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**Pneumatic**

# LINE COMPONENTS



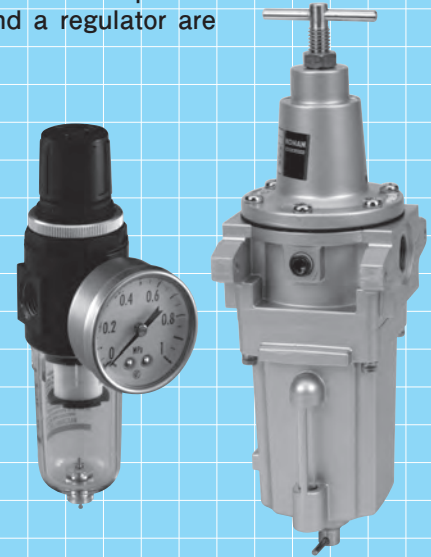
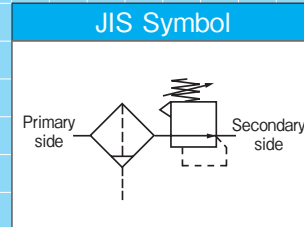
# REDUCING VALVE with filter

The FR unit is a compound line component into which an air filter and a regulator are integrated.

ARU2/ARU3A/FR21	Standard type	RC 1/8 ~ 1/2
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FR21P	Type mounted in the control box	RC 1/4 ~ 1/2
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FR5	Instrumentation type	RC 1/4 ~ 3/8
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## Model Code

When ordering, specify the model as follows:

### Standard type

Rc 1/8 ~ 1/4 **ARU2 -02-** 2 - 8 - 9

● Port size      ● Pressure gauge      ● Bracket

Rc 1/4 ~ 3/8 **ARU3A** 1 -03- 3 - 5 - 7 - 8 - 9

● Corrosion-resistant      ● Port size      ● Operating temperature range      ● Filter rating of element      ● Pressure gauge      ● Bracket

Rc 1/4 ~ 1/2 **FR21** 1 -04- 4 - 5 - 7 - 8 - 9

● Corrosion-resistant      ● Port size      ● Operating temperature range      ● Filter rating of element      ● Pressure gauge      ● Bracket

※ In case of FR21S-04-④-HT-⑦-⑧-⑨ or FR21S-04-④-LT-⑦-⑧-⑨  
Pressure gauge is made by stainless steel. The code is "GS".

### Type mounted in the control box

The drain discharge department have not a drain cock, and have a screw of Rc1/8.

Rc 3/8 ~ 1/2 **FR21P** 1 -04- 4 - 5 - 7 - 8 - 9

● Corrosion-resistant      ● Port size      ● Operating temperature range      ● Filter rating of element      ● Pressure gauge      ● Bracket

※ In case of FR21PS-04-④-HT-⑦-⑧ or FR21PS-04-④-LT-⑦-⑧  
Pressure gauge is made by stainless steel. The code is "GS".

### Instrumentation type

Rc 1/4 ~ 3/8 **FR5** 1 -02- 3 - 6 - 8 - 9

● Corrosion-resistant      ● Port size      ● Operating temperature range      ● Pressure gauge      ● Bracket

※ In case of FR5S-02-③-HT-G-⑨  
Pressure gauge is special specifications. The code is "GS".

**1 Corrosion-resistant**

- Portions that are exposed to outside weather conditions are corrosion-resistant coating and the exposed bolts,nuts and brackets are stainless steel.

Standard	No entry
Corrosion-resistant type	S

**2 Port size**

Rc 1/8	6A
Rc 1/4	8A

**3 Port size**

Rc 1/4	8A
Rc 3/8	10A

**4 Port size**

Rc 3/8	10A
Rc 1/2	15A

**5 Operating temperature range**

General purpose	- 20 ~ 60°C	No entry
Heat-resistant	5 ~ 100°C	HT
Freeze-resistant	- 40 ~ 45°C	LT

- For corrosion,freeze resistant type,allow some margin for delivery.
- In operating temperatures of 5°C or less, provide adequate measures against freezing.

**6 Operating temperature range**

General purpose	- 20 ~ 60°C	No entry
Heat-resistant	5 ~ 100°C	HT

- For corrosion,freeze resistant type,allow some margin for delivery.
- In operating temperatures of 5°C or less, provide adequate measures against freezing.

**7 Filter rating of element**

General purpose	40 μm	No entry
Instrumentation	5 μm	5

- (for ARU2/FR5),note that a filter rating of 5 microns only is available.

**8 Pressure gauge**

Without	No entry
With	G

- Pressure gauge sizes :  
50mm dia. (for ARU3A)  
40mm dia. (Others)  
Scale : 0 ~ 0.2MPa (for FR5)  
0 ~ 1.0MPa (Others)
- Pressure gauge is not mounted but appended with regulators.

**9 Bracket**

Without	No entry
With	BR

- Bracket is not mounted but appended with regulators.



# Reducing valve with filter

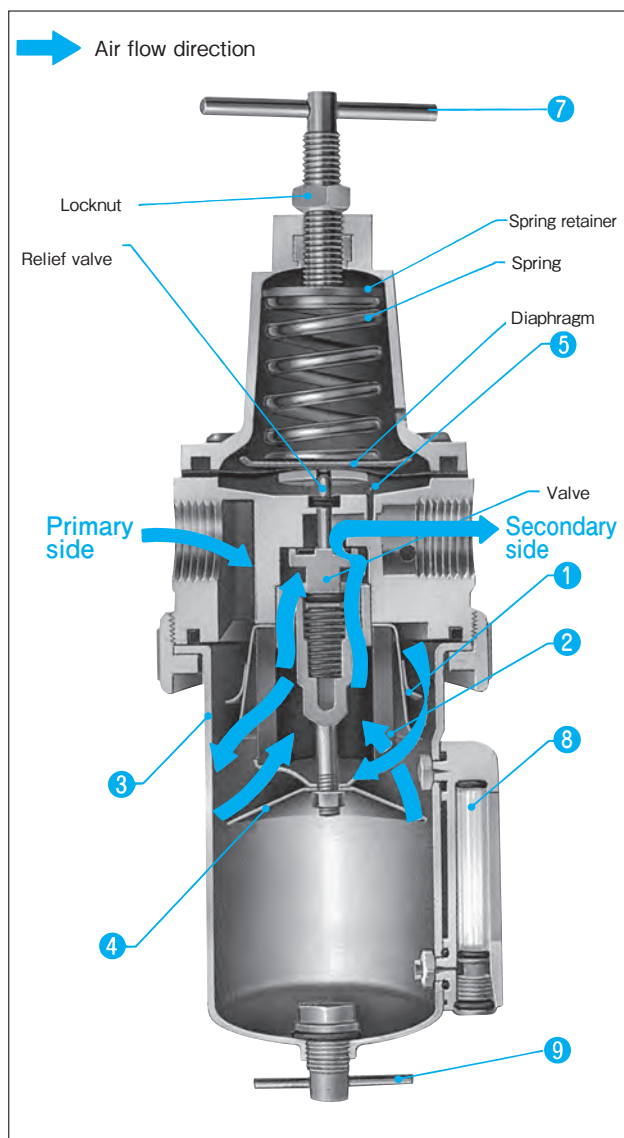
## Specifications

Model code	Standard type	ARU2 - 02				ARU3A - 03		FR21 - 04		
	In the control box							FR21P - 04		
	Instrumentation type			FR5 - 02						
Port size		6A	8A	8A	10A	8A	10A	10A	15A	
		Rc1/8	Rc1/4	Rc1/4	Rc3/8	Rc1/4	Rc3/8	Rc3/8	Rc1/2	
Operating pressure	Primary side (IN)	Max. 1.0MPa								
	Secondary side (OUT)	0.05 ~ 0.7MPa		0.02 ~ 0.2MPa		0.05 ~ 0.7MPa				
Proof pressure		1.5MPa								
Operating temperature range		- 20 ~ 60°C		General purpose		- 20 ~ 60°C		General purpose		- 20 ~ 60°C
				Heat-resistant		5 ~ 100°C		Heat-resistant		5 ~ 100°C
				Freeze-resistant		- 40 ~ 45°C		Freeze-resistant		- 40 ~ 45°C
Filter rating of element		5 μm		5 μm		See Model Code section.				
Mass		0.26kg		1kg		0.7kg		0.88kg		

- Above values of mass exclude weight of mounting bracket.
- For specifications other than those listed above, please contact us.

## Operation

### Standard type

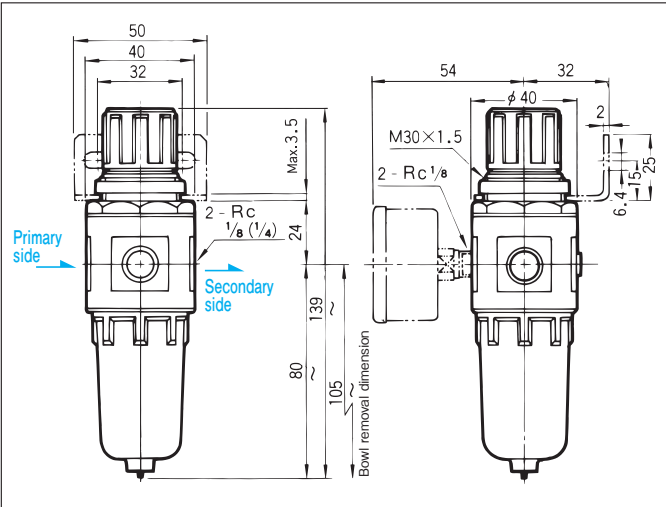


- Deflector**
  - Turns air from the primary side into a rotating air flow and separates moisture from the air by centrifugation.
- Filter element**
  - Finally filters out lightweight dirt and dust, foreign particles, etc. that cannot be separated from the air by centrifugation.
- Bowl**
  - The drain separated by centrifugation runs down the internal wall of the bowl and collects at the bottom.
- Baffle plate**
  - Prevents the drain in the bowl from re-entering the air.
- Diaphragm chamber**
  - Air pressure from the primary side enters the diaphragm chamber at the same time that it does the secondary side through the filter. The diaphragm is forced up until the pressure in the diaphragm chamber is equal to the spring force. The valve is then closed.
  - As the pressure in the secondary side drops, the valve is opened and the primary-side air pressure is furnished to the secondary side again.
- Relief valve**
  - When the handle is turned counterclockwise to lower the set pressure, the spring force weakens compared with the pressure in the diaphragm chamber. This forces the diaphragm up and opens the relief valve, thus releasing the air pressure in the secondary side to the atmosphere until that pressure is equal to the spring force.
- Handle (adjusting screw)**
  - To lower the set pressure, turn the handle counterclockwise.
  - Turning the handle clockwise causes the adjusting screw tip to force the spring retainer down, thus compressing the spring. This opens the valve, and the air pressure entering the primary side flows to the secondary side.
- Side glass**
  - Used to check the accumulating drain fluid quantity.
- Drain cock**
  - Turning the handle of this cock allows the drain fluid to be discharged.

## Outside Dimensions

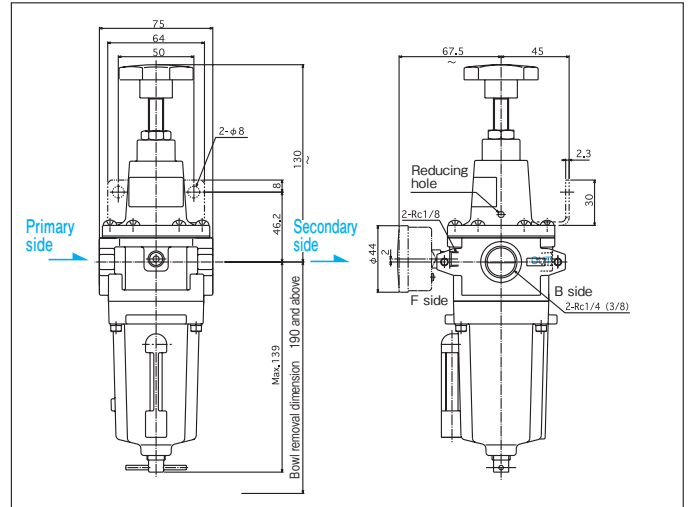
### Standard type

ARU2-02-06 · 8A

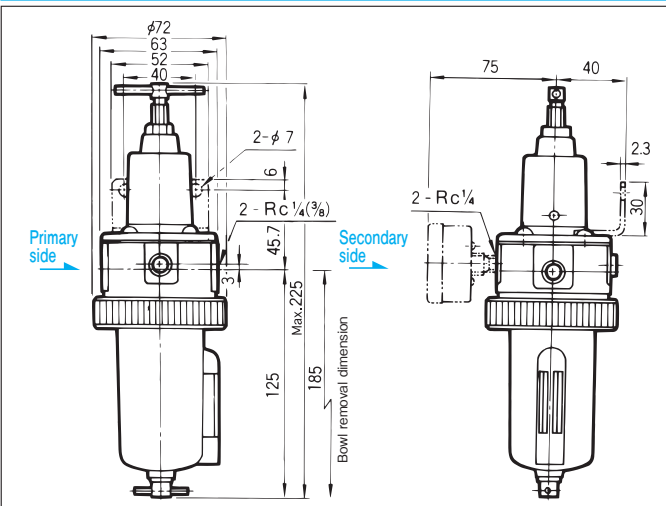


### Instrumentation type

FR5-02-8A · 10A

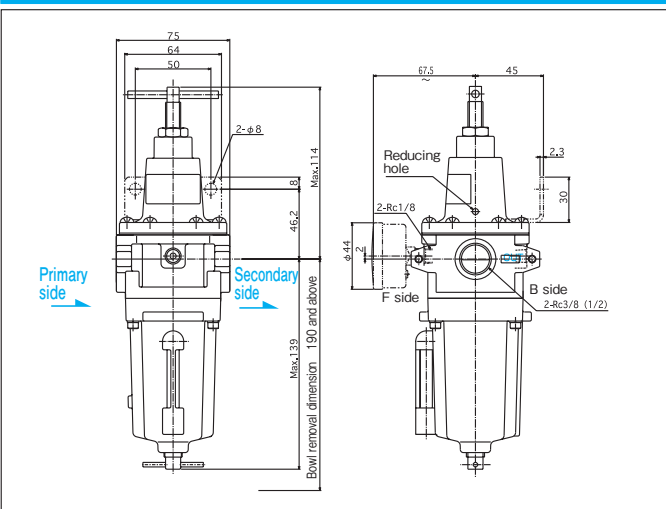


ARU3A-03-8A · 10A

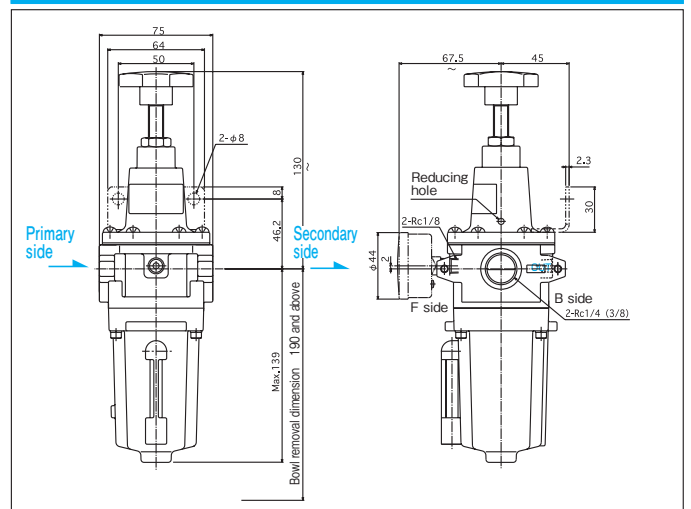


### Type mounted in the control box

FR21-04-10A · 15A



FR21P-04-10A · 15A





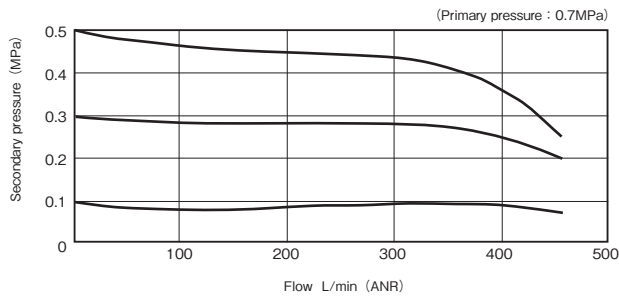
# Reducing valve with filter

## Performance Tables

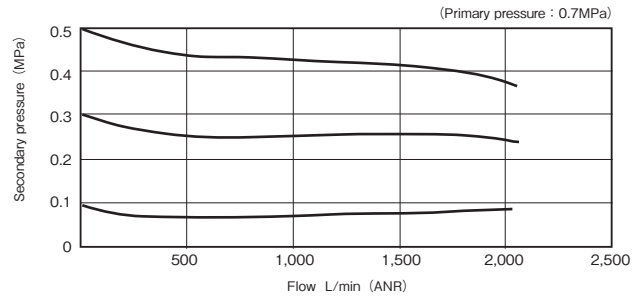
### Flow characteristics graphs

#### Standard and Panel-mount type

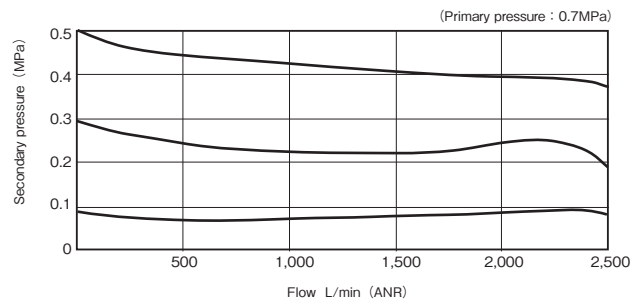
#### ARU2-02-6A · 8A



#### ARU3A-03-8A

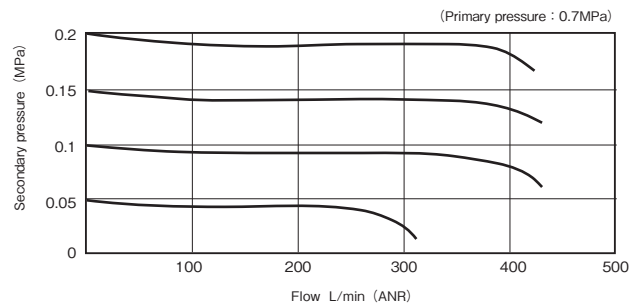


#### ARU3A-03-10A

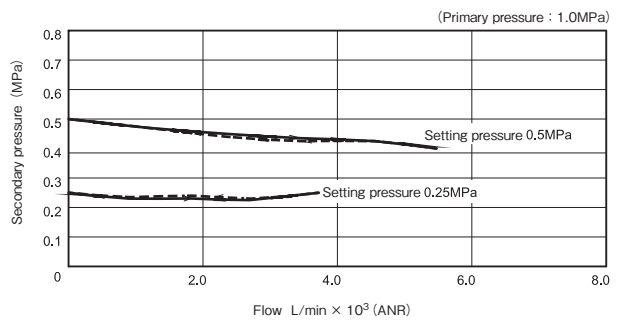


#### Instrumentation type

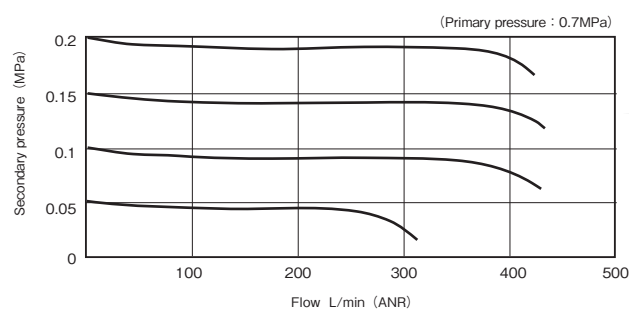
#### FR5-02-8A



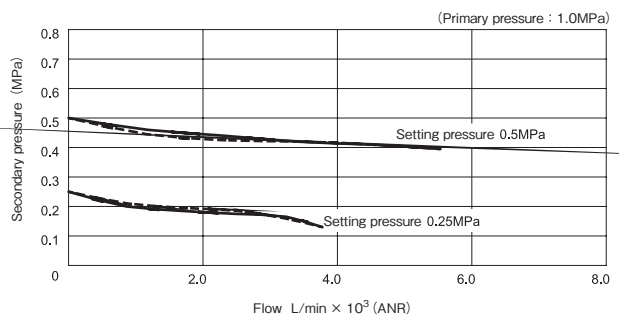
#### FR21-04-10A



#### FR5-02-10A



#### FR21-04-15A

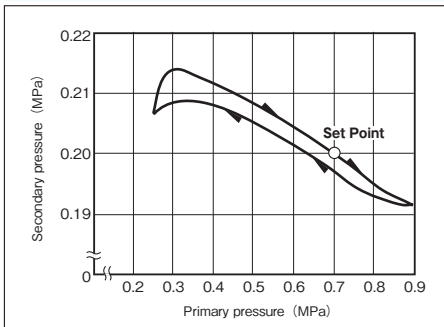


## Performance Tables

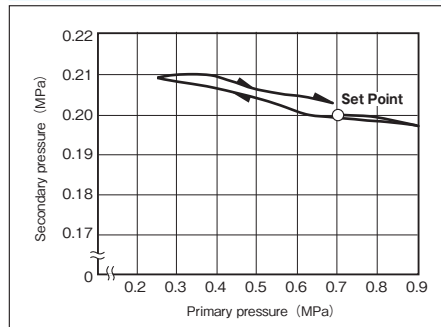
### Pressure characteristics graphs

Standard and Panel-mount , Instrumentation type

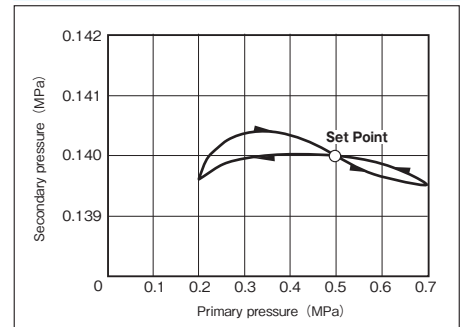
ARU2-02-6A · 8A



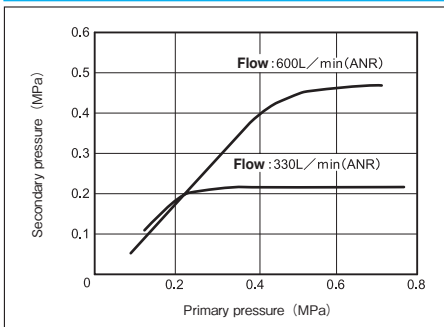
ARU3A-03-8A · 10A



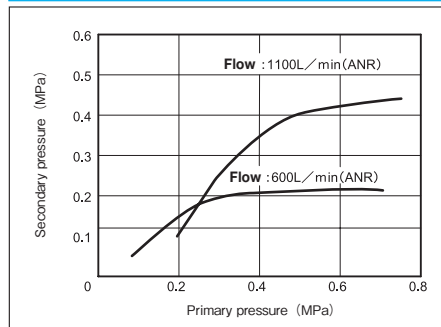
FR5-02-8A · 10A



FR21-04-10A



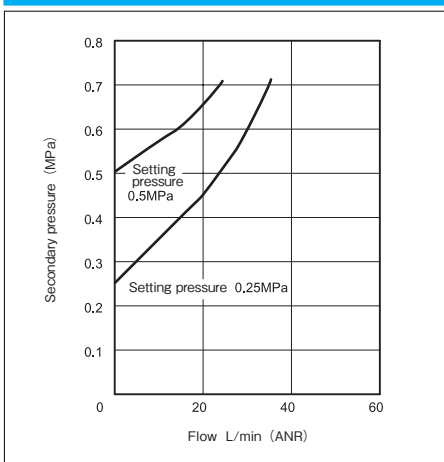
FR21-04-15A ※ This characteristics are based on the new JIS standard.



### Relief characteristics graphs

Standard and Panel-mount type

FR21-04-10A ※ This characteristics are based on the new JIS standard.



FR21-04-15A ※ This characteristics are based on the new JIS standard.

