Compact regulator, filter and regulator

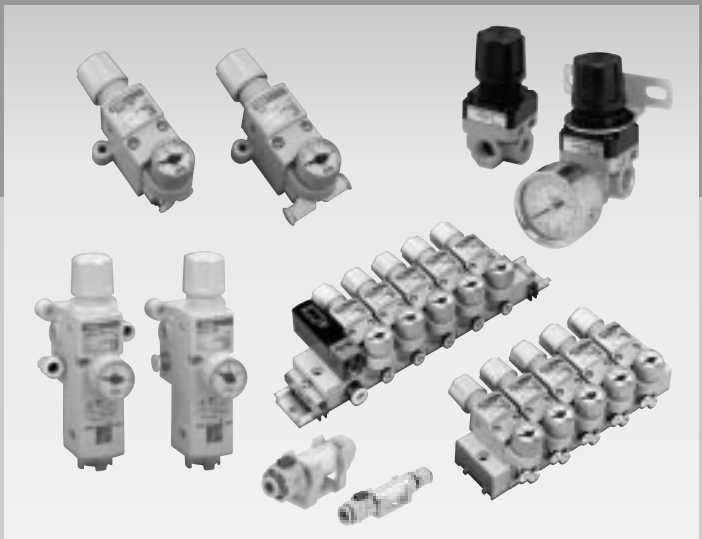
■ Components for air preparation and pressure adjustment / F.R.L. unit

Overview

Compact filter and regulator are available for semiconductor manufacturing lines and small device fields.
Select a model per applications.

Features

Compact / light weight / space saving



CONTENTS

Safety precautions

Always read this section before starting use.
Refer to Intro 67 for general precautions for pneumatic components.and to "⚠ Safety precautions" in this section for detailed cautions pertaining to each series.

Compact regulator RB500 Series

Design & Selection

⚠ CAUTION

■ Avoid using this product where strong pulsation of pressure or vibration is applied.

■ When installing between a solenoid valve and actuator, avoid use of this product in the circuit witch back pressure is applied.

■ Differential pressure between primary and secondary sides is to be 0.1 MPa and over.

■ In some case, the product could not be used in a sealed circuit at the secondary side or in balance circuit, so please consult with CKD

■ When the set output pressure of regulator is exceeded, if damage and malfunction of devices at the secondary side could be caused, always provide a safety device.

■ Avoid use in applications released into the atmosphere.

Installation & Adjustment

⚠ CAUTION

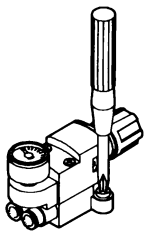
■ When transporting or installing the product.do not apply impact such as falling, etc., or failure of indicator accuracy may be caused.

■ Do not install the product where it is high temperature or humidity, or may cause a failure.

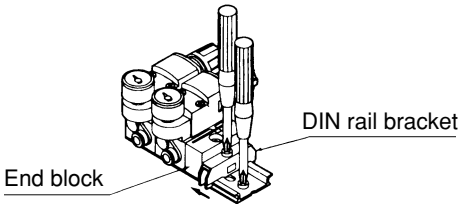
■ When installing a pressure gauge, screw the gauge into using a wrench on across floats of square section. If another section is used on, air leakage or damage may be caused.

■ When installing or piping, observe following matters.

- Check the IN arrow showing air inlet before connecting. If connected reversely, malfunction may be caused.
- Do not move and swing products with gripping adjustment knob.
- When installing a compact regulator, use M4 plain washer attached screw, and fix them with tightening torque 1.4 to 2.0 N·m or less.

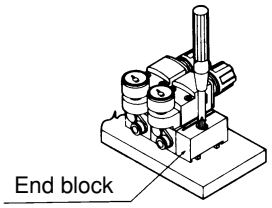


- When installing block a manifold with DIN rail, fix the DIN rail, while pinching the bracket by end blocks of manifold. Recommended tightening torque of DIN rail bracket is 1.4 to 2.0 N·m.
  Fix DIN rail bracket, while making no gaps between end blocks. Care must be taken when expanding, maintaining or disassembling regulator blocks.

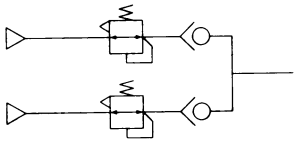


- Avoid installation where vibration or impact is applied.
- Flash the pipe carefully before installation.
- When assembling a pressure gauge or extending joint to pressure gauge port, fix the part with tightening torque 3.5 N·m or less.

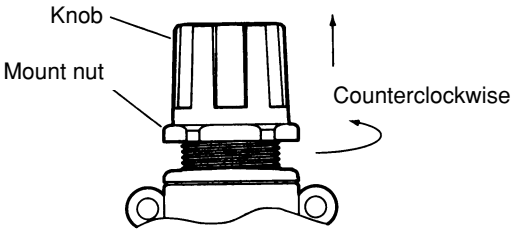
- When installing the product directly without using DIN rail (direct mount), fix end blocks on both sides with M4 set screws.
  Recommended tightening torque is 1.4 to 2.0 N·m.
  Install the product on fully flat plane. If the sheet plane is small, an external pressure from top may result in damaging manifold connection section. If flat sheet plane is not secured, use DIN rail mount type.



- When using in parallel as below, out side of circuit must not be closed. If closed circuit is required, install a check valve on each OUT side.



- When installing to a panel, loosening the mount nut, the nut function as a jack, so the knob is removed easily.
  Fix the product on a panel with a mount nut.



- Connecting a regulator, push-in joint is used. Tube coming off or air leakage could occur depending with outer diameter precision, wall thickness or hardness of piping tube. Use CKD specified tube. When mounting or dismounting a joint.press the release ring equally, while not twisting, then pull out the tube. When using a tube once used, cut the section having mark of chuck jaw.

Tube	O.D. (mm)	Tolerance of outer diameter (mm)	Bore size (mm)	Min. bending range (mm)
Soft nylon F-1500 series	ø4	±0.1	ø2.5	10
	ø6		ø4	20
	ø8		ø5.7	30
Urethane U-9500 series	ø4	+0.1 –0.15	ø2	10
	ø6		ø4	20
	ø8	+0.1 –0.2	ø5	30
Urethane NU series	ø4	±0.1	ø2.5	8
	ø6		ø4.5	15
	ø8		ø6	24

- Insert piping tube into push-in joint certainly and check that tube does not dislocate before starting use.
- For tube used with push-in joint, cut the tube to right angle by the dedicating tool.

During Use & Maintenance

⚠CAUTION

■ Working air quality

- Use clean compressed air filtered with 5 μm of air filter.
- Do not use the product with other than compressed air. Air containing corrosive gas, liquid and chemical may result in pressure adjustment failure, damage to body or rubber swelling.
- Service life could be shortened due to splashed lubricant and rubber part deterioration when using ultra dry air.

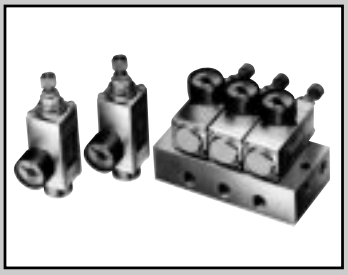
■ Working environment

Avoid using the products in following environment.

- When ambient temperature exceeds range of 5 to 60˚C.
- Where water drip and cutting lubricant contact to the product.
- Where it is humid, temperature fluctuates and dew condensates.
- Where splash of salt air or sea water contacts to the product.
- If there is atmosphere of corrosive gas and liquid and chemical material.
- Where the product is exposed to direct sun lay.

■ Pressure management

- If pressure adjustment knob is rotated clockwise, the secondary pressure increases, while counterclockwise, the pressure decreases. When adjusting pressure pull up the knob to check that lock is not applied.
- Pressure higher than the primary pressure can not be set.
- Conduct pressure setting to increase, then lock pressure adjustment knob after pressure setting.

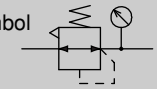


Miniature regulator

RA Series

Appropriate for semiconductor manufacturing lines and precise processing fields

Port size: Rc1/16, Rc1/8

JIS symbol 

RoHS

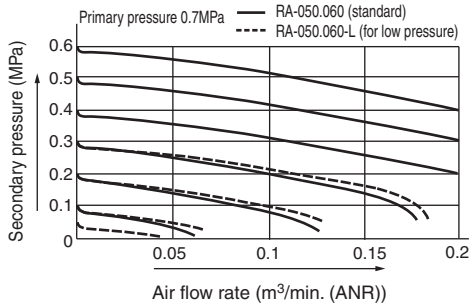
Specifications

Descriptions		RA-050	RA-060
Max. working pressure MPa		1.0	
Withstanding pressure MPa		1.5	
Ambient temperature range ˚C		5 to 65	
Set pressure range MPa*		0.1 to 0.7	
Relief		With relief mechanism	
Port size	IN	Rc1/8	Rc1/8 2 points
	OUT	Rc1/8	Rc1/8 individual
	GAUGE	Rc1/16	Rc1/16
Product weight g		74	2 stations: 350, 3 stations: 490 4 stations: 630, 5 stations: 760

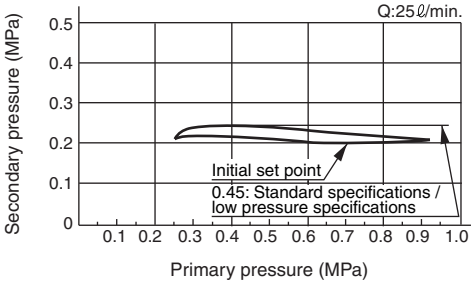
* Low pressure specifications are 0.05 to 0.35.

Flow characteristics

● RA-050



Pressure characteristics



How to order

● Miniature regulator (body porting)

RA-050 - L - X

Model no. / Ⓐ Type / Ⓑ Option

Symbol		Descriptions
Ⓐ **Type**		
Blank	Basic type	Standard pressure spec.
L		Low pressure spec.
G	With pressure gauge	Standard pressure spec.
Ⓑ **Option**		
Blank		None
X		Oil-prohibited

● Miniature regulator manifold type (sub-plate porting)

RA-060 - L - X - 2

Model no. / Ⓐ Type / Ⓑ Option / Ⓒ Station number

Symbol		Descriptions
Ⓐ **Type**		
Blank	Basic type	Standard pressure spec.
L		Low pressure spec.
G	With pressure gauge	Standard pressure spec.
Ⓑ **Option**		
Blank		None
X		Oil-prohibited
P7		Exhaust treatment
Ⓒ **Station number**		
2		2 stations
3		3 stations
4		4 stations
5		5 stations

⚠Note on model no. selection

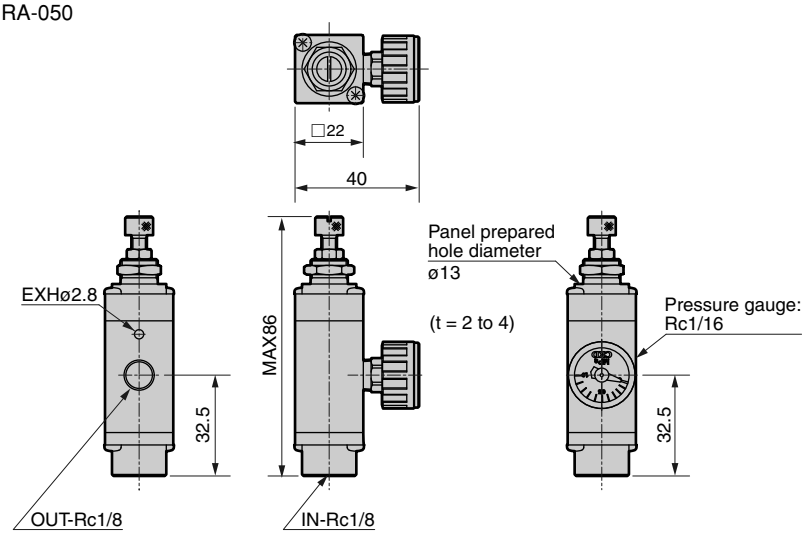
Note 1: A pressure gauge is attached. Refer torelated components on page 664 for the specifications on pressure gauge.

⚠Note on model no. selection

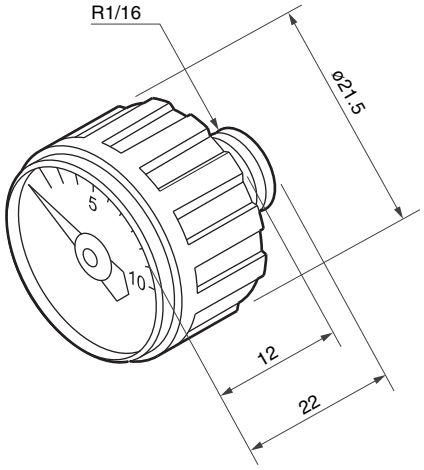
Note 1: A pressure gauge is attached. Refer torelated components on page 664 for the specifications on pressure gauge.

Dimensions

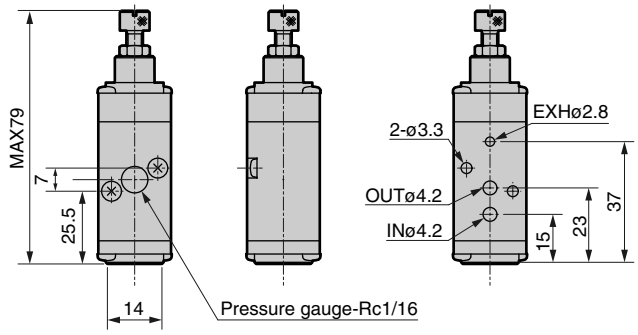
● RA-050



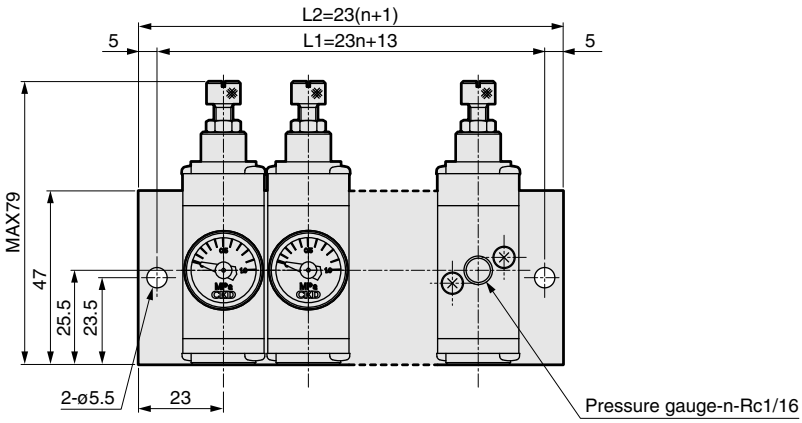
● Pressure gauge
G29D-3-P10 (R1/16: RA Series)

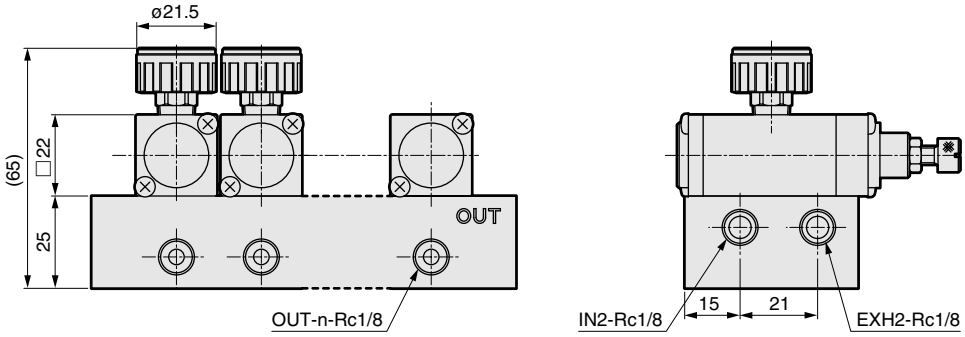


● RA-060 (discrete)



● RA-060



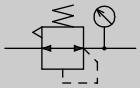


Compact piston type regulator

RA800 Series

Regulator with small size, light weight and improved operation.
Port size: Rc1/8, Rc1/4

JIS symbol



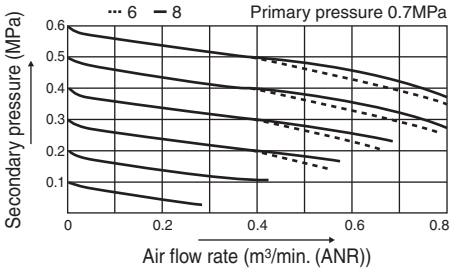
RoHS

Specifications

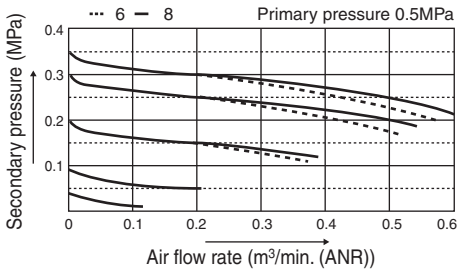
Descriptions		RA800	
Working fluid		Compressed air	
Max. working pressure MPa		1.0	
Withstanding pressure MPa		1.5	
Ambient temperature range ˚C		5 to 60	
Set pressure range MPa		0.05 to 0.85	
Relief		With relief mechanism	
Port size	IN-OUT	Rc1/8	Rc1/4
	GAUGE	Rc1/4	
Product weight g		110	

Flow characteristics

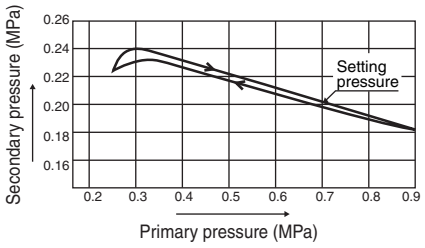
● Standard type



● Low pressure: L



Pressure characteristics



* Air flow rate is shown with atmospheric pressure conversion value m³/min. (ANR)

How to order

RA800 - 6 - P - G

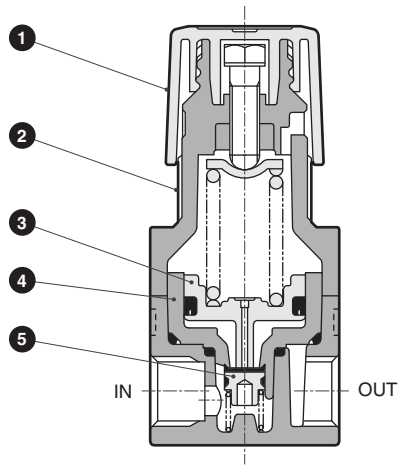
- RA800: Model no.
- 6: Ⓐ Port size
- P: Ⓑ Option Note 1
- G: Ⓒ Attachment

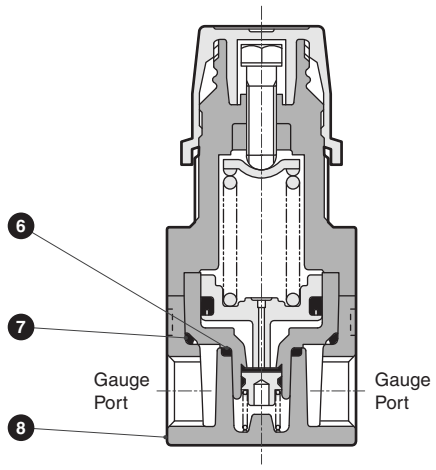
Symbol		Descriptions
Ⓐ Port size		
6		Rc1/8
8		Rc1/4
Ⓑ Option		
Panel mount Note 2	**Blank**	Without nut
	P	With nut
Pressure range	**Blank**	0.05 to 0.7MPa (pressure gauge: G49D-8-P10)
	L	0.05 to 0.35MPa (pressure gauge: G49D-8-P04)
Relief	**Blank**	Relief type
	N	Nonrelief type
Ⓒ Attachment		
Blank		None
G Note 3		Pressure gauge (G49D-8-P10)
B Note 2		Bracket (RA800-BA083)

⚠Note on model no. selection

Note 1: When selecting options for several items, list options in order from the top.
Note 2: "B" bracket attached is available only for option symbol P (panel mount).
Note 3: If "L" is selected for the pressure range option, the low-pressure gauge (G49D-8-P04) will be used.

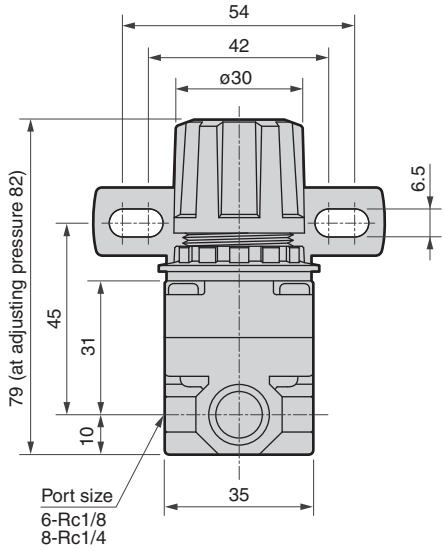
Internal structure and parts list

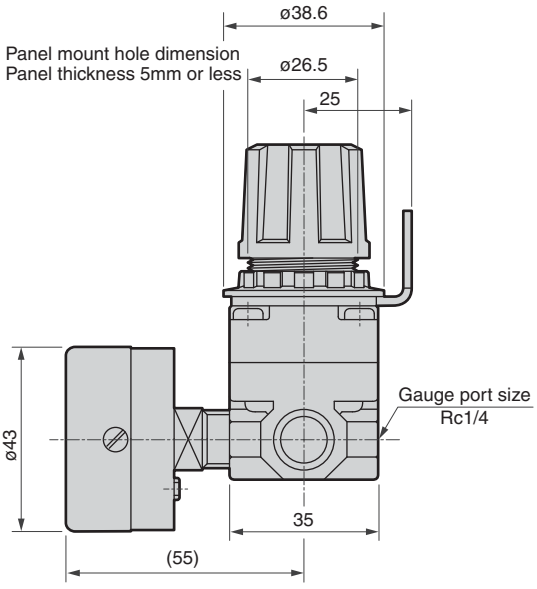




No.	Parts name	Material	No.	Parts name	Material
1	Knob	Polyacetal resin	5	Valve element	Brass, hydrogen nitrile rubber
2	Guard	Polyamide resin	6	O ring	Nitrile rubber
3	Piston assembly	Polyacetal resin, nitrile rubber	7	O ring	Nitrile rubber
4	Piston guide	Polyphenylene sulfide resin	8	Body	Aluminum alloy die-casting

Dimensions

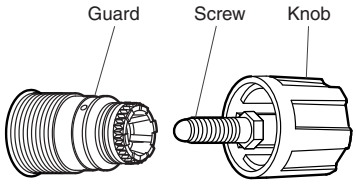


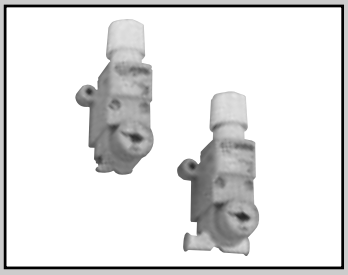


* B: bracket, G: pressure gauge, P: panel mount are optional.

⚠ Precautions for during use & maintenance

To install this product on the panel or wall bracket, when disassembling the knob, if the screw is removed, insert the screw into the knob or the cover until it snaps.



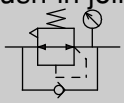


Compact regulator

RB500 Series

Compact, space saving structure and reverse flow function integrated.
Port size: Push-in joint ø4, ø6

JIS symbol



RoHS CAD

Specifications

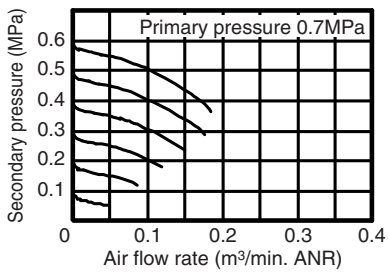
Descriptions		RB500
Working fluid		Compressed air
Max. working pressure MPa		1.0
Withstanding pressure MPa		1.5
Ambient temperature range °C		5 to 60
Set pressure range MPa		0.05 to 0.7 (Note 1)
Relief		With relief mechanism
Port size	IN-OUT	Push-in joint: ø4, ø6
	GAUGE	Rc1/8
Product weight g		80

Note 1: Low pressure specifications are 0.05 to0.35.

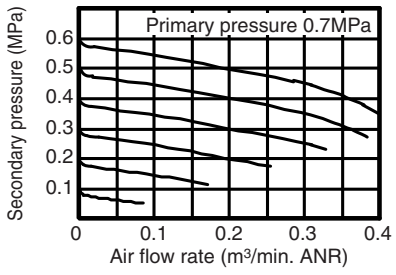
Ozone specifications (Ending 14)
RB500 ····· P11

Flow characteristics

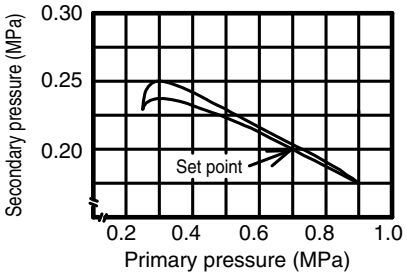
● RB500-SSC4



● RB500-SSC6



Pressure characteristics



How to order

RB500 - **SSC4** - **PG39**

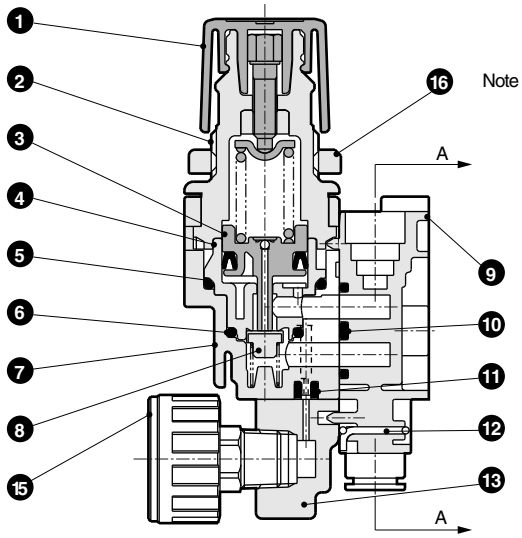
- RB500: Model no.
- SSC4: Ⓐ Connection
- PG39: Ⓑ Option

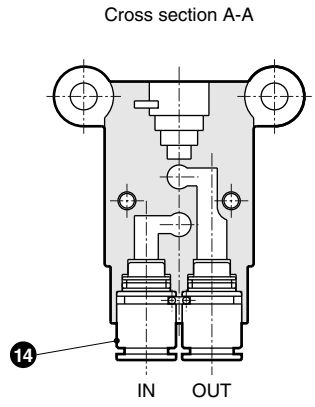
Symbol			Descriptions
Ⓐ Connection			
Direction	IN	S	Straight
		L	Elbow
	OUT	S	Straight
		L	Elbow
Port size		C4	ø4
		C6	ø6
Ⓑ Option			
Panel mount Note 2		Blank	Without nut
		P	With nut
Pressure range		Blank	0.05 to 0.7MPa (pressure gauge: G29D-6-P10)
		L	0.05 to 0.35MPa (pressure gauge: G39D-6-P04)
Relief		Blank	Relief type
		N	Nonrelief type
Pressure gauge		Blank	With pressure gauge
		T	Without pressure gauge (gauge port Rc1/8)
		G39	With pressure gauge (G39D-6-P10)

⚠ Note on model no. selection

Note 1: ø21 0 to 1.0MPa pressure gauge is provided as standard. For low pressure, ø27 0 to 0.4 MPa low pressure gauge is provided.
Note 2: For panel installation, indicate option symbol "P".

Internal structure and parts list





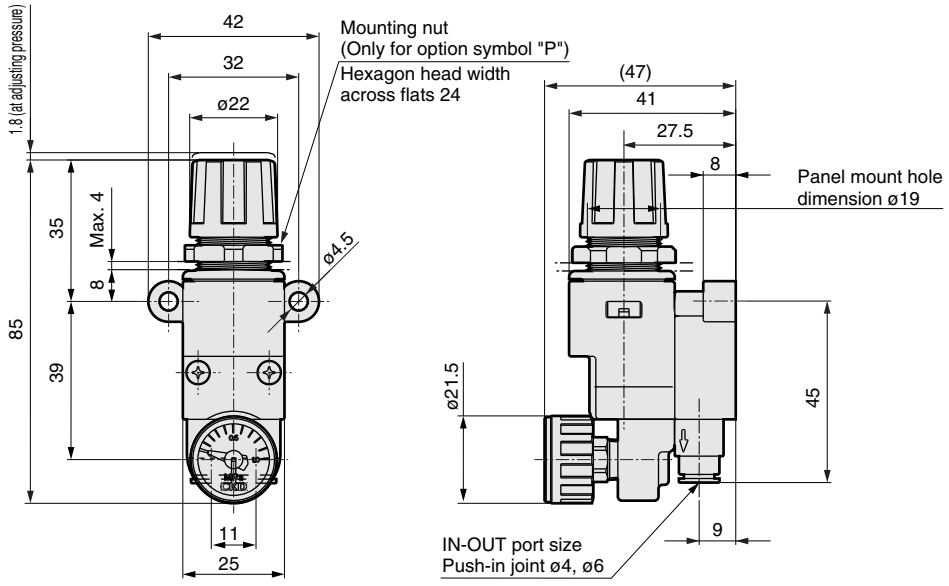
No.	Parts name	Material
1	Knob	Polyacetal resin
2	Guard	Polyamide resin
3	Piston assembly	Polyacetal resin, nitrile rubber
4	Piston guide	Polyacetal resin
5	O ring	Nitrile rubber
6	O ring	Nitrile rubber
7	Body	Polyamide resin
8	Valve element	Alumin.um, hydrogen nitrile rubber
9	Piping block assembly	Polyamide resin, steel
10	Body packing seal	Hydrogen 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

Note 1: A mounting nut is optional.
Nut is attached only for option symbol "P".

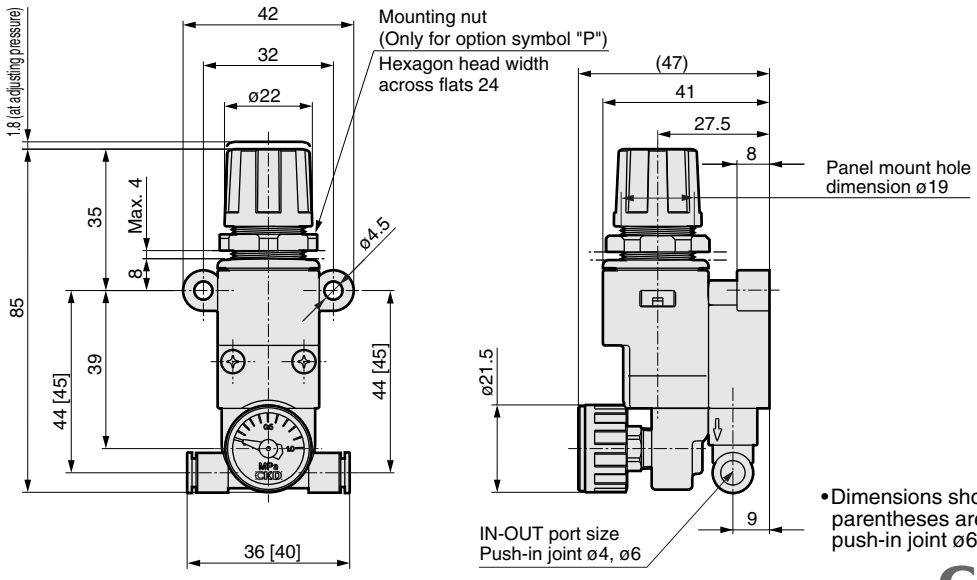
Dimensions

CAD

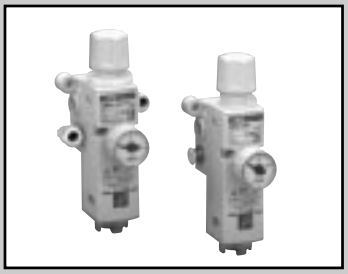
● RB500 straight piping



● RB500 elbow piping



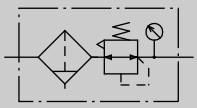
•Dimensions shown in parentheses are for push-in joint ø6.



Compact filter and regulator

WB500 Series

JIS symbol



RoHS CAD

Features

- Compact
  Push-in joint and bracked are integrated to reduce total space.
- Lightweight
  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 MPa		1.0
Withstanding pressure MPa		1.5
Ambient temperature range ˚C		5 to 60
Filtration rating μm		5
Set pressure range MPa		0.05 to 0.7 (Note 1)
Relief		With relief mechanism
Drain capacity cm^3		1.0
Drainage method		Manual
Port size	IN-OUT	Push-in joint: ø4, ø6
	GAUGE	Rc1/8
Product weight g		100

Note 1: Low pressure specifications are 0.05MPa to0.35MPa.

How to order

WB500 - SSC4 - PG39

Ⓐ Connection

Ⓑ Option

Symbol	Descriptions	
Ⓐ Connection		
Direction		
S	Straight	IN
L	Elbow	IN
S	Straight	OUT
L	Elbow	OUT
Port size		
C4	ø4	
C6	ø6	

Ⓑ Option		
Panel mount Note 3	**Blank**	Without nut
	P	With nut
Pressure range	**Blank**	0.05 to 0.7MPa (pressure gauge: G29D-6-P10)
	L	0.05 to 0.35MPa (pressure gauge: G39D-6-P04)
Relief	**Blank**	Relief type
	N	Nonrelief type
Pressure gauge	**Blank**	With pressure gauge
	T	Without pressure gauge (gauge port Rc1/8)
	G39	With pressure gauge (G39D-6-P10)
Flow direction	**Blank**	Standard flow (left → right)
	X1	Reverse flow (right → left)
Drain plug material	**Blank**	Polycarbonate
	Z	Non-clear nylon Note 1

Note on model no. selection

Note 1: The same material (nylon) as the body is used, so the plug is not transparent.
Note 2: The 0 to 1.0MPa pressure gauge is the standard for ø21.
For low pressure, ø27 0 to 0.4 MPa low pressure gauge is provided.
Note 3: Select option symbol “P” when mounting on a panel.

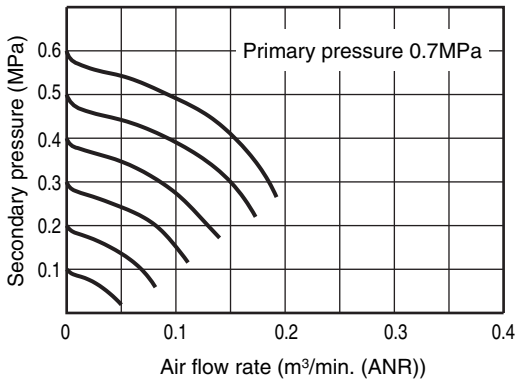
<Example of model number>

WB500-SSC4-PG39

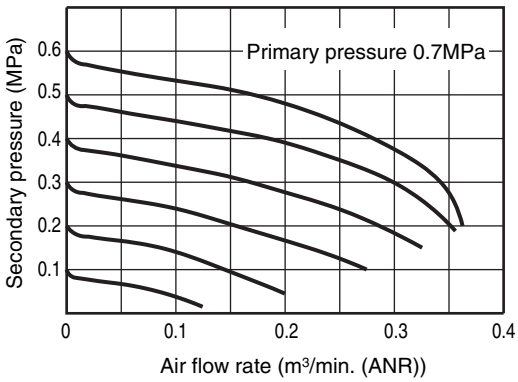
Ⓐ Connection (direction) : Both IN and OUT are straight
Port size : ø4
Ⓑ Option : Panel mount
Ⓒ Pressure gauge : ø27 0 to 0.1MPa pressure gauge

Flow characteristics

● WB500-**C4

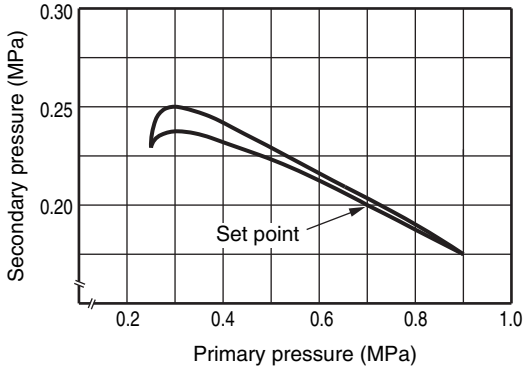


● WB500-**C6



Pressure characteristics

● WB500

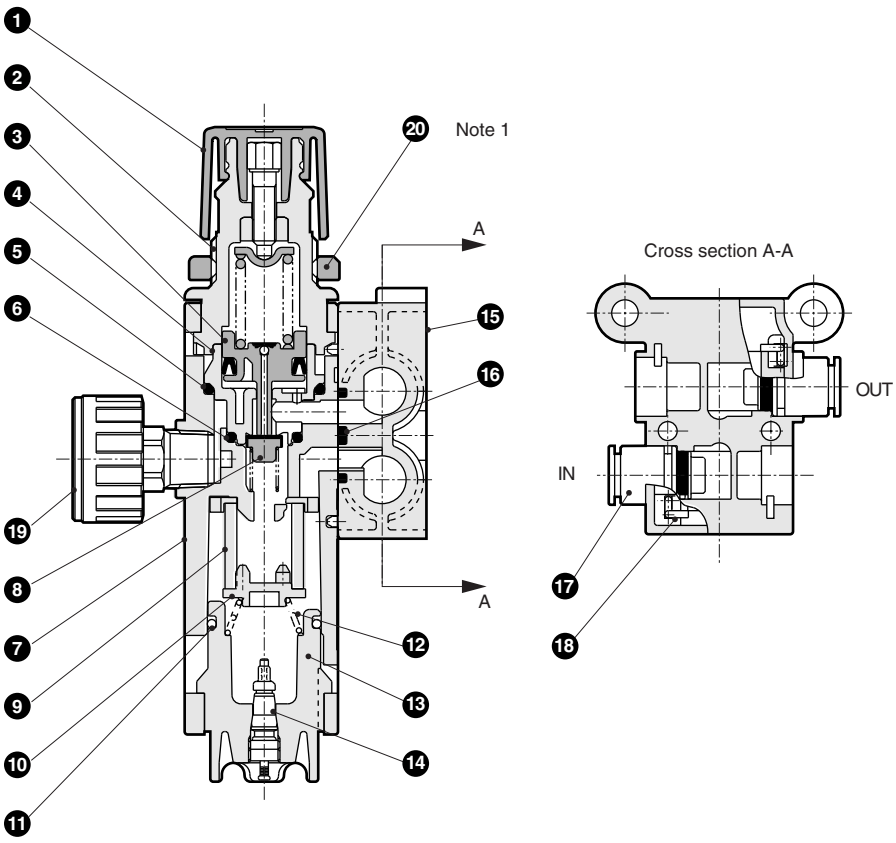


Safety precautions

■ Precaution for piping

● Do not use this product in an atmosphere containing organic solvents or chemicals, etc., or where the product could come in contact with them.
● Avoid direct sunlight.
● Avoid using this product where vibration and impact are present.
● Install so that the drain plug faces straight down.
● Avoid using this product where there are large amounts of drainage. If unavoidable, install an air dryer or drain separator on the IN side.
● Flash the pipe carefully before installation.
● Use the CKD soft nylon tube or urethane tube for the piping tubes.
● Do not insert the piping tube in a slanted manner as it could dislocate.
● Securely insert piping into the push-in joint before use.
● Turn the pressure adjustment knob clockwise to increase secondary pressure, and counterclockwise to lower pressure.
● Check the primary pressure carefully before setting the pressure.
● Stop the primary pressure and release the residual pressure before starting maintenance.
● Mount the pressure gauge with a tightening torque of 3.5N·m or less.

Internal structure and parts list

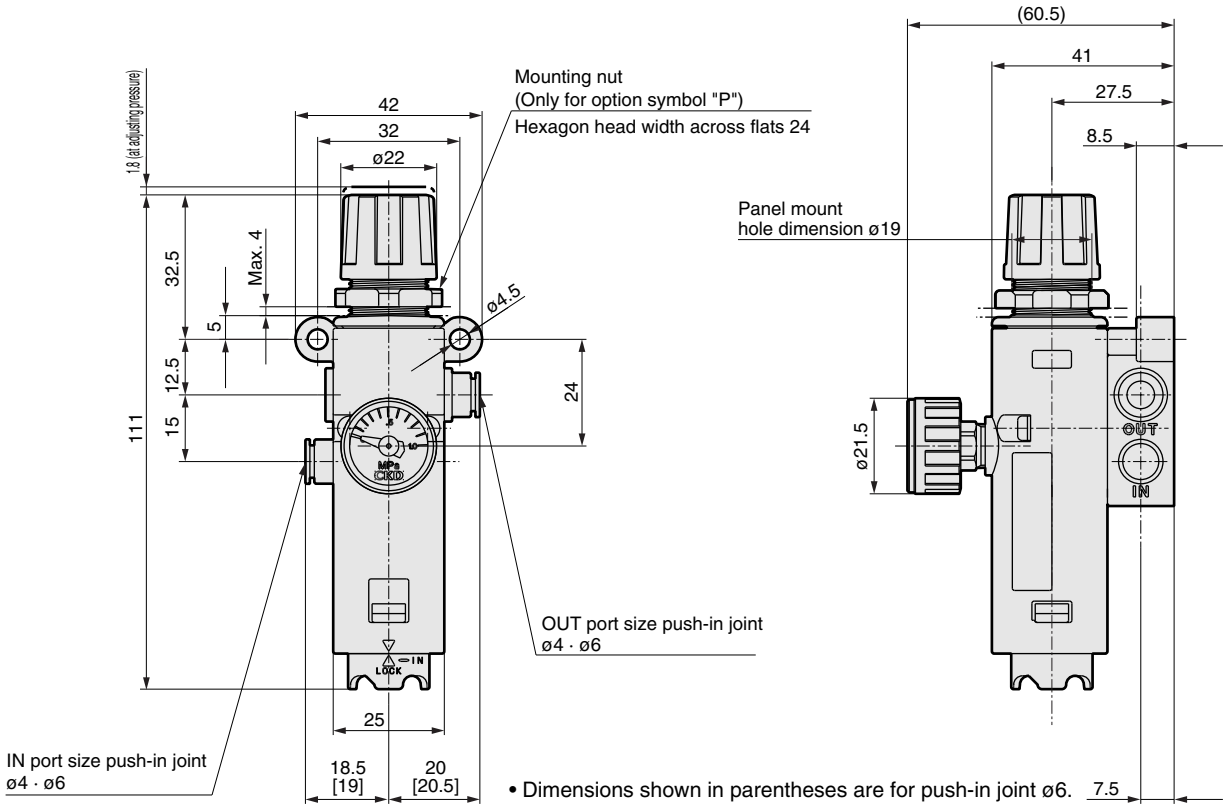


No.	Parts name	Material
1	Knob	Polyacetal resin
2	Guard	Polyamide resin
3	Piston assembly	Polyacetal resin, nitrile rubber
4	Piston guide	Polyacetal resin
5	O ring	Nitrile rubber
6	O ring	Nitrile rubber
7	Body	Polyamide resin
8	Valve element	Alumin.um, hydrogen nitrile rubber
9	Element	Polypropylene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

Note 1: A mounting nut is optional.
Nut is attached only for option symbol "P".

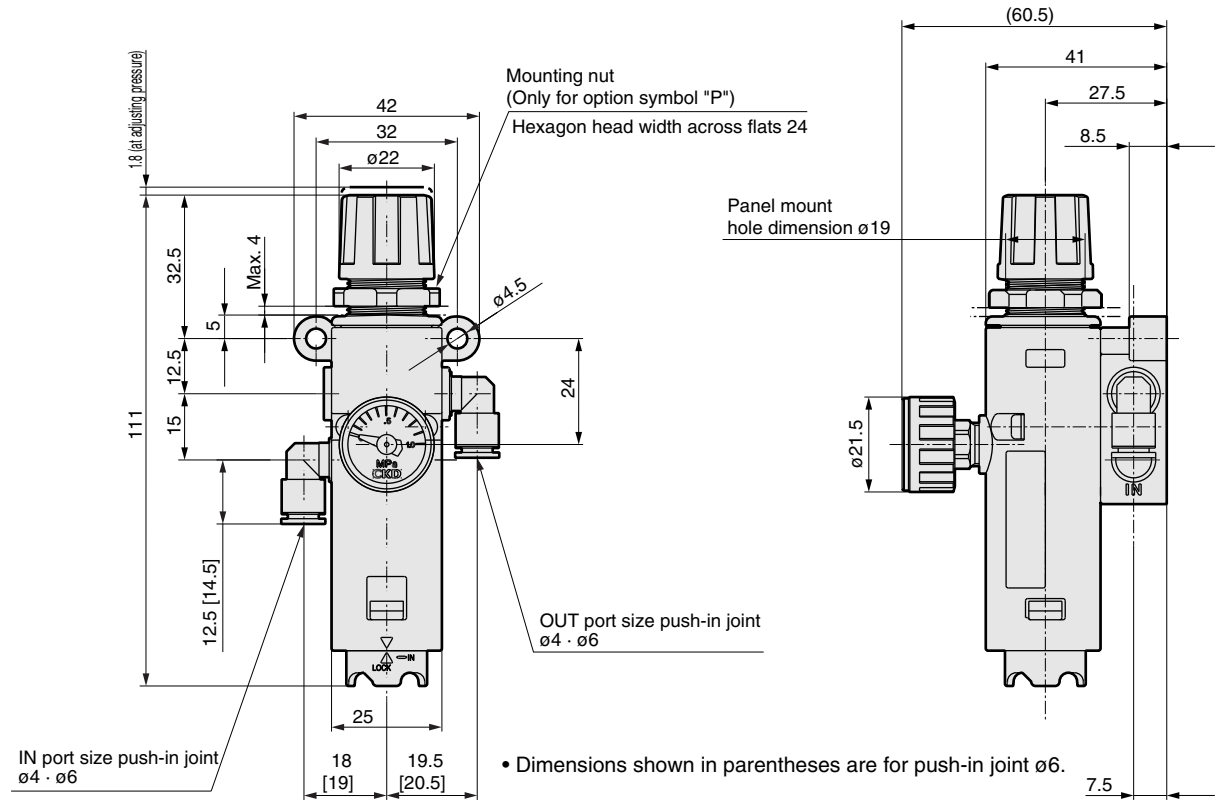
Dimensions

● WB500 straight piping

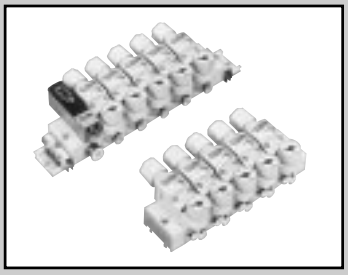


• Dimensions shown in parentheses are for push-in joint ø6.

● WB500 elbow piping



• Dimensions shown in parentheses are for push-in joint ø6.



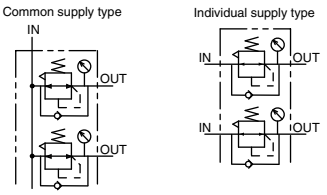
Block manifold regulator

MNRB500 Series

Port size: Push-in joint ø4, ø6, ø8

RoHS CAD

JIS symbol



Specifications

Descriptions		MNRB500A	MNRB500B
Working fluid		Compressed air	
Max. working pressure MPa		0.8	
Withstanding pressure MPa		1.2	
Ambient temperature range ˚C		5 to 60	
Set pressure range MPa		0.05 to 0.7 (Note 1)	
Relief		With relief mechanism	
Port size	IN	Push-in joint ø6, ø8	Push-in joint ø4, ø6
	OUT	Push-in joint: ø4, ø6	
	GAUGE	Rc1/8	

Note 1: Low pressure specifications are 0.05 to 0.35.

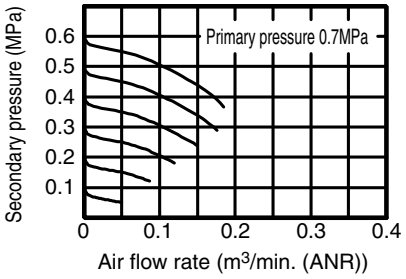
Ozone specifications (Ending 15)

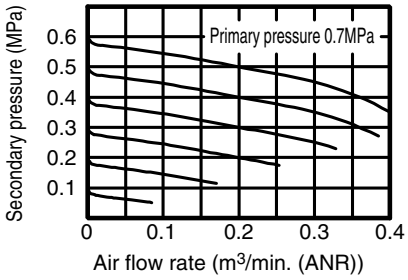
MNRB500* –·····– P11

Flow characteristics

For 1-station and 2-station simultaneous use

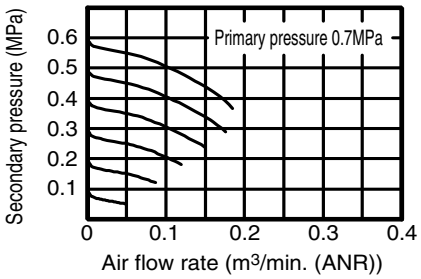
- MNRB500A-SSC64
- MNRB500B-SSC4
- MNRB500A-SSC86
- MNRB500B-SSC6

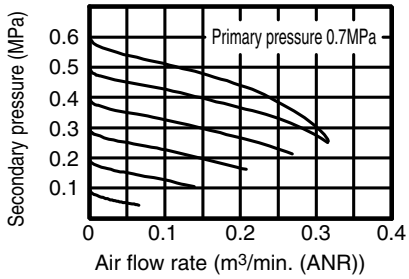




For 3-station simultaneous use

- MNRB500A-SSC64
- MNRB500A-SSC86

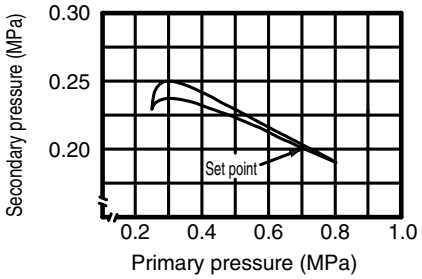




Note 1: With common exhaust, primary pressure is insufficient when using multiple manifolds simultaneously. So, install air supply block per three stations. Use an air supply port larger than OUT port size.

Note 2: The characteristics for using three stations simultaneously indicate the characteristics for the remaining station when the working flow for two of the three stations is 200l/min.

Pressure characteristics



How to order

MNRB500A - **SSC64** - **5** - **NG39** - **D**

Ⓐ Model no. Note 1
Ⓑ Joint type
Ⓒ Port size
Ⓓ Station number Note 2
Ⓔ Option Note 3
Ⓕ Installation method

Symbol	Descriptions
Ⓐ Model no.	
MNRB500A	Common supply type
MNRB500B	Individual supply type
Ⓑ Joint type	
IN direction	
S	Straight
L	Elbow
OUT direction	
S	Straight
L	Elbow

Ⓒ Port size IN-OUT		MNRB500A	MNRB500B
C64	IN; ø6, OUT; ø4	●	
C66	IN; ø6, OUT; ø6	●	
C84	IN; ø8, OUT; ø4	●	
C86	IN; ø8, OUT; ø6	●	
C4	IN / OUT; ø4		●
C6	IN / OUT; ø6		●

Ⓓ Station number	
1	1 station
2	2 stations
⋮	⋮
10	10 stations

Ⓔ Option			MNRB500A	MNRB500B
Pressure range	**Blank**	0.05 to 0.7MPa (pressure gauge: G29D-6-P10)	●	
	L	0.05 to 0.35MPa (pressure gauge: G39D-6-P04)	●	
Relief	**Blank**	Relief type	●	
	N	Nonrelief type	●	
Pressure gauge Note 4	**Blank**	With pressure gauge	●	
	T	Without pressure gauge (gauge port Rc1/8)	●	
	G39	With pressure gauge (G39D-6-P10)	●	
Flow direction	**Blank**	Standard flow (left → right)	●	●
	X1	Reverse flow (right → left)	●	

Ⓕ Installation method	
Blank	DIN rail installation
D	Direct mount

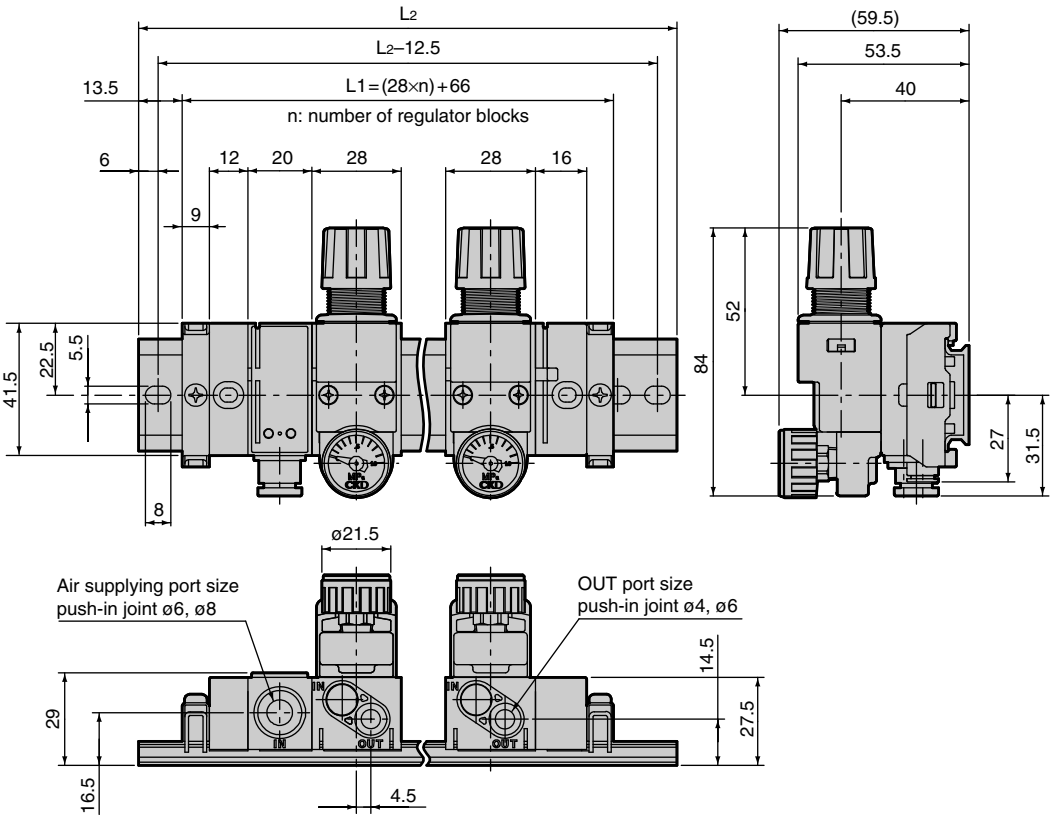
⚠ Note on model no. selection

Note 1: Air supply block is tobe 1 station.
When using three or more stations simultaneously with the common supply, increase one supply block station for every three stations.
In this case, indicate specifications in the mix manifold specification sheet.
Note 2: Maximum installation number of direct mount type is 5 stations.
Note 3: Same options and pressure gauge apply for each regulator block.
Note 4: ø21: 0 to 1.0MPa pressure gauge is the standard.
For low pressure, ø27: 0 to 0.4 MPa low pressure gauge is provided.
Note 5: When other than basic model specifications, issue the mix manifold specification sheet on page 609.

Dimensions CAD

● Common supply type DIN rail mount type

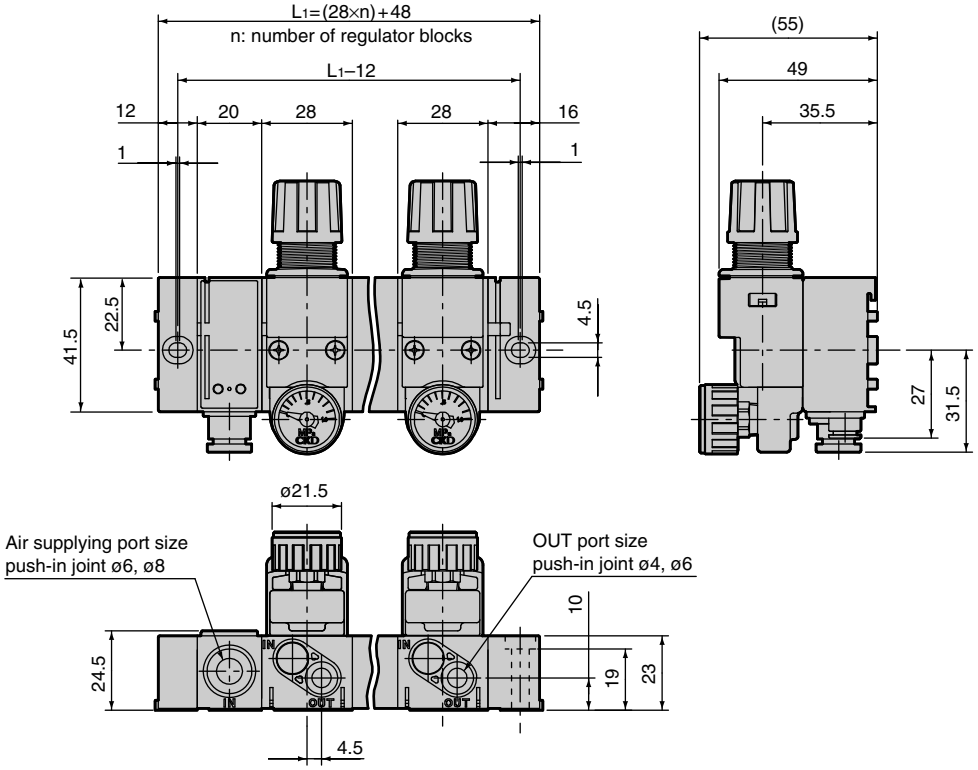
MNRB500A-**C**-*



Station number	L2 dimension
1	125
2	150
3	175
4	212.5
5	237.5
6	262.5
7	287.5
8	325
9	350
10	375

● Common supply type direct mount type

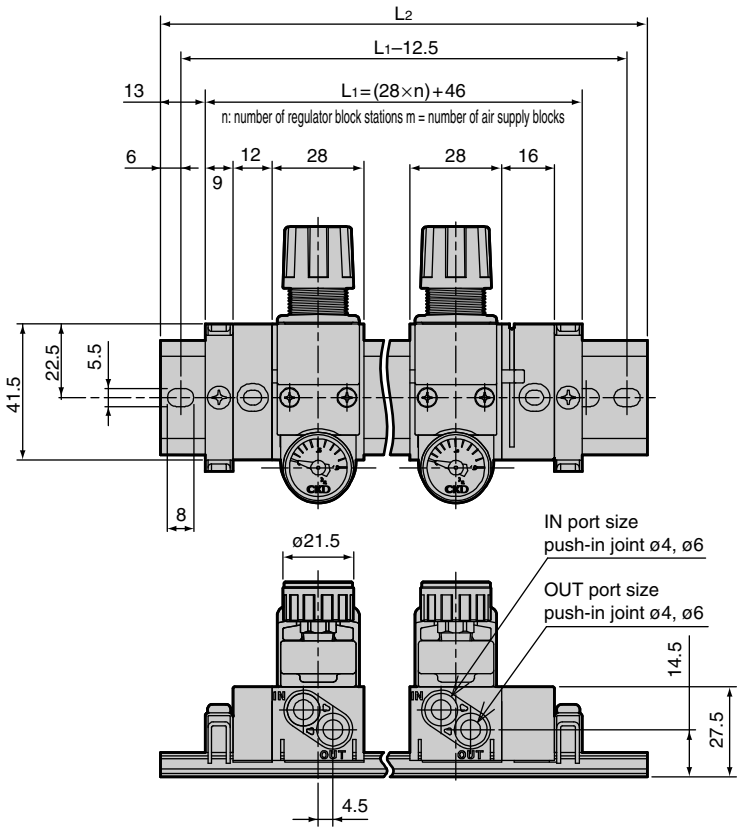
MNRB500A-**C**-*-D

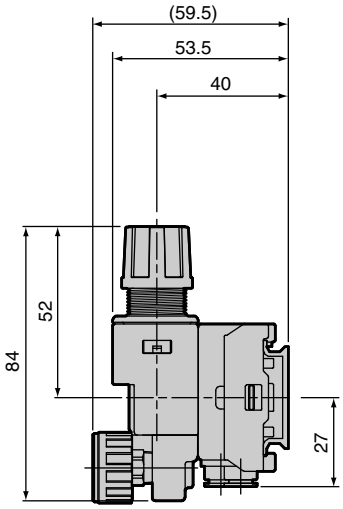


Dimensions

● Individual supply type DIN rail mount type

MNRB500B-**C*-*

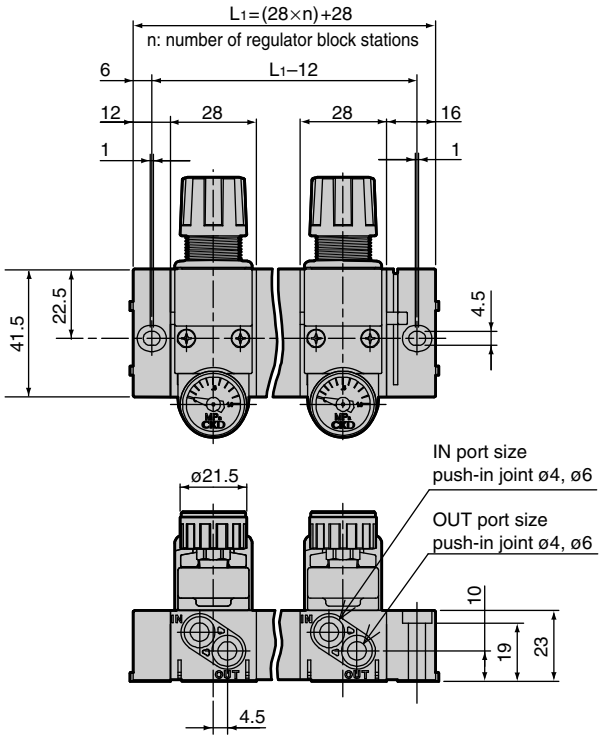


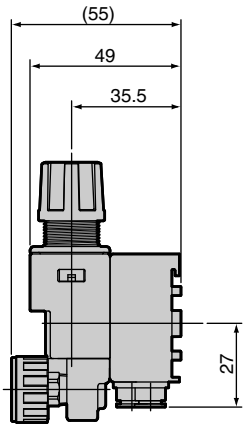


Station number	L2 dimension
1	100
2	137.5
3	162.5
4	187.5
5	212.5
6	250
7	275
8	300
9	325
10	362.5

● Individual supply type direct mount type

MNRB500B-**C*-*-D



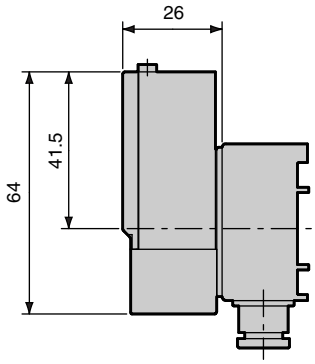


Pressure switch / push-in joint elbow type dimensions

● Air supply block with pressure gauge

NRB500-APS-*C*

Pressure switch APS is integrated into air supply block to control primary pressure.

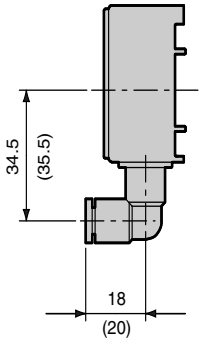


● Air supply block

Push-in joint elbow type

NRB500-NP-LC*

Front or rear piping is enabled with air supply port with elbow joint.



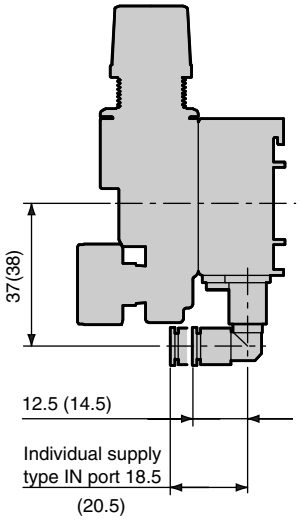
Dimension in ( ) is for C8

● Regulator block

Push-in joint elbow type

NRB500*-**C*

Front or rear piping is enabled with IN and OUT ports with elbow joint.



Dimension in ( ) is for C6

MEMO

Regulator block

How to order

NRB500B - SSC4U - NG39

- Ⓐ Model no.
- Ⓑ Connection
- Ⓒ Option

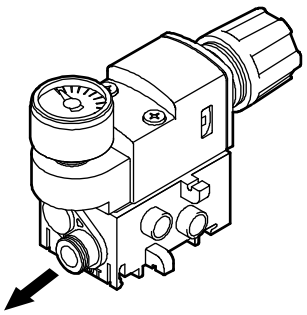
Symbol			Descriptions
Ⓐ Model no.			
NRB500A			Common supply type
NRB500B			Individual supply type
Ⓑ Connection			
Direction	IN (Note 1)	**S**	Straight
		L	Elbow
	OUT	**S**	Straight
		L	Elbow
Port size	**IN-OUT**	**C4**	ø4
		C6	ø6
OUT side piping		**Blank**	IN-OUT down piping
		U (Note 2)	OUT side up piping
Ⓒ Option			
Pressure range		**Blank**	0.05 to 0.7MPa (pressure gauge: G29D-6-P10)
		L	0.05 to 0.35MPa (pressure gauge: G39D-6-P04)
Relief		**Blank**	Relief type
		N	Nonrelief type
Pressure gauge Note 3		**Blank**	With pressure gauge
		T	Without pressure gauge (gauge port Rc1/8)
		G39	With pressure gauge (G39D-6-P10)

⚠Note on model no. selection

Note 1: For common supply, IN port connection type is not required
Note 2: Applicable only for straight.
Note 3: ø21 0 to 1.0MPa pressure gauge is provided as standard.
For low pressure, ø27 0 to 0.4 MPa low pressure gauge is provided.

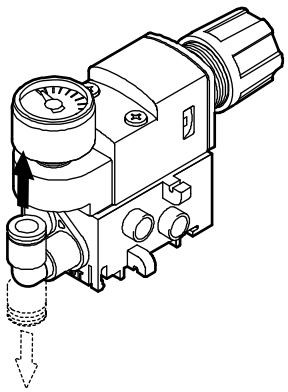
● Common supply straight type

Downward piping in enabled with OUT port with straight joint.



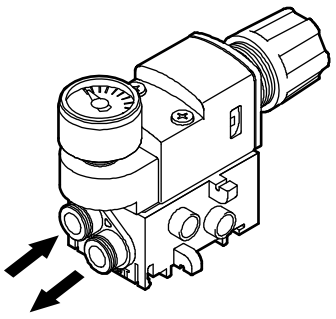
● Common supply elbow type

Front or rear piping is enabled with OUT port with elbow joint.



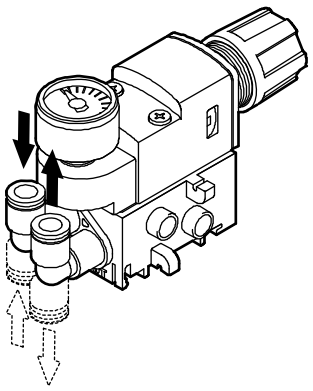
● Individual supply straight type

Front or rear piping is enables with IN and OUT ports with straight joint.



● Individual supply elbow type

Front or rear piping is enabled with IN and OUT ports with elbow joint.



Sub base

How to order

NRB500A - NS - SSC4 MP

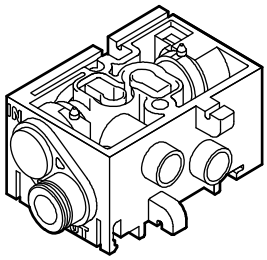
- Ⓐ Model no.
- Ⓑ Connection
- Ⓒ Option

Symbol			Descriptions
Ⓐ Model no.			
NRB500A			Common supply
NRB500B			Individual supply
Ⓑ Connection			
Direction	IN Note 1	**S**	Straight
		L	Elbow
	OUT	**S**	Straight
		L	Elbow
Port size	IN-OUT	**C4**	ø4
		C6	ø6
OUT side piping		**Blank**	IN-OUT down piping
		U Note 2	OUT side up piping
Ⓒ Option			
T			Without pressure gauge
Blank			Without masking plate
MP Note 3			With masking plate

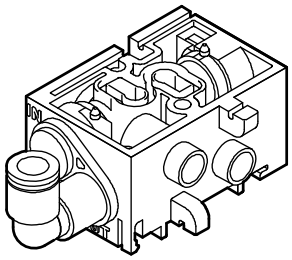
Note on model no. selection

Note 1: For common supply, IN port connection type is not required
Note 2: Straight only
Note 3: The mixed manifold specifications are required when a masking plate is provided.

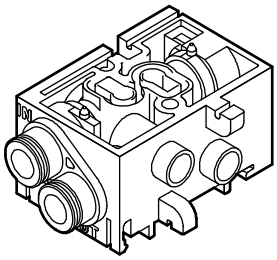
● Common supply straight type
OUT port with straight joint



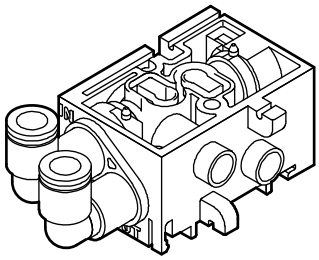
● Common supply elbow type
OUT port with elbow joint



● Individual supply straight type
IN, OUT ports with straight joint



● Individual supply elbow type
IN, OUT ports with elbow joint



Regulator body

How to order

RB500 - 00 S - NG39

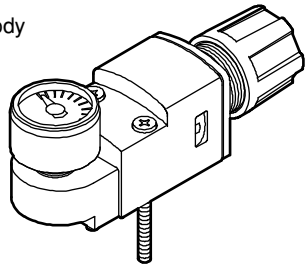
- Ⓐ Connection
- Ⓑ Option

Symbol		Descriptions
Ⓐ Connection		
S		Discrete (RB500)
M		Manifold (MNRB500A.B)
Ⓑ Option		
Panel mount Note 1	**Blank**	Without nut
	P	With nut
Pressure range	**Blank**	0.05 to 0.7MPa (pressure gauge: G29D-6-P10)
	L	0.05 to 0.35MPa (pressure gauge: G39D-6-P04)
Relief	**Blank**	Relief type
	N	Nonrelief type
Pressure gauge Note 2	**Blank**	With pressure gauge
	T	Without pressure gauge (gauge port Rc1/8)
	G39	With pressure gauge (G39D-6-P10)

Note on model no. selection

Note 1: Select option symbol "P" when mounting on a panel.
Note 2: ø21 0 to 1.0MPa pressure gauge is provided as standard. For low pressure, ø27 0 to 0.4 MPa low pressure gauge is provided.

● Regulator body



Common supply block

How to order

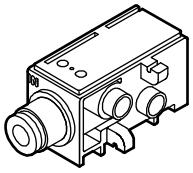
NRB500 - NP - SC6

Ⓐ Connection

Symbol		Descriptions
Ⓐ **Connection**		
Direction	**S**	Straight
	L	Elbow
Port size	**C6**	ø6
	C8	ø8

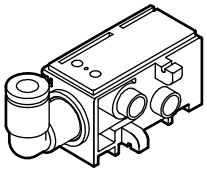
● Straight type

Air supply port with straight joint



● Elbow type

Air supply port with elbow joint



Common supply block with pressure switch

How to order

NRB500 - APS - SC6 - 3

Ⓐ Connection

Ⓑ Lead wire length

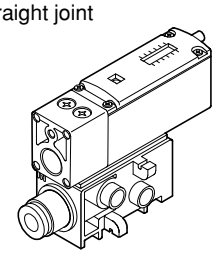
Symbol		Descriptions
Ⓐ **Connection**		
Direction	**S**	Straight
	L	Elbow
Port size	**C6**	ø6
	C8	ø8
Ⓐ **Lead wire length**		
	Blank	1m
	3	3m
	5	5m

⚠Note on model no. selection

Note 1: Please issue the mixed manifold specifications given on page 609 when using the common supply block with pressure switch.

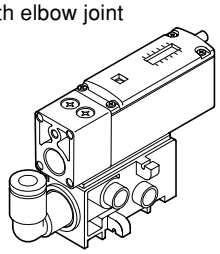
● Straight type

Air supply port with straight joint



● Elbow type

Air supply port with elbow joint



End block

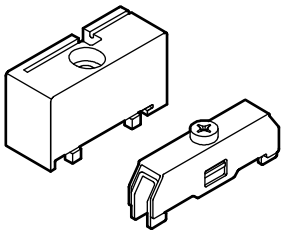
How to order

NRB500-NE D

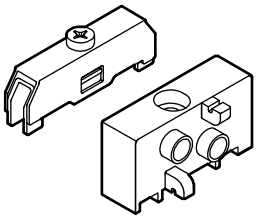
Ⓐ Connection

Symbol	Descriptions
Ⓐ Connection	
Blank	End block R for DIN rail (right)
L	End block L for DIN rail (left)
D	Direct end block R
DL	Direct end block L

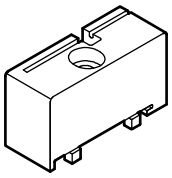
● End block R for DIN rail



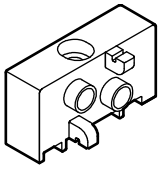
● End block L for DIN rail



● Direct end block R



● Direct end block L



End blocks R and L are required for manifold configuration.
For DIN rail, use end blocks R and L with DIN rail bracket.

DIN rail

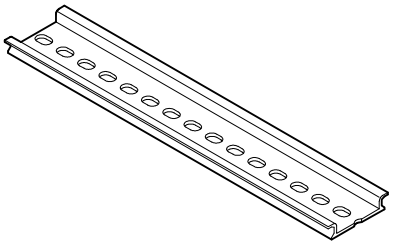
How to order

NRB500-BAA 150

Ⓐ DIN rail dimension
Note 1

Symbol	Descriptions
Ⓐ DIN rail dimension	
125	125mm
150	150mm
⋮	⋮

● DIN rail



⚠Note on model no. selection

Note 1: For the DIN rail dimensions, refer to the mixed manifold specifications preparation methods, the DIN rail length and manifold dimensions, and indicate with a mm unit.

Push-in cartridge joint (regulator block)

How to order

NRB500 - JOINT - CL4

Ⓐ Type

Symbol	Descriptions	
Ⓐ Type		
C4	Straight ø4	
C6	Straight ø6	
CL4	Elbow ø4 (discrete)	
CL6	Elbow ø6 (discrete)	
CLL4	Long elbow ø4 (manifold)	
CLL6	Long elbow ø6 (manifold)	

Cartridge joint (common air supply block)

How to order

NRB500 - Q - JOINT - L6

Ⓐ Type

Symbol	Descriptions	
Ⓐ Type		
6	Straight ø6	
8	Straight ø8	
L6	Elbow ø6	
L8	Elbow ø8	

Pressure gauge

How to order

G29D - 6 - P10

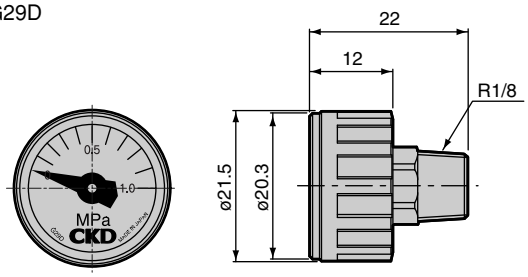
Ⓐ Model no.

Ⓑ Pressure display

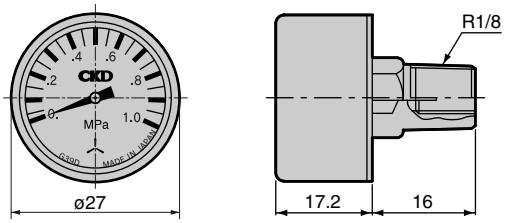
Symbol	Descriptions
Ⓐ Model no.	
G29D	
G39D	
Ⓑ Pressure display	
P10	0 to 1.0MPa
P04	0 to 0.4MPa (only G39D)

Dimensions

● G29D



● G39D



Blanking plug

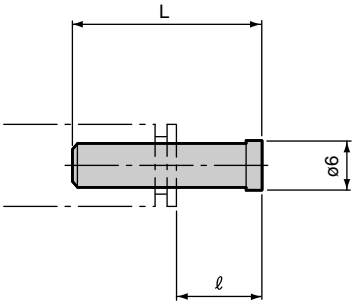
How to order

GWP 4 - B

Ⓐ Connection

Symbol	Descriptions
Ⓐ Connection	
4	ø4
6	ø6
8	ø8

Dimensions



⚠Note on model no. selection

Note 1: Sales unit is 10 pieces per unit.

Model no.	Joint port size ø	L	ℓ	d
GWP 4-B	4	27	11	6
GWP 6-B	6	29	11.5	8
GWP 8-B	8	33	14	10

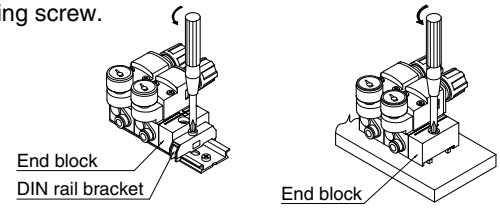
⚠ CAUTION

Disassembling and assembling the block manifold, and replacing the cartridge joint

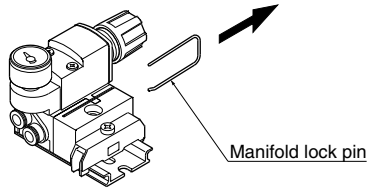
To change the regulator block when the regulator body or regulator block specifications change or when life has been reached, or when adding an air supply block, use the following procedures to expand, disassemble, and assemble parts. Refer to the separate instruction manual for details.
Stop the air pressure source supply and release residual pressure before starting disassembly work. After assembling parts, confirm that the lock pin is accurately inserted in the coupling groove between blocks before use. When using DIN rail installing, confirm that the DIN rail bracket is securely fixed ontothe end block with no gaps. When directly installing without a DIN rail, check that the end block is fixed with screw before starting use. Air could leak between blocks if the end block is not securely fixed.

Replacing the regulator block and air supply block

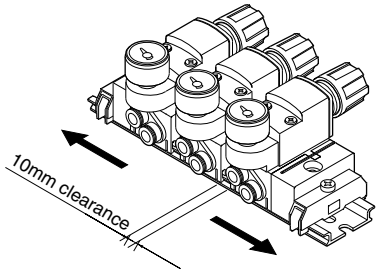
(1) When using the DIN rail installing, loosen the DIN rail bracket set screw.
When directly installing without a DIN rail, remove the end block fixing screw.



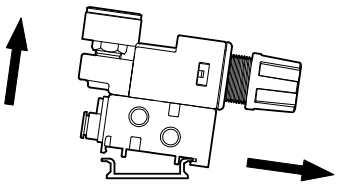
(2) Using a tip thin screwdriver, pull out the manifold lock pin coupling the regulator block and air supply block to be replaced.



(3) Slide the block toward the end block, and make an approximately 10mm opening at both ends of the block to be replaced.
When installed directly, pull out blocks on both sides.



(4) Remove the pressure gauge up by pulling it up and toward the pressure adjustment knob. When DIN rail brackets on both sides are slid 2mm or more from the end block, the entire manifold block can be removed.



(5) Replace with a new block.
(6) Check that there is no gap between blocks, and then insert the manifold lock pin until it contacts the bottom of the groove.
(7) Refer to the safety precautions and installation methods, and fix the manifold block.

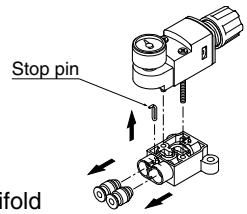
Increasing the regulator and air supply block rows

(1) If blocks may be increased, order the DIN rail with a length providing for the increase. If the DIN rail is too short when blocks are increased, replace with a DIN rail that accommodates the increase.

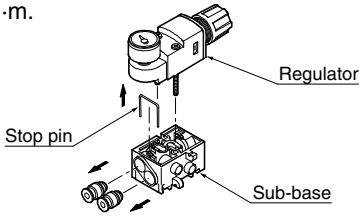
(2) When installing with DIN rails, fix DIN rail brackets. When directly installing without a DIN rail, fix the end block.

Replacing the cartridge joint

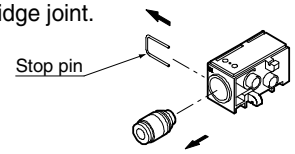
Replacing the compact regulator
(1) Loosen the screw on the regulator body, and disassemble the piping block.
(2) Using a minus screwdriver, etc., remove the lock pin inserted onto the top of the sub base. Replace the cartridge joint.
Confirm that there is no dirt, etc., on the joint's O-ring, and then assemble it in the original position.
Tighten the regulator body tightening screw with a torque of 0.5 to 0.8 N·m.



Replacing the block manifold
(1) Disassemble the block following the regulator block and air supply block replacement procedures.
(2) To replace the regulator block's cartridge joint, loosen the screw on the regulator body, and disassemble the sub base. Using a minus screwdriver, etc., remove the lock pin inserted onto the top of the sub-base. Replace the cartridge.
Confirm that there is no dirt, etc., on the joint's O-ring, and then assemble it in the original position.
Tighten the regulator body tightening screw with a torque of 0.5 to 0.8 N·m.



To replace the air supply block cartridge joint, remove the lock pin inserted on the air supply block side with a minus driver, etc. Then, replace the cartridge joint.



(3) Check that the cartridge joint is fixed with the lock pin and will not move.

How to fill out mix manifold specifications

● Mix manifold model No.

Refer to page 634 to 638 for model No. per component.

MNRB500A - MX - 3 - ( )

Ⓐ Model no.

Ⓑ Number of regulator blocks

Ⓒ Installation method

Symbol	Descriptions
Ⓐ Model no.	
MNRB500A	Common supply type
MNRB500B	Individual supply type
Ⓑ Number of regulator blocks	
1	1 station
2	2 stations
⋮	⋮
Ⓒ Installation method	
Blank	DIN rail
D Note 1	Direct mount

⚠Note on model no. selection

Note 1: Station number of direct mount block is tobe within 6 blocks including regular and air supply blocks. However, a regular block is to be 5 stations or less.

Note 2: Consult with CKD if the common supply and the individual supply types are combined.

Configurations	Model no. \ Installation position	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Quantity
End block L	NRB500-NE L	○														1
Common air supply block	NRB500-NP-															
Common air supply block with APS	NRB500-APS- SC6 - 3		○													1
Regulator block	NRB500 A SC6			○	○	○										3
	NRB500															
	NRB500															
	NRB500															
	NRB500															
	NRB500															
	NRB500															
	NRB500															
	NRB500															
Sub-base with masking plate	NRB500 - NS- -MP															
End block R	NRB500-NE						○									1
DIN rail	L2 = 175 mm	Accessories Blanking plug				GWP4-B Piece GWP6-B Piece					GWP8-B Piece					

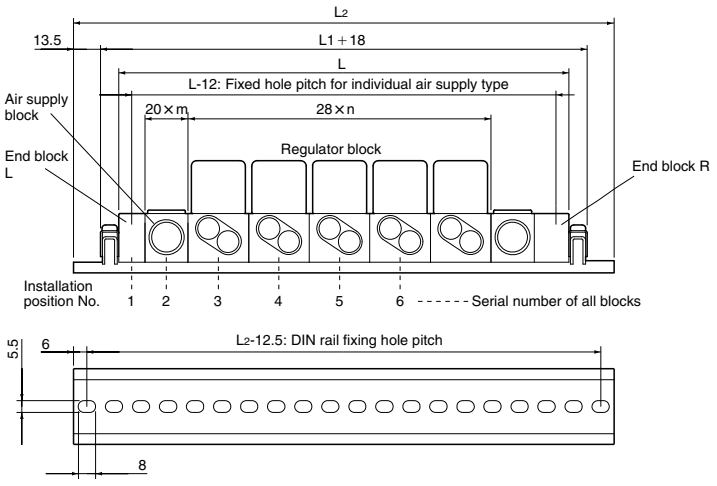
● DIN rail length and manifold dimensions

Manifold length L2: Refer to the table on the right.

L=(28×n)+(20×m)+28

n: Regulator block number

m: Air supply block number



● Common supply type Manifold L2 dimensions

Station number	Dimension of m = 1	Dimension of m = 2	Dimension of m = 3
1	125		
2	150		
3	175	200	
4	212.5	225	
5	237.5	262.5	275
6	262.5	287.5	300
7	287.5	312.5	337.5
8	325	337.5	362.5
9	350	375	387.5
10	375	400	412.5

● Individual supply type Manifold L2 dimensions

Station number	L2 dimension
1	100
2	137.5
3	162.5
4	187.5
5	212.5
6	250
7	275
8	300
9	325
10	362.5

MNRB500 mix manifold specification sheet

Issue date / /

Your company name

Contact

Contact

Slip No. Quantity Set Delivery /

Order No.

● Mix manifold model No.

MNRB500 **-MX-** ○ **-** ○

Ⓐ Model no.

Ⓑ Number of regulator blocks

Ⓒ Installation method

Symbol	Descriptions
Ⓐ Model no.	
MNRB500A	Common supply type
MNRB500B	Individual supply type
Ⓑ Number of regulator blocks	
1	1 station
2	2 stations
⋮	⋮
Ⓒ Installation method	
Blank	DIN rail
D Note 1	Direct mount

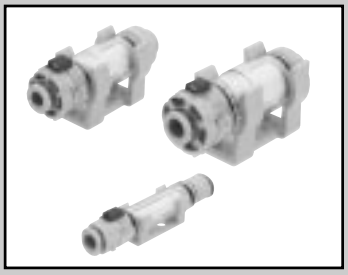
⚠Note on model no. selection

Note 1: Station number of direct mount block is tobe within 6 blocks including regular and air supply blocks.
However, a regular block is to be 5 stations or less.
Note 2: Consult with CKD if the common supply and the individual supply types are combined.

● Mix manifold specifications

Configurations	Model no. \ Installation position	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Quantity
End block L	NRB500-NE□															
Common air supply block	NRB500-NP-□															
Common air supply block with APS	NRB500-APS-□-□															
Regulator block	NRB500□-□□□□□															
	NRB500□-□□□□□															
	NRB500□-□□□□□															
	NRB500□-□□□□□															
	NRB500□-□□□□□															
	NRB500□-□□□□□															
	NRB500□-□□□□□															
	NRB500□-□□□□□															
Sub-base with masking plate	NRB500□-NS-□-MP															
End block R	NRB500-NE□															
DIN rail Note 3	L_2 = □ mm	Accessories Blanking plug				GWP4-B Piece GWP6-B Piece					GWP8-B Piece					

Note 3: Select the DIN rail L_2 dimensions from the L_2 dimensions given on page 608.



Inline filter

FSL Series

● Port size: ø4 to ø10

JIS symbol 

CAD RoHS

Features

● Compact, lightweight and space saving inline type
The resin body realizes a light and compact filter.

● Diverse range of model variations
Select the flow rate from 100, 200 or 500, and the port size from ø4, ø6, ø8 or ø10.

● Use either positive or negative pressure
Use a positive pressure in the same manner as a conventional vacuum inline filter

● Easy maintenance
Replacing the element is easy as the main body can be removed and attached without tools.

Specifications

Model no. / Descriptions	FSL100		FSL200		FSL500		
Port size mm	ø4	ø6	ø4	ø6	ø6	ø8	ø10
Working fluid	Air						
Ambient temperature range ˚C	0 to 50 (no freezing)						
Max. working pressure MPa	0.8 (Note 1)						
Vacuum working pressure kPa	-100						
Withstanding pressure MPa	1.2						
Nominal filtration rate µm	10 (Collection effeciency 95%)						
Filtration area cm^2	4.7		7.5		12.7		
Recommended processing flow rate (Note 2) L/min (ANR)	10		15	20	25	50	60
Weight g	8	8.5	20.5	21.5	34.5	33.5	39

Note 1: The maxmum working pressure is the value at 20˚C.
When using in other temperature ranges, refer to the “Relation of working temperature and maximum working pressre.
Note 2: Initial flow rate at initial pressure loss 3kPa or less under negative pressure. When using with a positive pressure, refer to the “Flow characteristics” on page 611.

How to order

● Inline filter

FSL **500** - **1010** - **B**

Ⓐ Series
Ⓑ Vacuum side port size
Pad side port size
Ⓒ Attached options

Symbol	Descriptions
Ⓐ Series	
100	FSL100 Series
200	FSL200 Series
500	FSL500 Series
Ⓑ Vacuum side port size-Pad side port size	
44	ø4 push-in joint - ø4 push-in joint
66	ø6 push-in joint - ø6 push-in joint
88	ø8 push-in joint - ø8 push-in joint
1010	ø10 push-in joint - ø10 push-in joint
Ⓒ Attached options	
Blank	None
B	Bracket

◆ Series port size combination table

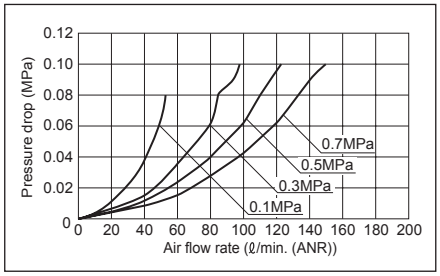
Model no. / Port size	44	66	88	1010
FSL100	●	●		
FSL200	●	●		
FSL500		●	●	●

not available.

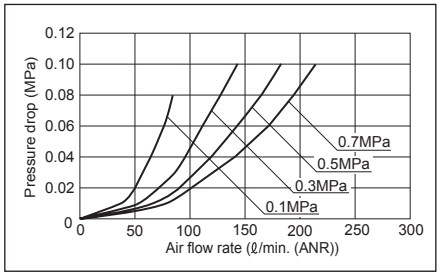
Flow characteristics

*The flow characteristics graph gives reference values, and does not guarantee the values.

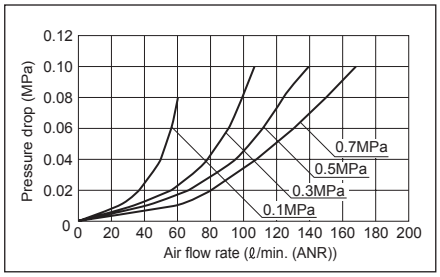
●FSL100-44



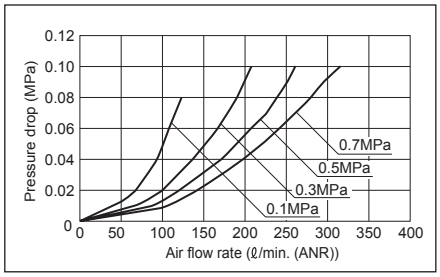
●FSL100-66



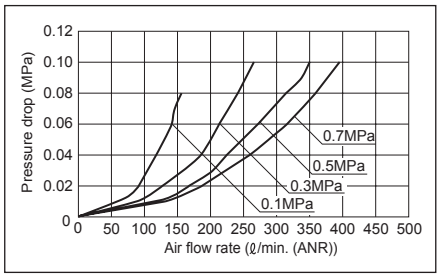
●FSL200-44



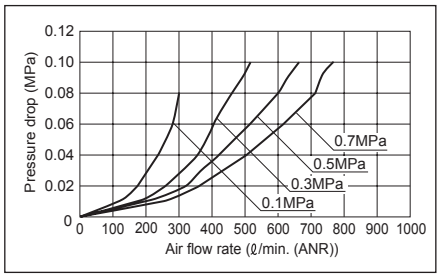
●FSL200-66



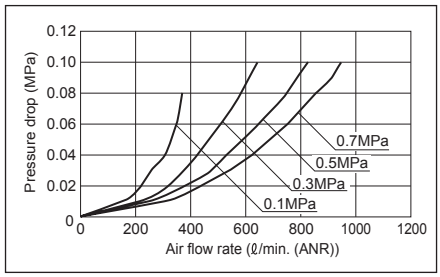
●FSL500-66



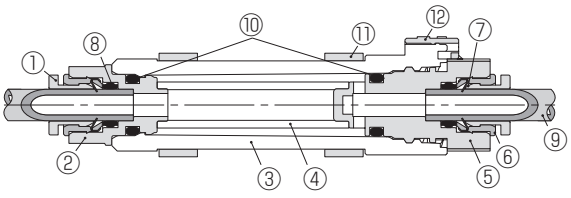
●FSL500-88



●FSL500-1010



Internal structure and parts list



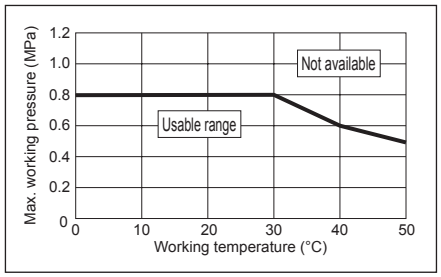
No.	Parts name	Material
①	Release ring	Acetal resin
②	Resin body A cover	PBT resin
③	Guard	Special polyester resin
④	Filter element	Polyvinyl formal resin
⑤	Resin body B	PBT
⑥	Guide ring	Brass, electroless nickel plating
⑦	Lock jaw	Stainless steel
⑧	Rubber sleeve	Nitrile rubber
⑨	Tube	—
⑩	O ring	Nitrile rubber
⑪	Bracket	Acetal resin
⑫	Slide lock	Acetal resin

●Maintenance part

·Filter element (part No.4)

Filter element model no.	Applicable model no.	Element size
VSFU-1L-E	FSL100	ø6×ø4×L25
FSL200-E	FSL200	ø11×ø7×L22
FSL500-E	FSL500	ø15×ø11×L27

Relation of working temperature and maximum working pressure

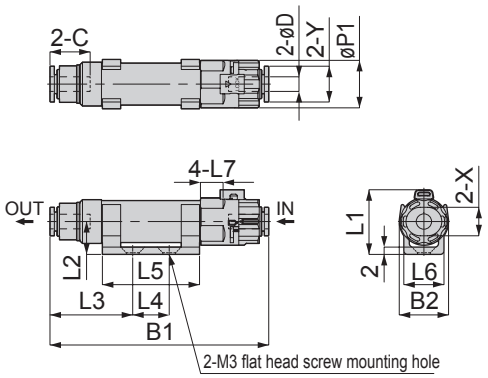


Dimensions

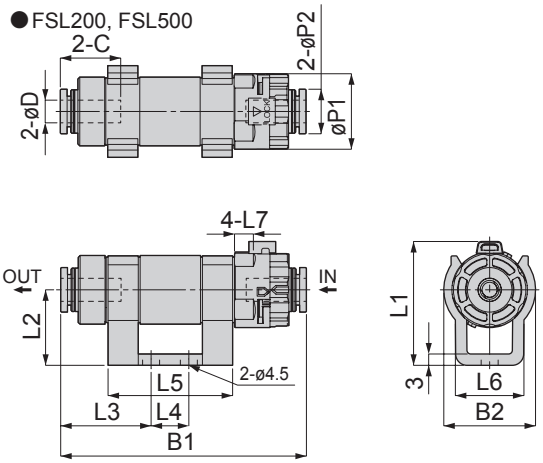
CAD

* The following outline drawing shows the state with the enclosed optional bracket mounted.

● FSL100



● FSL200, FSL500



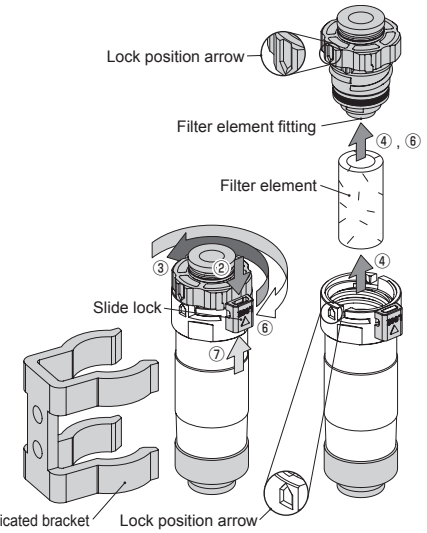
Unit: mm

Type	Tube Outer diameter øD	C	B1	B2	L1	L2	L3	L4	L5	L6	L7	øP1	øP2	X	Y
FSL100-44-*	4	11.3	60.7	13.5	18	9	23	10	26.6	11	6.2	13	–	7.8	9.8
FSL100-66-*	6	11.8	64.8	13.5	18	9	25.3	10	26.6	11	6.2	13	–	9.8	11.8
FSL200-44-*	4	14.9	61.1	24.3	33	20	20.3	10	33	18.2	5	20	9.9	–	–
FSL200-66-*	6	16	65.5	24.3	33	20	24.2	10	33	18.2	5	20	11.8	–	–
FSL500-66-*	6	17	72	28.3	39.6	24	19.6	14	39.5	20.2	8.5	25	11.8	–	–
FSL500-88-*	8	18.1	71.2	28.3	39.6	24	20.9	14	39.5	20.2	8.5	25	13.8	–	–
FSL500-1010-*	10	19.2	77.4	28.3	39.6	24	26.8	14	39.5	20.2	8.5	25	16.8	–	–

Usage methods

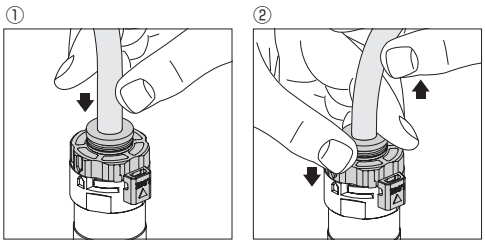
1. Replacing the filter element

(1) Release the filter's inner pressure to the atmosphere.
(2) Release the red slide lock. (In opposite direction of LOCK arrow)
(3) Turn the joint body 180° counterclockwise.
(4) Remove the turned joint body from the filter cover, and replace the filter element.
(5) If necessary, remove the dust accumulated in the filter cover using compressed air, etc.
(6) Mount the element into the filter element fitting, insert into the main body, and turn the joint body clockwise until it stops.
(7) In the tightened state, confirm that the lock position arrow on the joint body and the lock position arrow on the filter cover are aligned, and then lift the slide lock up (toward the LOCK arrow). Confirm that it is properly locked.



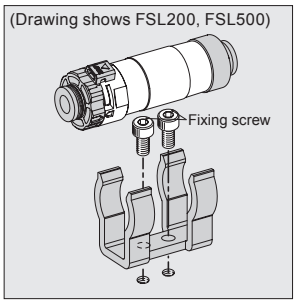
Usage methods

2. Removing and attaching the connection



1. Removing and attaching the tube
   (1) Mounting the tube
   With the inline filter FSL (filter with push-in joint) the locking hooks are fixed when the tube is inserted into the end of the tube. The elastic sleeve seals the periphery of the tube.
   (2) Removing the tube
   To remove the tube, press the release ring. The locking hooks will open and the tube can be pulled off.
   Always stop the air before removing the tube.

2. Tightening the screw
   (1) Tightening the screw
   Use the fixing hole on the dedicated bracket, and fix with the following screws.
   (Refer to the outline drawings for the fixing hole pitch.)
   Fixing screw ►FSL100: M3 flat head screw, FSL200, FSL500: M4 screw



Safety precautions

⚠ WARNING

■ Design & Selection
- The filter's clear cover is made of special polyester resin. Avoid using in an atmosphere containing chemicals (see right) or where these chemicals could come in contact as there is a risk of damage.

■ Installation & Adjustment
- Do not apply a load by pulling, twisting or bending the body. Do not drop or apply excessive impact. The product could break or come apart.

■ During Use & Maintenance
- Always lock the slide lock during use.

●Table of Chemical names

Chemical name
All alcohols
Thinner
Carbon tetrachloride
Chloroform
Acetic ester
Aniline
Cyclohexane
Trichloroethylene
Sulfuric acid
Lactic acid
Water-soluble cutting oil (alkaline)

* There are other chemicals which cannot be used. Contact CKD for information.

⚠ CAUTION

■ Design & Selection
- Do not use where ultraviolet rays come in direct contact.
- When using in a circuit where vacuum and vacuum break air are alternately applied, the dust removed by the element could be discharged by the break air.

■ Installation & Adjustment
- Check the arrows indicating the air flow on the body before piping the pipes. The filter functions will not be satisfied if the pipes are connected in reverse.
- After removing the dust and replacing the element, securely fix the case and confirm that there are no leaks.

■ During Use & Maintenance
- Periodically maintenance and inspect the unit. A clogged element could cause the performance to drop and other trouble to occur.
- When disassembling or assembling the unit for maintenance, make sure that the O ring is not damaged. Use of a damage O ring could result in problems such as leaks.
- When rotating the joint body for disassembly or assembly, take care to not apply excessive force with the tools, etc. The unit could break.