

INSTRUCTION MANUAL

FILTER - REGULATOR

WB500

- Please read this instruction manual carefully before using this product, particularly the section describing safety.
- Retain this instruction manual with the product for further consultation whenever necessary.

For Safety Use

To use this product safely, basic knowledge of pneumatic equipment, including materials, piping, electrical system and mechanism, is required (to the level pursuant to JIS B 8370 Pneumatic System Rules).

We do not bear any responsibility for accidents caused by any person without such knowledge or arising from improper operation.

Our customers use this product for a very wide range of applications, and we cannot keep track of all of them. Depending on operating conditions, the product may fail to operate to maximum performance, or cause an accident. Thus, before placing an order, examine whether the product meets your application, requirements, and how to use it.

This product incorporates many functions and mechanisms to ensure safety. However, improper operation could result in an accident. To prevent such accidents, read this instruction manual carefully for proper operation.

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WB500

Filter - Regulator

Manual No. SM-250880-A

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NOTE: Letters & figures enclosed within Gothic style bracket
(examples such as [C2-4PP07] · [V2-503-B] etc.) are editorial
symbols being unrelated with contents of the book.

1. PRODUCT

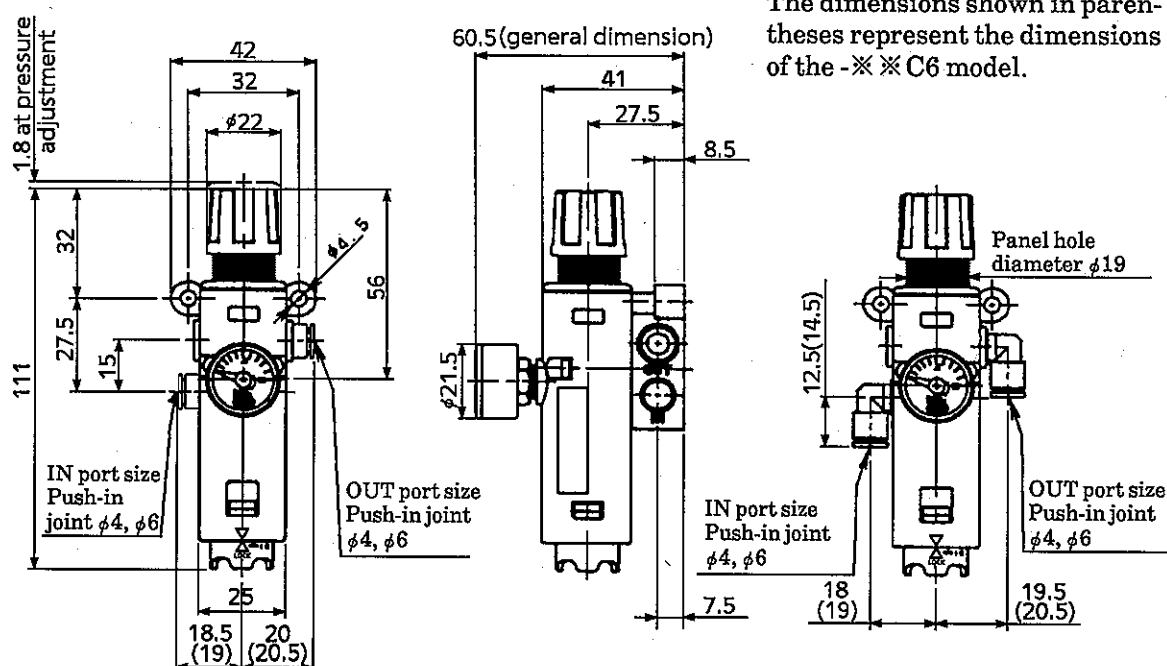
1.1 Specifications

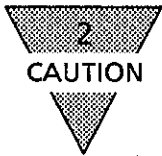
Model No.		WB500-※※C4	WB500-※※C6
Item			
Media		Compressed air	
Max. working pressure	MPa	1.0	
Withstanding pressure	MPa	1.5	
Working temperature range	°C	5 - 60	
Filtration rating	μm	5	
Set pressure range	MPa	0.05 - 0.7 For low pressure: 0.05 - 0.35	
Relief pressure	MPa	Set pressure plus 0.1	
Drain capacity (Filter)	cm ³	1.0	
Port size	IN-OUT	Push-in joint φ4	Push-in joint φ6
	GAUGE	Rc1/8	
Product weight	g	100	

1.2 External Dimensions

• Straight piping type

• Elbow piping type





2. CAUTION

Do not use the filter - regulator under the following conditions. If the filter - regulator must be used under these conditions, protect it with a cover or a case or take measures as specified below.

- 1) A place where the ambient temperature is not between 5°C and 60°C.
- 2) A place where the filter - regulator will be exposed to waterdrops or cutting oil.
- 3) A place where dew forms because of high humidity and/or temperature changes.
- 4) A place subject to a corrosive gas, fluid or chemical atmosphere.
- 5) A place where the filter - regulator will be exposed to a sea breeze or splashes of saltwater.
- 6) A place where the filter - regulator will be exposed to direct sunlight.
- 7) Where the filter - regulator is subjected to excessive shock or vibration.
- 8) To discharge a large amount of drain, install an air dryer or a drain separator upstream of the IN port of the filter - regulator.
- 9) When replacing an O-ring or any other expendable part, use a genuine name brand or specified part.
- 10) When storing the filter - regulator for more than one year, avoid storage in an environment prone to high temperature or humidity.

3. INSTALLATION

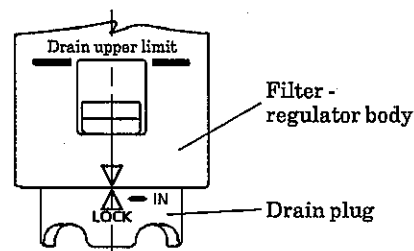
3.1 Piping

- 1) Connect the piping so that air flows as indicated by the IN and OUT marks on the piping block of the filter - regulator.
- 2) Install a pressure gauge in the gauge port. If a pressure gauge is not used, install a pipe plug instead. Keep the tightening torque of the pressure gauge and the pipe plug at or below 3.5 N·m.
- 3) Flush the pneumatic piping completely before connection.
- 4) Applicable tubes

The piping is designed to be connected with a push-in joint. Piping tubes of an improper outer diameter, wall thickness or hardness may become disconnected or cause leakage. Use our specified tube.

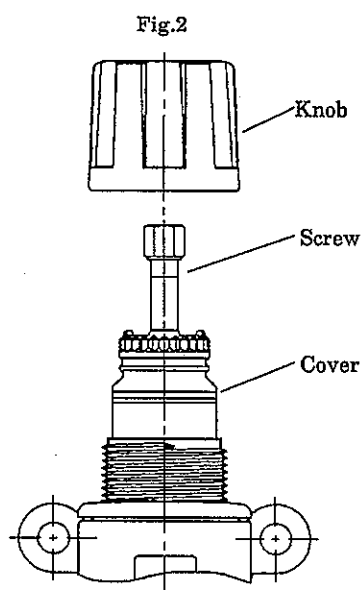
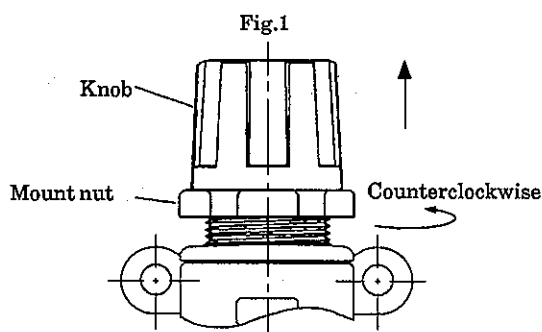
Tube	Outer diameter	Outer diameter tolerance	Inner diameter	Minimum bending radius
Soft nylon F-1500 series	φ4	±0.1	φ2.5	10
	φ6		φ4	20
Urethane U-9500 series	φ4	+0.1	φ2	10
	φ6	-0.15	φ4	20
Urethane NU series	φ4	±0.1	φ2.5	8
	φ6		φ4.5	15

- 5) Insert the piping tube in the push-in joint, and confirm that the tube is connected completely.
- 6) Upon connecting the piping, confirm that the \triangle_{LOCK} mark on the drain plug is aligned with the ∇ mark on the filter - regulator body before use.

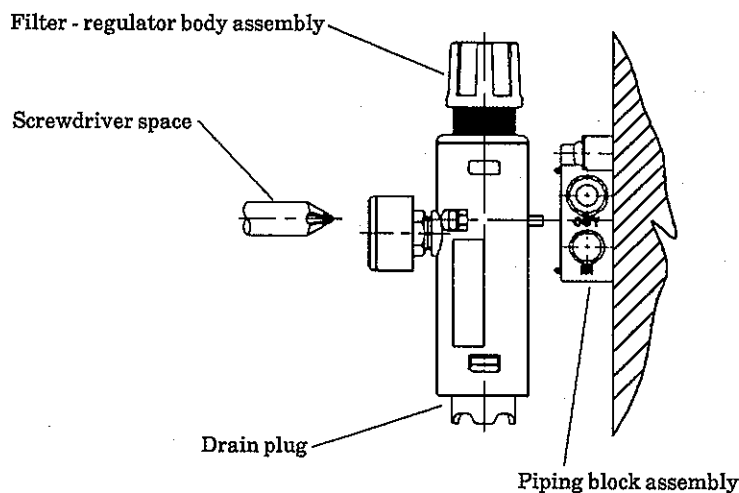


3.2 Installation

- 1) Install the filter - regulator so that the drain plug is directed vertically downward.
- 2) Fasten the filter - regulator using M4 screws with a plain washer. Tighten the screws to 2N-m or less.
- 3) To use an optional panel mount "P", drill a $\phi 19$ diameter mounting hole. Remove the knob of the mount nut by turning it counterclockwise as shown in Fig.1, and insert the filter - regulator in the panel. If the screw comes off when the knob is removed, insert the screw in the knob or cover as shown in Fig.2, and push the knob into the cover until a "click" is heard.



- 4) Install the filter - regulator as close to the intended pneumatic unit as possible.
- 5) When disassembling the filter - regulator, secure enough space for disassembly.
Before removing the filter - regulator body assembly, detach the pressure gauge from the assembly.





4. OPERATION

4.1 Pressure Setting

- 1) Before setting the pressure, pull up the knob to confirm that it is unlocked, and turn the knob.
- 2) Do not move or swing the product by holding the pressure adjustment knob.
- 3) The pressure increases by turning the pressure adjustment knob in the H direction, or decreases by turning the knob in the L direction. When setting the pressure, increase it from a low level to a high level.
- 4) By pushing the knob, it is locked and cannot turn.

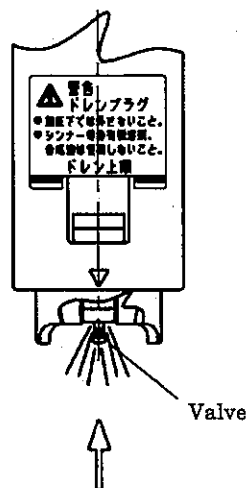
Adjust the pressure within the set pressure range. However, it cannot be set at a value higher than the primary pressure.

5. MAINTENANCE

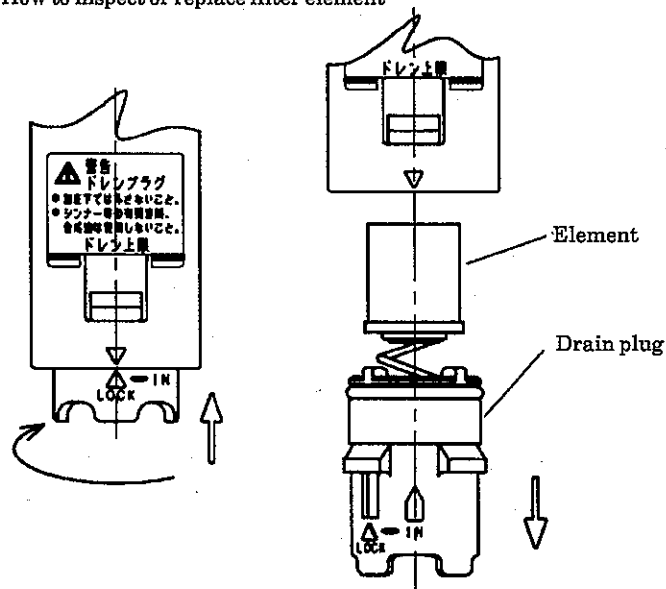
5.1 Maintenance

- 1) The drain plug must be drained before the drain reaches the upper limit.
To discharge drain, push up the valve at the bottom of the drain plug.
- 2) To inspect or replace the filter element, shut off the primary pressure and release any residual pressure from the filter - regulator. Next, remove the element and the drain plug by turning the drain plug leftward while pushing it up.
- 3) When cleaning the filter element, use a neutral detergent for home use.
After cleansing, blow any moisture out of the inside of the element with compressed air.
- 4) When cleansing the drain plug, use a neutral detergent for home use. Do NOT use any other detergent.
- 5) Upon inspecting or replacing the filter element, make sure that the \triangle_{LOCK} mark on the drain plug is aligned with the ∇ mark on the filter - regulator body before use.

How to discharge drain

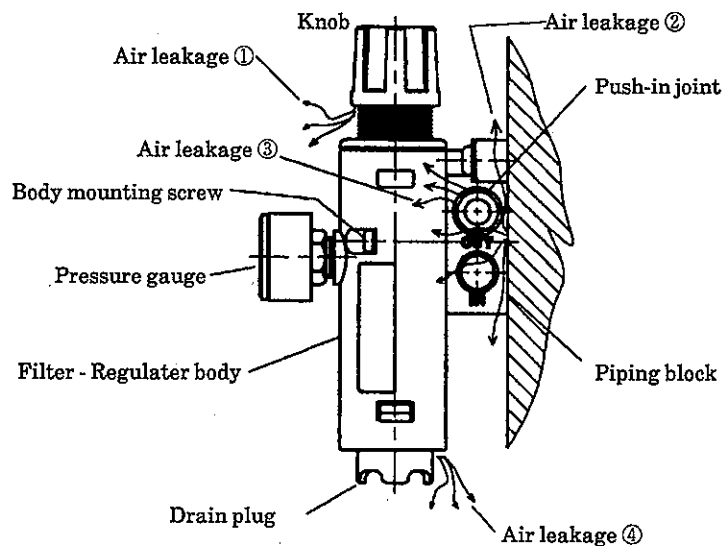


How to inspect or replace filter element



5.2 Troubleshooting

Problem	Main cause	Measure
<ul style="list-style-type: none"> • The pressure cannot be adjusted. • Air leaks from the bottom of the knob ①. 	<ul style="list-style-type: none"> • There is a foreign substance on the rubber face of the valve element. 	<ul style="list-style-type: none"> • Shut off the compressed air, disassemble the filter - regulator, and remove the foreign substance.
	<ul style="list-style-type: none"> • The compressed air flows from the OUT port to the IN port. 	<ul style="list-style-type: none"> • Shut off the compressed air, and connect the piping in the right direction.
	<ul style="list-style-type: none"> • The rubber face of the valve element is damaged. 	<ul style="list-style-type: none"> • Shut off the compressed air, disassemble the filter - regulator, and replace the damaged part with a new one.
	<ul style="list-style-type: none"> • The miniature Y-lip for the piston is damaged. 	
<ul style="list-style-type: none"> • Air leaks from the clearance between the filter - regulator body and the piping block ②. 	<ul style="list-style-type: none"> • An O-ring is damaged. 	
	<ul style="list-style-type: none"> • The body packing is shrunk or damaged. • The body mounting screw is loose. 	<ul style="list-style-type: none"> • Shut off the compressed air, and tighten the screw.
<ul style="list-style-type: none"> • The pressure does not increase. 	<ul style="list-style-type: none"> • The primary pressure is insufficient. 	<ul style="list-style-type: none"> • Check the primary pressure.
	<ul style="list-style-type: none"> • The primary piping is long, or its diameter is small. 	<ul style="list-style-type: none"> • Reduce the primary piping length, or increase the piping diameter.
	<ul style="list-style-type: none"> • The indicator of the pressure gauge does not function at all. 	<ul style="list-style-type: none"> • Replace the pressure gauge with a new one.
<ul style="list-style-type: none"> • Air leaks from the push-in joint ③. 	<ul style="list-style-type: none"> • The tube is not inserted completely. 	<ul style="list-style-type: none"> • Confirm whether the tube is inserted completely.
	<ul style="list-style-type: none"> • The seal material of the push-in joint is expanded, shrunk or damaged. 	<ul style="list-style-type: none"> • Replace the push-in joint with a new one.
<ul style="list-style-type: none"> • Air leaks from the drain plug ④. 	<ul style="list-style-type: none"> • An O-ring is damaged. 	<ul style="list-style-type: none"> • Shut off the compressed air, disassemble the filter - regulator, and replace the damaged part with a new one.
	<ul style="list-style-type: none"> • The drain plug is damaged. 	



5.3 Replacement of Parts

Before disassembling the filter - regulator, shut off the primary pressure, and release any residual pressure to confirm that the filter - regulator is depressurized completely. Disassemble the regulator according to the disassembling diagram.

5.4 Disassembling Diagram and Expendable Parts List

Tighten the panel mount nut ⑫ to 3N·m or less.

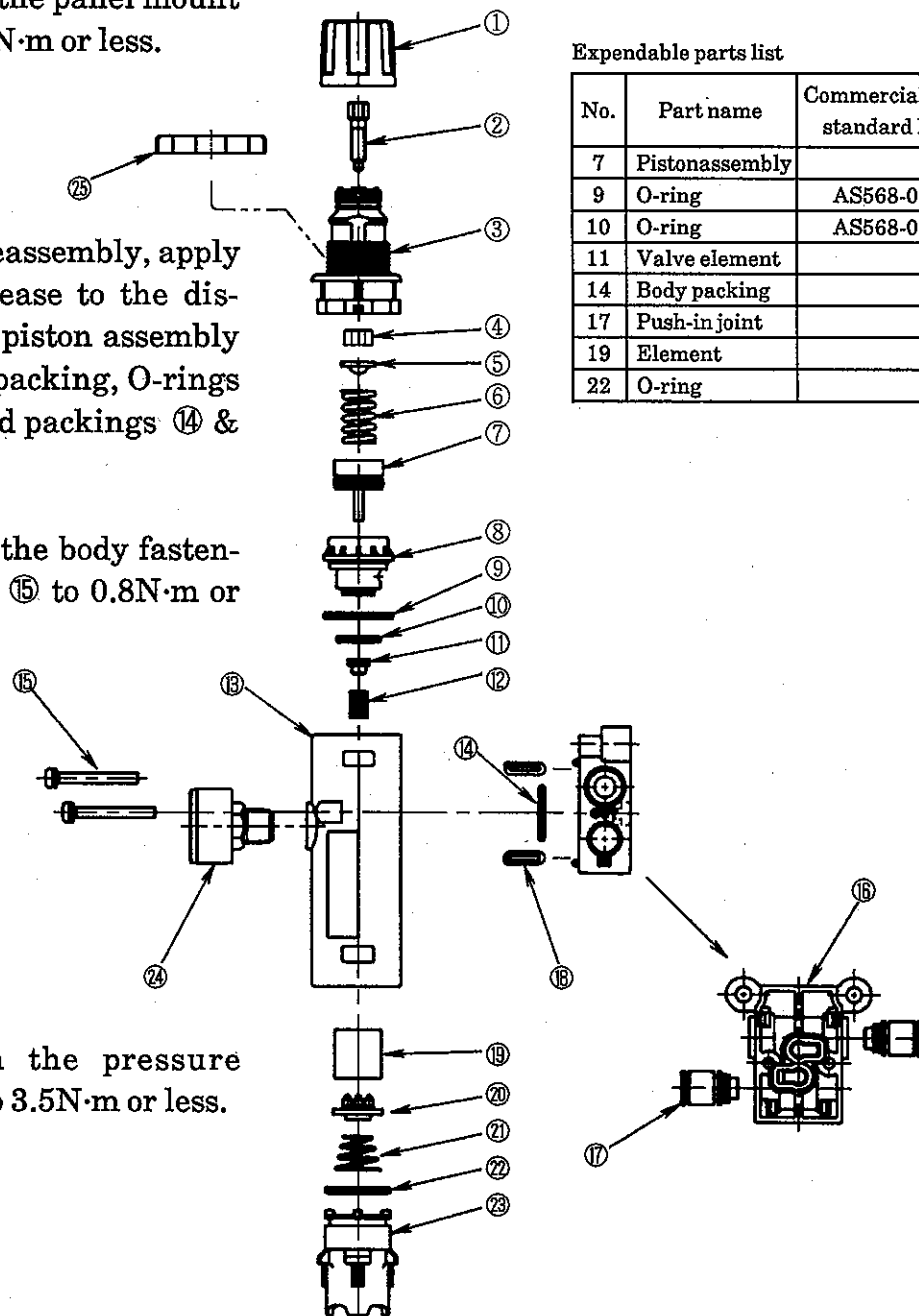
Before reassembly, apply silicone grease to the disassembled piston assembly ⑦ and its packing, O-rings ⑨ & ⑩ and packings ⑭ & ⑲.

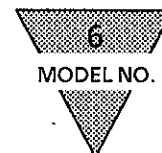
Tighten the body fastening screw ⑮ to 0.8N·m or less.

Tighten the pressure gauge ⑳ to 3.5N·m or less.

Expendable parts list

No.	Part name	Commercial part standard No.
7	Piston assembly	
9	O-ring	AS568-017
10	O-ring	AS568-012
11	Valve element	
14	Body packing	
17	Push-in joint	
19	Element	
22	O-ring	





6. HOW TO ORDER



③ Connection				④ Option		⑤ Pressure gauge	
Direction	IN/OUT	Port size		No code	Standard product	No code	φ21, 0 - 1.0MPa
S	Straight	C4	φ4	P	Panel mount	(Standard product)	pressure gauge equipped
L	Elbow	C6	φ6	L	For low pressure	No code	φ27, 0 - 0.4MPa
				N	Non-relief	(For low pressure)	pressure gauge equipped
				T	Without pressure gauge	G39	φ27, 0 - 1.0MPa pressure gauge equipped
				X1	Opposite flow (Right→Left)	※ A pressure gauge will be installed at delivery.	
				Z	Semitransparency drain plug		