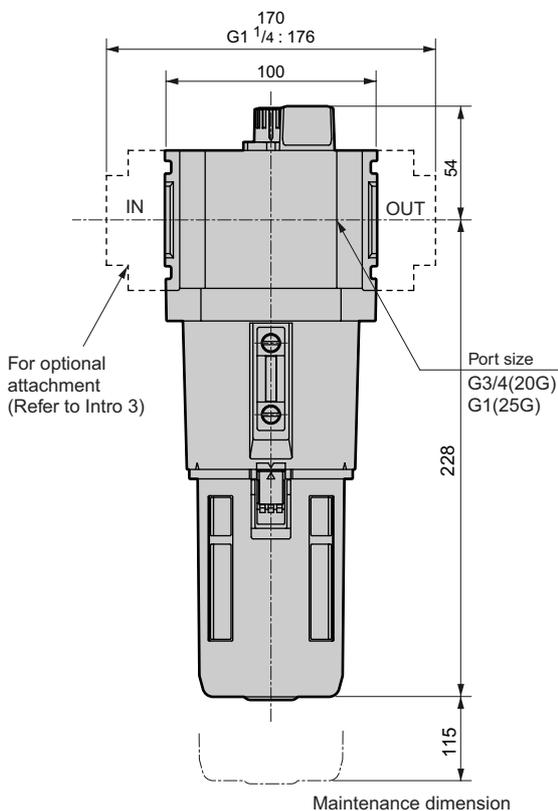
### Dimensions

• L4000



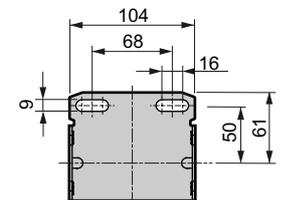
Note: In attachments, C type bracket and piping adapter set can not be used together.

• L8000



Note: In attachments, C type bracket and piping adapter set can not be used together.

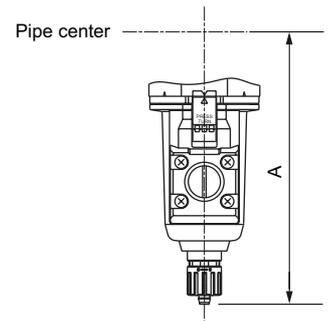
Attachment  
(C type bracket)



Note: In attachments, C type bracket and piping adapter set can not be used together.

### Optional dimensions

- Metal bowl (option)  
(L3000-4000-8000)



Model	A
L3000	154
L4000	177
L8000	255



Shut-off valve

# V1000/V3000 Series

Enabling to exhaust by 1 action. Appropriate for preventing accidents caused by residual pressure in pneumatics lines.

Port size: G1/8 to G1/2



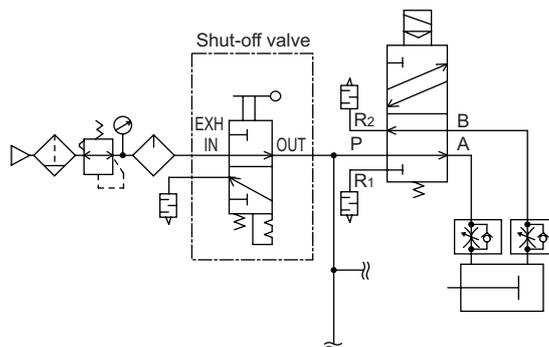
Please see CKD website or Digital Catalogue CD for CAD data.

## Specifications

Descriptions	V1000		V3000			
Appearance						
Descriptions	V1000-6	V1000-8	V3000-8	V3000-10	V3000-15	
Working fluid	Compressed air					
Max. working pressure Bar	10					
Withstanding pressure Bar	15					
Fluid temperature °C	5 to 60					
Operation lever switchover angle	90°					
Operating force	Pushing force N	18		80		
	Torque N·m	0.5		2		
Valve section leakage cm <sup>3</sup> /min (ANR)	10					
External leakage cm <sup>3</sup> /min (ANR)	10					
Port size (Rc)	IN-OUT	1/8	1/4	1/4	3/8	1/2
	EXH	1/8		3/8		
Product mass kg	0.168		0.25			
Effective sectional area (mm <sup>2</sup> )	IN / OUT	15	18	40	70	85
	OUT / EXH	5		40	50	50

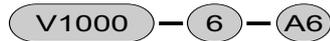
## Applications

Explanation: When a solenoid valve and an air cylinder, etc. are repaired and adjusted, to ensure the safety, exhaust compressed air in the pneumatic circuit with a shut-off valve before starting work.

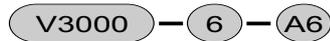


### How to order

- F.R.L. 1000 series



- F.R.L. 3000 and 4000 series



A Model

B Port size

C Attachment  
Note 1

		A Model	
		V1000	V3000
Symbol	Descriptions		
B Port size			
6	Rc1/8	●	
8	Rc1/4	●	●
10	Rc3/8		●
15	Rc1/2		●
C Attachment (attached)			
A6	Rc1/8 piping adapter set	●	
A8	Rc1/4 piping adapter set	●	●
A10	Rc3/8 piping adapter set	●	●
A15	Rc1/2 piping adapter set		●
A20	Rc3/4 piping adapter set		●
B	C type bracket	●	●

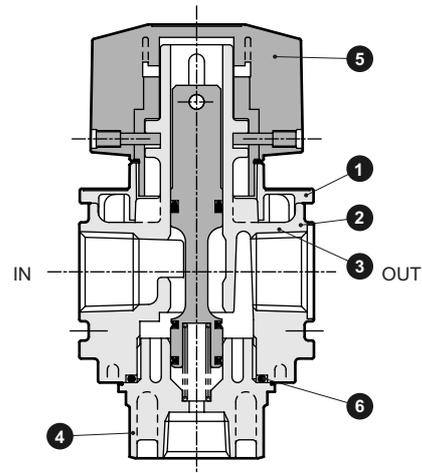
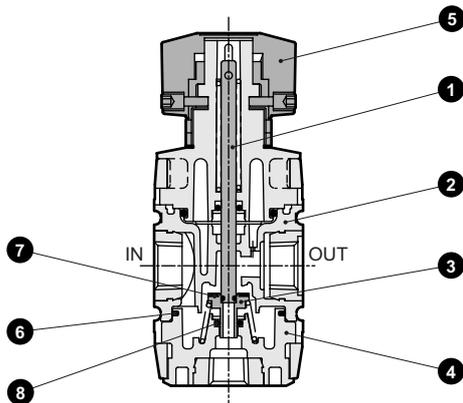
### ⚠ Note on model No. selection

Note 1: A piping adaptor set A\*00-\*\* (refer to page 586) is attached.  
A piping adapter set and C type bracket can not be used together.

## Internal structure and parts list

• V1000

• V3000

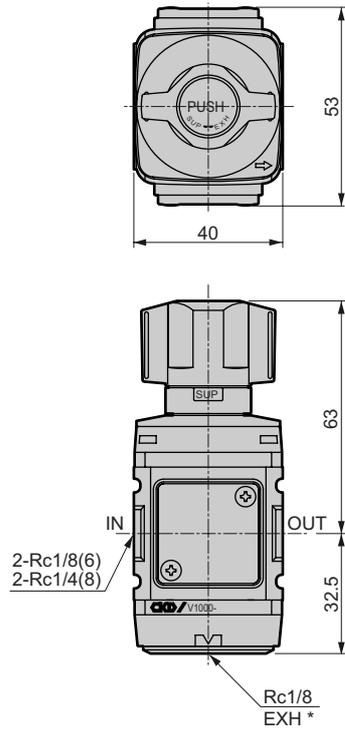


No.	Part name	Material
1	Spool	Steel
2	Body assembly	Polyamide resin and steel
3	Valve element	Brass and nitrile rubber
4	Bottom plug	Polyamide resin and steel
5	Knob	Polyacetal resin
6	Packing seal	Nitrile rubber
7	O ring	Nitrile rubber
8	O ring	Nitrile rubber

No.	Part name	Material
1	Blade cover	ABS resin
2	Body	Aluminum ally die casting
3	Spool assembly	Aluminum alloy urethane rubber resin
4	Bottom plug	PBT resin
5	Knob	Polyacetal resin
6	O ring	Nitrile rubber

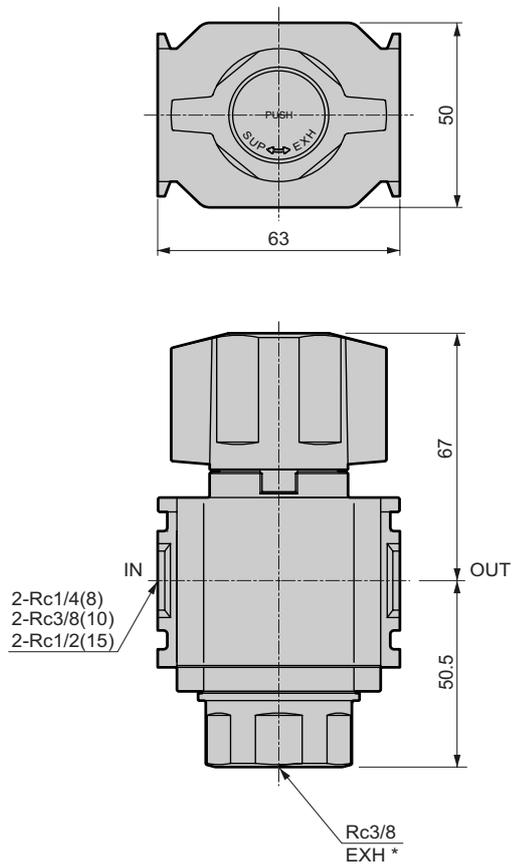
## Dimensions

• V1000



\* EXH port is silencer for mounting port.

• V3000



\* EXH port is a silencer port.



Lockout valve (OSHA conformed)

# V3010 Series

Appropriate for preventing accidents caused by residual pressure in pneumatic lines

Port size: G1/4 to G1/2



Please see CKD website or Digital Catalogue CD for CAD data.

## Specifications

Descriptions	V3010-8	V3010-10	V3010-15	
Working fluid	Compressed air			
Max. working pressure Bar	10			
Withstanding pressure Bar	15			
Fluid temperature °C	5 to 60			
Operation lever switchover angle	90°			
Operating force	Pushing force N	80		
	Torque N·m	2.5		
Valve seat leakage cm <sup>3</sup> /min(ANR)	10			
External leakage cm <sup>3</sup> /min(ANR)	10			
Port size (Rc)	IN-OUT	1/4	3/8	1/2
	EXH	3/8		
Product mass kg	0.3			
Effective sectional area (mm <sup>2</sup> )	IN → OUT	40	70	85
	OUT → EXH	40	50	50

### How to order



A Port size

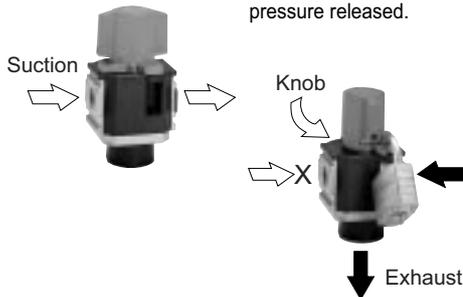
B Attachment  
Note 1

Symbol	Descriptions
<b>A Port size</b>	
8	Rc1/4
10	Rc3/8
15	Rc1/2
<b>B Attachment (attached)</b>	
A8	Rc1/4 piping adapter set
A10	Rc3/8 piping adapter set
A15	Rc1/2 piping adapter set
A20	Rc3/4 piping adapter set
A25	Rc1 piping adapter set
B	C type bracket

## Operation

• At normal use

• At maintenance  
Can be locked at the position where residual pressure released.



### ⚠ Note on model No. selection

Note 1: A piping adaptor set A\*00-\*\* is attached.  
Note 2: Consult with CKD on locking at the air supply position.

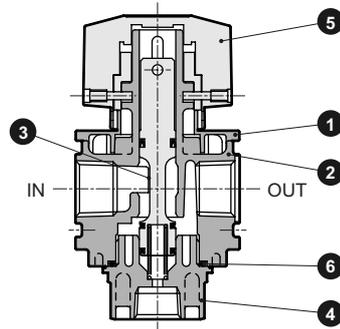
## OSHA (Occupational Safety and Health Administration)

establishes Safety standards on operators and U.S. safety standards, etc.

< Rule of lockout / tagout >

When maintaining a machine, the operator must stop and close air supply with a shut-off valve, and exhaust residual pressure at the same time. During the operation, if a third person inadvertently operates the valve to apply compressed air, a cylinder, etc. may start moving suddenly, and may injure the operator, causing a danger. Therefore, the rule has been established; all valves used for this kind of purpose must have a structure that the valve can be locked.

## Internal structure and parts list

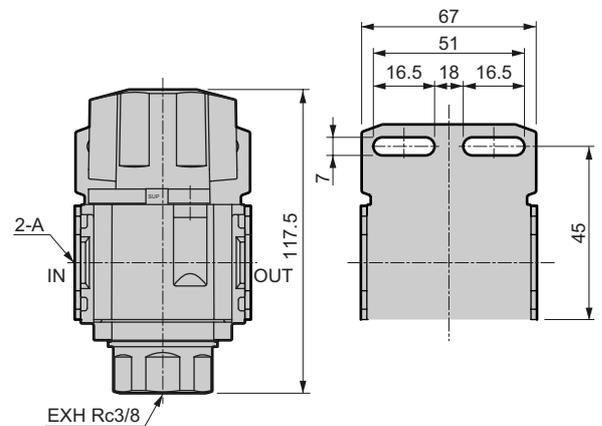
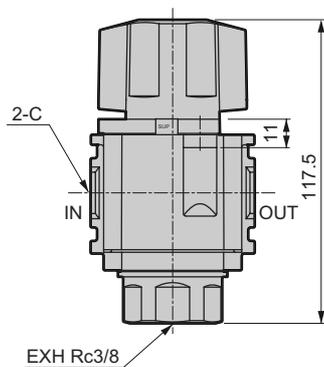
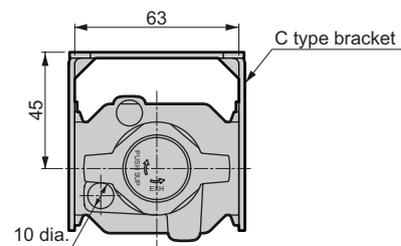
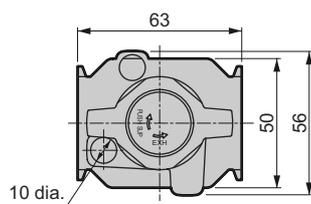


No.	Part name	Material
1	Plate cover	ABS resin
2	Body	Aluminum ally die casting
3	Spool assembly	Aluminum alloy urethane rubber resin
4	Bottom plug	PBT resin
5	Knob	Aluminum ally die casting
6	O ring	Nitrile rubber

## Dimensions

• V3010

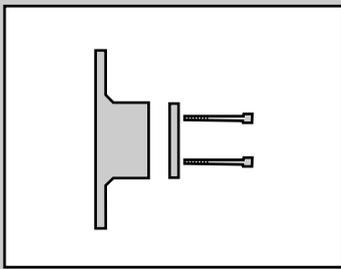
• With C type bracket



C type bracket is attached at shipment.  
C type bracket and piping adapter set can not be used together.

\* EXH port is a silencer port.

Descriptions	C
V3010-8	Rc1/4
V3010-10	Rc3/8
V3010-15	Rc1/2



Bracket

# B Series

Joiner

# J Series

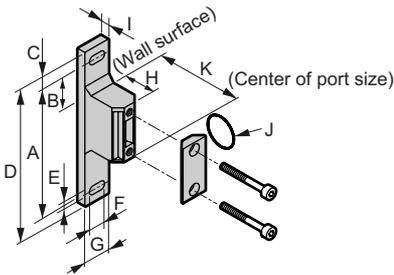


Please see CKD website or Digital Catalogue CD for CAD data.

## Dimensions and applications

### T type bracket set

- Model no.: B110 / B310 / B410 / B810



#### • Applications



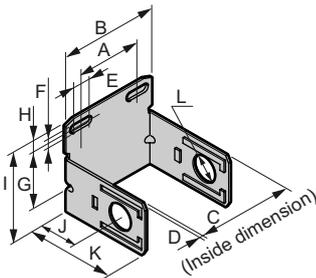
This bracket has two holes on the top and bottom to fix the device, with the system upgrading device, to a wall.  
The 3000 Series and 4000 Series are coupled using B410.

Note: If 3000 series and 4000 series are combined, use B410.

Model No.	Applicable model	A	B	C	D	E	F	G	H	I	J	K
B110	1000 series	80	35	10	100	5.5	2	16	25	7	JASO-2013	40
B310	3000 series	105	45	10	125	7	7	22	27	7	JISB2401-P21	45
B410	4000 series	105	45	10	125	7	7	22	37	7	JISB2401-P21	55
B810	8000 series	120	50	15	150	9	5	27	37	8	AS568-127	65

### C type bracket

- Model no.: B120 / B320 / B420 / B820
- Attachment: B



#### • Applications

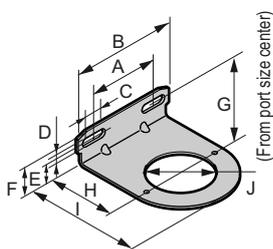


This bracket fixes independent parts simply.

Model No.	Applicable model	A	B	C	D	E	F	G	H	I	J	K	L
B120	1000 series	44	68	40	t2.0	10	6.5	35	8.5	61.5	40	60	14 dia.
B320	3000 series	34.5	67	63	t2.3	16.5	7	45	9	75.5	45	69	21.7 dia.
B420	4000 series	55	84	80	t2.3	14.0	7	45	9	75.5	55	69	21.7 dia.
B820	8000 series	68	104	100	t2.3	16	9	50	11	93.5	65	102	35 dia.

### L type bracket

- Model no.: B130 / B330 / B430
- Attachment: B3



#### • Applications



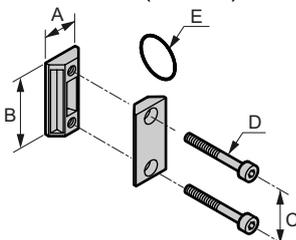
This bracket fixes parts using the panel mounting nut on the filter regulator or regulator.

Loosen the mounting nut to remove the knob. After inserting L type bracket, fix the bracket by the mounting nut. Finally, press-fit the knob by a hand from the top.

Model No.	Applicable model	A	B	C	D	E	F	G	H	I	J	Other
B130	1000 series	44	68	10	6.5	16	24.5	45	40	59	26.5 dia.	
B330	3000 series	34.5	67	16.5	7	18	26	58 (63.5)	45	76	40 dia.	Number in ( ) is for W3000 / 3100.
B430	4000 series	55	84	14	7	18	26	58	55	94	47 dia.	

### Joiner set

- Model no.: J100 (C1000)  
J400 (C3000 / C4000)  
J800 (C8000)

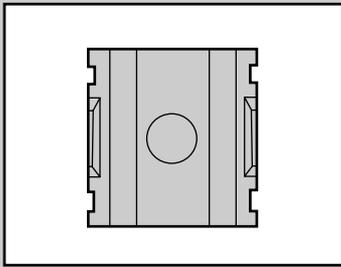


#### • Applications



Use this as a joint when upgrading the system.  
The J400 is also used to couple the 3000 Series and 4000 Series.

Model No.	Applicable model	A	B	C	D	E
C1000-J100	1000 series	10	36	26	M3.5	JASO-2013
C4000-J400	3000 series 4000 series	21	44	32	M5	JIS B2401-P21
C8000-J800	8000 series	26	65	50	M6	AS568-127



Distributor

# D101/D401/D801 Series

Use for pipe branch  
Port size: G1/8 to G 1



Please see CKD website or Digital Catalogue CD for CAD data.

## Specifications

Descriptions	D101-00	D401-00	D801-00
Working fluid	Compressed air		
Max. working pressure bar	10		
Withstanding pressure bar	15		
Branch no. of port	1		
Port size G	1/8, 1/4	1/4, 3/8, 1/2	3/4, 1
Working temperature °C	5 to 60		
Product mass kg	0.045	0.13	0.35

## How to order

D101 - 00 - 6G - B11

A Model No .

B Port size

C T type bracket

Symbol	Descriptions		
<b>A</b> Model No .			
D101	Distributor		
D401	Distributor		
D801	Distributor		
<b>B</b> Port size			
	D101	D401	D801
6G G1/8	●		
8G G1/4	●	●	
10G G3/8		●	
15G G1/2		●	
20G G3/4			●
25G G 1			●
<b>C</b> T type bracket			
B11 1000 series	●		
B31 3000 series		●	
B41 4000 series		●	
B81 8000 series			●

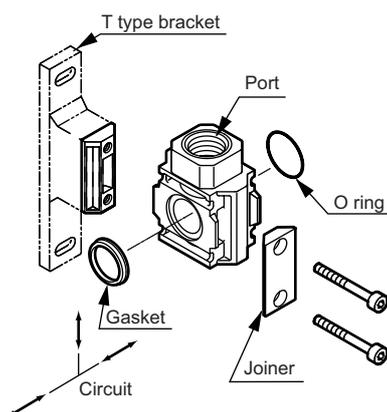
### ⚠ Note on model No. selection

Note 1. A joiner set (joiner / bolt / O ring) and a gasket are attached as standard.

Note 2. Consult with CKD for 2 way branch.

Note 3. D401 can be connected to both 3000 and 4000 series.

## Assembly method (D101-00, D401-00 and D801-00)



Note 1: When installing at the primary side, insert an O ring, while installing at the secondary side, insert a gasket.

Note 2: When inserting O ring and gasket to assemble, O ring and gasket must not be folded.

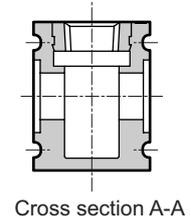
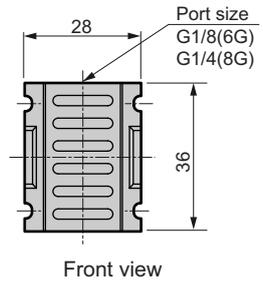
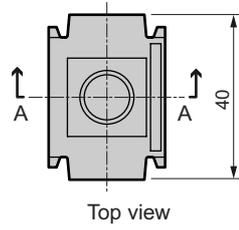
## Applications (D101-00, D401-00 and D801-00)



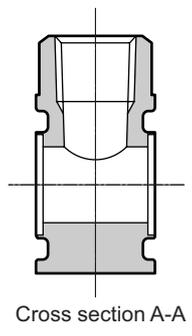
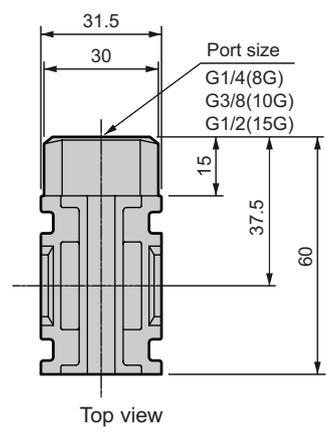
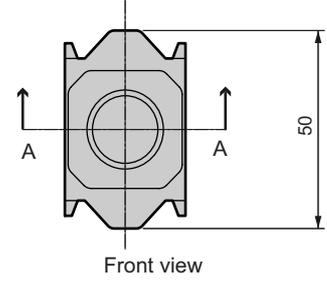
# Auxiliary components (modular design)

## Dimensions

• D101-00



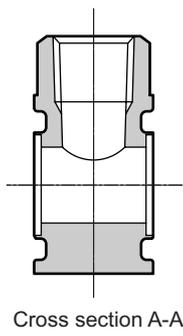
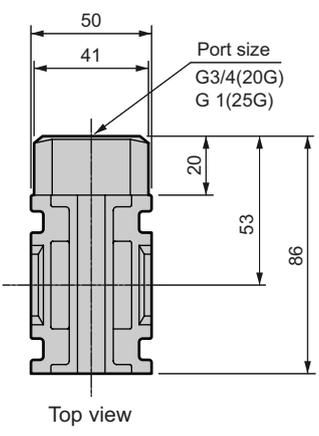
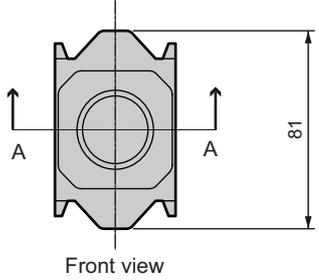
• D401-00



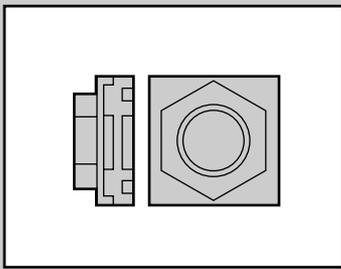
Note: Please consult with CKD for 2 way branch type.

Note: Please consult with CKD for 2 way branch type.

• D801-00



Note: Please consult with CKD for 2 way branch type.



## Piping adapter

# A100/A400/A800 Series

Port size: G1/8 to G 1

By using an adaptor, isolated devices are removed for maintenance instead of removing piping. The adaptor is also handy for changing the connection bore size of the independent device.



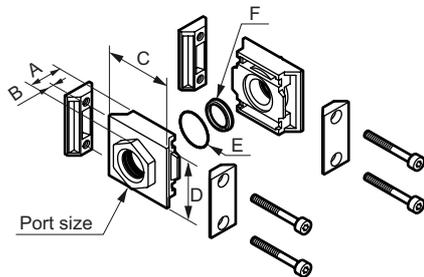
Please see CKD website or Digital Catalogue CD for CAD data.

## Dimensions and applications

### Piping adapter set

- Model no.: A100-6,8,10 (C1000)  
A400-8,10,15,20 (C3000 and C4000)  
A800-20, 25, 32 (C8000)

#### • Applications

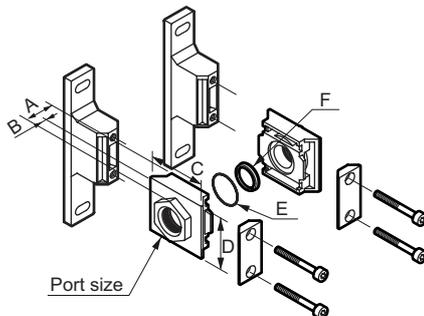


Model No.	Port size	Applicable model	A	B	C	D	E (O ring)	F (gasket)	Other
A100-6G	G1/8	1000 series	21.5	13.5	40	36	JASO-2013 1 pc.	1 pc.	—
A100-8G	G1/4								
A100-10G	G3/8								
A400-8G	G1/4	3000 Series 4000 Series	20 (25)	6 (11)	50	45	JISB2401 P21 1 pc.	1 pc.	Number in ( ) is for G3/4.
A400-10G	G3/8								
A400-15G	G1/2								
A400-20G	G3/4								
A800-20G	G3/4	8000 series	35 (38)	15 (18)	81	66	AS568-127 1 pc.	1 pc.	Number in ( ) is for G1 1/4.
A800-25G	G 1								
A800-32G	G1 1/4								

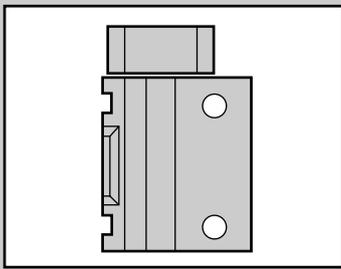
### Piping adaptor set with bracket

- Model no.: A100-6,8,10-B11 (C1000)  
A400-8, 10, 15-B31 (C3000)  
A400-8, 10, 15, 20-B41 (C4000)  
A800-20, 25, 32-B81 (C8000)  
(With T type bracket set)

#### • Applications



Model No.	Port size	Applicable model	A	B	C	D	E (O ring)	F (gasket)	Other
A100-6G-B11	G1/8	1000 series	21.5	13.5	40	36	JASO-2013 1 pc.	1 pc.	—
A100-8G-B11	G1/4								
A100-10G-B11	G3/8								
A400-8G-B31	G1/4	3000 series	20	6	50	45	JISB2401 P-21 1 pc.	1 pc.	
A400-10G-B31	G3/8								
A400-15G-B31	G1/2								
A400-8G-B41	G1/4								
A400-10G-B41	G3/8	4000 series	20 (25)	6 (11)	50	45	JISB2401 P-21 1 pc.	1 pc.	Number in ( ) is for G3/4.
A400-15G-B41	G1/2								
A400-20G-B41	G3/4								
A800-20G-B81	G3/4	8000 series	35 (38)	15 (18)	81	66	AS568-127 1 pc.	1 pc.	Number in ( ) is for G1 1/4.
A800-25G-B81	G 1								
A800-32G-B81	G1 1/4								



L type piping adapter

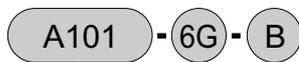
# A101/A401/A801 Series

Port size: G1/8 to G 1



Please see CKD website or Digital Catalogue CD for CAD data.

## How to order



**A** Model No .

**B** Port size

**C** T type bracket

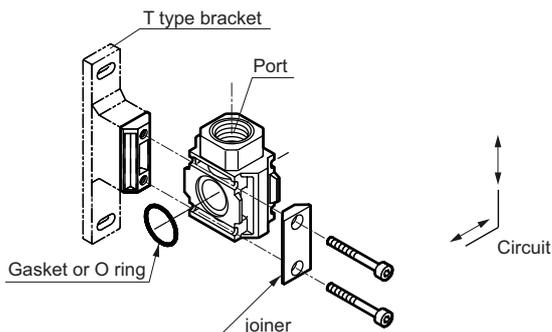
Symbol		Descriptions		
<b>A Model No .</b>				
A101		L type piping adapter		
A401		L type piping adapter		
A801		L type piping adapter		
<b>B Port size</b>				
		A101	A401	A801
6G	G1/8	●		
8G	G1/4	●	●	
10G	G3/8		●	
15G	G1/2		●	
20G	G3/4			●
25G	G 1			●
<b>C T type bracket Note 1</b>				
B11	1000 series	●		
B31	3000 series		●	
B41	4000 series		●	
B81	8000 series			●

### Note on model No. selection

Note 1: A joiner set (joiner / bolt / O ring) and a gasket are attached as standard.

Note 2: Consult with CKD for vertical piping.

## L type piping adapter



### • Applications



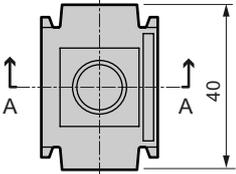
Note: When installing at the primary side, insert an O ring, while installing at the secondary side, insert a gasket.

# Auxiliary components (modular design)

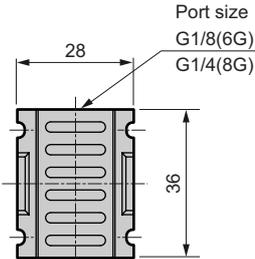
Dimensions

## Dimensions

• A101

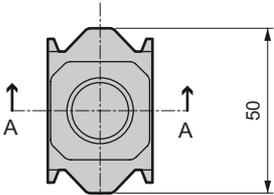


Top view

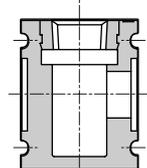


Front view

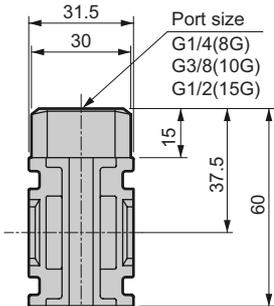
• A401



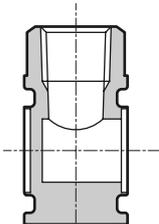
Top view



Cross section A-A

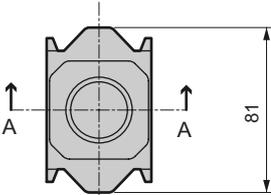


Front view

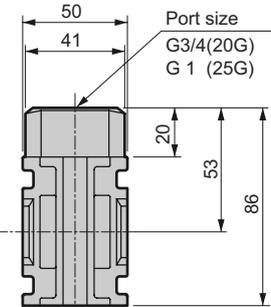


Cross section A-A

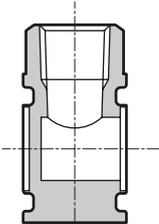
• A801



Top view



Front view

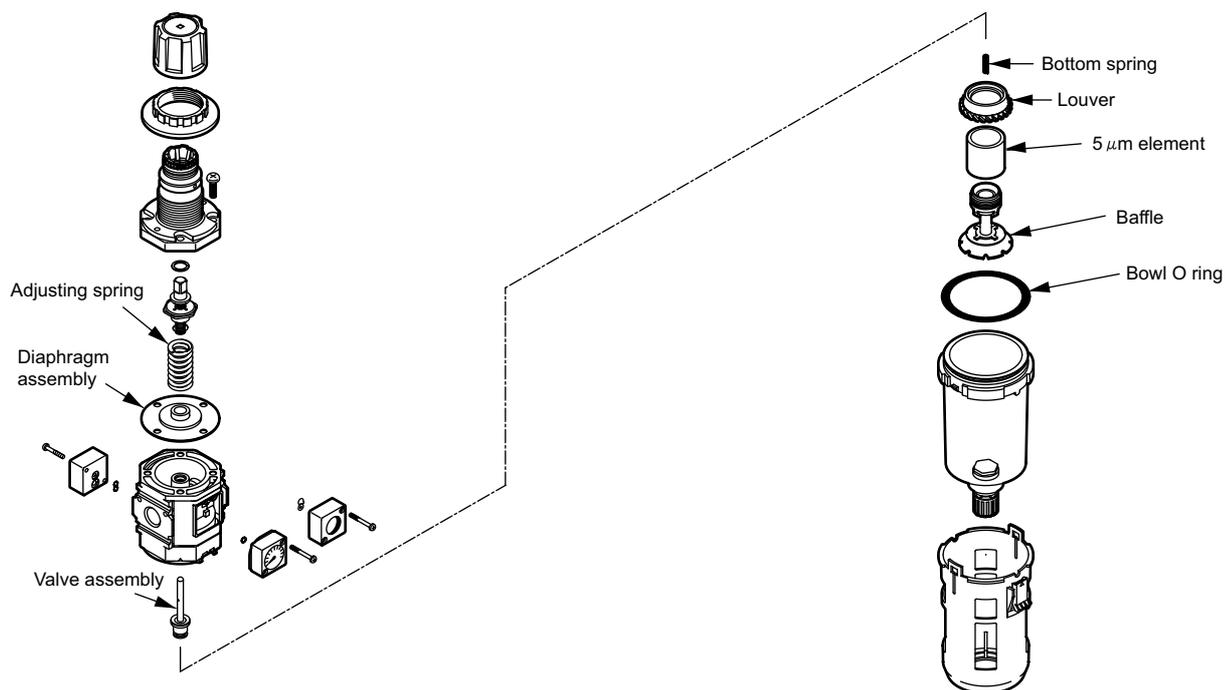


Cross section A-A

# Filter/Regulator Series

## Optional parts drawing

Filter / Regulator W \* 000 Series



Repair kits (set of diaphragm assembly, valve assembly, bottom spring, louver, element, baffle and bowl O ring)

Repair kits model no.	Relief type diaphragm	Relief type diaphragm
Model	5 $\mu\text{m}$ element (blank)	0.3 $\mu\text{m}$ element (Y)
W1000	W1000-KIT	W1000-KIT-Y
W3000	W3000-KIT	W3000-KIT-Y
W4000	W4000-KIT	W4000-KIT-Y
W8000	W8000-KIT	W8000-KIT-Y

Note: An element and baffle assembly is provided for W1000 / W1100, while a louver is assembled to the body, and not included in repair parts. Refer to option parts table of air filter for bowl assemblies.

### Optional parts drawing

• Air filter F \* 000 Series

#### Element

Element model no. Model	5 μm Element	0.3 μm Element (Y)
F1000	F1000-ELEMENT-ASSY	—
F3000	F3000-ELEMENT	F3000-ELEMENT-Y
F4000	F4000-ELEMENT	F4000-ELEMENT-Y
F8000	F8000-ELEMENT	F8000-ELEMENT-Y

Note: A baffle and element assembly is provided to F1000 and W1000.

**(FM1)**  
NO type automatic drain bowl  
assembly with manual cock

**(F1M1)**  
NC type automatic drain bowl  
assembly with manual cock

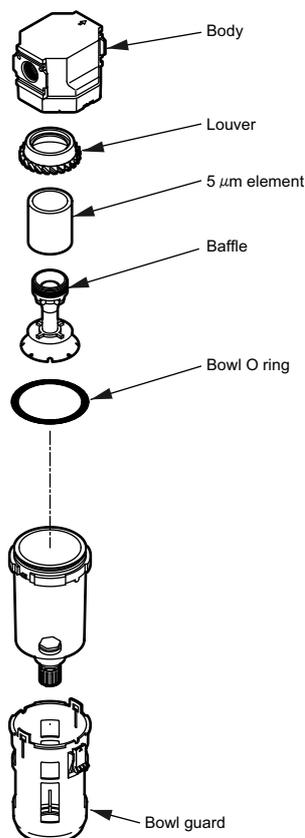


**(M1)**  
Metal bowl assembly  
with manual cock



**(E)**  
NO type automatic drain bowl  
assembly with manual cock

**(F1)**  
NC type automatic drain bowl  
assembly with manual cock



#### Bowl assembly (set of bowl assembly and bowl O ring)

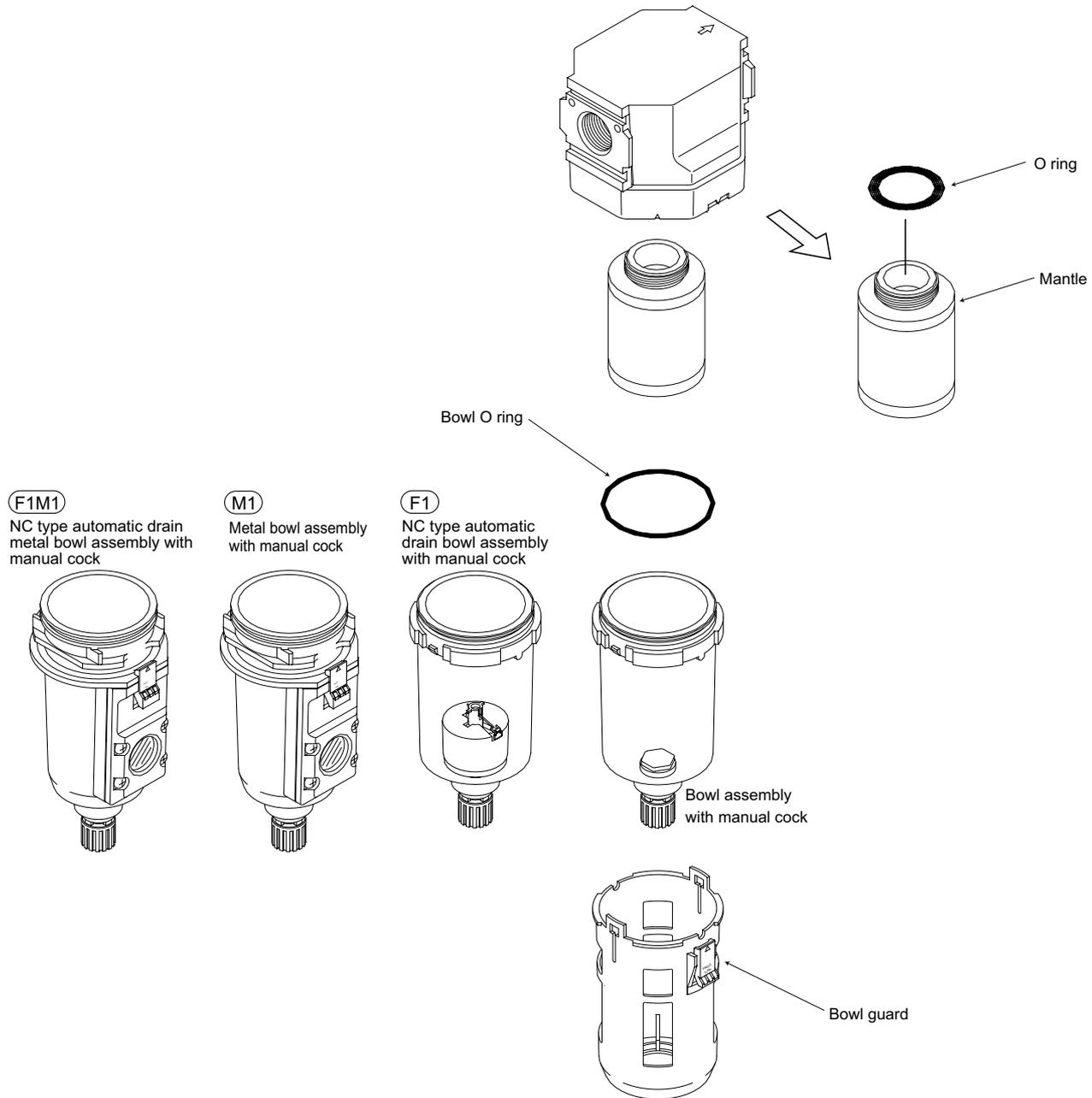
Bowl assembly model no. Model	PC bowl assembly with manual cock	Metal bowl assembly with manual cock	NO type automatic drain PC bowl assembly with manual cock	NC type automatic drain PC bowl assembly with manual cock	NO type automatic drain metal bowl assembly with manual cock	NC type automatic drain metal bowl assembly with manual cock
F1000, W1000 M1000	F1000-BOWL	—	—	—	—	—
F3000, W3000 *M3000	F3000-BOWL	F3000-BOWL-M1	*F3000-BOWL-F	M3000-BOWL-F1	*F3000-BOWL-FM1	M3000-BOWL-F1M1
F4000, F8000, W4000, W8000, *M4000 and * M8000	F4000-BOWL	F4000-BOWL-M1	*F4000-BOWL-F	M4000-BOWL-F1	*F4000-BOWL-FM1	M4000-BOWL-F1M1

\*NO type automatic drain is not selected for oil mist filters; M3000, M4000 and M8000.

# Oil Mist Filter Series

## Optional parts drawing

• Oil mist filter M \* 000 Series



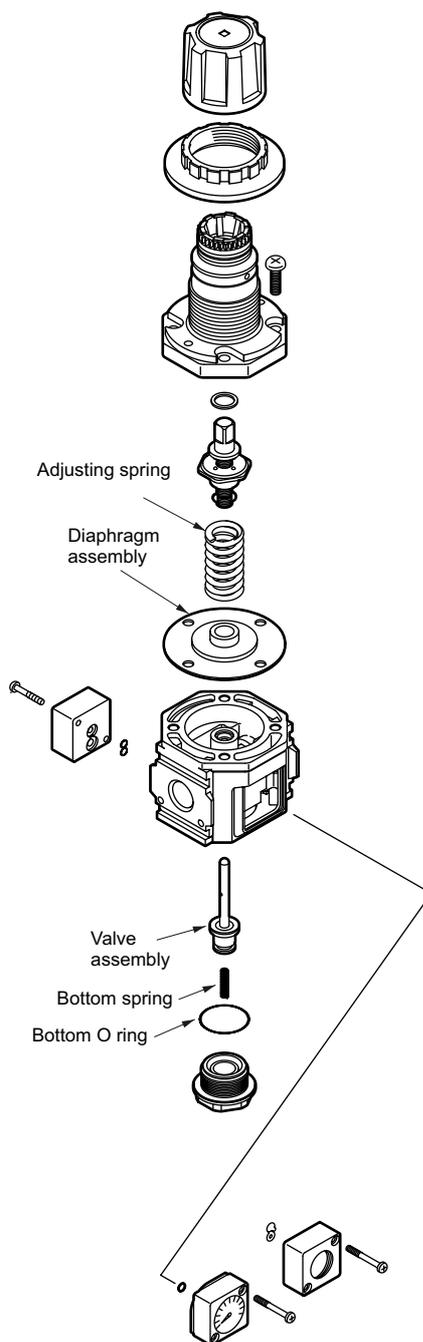
### Repair kits (set of O ring and mantle)

Model	M type	S type
M1000	M1000-MANTLE-ASSY	M1000-MANTLE-ASSY-S
M3000	M3000-MANTLE-ASSY	M3000-MANTLE-ASSY-S
M4000	M4000-MANTLE-ASSY	M4000-MANTLE-ASSY-S
M8000	M8000-MANTLE-ASSY	M8000-MANTLE-ASSY-S

\*Refer to options / parts list of air filter for bowl assembly.

## Optional parts drawing

• Regulator R \* 000 R\*100 Series



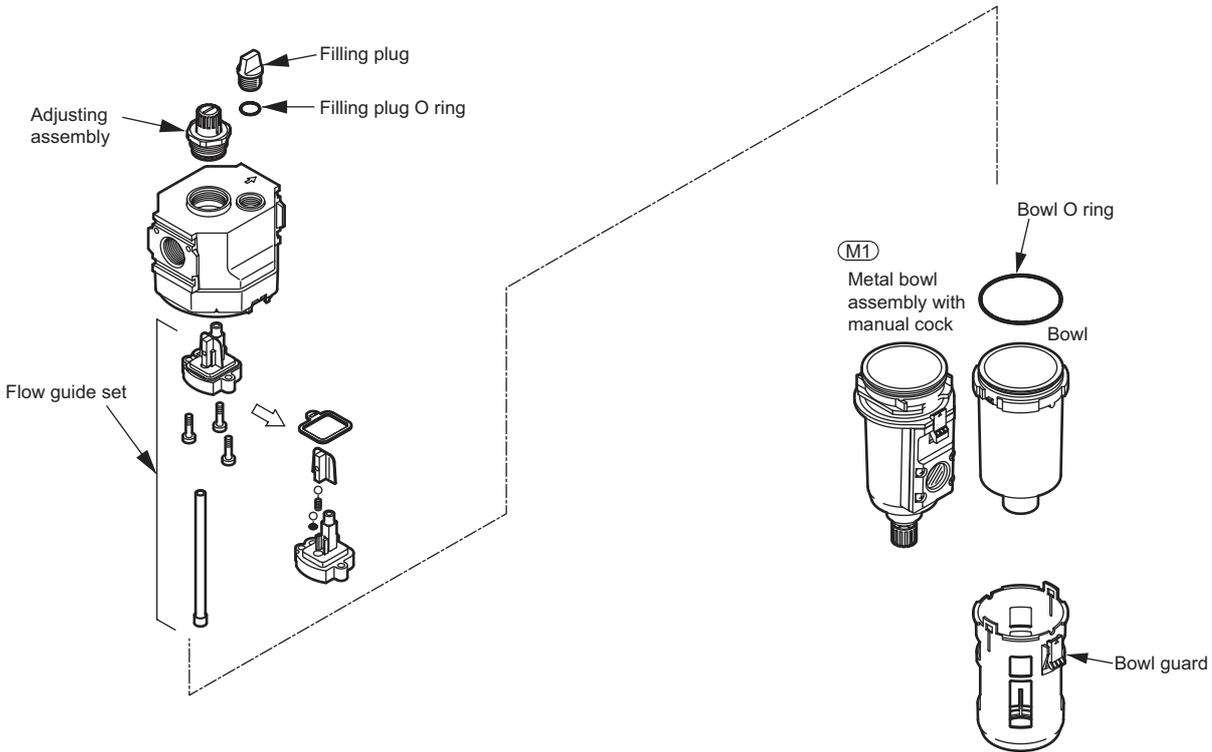
Repair kits (set of diaphragm assembly, valve assembly, bottom spring and bottom O ring)

Repair kits model no.	Relief type diaphragm	No Relief type diaphragm
R1000, R1100	R1000-KIT	R1000-KIT-N
R3000, R3100	R3000-KIT	R3000-KIT-N
R4000, R4100	R4000-KIT	R4000-KIT-N
R8000, R8100	R8000-KIT	R8000-KIT-N

# Lubricator Series

## Optional parts drawing

### • Lubricator L \* 000 Series



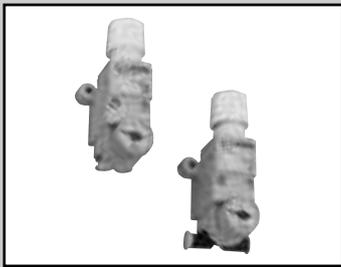
### Repair kits (set of filling plug O ring, adjusting assembly, flow guide set and bowl O ring)

Model no.	Repair kits model no.
L3000	L3000-KIT
L4000	L4000-KIT
L8000	L8000-KIT

### Bowl assembly (set of bowl assembly and bowl O ring)

Bowl assembly model no.	Polycarbonate bowl without cock (blank)	Metal bowl with manual cock (M1)
Model no.		
L1000	L1000-BOWL	—
L3000	L3000-BOWL	F3000-BOWL-M1
L4000, L8000	L4000-BOWL	F4000-BOWL-M1

\*Refer to options / parts list of air filter for bowl guards.

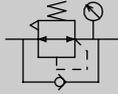


## Miniature regulator

# RB500 Series

Compact / space saving structure  
Port size: Push-in joint 4 and 6 dia.

JIS symbol



Please see CKD website or Digital Catalogue CD for CAD data.

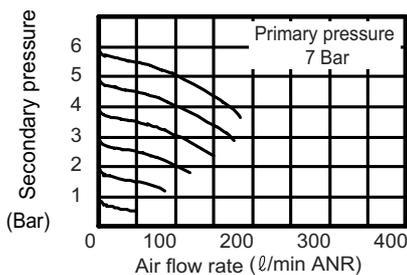
## Specifications

Descriptions		RB500
Working fluid		Compressed air
Max. working pressure	Bar	10
Withstanding pressure	Bar	15
Ambient temperature range °C		5 to 60
Set pressure range	Bar	0.5 to 7 (Note 1)
Relief		With relief mechanism
Port size	IN-OUT	Push-in joint: 4, 6 dia.
	GAUGE	Rc1/8
Product mass	g	80

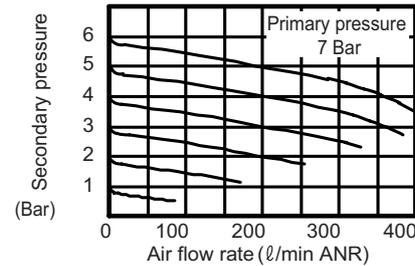
Note 1: 0.5 to 3.5 Bar for low pressure specifications.

## Flow characteristics

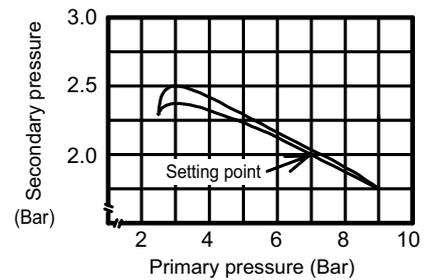
### • RB500-SSC4



### • RB500-SSC6



## Pressure characteristics



## How to order



Model

A Connection

B Option

C Accessory

Symbol	Descriptions		
<b>A Connection</b>			
Direction	IN	S	Straight
		L	Elbow
	OUT	S	Straight
		L	Elbow
Port size	C4	4 dia.	
	C6	6 dia.	
<b>B Option</b>			
Blank	Standard products		
P	Panel mount Note 2		
L	For low pressure		
N	Non-relief		
T	Without pressure gauge		
<b>C Accessory</b>			
Blank	21dia. 0 to 10 Bar gauge	Standard	
Note 1	27 dia. 0 to 4 Bar gauge		
G39	27 dia. 0 to 10 Bar gauge	Option	
<b>D Ozone proof</b>			
P11	Ozone proof specifications (custom order)		

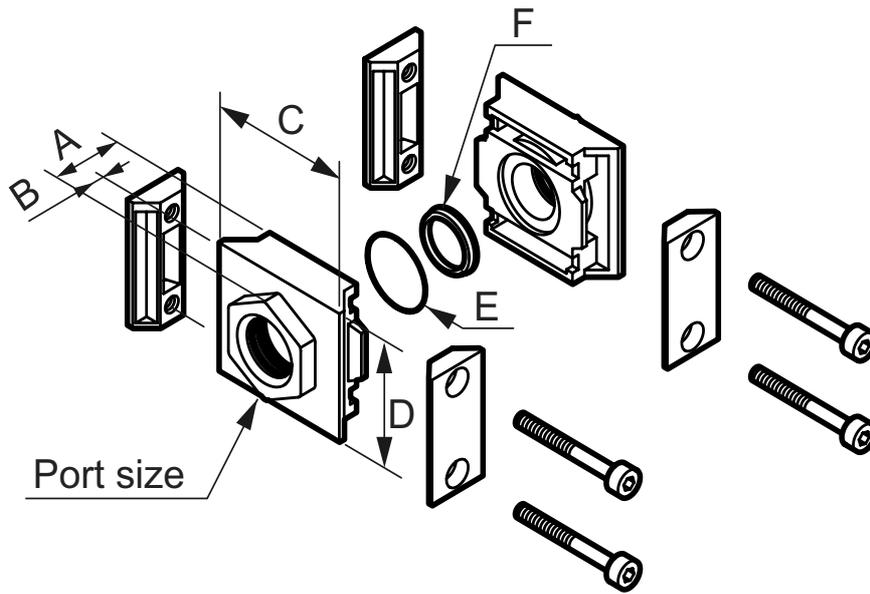
### ⚠ Note on model No. selection

Note 1: 21 dia. 0 to 10 Bar pressure gauge is provided as standard.

However for low pressure, 27 dia. 0 to 4 Bar low pressure gauge is provided.

Note 2: For panel installation, indicate option symbol "P".

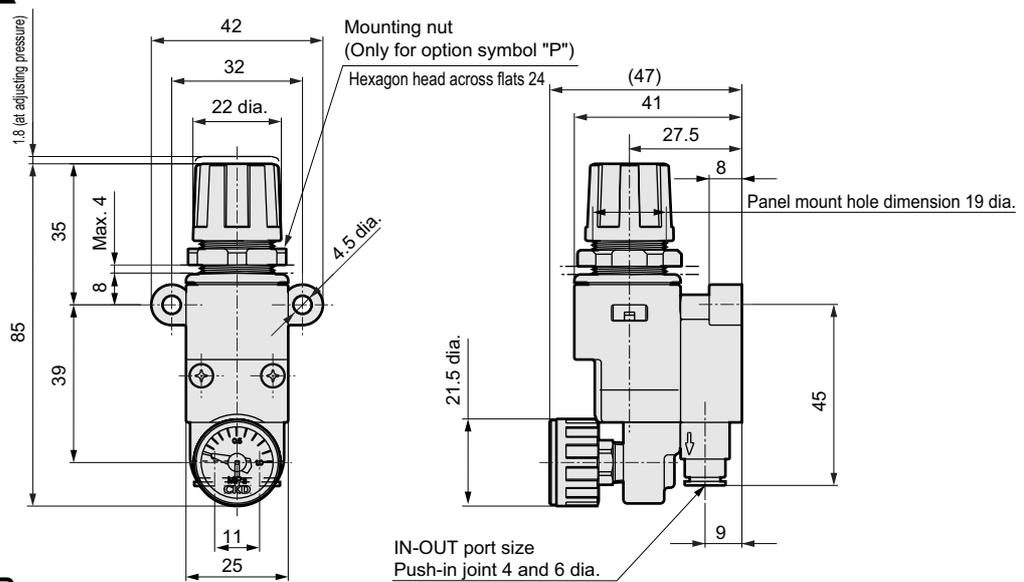
### Internal structure and parts list



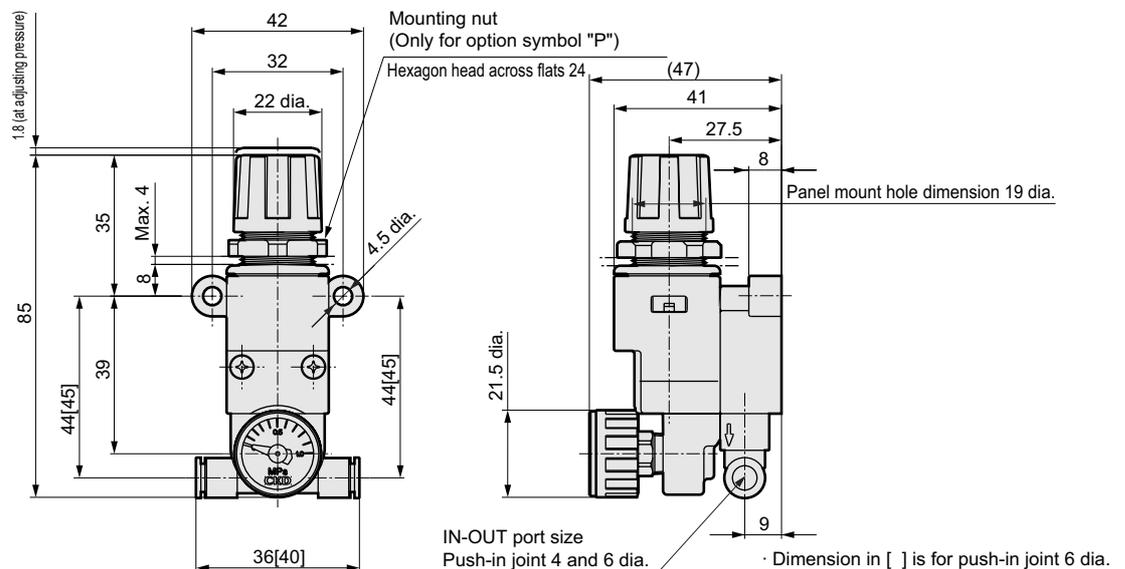
No	Parts name	Material
1	Knob	Polyacetal resin
2	Cover	Polyamide resin
3	Piston assembly	Polyacetal resin / nitrile rubber
4	Piston guide	Polyacetal resin
5	O ring	Nitrile rubber
6	O ring	Nitrile rubber
7	Body	Polyamide resin
8	Valve element	Aluminum / nitrile rubber
9	Pipe block assembly	Polyamide resin / steel
10	Body packing seal	Nitrile rubber
11	Packing seal	Nitrile rubber
12	Stop pin	Stainless steel
13	Gauge plug	Polyamide resin
14	Cartridge joint	
15	Pressure gauge	
16	Mounting nut	Polyacetal resin

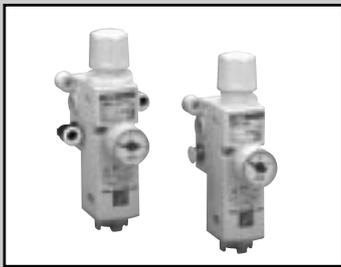
### Dimensions

- RB500 axial piping  Please see CKD website or Digital Catalogue CD for CAD data.



- RB500 elbows pipe  Please see CKD website or Digital Catalogue CD for CAD data.

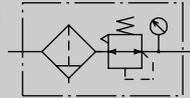




Small filter / regulator

# WB500 Series

JIS symbol



Please see CKD website or Digital Catalogue CD for CAD data.

## Features

- Compact  
Push-in joint and bracket is integrated to reduce total space.
- Light weight  
Resin is used in body material to reduce weight.
- Increased workability  
Push-in joint is provided as standard. 2 types of piping direction; straight or elbow are available. Plumbing is also easy.

## Specifications

Descriptions	WB500	
Working fluid	Compressed air	
Max. working pressure Bar	10	
Withstanding pressure Bar	15	
Ambient temperature range °C	5 to 60	
Filtration rating μm	5	
Set pressure range Bar	0.5 to 7 (Note 1)	
Relief	With relief mechanism	
Drain capacity cm <sup>3</sup>	1.0	
Drainage method	Manual	
Port size	IN-OUT	Push-in joint: 4, 6 dia.
	GAUGE	Rc1/8
Product mass g	100	

Note 1: 0.5 Bar to 3.5 Bar for low pressure specifications

## How to order

WB500 - SSC4 - P - G39

A Connection

B Option

C Accessory

Symbol	Descriptions	
<b>A Connection</b>		
Direction		
S	Straight	IN
L	Elbow	
S	Straight	OUT
L	Elbow	
Port size		
C4	4 dia.	
C6	6 dia.	
<b>B Option</b>		
Blank	Standard product	
P	Panel mount Note 3	
L	For low pressure	
N	Non-relief	
T	Without pressure gauge	
X1	IN-OUT reverse	
Z	Opaque drain plug Note 1	
<b>C Accessory</b>		
Blank	21 dia. 0 to 10 Bar gauge	Standard Note 2
	27 dia. 0 to 4 Bar gauge	
G39	27 dia. 0 to 10 Bar gauge	Option

## ⚠ Note on model No. selection

Note 1: Opaque material (nylon) as same as the body is applied.

Note 2: For 21 dia., 0 to 10 Bar pressure gauge is provided as standard.

If low pressure specifications, low pressure gauge with 0 to 4 Bar range for 27 dia. is provided.

Note 3: Select option symbol "P" for panel installation.

## [Example of model number]

### WB500-SSC4-PG39

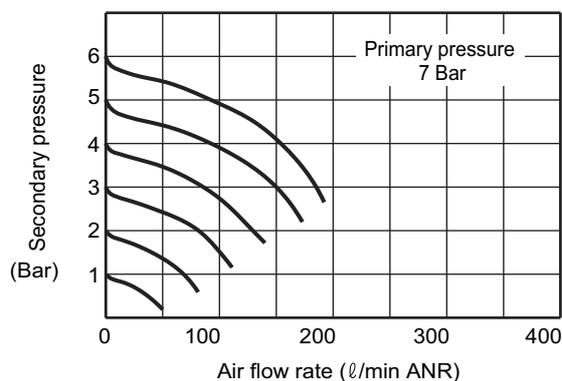
**A** Connection (direction) : Straight for IN-OUT  
Connection (port size) : 4 dia.

**B** Option : Panel mount

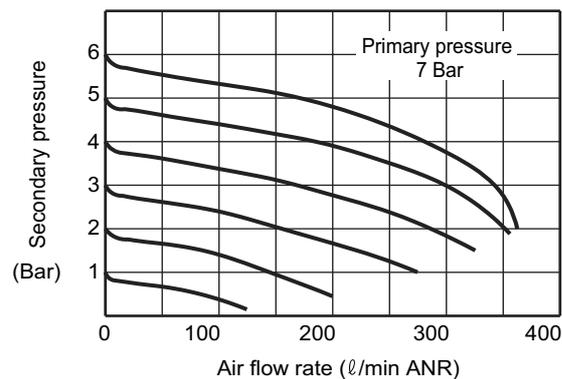
**C** Accessory : 27 dia. 0 to 1 Bar pressure gauge

### Flow characteristics

• WB500-\*\*C4

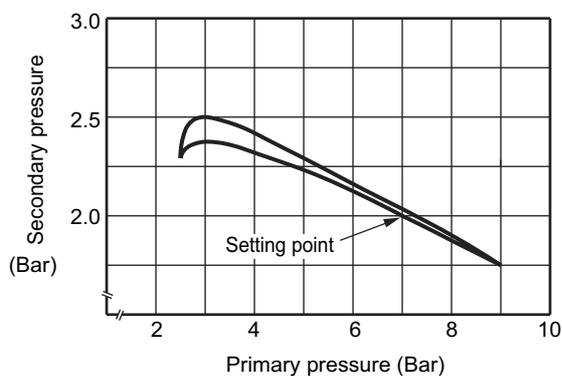


• WB500-\*\*C6



### Pressure characteristics

• WB500

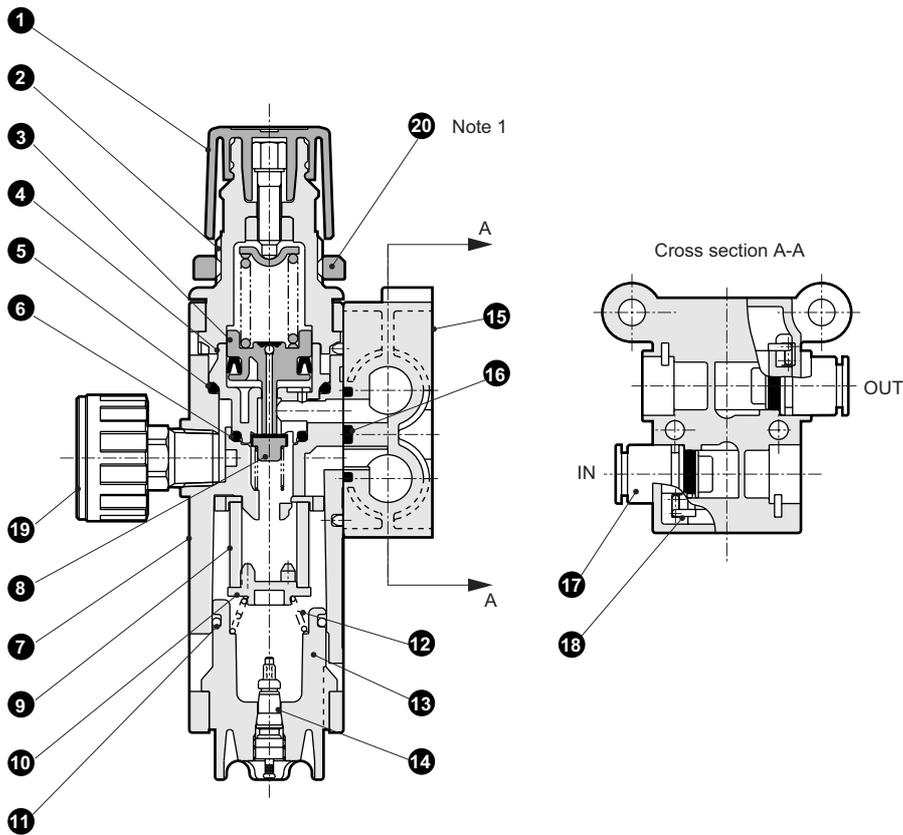


### Precautions

#### \* Pipe cautions

- Do not use the product where organic solvent or chemicals, etc. are present in the atmosphere or adhered to the product.
- Avoid direct sun lay.
- Do not use the product where vibration or impact could occur.
- Install the product vertically facing the drain plug downward.
- Avoid using the product where large drain may be generated. If unavoidable, install an air dryer and automatic drain before IN port.
- Air-flush the air pipe carefully before connection.
- Use CKD soft nylon tube or urethane tube for piping material.
- Insert piping tube into push-in joint securely before starting use.
- If the pressure adjustment knob is rotated clockwise, the secondary pressure will increase, while rotated counterclockwise, the pressure will drop.
- Check the primary pressure before setting the pressure.
- When maintenance, stop the primary pressure, and release the residual pressure before starting work.
- When assembling a pressure gauge, tighten the gauge with tightening torque 3.5N·m or less.

## Internal structure and parts list



Note 1: Mounting nut is optional.  
Attached only for option symbol "P".

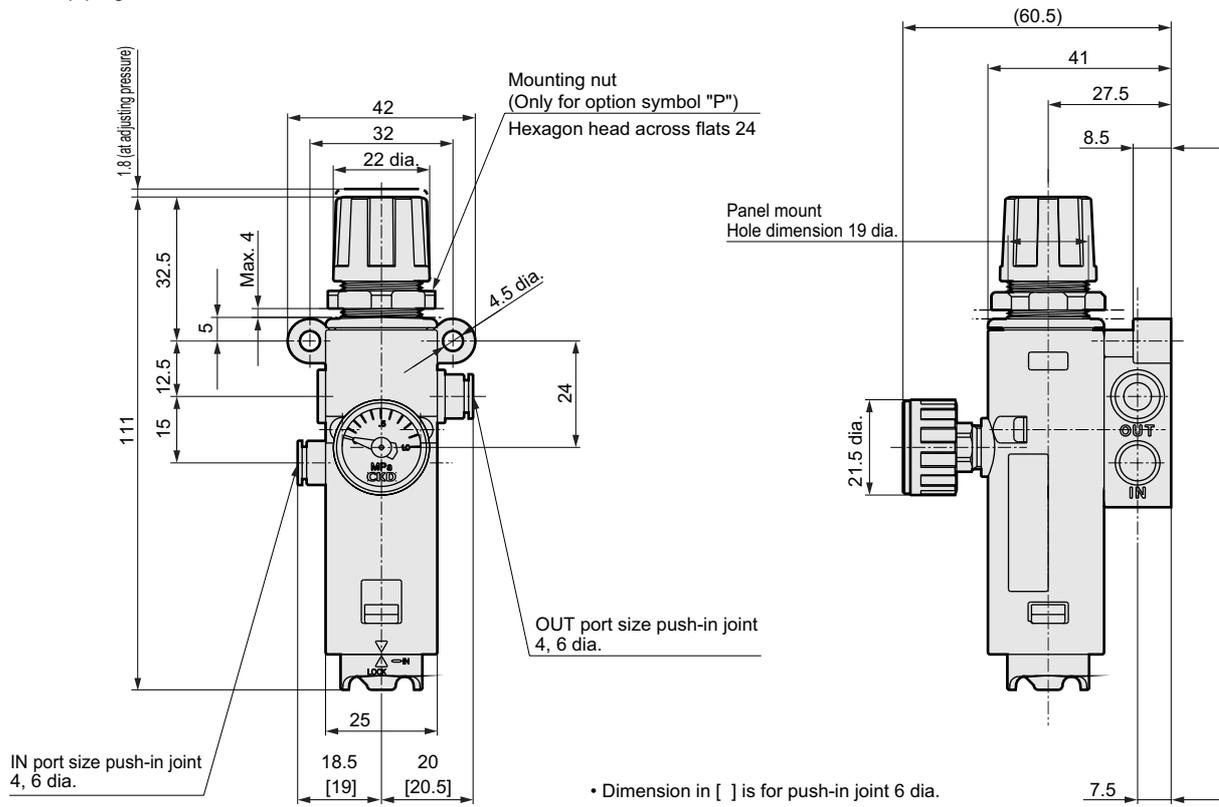
No.	Parts name	Material
1	Knob	Polyacetal resin
2	Cover	Polyamide resin
3	Piston assembly	Polyacetal resin / nitrile rubber
4	Piston guide	Polyacetal resin
5	O ring	Nitrile rubber
6	O ring	Nitrile rubber
7	Body	Polyamide resin
8	Valve element	Aluminum / nitrile rubber
9	Element	Polypropylene
10	Baffle	Polyacetal resin
11	O ring	Special nitrile rubber
12	Spring	Stainless steel
13	Drain plug	Polycarbonate resin
14	Valve	
15	Pipe block assy	Polyamide resin / steel
16	Body packing seal	Nitrile rubber
17	Cartridge joint	
18	Stop pin	Stainless steel
19	Pressure gauge	
20	Mounting nut	Polyacetal resin

## Dimensions

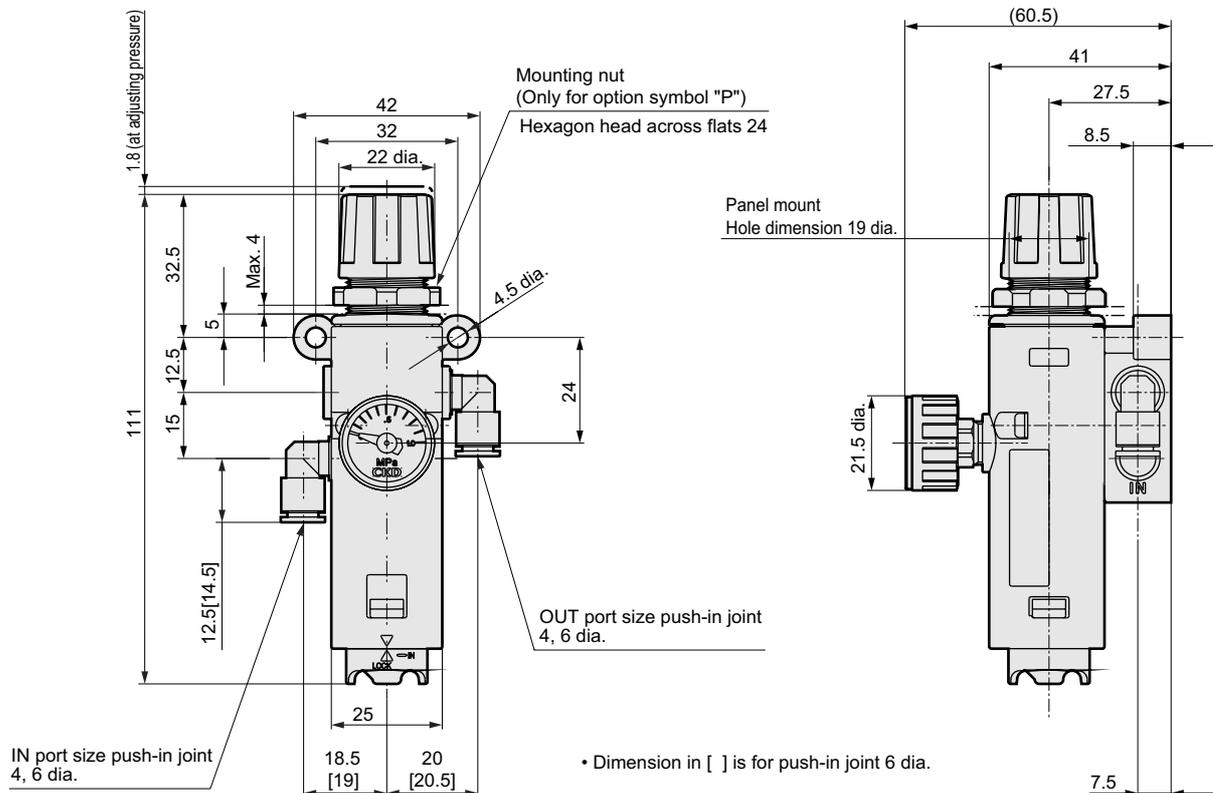


Please see CKD website or Digital Catalogue CD for CAD data.

### • WB500 axial piping



### • WB500 elbow piping





Precision regulator

# RP1000 Series

• Port size: Rc1/4

JIS symbol



Please see CKD website or Digital Catalogue CD for CAD data.

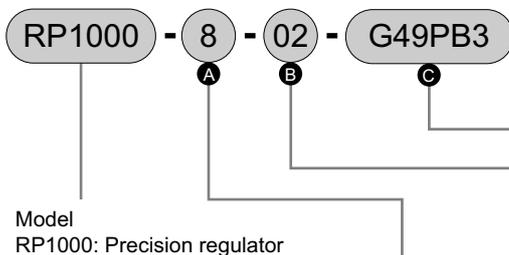
## Specifications

Descriptions		RP1000-8-02	RP1000-8-04
Working fluid		Clean compressed air (See Safety Precautions for RP1000/2000 recommended circuit.)	
Max. working pressure	Bar	10	
Min. working pressure	Bar	Set pressure +1 Note 1	
Withstanding pressure	Bar	15	
Ambient temperature / fluid temperature	°C	-5 to 60 (to be unfrozen)	
Set pressure range	Bar	0.03 to 2	0.05 to 4
Sensitivity		Within 0.1% of full scale	
Repeatability		Within ± 0.5% of full scale	
Air consumption	ℓ / min(ANR)	1.3 or less Note 2	
Port size		Rc1/4	
Pressure gauge port size		Rc1/8	
Mass	g	250	

Note 1. Flow rate of the secondary side is to be zero. If the set pressure is 3 Bar and over, increase +2 Bar in the set pressure.

Note 2. The primary pressure is to be 7 Bar. Air is released to atmosphere normally.

## How to order



A Port size		B Set pressure range		C Attachment (attached)	
8	Rc1/4	02	MAX. 2 Bar	Blank	None
		04	MAX. 4 Bar	G49P	Pressure gauge (G49D-6-*)
				B3	L type bracket

Note 1: Max. 7 Bar setting type is also available.

Note 2: A pressure gauge and a bracket are attached.

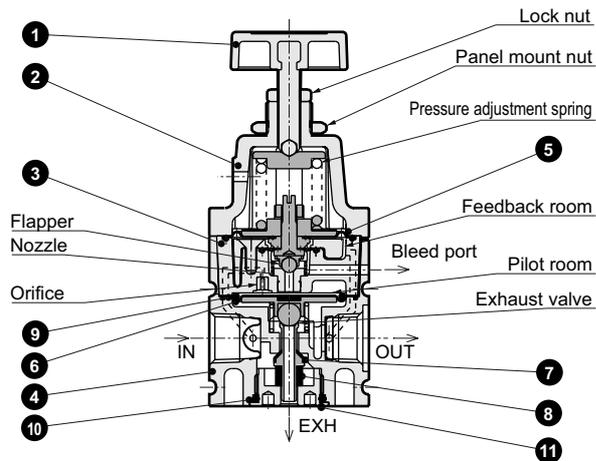
Note 3: A pressure gauge as same pressure range as the regulator is attached.

Note 4: One R1/8 plug is attached to the product.

## Discrete attachment model No.

Model	Discrete attachment model no.
RP1000-8-02-G49P	G49D-6-P02
RP1000-8-04-G49P	G49D-6-P04
RP1000-8- $\frac{3}{4}$ B3	B131

### Internal structure and parts list



No.	Parts name	Material
1	Pressure adjustment knob	Polyacetal resin and stainless steel
2	Cover	Aluminum ally die casting
3	Pilot body assembly	Aluminum ally die casting, etc.
4	Body	Aluminum ally die casting
5	Pilot diaphragm	Special nitrile rubber
6	Main diaphragm	Special nitrile rubber
7	Valve	Special nitrile rubber and stainless steel
8	Bottom rubber	Silicon rubber
9	O ring	Nitrile rubber
10	O ring	Nitrile rubber
11	Bottom plug	Brass and electroless nickel plating

### Operational explanation

Air supplied from IN side is stopped its flow to OUT side by the 7 valve. Some supplied air passes through the orifice to flow into the pilot room. If the 1 pressure adjustment knob is rotated, the pressure adjustment spring is compressed, and the 5 pilot diaphragm and the flapper are pushed down to close the nozzle. If the pressure in the pilot room rises, 6 main diaphragm is forced lower to open 7 valve, and to supply air to OUT side. The entrained air is flowed into the feedback room, and functions to the 5 pilot diaphragm. If the diaphragm is forced upward until reach the pressure of regulator spring, the 5 pilot diaphragm and flapper is forced upward to open the nozzle, and extremely small air is released to the atmosphere to reduce pressure in the pilot room. At the same time, Out side pressure functions to the 6 main diaphragm to force upward, the 7 valve is closed and set pressure is maintained. Air is consumed and the pressure drops in OUT side, the pressure in feedback room also drops. The 5 pilot diaphragm and the flapper are forced lower to close the nozzle. If the pressure in the pilot room rises, and the pressure functions to the 6 main diaphragm to open the 7 valve. This compensates pressure drop. If OUT side pressure increases higher than the set pressure, the pressure in feedback room also increases. The 5 pilot diaphragm and the flapper are forced upward to open the nozzle. This allows the pressure in the pilot room to decrease, and the 6 main diaphragm is forced upward to open the exhaust valve, and the surplus pressure is exhausted from EXH port in OUT side to the atmosphere. This pilot pressure control method with precise pressure control enables precise pressure control following extremely small pressure deviation.

### Repair parts list

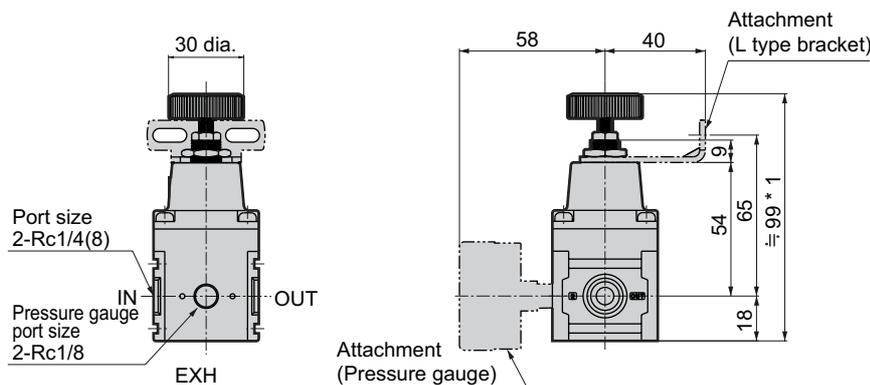
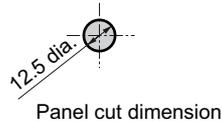
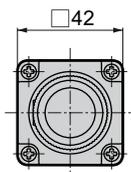
No.	Parts name	Model no.
3	Pilot body assembly	RP1000-PILOT-ASSY
5	Pilot diaphragm	
6	Main diaphragm	RP1000-DIAPHRAGM-ASSY
9	O ring	
7	Valve	RP1000-VALVE-ASSY
8	Bottom rubber	
10	O ring	

### Dimensions

• RP1000



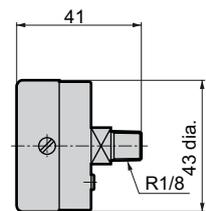
Please see CKD website or Digital Catalogue CD for CAD data.



- \* 1: Dimension at set pressure 0 Bar
- \* 2: Pressure gauge and bracket are optional.

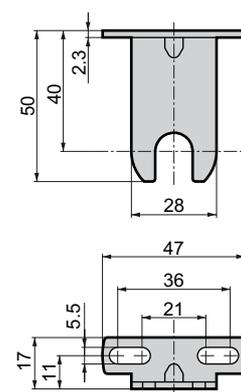
### Pressure gauge

• G49D-6-<sup>P02</sup>/<sub>P04</sub>



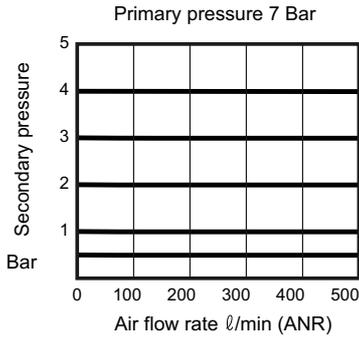
### L type bracket

• B131

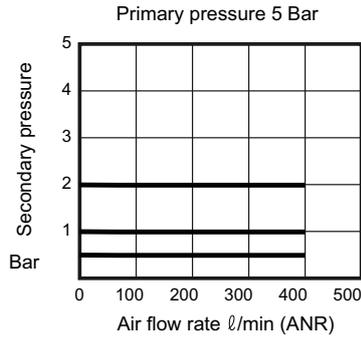


## Flow characteristics

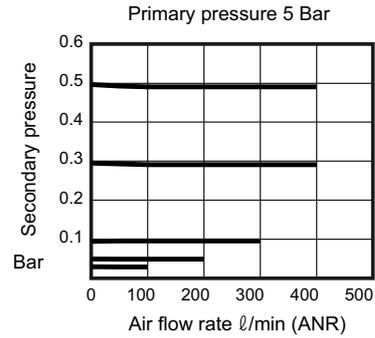
• RP1000-8-04



• RP1000-8-02

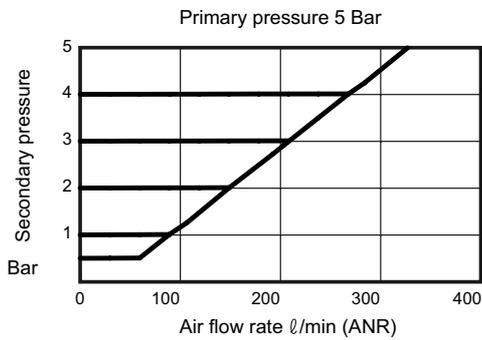


• RP1000-8-02 (flow characteristics at low pressure)

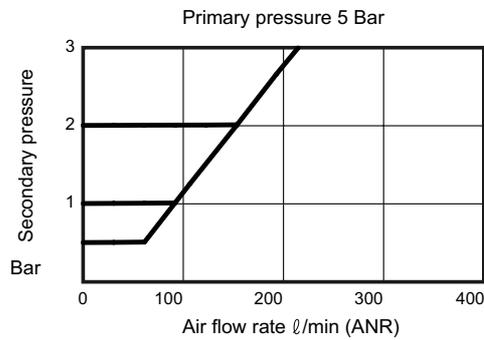


## Relief flow characteristics

• RP1000-8-04

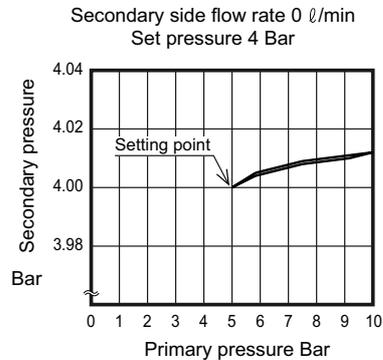
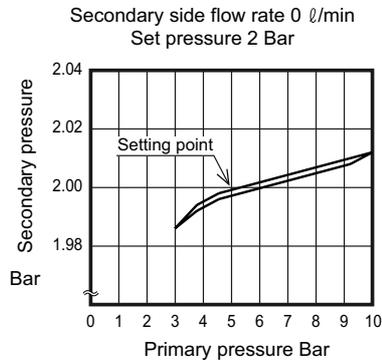
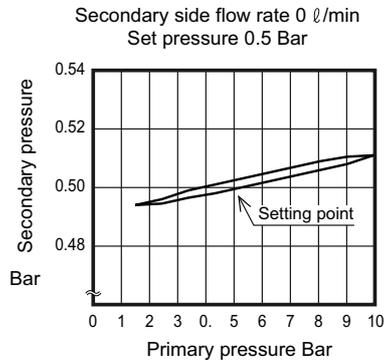


• RP1000-8-02

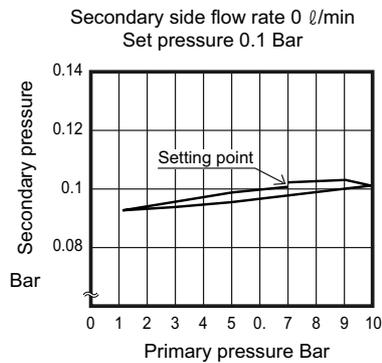
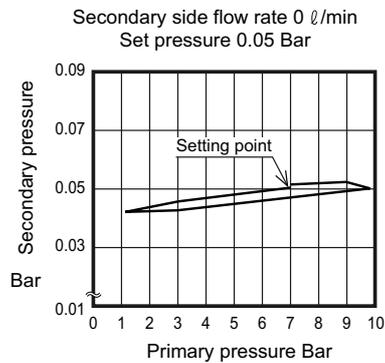


## Pressure characteristics

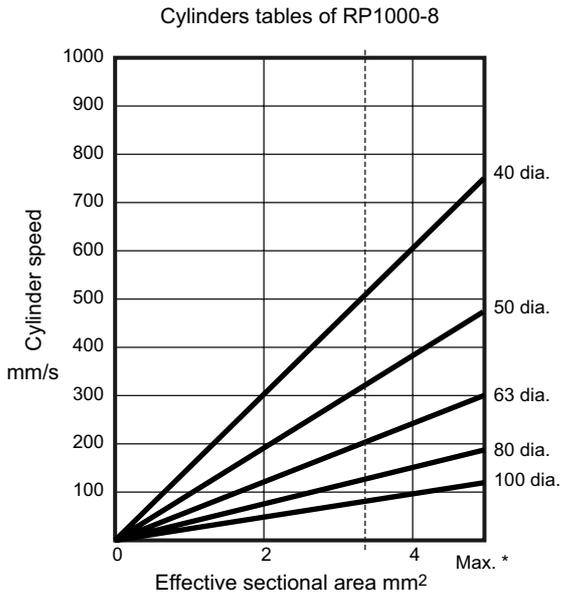
• RP1000-8-04



• RP1000-8-02



## Cylinder speed range of RP1000

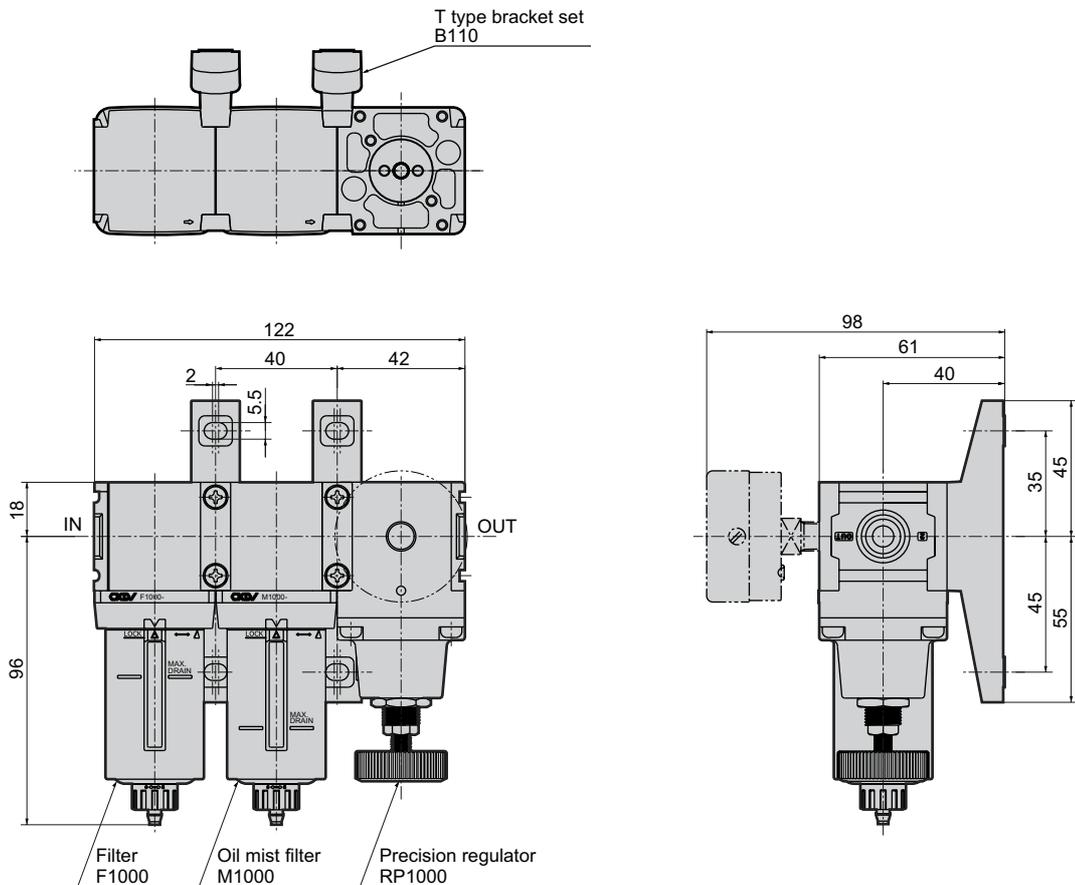


This cylinder table shows available range according to air supply / exhaust flow rate of precision regulator and required consumption flow rate at cylinder PUSH / PULL .

----- Recommended cylinder line  
(70% of max. flow rate is recommended.)

\* Max. cylinder line  
(Cylinder directly installed)

## Precise pressure control system e.g.



\*If required for assembly, please consult with CKD.

Applicable model	Filter	Oil mist filter	Precision regulator	T type bracket set
Model	F1000	M1000	RP1000	B110 (two)



Precision regulator

# RP2000 Series

• Port size: Rc1/4 Rc3/8

JIS symbol



Please see CKD website or Digital Catalogue CD for CAD data.

## Specifications

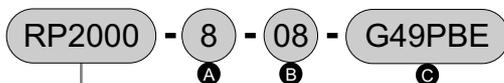
Descriptions	RP2000-8-08	RP2000-10-08
Working fluid	Clean compressed air (See Safety Precautions for RP1000/2000 recommended circuit.)	
Max. working pressure	Bar	10
Min. working pressure	Bar	Set pressure +1 Note 1
Withstanding pressure	Bar	15
Ambient temperature / fluid temperature	°C	-5 to 60 (to be unfrozen)
Set pressure range	Bar	0.3 to 8.5
Sensitivity	Within 0.2% of full scale	
Repeatability	Within ± 0.5% of full scale	
Air consumption	ℓ / min(ANR)	5 or less Note 2
Port size	Rc1/4	Rc3/8
Exhaust side port size	Rc3/8	
Pressure gauge port size	Rc1/8	
Mass	g	470

Note 1. Flow rate of the secondary side is to be zero.

Note 2. Conditions where the primary pressure is 7 Bar and set pressure is 3 Bar. Consumed air is normally released to the atmosphere from the bleed port and EXH port.

So, air consumption is the total of consumption volume released from the bleed port and EXH port. Air 1ℓ/min (ANR) or less is released from EXH port.

## How to order



Model  
RP2000: Precision regulator

A Port size		B Set pressure range		C Attachment (attached)	
8	Rc1/4	08	MAX. 8.5 Bar	Blank	None
10	Rc3/8			G49P	Pressure gauge
				B	C type bracket
				E	Silencer

Note 1: If the port size Rc1/2 is required, use a piping adapter set (model no. : A400-15).

Note 2: Attachment is attached.

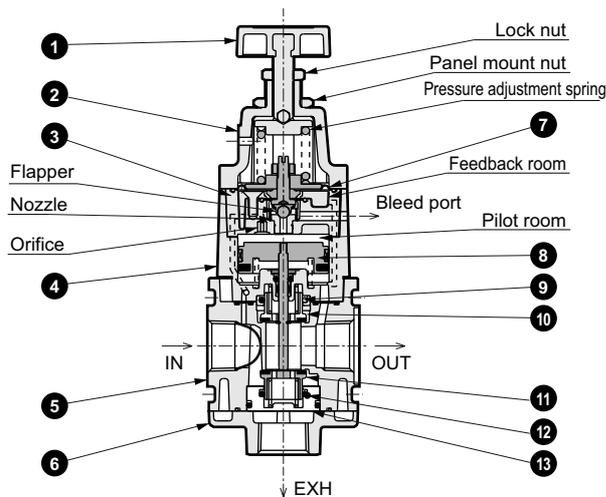
Note 3: A piping adapter set and C type bracket can not be used together.

Note 4: One R1/8 plug is attached to the product.

## Discrete attachment model No.

Attachment symbol	Discrete attachment model no.
G49P	G49D-6-P10
B	B220
E	SLW-10A

### Internal structure and parts list



No.	Parts name	Material
1	Pressure adjustment knob	Polyacetal resin and stainless steel
2	Cover	Aluminum ally die casting
3	Pilot body assembly	Aluminum ally die casting, etc.
4	Top body assembly	Aluminum ally die casting, etc.
5	Body	Aluminum ally die casting
6	Exhaust adaptor	Aluminum ally die casting
7	Pilot diaphragm	Special nitrile rubber
8	Piston assembly	Aluminum and stainless steel, etc.
9	O ring	Nitrile rubber
10	Exhaust valve	Brass and special nitrile rubber
11	Air supply valve	Brass and special nitrile rubber
12	O ring	Nitrile rubber
13	Bottom cap	Brass

### Operational explanation

Air supplied from IN side is stopped its flow to OUT side by the air supply valve. Some supplied air passes through the orifice to flow into the pilot room. If the ① pressure adjustment knob is rotated, the pressure adjustment spring is compressed, and the ⑦ pilot diaphragm and the flapper are pushed down to close the nozzle. If the pressure in the pilot room rises, the piston is forced lower to open ⑩ air supply valve, and to supply air to OUT side. The entrained air is flowed into the feedback room, and functions to the ⑦ pilot diaphragm. If the diaphragm is forced upward until reach the pressure of regulator spring, the ⑦ pilot diaphragm and flapper is forced upward to open the nozzle, and extremely small air is released to the atmosphere to reduce pressure in the pilot room. At the same time, Out side pressure functions to the main diaphragm to force upward, the valve is closed and set pressure is maintained. Out side pressure functions to the piston to lower at the same time, while ⑪ air supply valve is closed to maintain the set pressure. Air is consumed and the pressure drops in OUT side, the pressure in feedback room also drops. The ⑦ pilot diaphragm and the flapper are forced lower to close the nozzle. If the pressure in the pilot room rises, and the pressure functions to the piston to open the ⑪ air supply valve. This compensates pressure drop. If OUT side pressure increases higher than the set pressure, the pressure in feedback room also increases. The ⑦ pilot diaphragm and the flapper are forced upward to open the nozzle. This allows the pressure in the pilot room to decrease, and the piston is forced upward to open the ⑩ exhaust valve, and the surplus pressure is exhausted from EXH port in OUT side to the atmosphere. This pilot pressure control method with precise pressure control enables precise pressure control following extremely small pressure deviation.

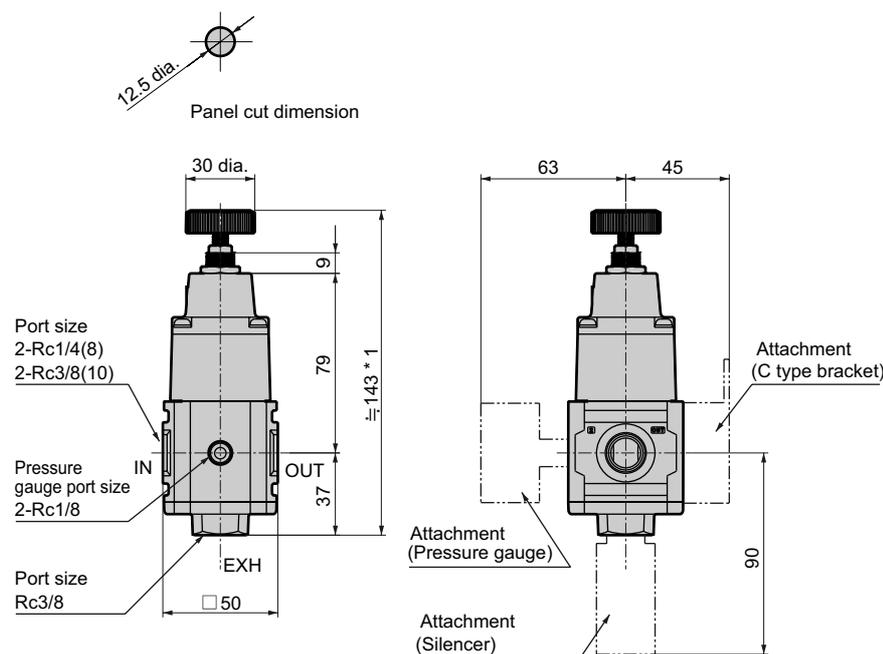
### Repair parts list

No.	Parts name	Model no.
3	Pilot body assembly	RP2000 -PILOT-ASSY
7	Pilot diaphragm	
4	Top body assembly	RP2000 -TOP-BODY-ASSY
11	Air supply valve	RP2000 -BTM-VALVE-ASSY
12	O ring	
13	Bottom cap	

Note: Part No. ⑧ ⑨ and ⑩ are contained in top body assembly ④.

### Dimensions

• RP2000  Please see CKD website or Digital Catalogue CD for CAD data.

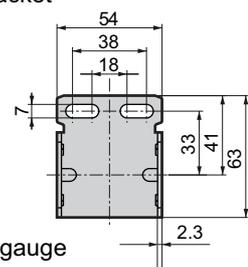


\* 1: Dimension at set pressure 0 Bar

\* 2: Pressure gauge, C type bracket and silencer are optionally attached.

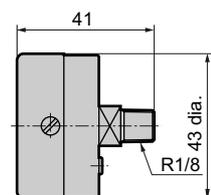
#### C type bracket

• B220



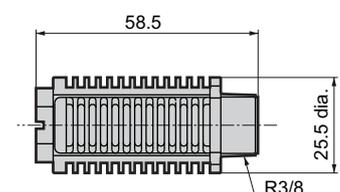
#### Pressure gauge

• G49D-6-P10



#### Silencer

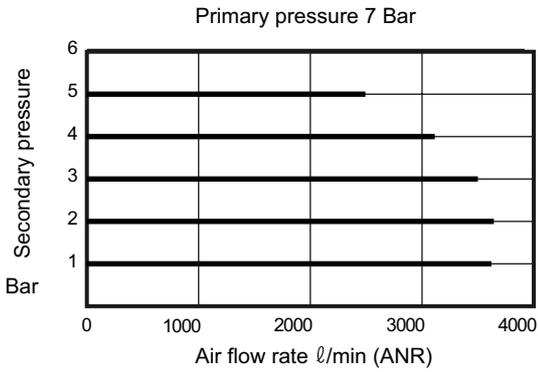
• SLW-10A



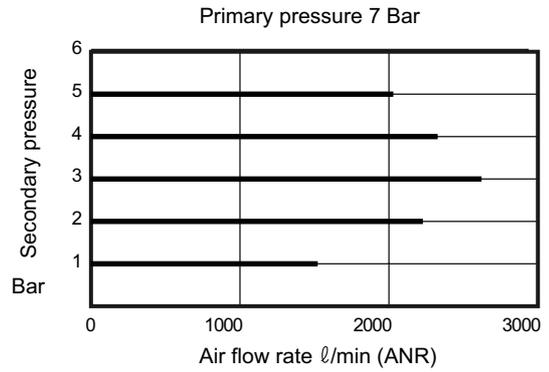
# RP2000 Series

## Flow characteristics

• RP2000-10-08

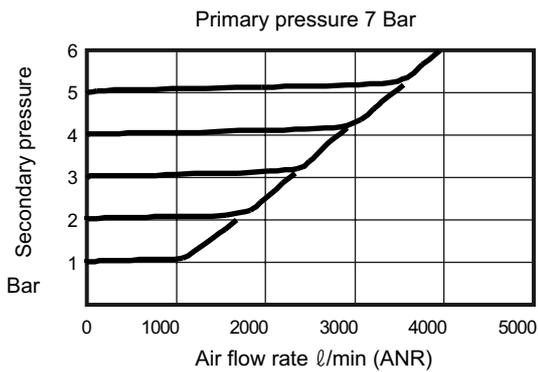


• RP2000-8-08

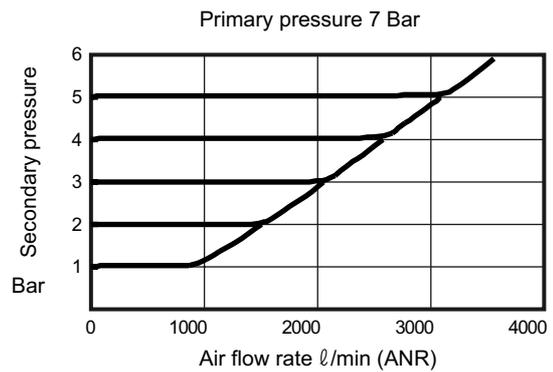


## Relief flow characteristics

• RP2000-10-08

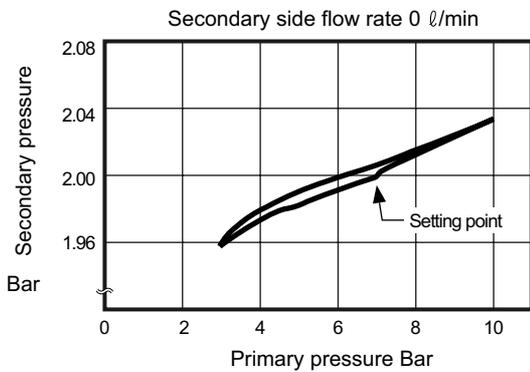


• RP2000-8-08

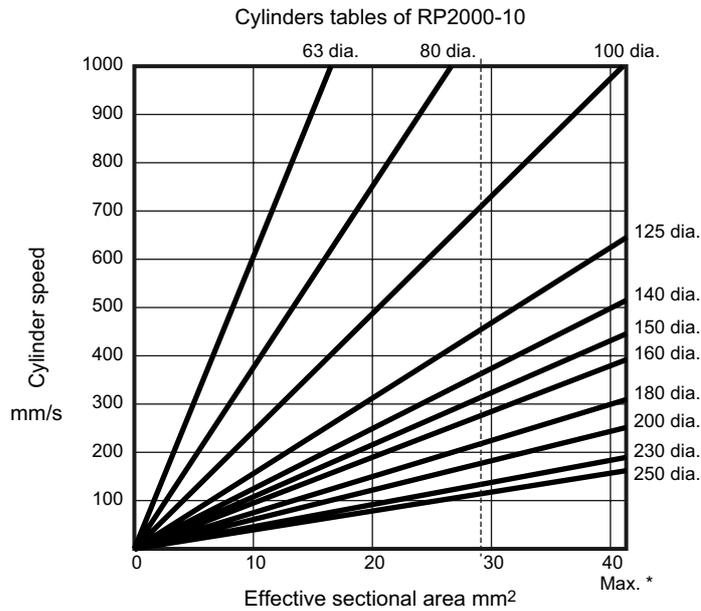


## Pressure characteristics

• RP2000-\*-08



## Cylinder speed range of RP2000

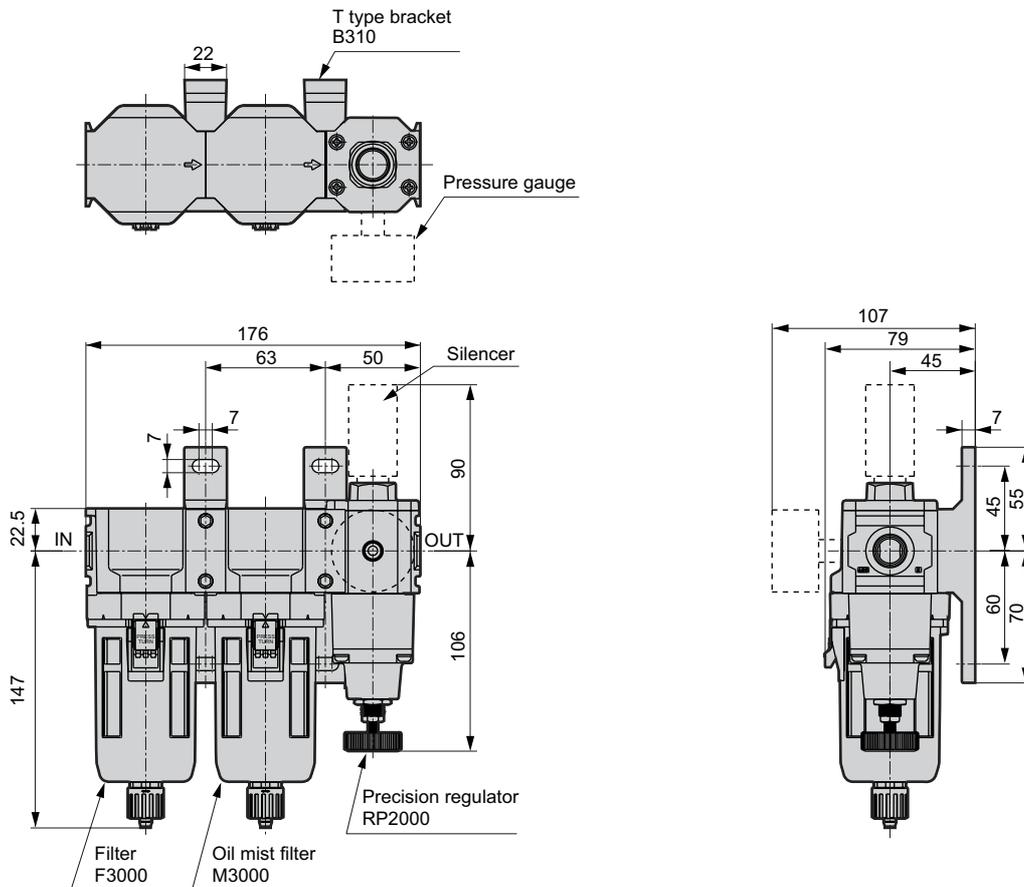


This cylinder table shows available range according to air supply / exhaust flow rate of precision regulator and required consumption flow rate at cylinder PUSH / PULL .

----- Recommended cylinder line (70% of max. flow rate is recommended.)

\* Max. cylinder line (Cylinder directly installed)

## Precise pressure control system e.g.

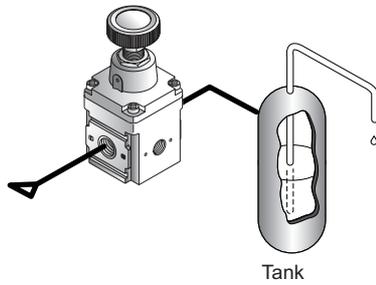


\*If required for assembly, please consult with CKD.

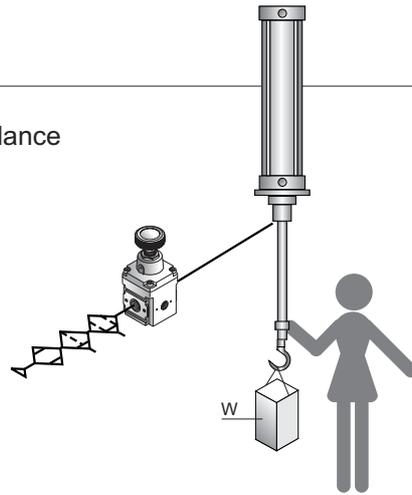
Applicable model	Filter	Oil mist filter	Precision regulator	T type bracket set
Model	F3000	M3000	RP2000	B310 (two)

## Major applications

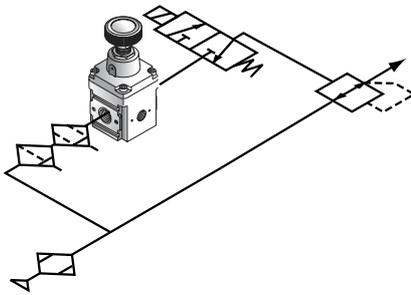
\*Liquid discharge control



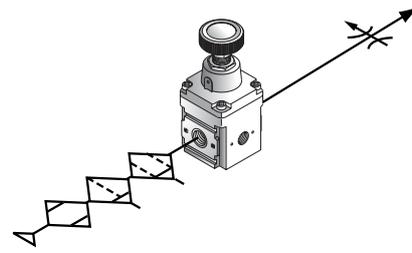
\*Balance



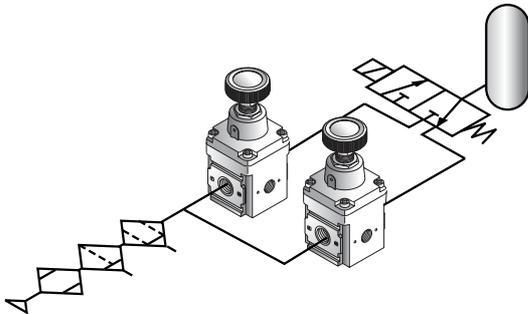
\*Pilot pressure control



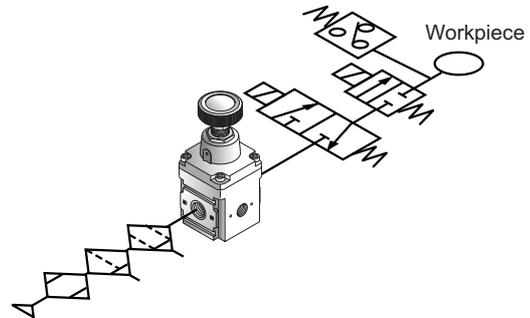
\*Extremely low pressure blow



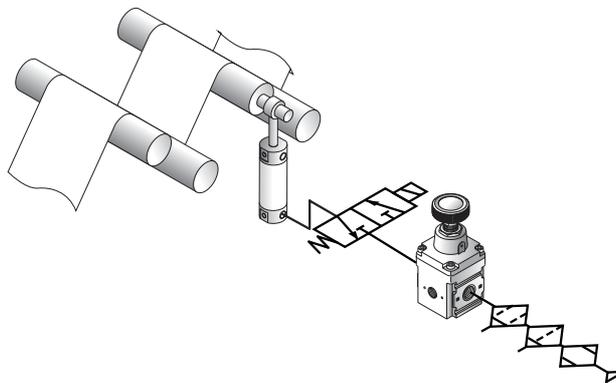
\*Quick pressure adjustment in tank



\*Leak test



\*Tension control





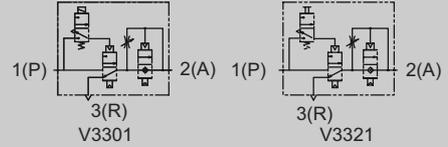
Slow start valve

# V3301/V3321 Series

To maintain safety at starting and stopping.

- Port size: Rc1/4 to Rc1/2

JIS symbol



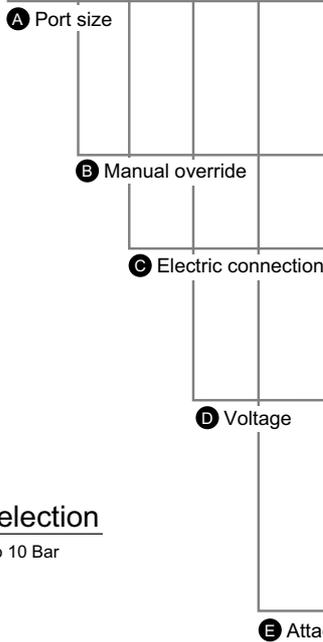
## Specifications

Descriptions		V3301/V3321		
Operating method	Pilot operated soft spool valve			
Working fluid	Compressed air (ultra dry compressed air excluded) Note 1			
Working pressure range	Bar	2 to 10		
Withstanding pressure	Bar	15		
Ambient temperature range	°C	5 to 60		
Port size	1 (P) / 2 (A) port	Rc1/4	Rc3/8	Rc1/2
	3 (R) port	Rc3/8		
	Gauge port	Rc1/4		
Effective sectional area	Low speed air supply	6		
	High speed air supply	40	64	76
	High speed exhaust	50	74	78
Response time	0.2sec or less			
Lubrication	Pre-lubricated Note 2			
Mass	g	V3301: 635 V3321: 515		
Solenoid valve specifications		V3301		
Rated voltage	V	AC100(50/60Hz)	AC200(50/60Hz)	DC24
Starting current	A	0.076/0.058	0.038/0.030	0.092
Holding current	A	0.038/0.029	0.019/0.015	
Power consumption	W	2.2/1.7	2.2/1.7	2.2
Temperature rise	K	40 or less		
Voltage fluctuation range	±10%			
Insulation class	Class B			
Electric connection	Grommet lead wire / terminal box			

Note 1: Consult with CKD for ultra dry compressed air.  
 Note 2: Use turbine oil Class 1 ISOVG32 for lubrication.

## How to order

- Solenoid valve type
  - V3301 - 08 - 1 - B
- Manual
  - V3321 - 08 - B



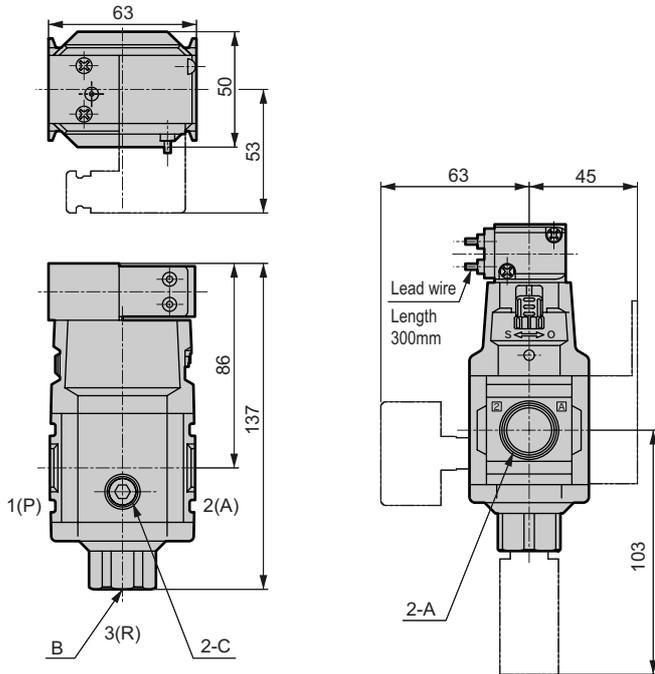
Symbol	Descriptions	
<b>A</b>	<b>Port size</b>	
	1(P) / 2 (A) port	
	08	Rc1/4
	10	Rc3/8
	15	Rc1/2
<b>B</b>	<b>Manual override</b>	
	Blank	Non-locking
	M1	Locking
<b>C</b>	<b>Electric connection</b>	
	Blank	Grommet lead wire
	S	Grommet lead wire / surge suppressor
	B	Terminal box
	LS	Terminal box surge suppressor / indicator light
<b>D</b>	<b>Voltage</b>	
	1	AC100V 50/60Hz
	2	AC200V 50/60Hz
	3	DC24V
	4	DC12V
	5	AC110V 50/60Hz
	6	AC220V 50/60Hz
		Standard
		Option
<b>E</b>	<b>Attached option</b>	
	B	Bracket
	G49P	Pressure gauge (note)
	S	Silencer

### ⚠ Note on model No. selection

Note: A pressure gauge with 43 dia., 0 to 10 Bar range is attached.

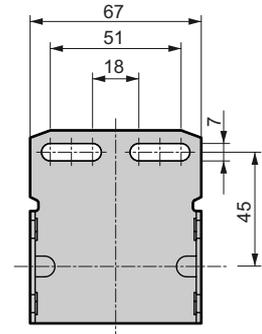
### Dimensions

• V3301

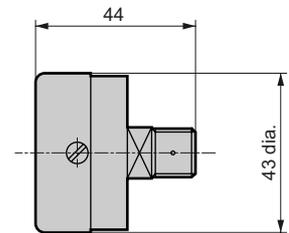


	A	B	C
V3301-08	Rc1/4	Rc3/8	Rc1/4
V3301-10	Rc3/8		
V3301-15	Rc1/2		

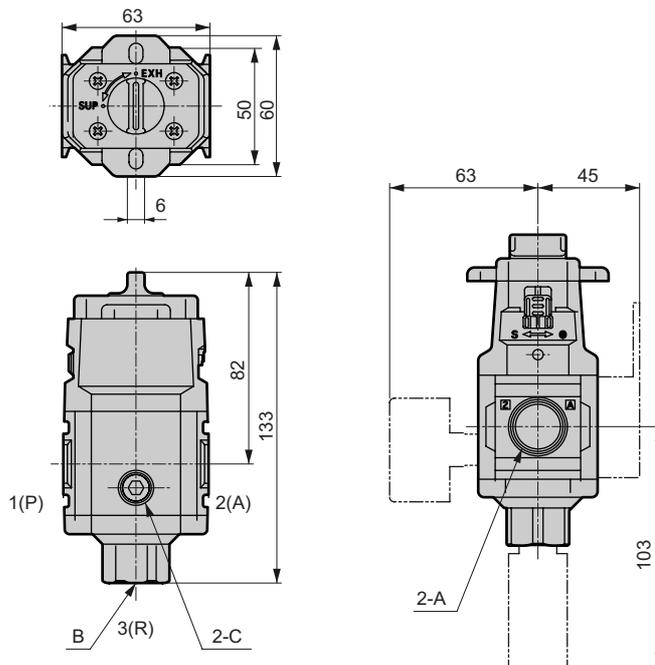
• Brackets: B320



• Pressure gauge: G49D-8-P10

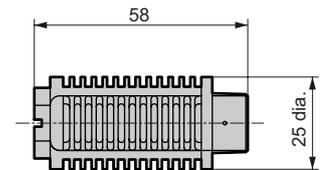


• V3321



	A	B	C
V3321-08	Rc1/4	Rc3/8	Rc1/4
V3321-10	Rc3/8		
V3321-15	Rc1/2		

• Silencer: SLW-10A

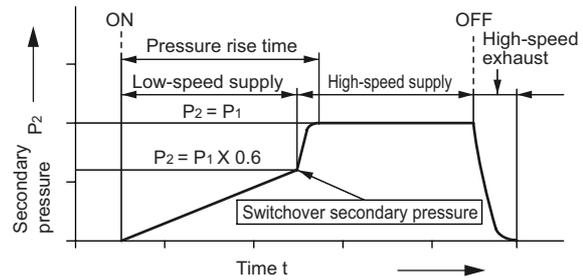


## Operational explanation. Refer to operating characteristics

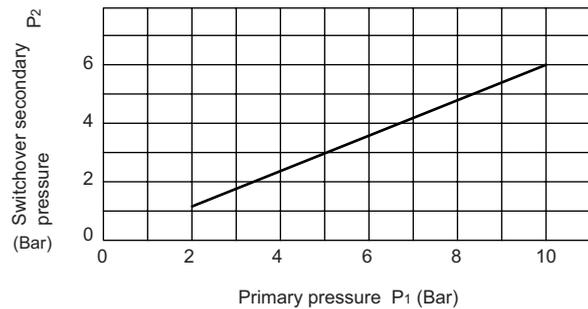
The slow start valve turns ON when the solenoid valve is energized or the manual section is set to SUP. The valve turns OFF when the solenoid valve is deenergized or the manual section is set to EXH.

- (1) First, when the main unit is turned ON, the low-speed supply path opens and compressed air starts to flow to the secondary side. Secondary pressure gradually starts to rise. Operable cylinders start moving at a low speed and do not pop out.
- (2) Next, when secondary pressure exceeds 60% of primary pressure, the high-speed supply path opens. Secondary pressure suddenly rises to the same pressure as primary pressure (fully open).
- (3) When the main unit is turned OFF, high-speed exhaust starts and residual pressure in the unit is exhausted.

### Operating characteristics



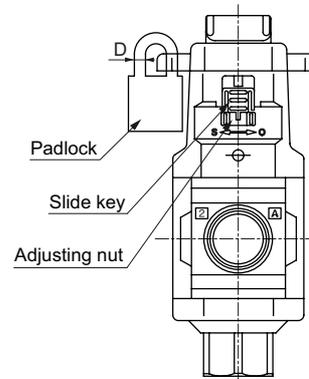
### Switchover secondary pressure



## Adjusting the slow start function (refer to side view)

- (1) Press up the slide key and release the adjusting nut lock.
- (2) Turn the main unit ON, and confirm cylinder operation speed and secondary pressure rise time. Turn the main unit OFF.
- (3) Turn the adjusting nut as explained below, and adjust the state.  
Cylinder pops out → Turn to the S side  
Low-speed operation time is too long → Turn to the O side  
Repeat steps (2) and (3) as necessary, and adjust to the optimum state.
- (4) Align the adjusting nut's keyway with the projection on the slide key.
- (5) Press down the slide key and lock the adjusting nut.
- (6) Confirm that the main unit is OFF.

### Side view



## ⚠ Precautions for use

- Note 1: This valve is for device starting and stopping including emergency stops. This valve should not be used for cylinder repeat operation or as a normal 3-way valve.
- Note 2: If the minimum operating pressure of the cylinder, which is to be prevented from popping out, is less than 50% of working pressure, popping out is not prevented.
- Note 3: The manual override is locked with a manual valve. Select a padlock with a D dimension of 3.8 to 5.8 mm.
- Note 4: Connect a silencer or exhaust filter, etc., on the exhaust port for safety and noise reduction.