CKD

Discontinue

SM-190944-A

INSTRUCTION MANUAL

Precision F · R Unit

7170

- 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.

CKD Corporation

Discontinue

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.

Observe the cautions on handling described in this manual, as well as the following instructions:

⚠ Precautions

- The filter and the lubricator use a plastic bowl. Do not use them with an organic solvent. The bowl will be damaged. With an organic solvent, use a filter and a lubricator containing a metal bowl.

Discontinue

INDEX

7170
Precision F · R Unit
Manual No. SM-190944-A

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.

Sep.30.1996
Revision : Feb.01.2000

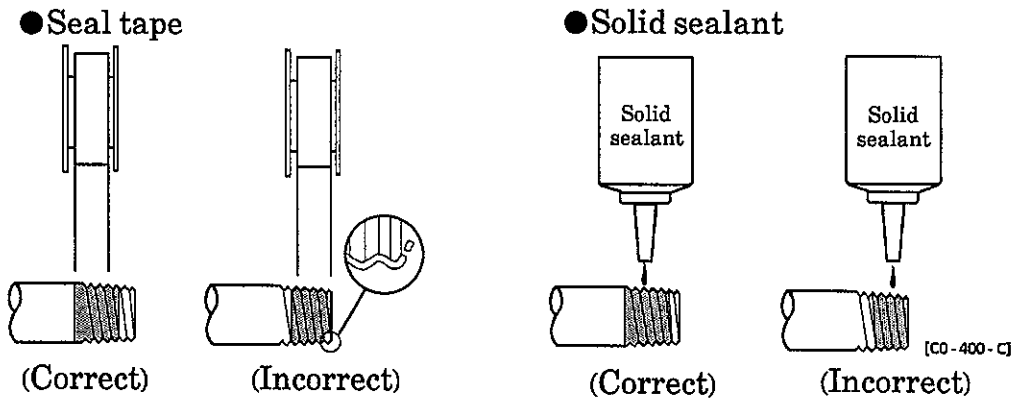
Discontinue

1. CAUTION

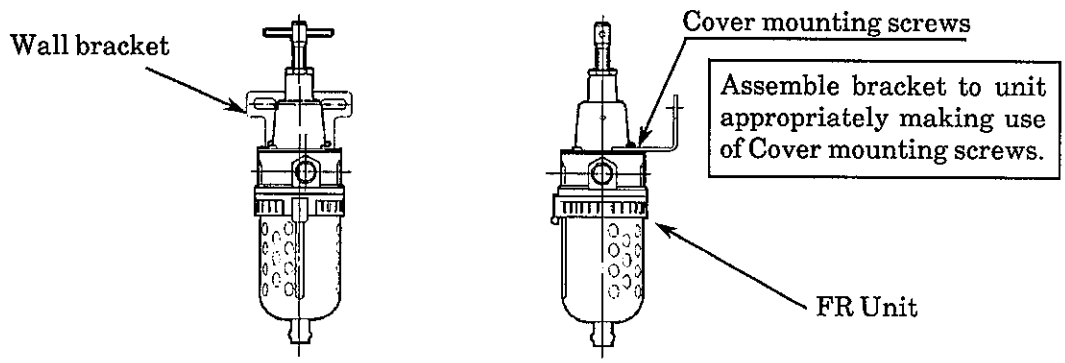
1) Refer to Air filters catalog as for Product specification and Model coding.
2) Avoid its installation where is exposed to sunlight directly.
3) Keep working air pressure no higher than 1.0MPa.
4) Avoid its installation where ambient temperature is foreseen exceeding 65℃.
5) Never install it in the environment with organic solvent as the bowl is made of polycarbonate resin. Also refer to catalog as for details because chemical proof characteristics varies dependingon material of bowls.
6) Select air compressor of 0.75KW or larger (discharge flow of 90 litre/min or larger) when N.O.automatic drain (Optional "F") is installed.
7) Avoid installation of automatic drain type where viscosity of drain is dense. It is recommended to install a heavy duty drain type or Snap drain type in place.

2. INSTALLATION

1) Install it as close by the pnuematic equipment as possible.
2) Install it to have arrow mark on body match the direction of air flow indicated by IN-OUT marking.
3) Install it to have a bowl of FR Unit held downward of line.
4) Withhold application of seal tape or sealant approx. two pitches of thread off the pipe tip so as to keep the residuals of such from falling into pipe or equipment.



5) When to install it together with Wall bracket (Optional "B", supplied with), do so upon combining filter and bracket first. (Refer to the illustration below)



[SM-190944-A]

Discontinue

6) Purge line

For plastic bowl : Soft Nylon tube of ID 5.7mm~6mm can be slipped on directly.

For metal bowl : Automatic drain type is provided a joint tube of Rc1/4 thread. As for manually operated purge cock, there is a female thread of Rc1/8 when the cock is removed. Install a stop valve to make it useful.

※ For automatic purge type, avoid piping standing up right and keep total length within 5 meters.

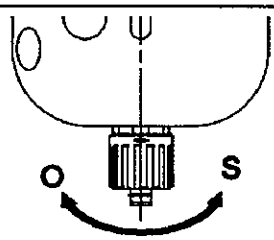
7) Leave a room of over 100mm above Adjusting screw and over 60mm under bowl bottom for operation and later maintenance work.

8) Install pressure gage on the side observeable it with ease and use a plug to block the opening on the other side.

3. OPERATION

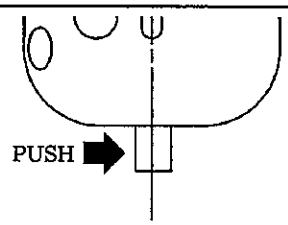
3.1 Purging drain

Plastic bowl with automatic drain affixed with manual cock



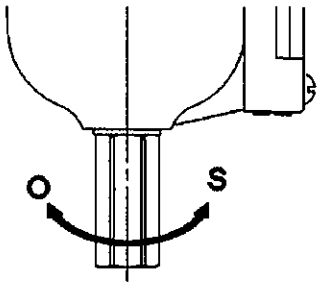
Drain is purged when cock is turned toward "O" and purging is shut off when cock is turned toward "S". The bowl with automatic drain valve purges drain automatically as drain accumulate to a certain level but drain is also purgedmanually, too.

Plastic bowl with flexible drain



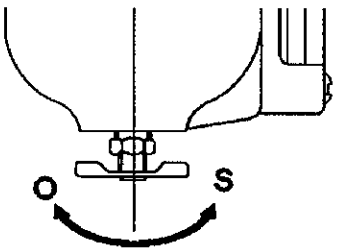
Drain is purged when cock is pushed sideway from any peripheral point in the direction of PUSH ➡ mark, and purging is shut off when pushing is released.

Metal bowl with automatic drain



Drain is purged automatically when drain accumulates to a certain level but is also purged manually. Handling is as same as that of Plastic bowl.
Manual operation, sometimes, is hindered when threaded joint is screwed in to build purge line.

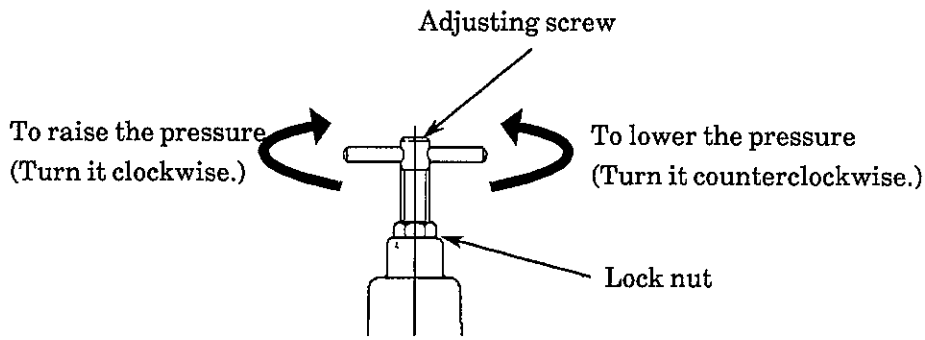
Metal bowl with pet cock



Drain is purged when cock is turned toward "O" and purging is shut off when cock is turned toward "S".

3.2 Pressure Setting

1) To set pressure, make use of the adjusting screw upon loosening lock nut.
2) Turn the adjusting screw clockwise to raise the pressure while turning it counterclockwise to lower the pressure.
3) When required pressure is set, tighten the lock nut to keep the set value from slipping off.
   ※ Keep the set value always within the specified value. Of course, it is unable to set the value higher than the pressure of primary side.



4. MAINTENANCE

Before trying to remove the bowl, shut off compressed air, set value down to "0" by adjusting screw, purge residual pressure making use of manual cock and verify no more pressure remaines in line.

4.1 Periodic inspection

1) Purge drain periodically to keep its level below upper limit.
Comply with Chapter 3 above regarding purge operation.

2) Clean or wash element periodically to prevent pressure loss.

- 5μm element
  Wash it with household neutral detergent and flush air from inside out to blow off water drops. Replace element with new one when washing does not remove the blot.
  (Element model code : 1144-element or 1144-85-157)
- 3μm element "X"
  Replace it with new one every 6 months. Replacing period may be shortened in the event that it become filthier sooner.
  (Element model code : 1144-element X or 1144-85-5000)
- 0.3μm element "Y"
  It is the time of replacement with new one when pressure difference reaches to 0.07MPa.
  (Element model code : 1144-element Y or 1144-85-5145)

3) As for automatic drain "FJ/F1J" clean or wash element (eithr with running water or air flushing) periodically or else replace it with new one to prevent accumulation of solid particles.

Model code of Bowl ass'y with automatic drain

Polycarbonate Bowl	N.O.automatic drain	1144-Bowl-FJ	or 1144-15-7164
	N.C.automatic drain	1244-Bowl-F1J	or 1244-15-7197
Nylon Bowl	N.O.automatic drain	1144-Bowl-FJZ	or 1144-15-7164Z
	N.C.automatic drain	1244-Bowl-F1JZ	or 1244-15-7179Z
Metal Bowl	N.O.automatic drain	1144-Bowl-FJM	or 1144-15-7169
	N.C.automatic drain	1244-Bowl-F1JM	or 1244-15-7184
Metal Bowl with sight gage	N.O.automatic drain	1144-Bowl-FJMG	or 1144-15-7174
	N.C.automatic drain	1244-Bowl-F1JMG	or 1244-15-7189

Discontinue

4.2 Trouble Shooting

Troubles	Possible major causes	Countermeasures
Drain emerges immediately passing filter.	Drain accumulated exceeding the upper limit.	Purge drain. (Refer to Chapter 3. Operation)
Insufficient flow and remarkable pressure drop	Clogged meshes of filter element	Remove bowl and element upon shutting off the compressed air then replace or wash the element.
It does not purge even when purge cock is opened.	Foreign particles piled to purging port	Remove bowl ass'y upon shutting off the compressed air then clean or replace bowl ass'y.
Automatic drain fails to purge dain automatically. Or air leaks through purging port.	Mechanical trouble of automatic drain or clogged dirt ※ In case of NO automatic drain "F", it purges air while air pressure rises up to 0.1MPa , for the purpose of cleaning inside of bowl.	Remove bowl ass'y upon shutting off the compressed air then clean inside of bowl or replace the ass'y with a new unit. Replace bowl ass'y when cleaning does not help regaining the function.
Air leaks through Bowl mounting device.	Defective O-ring or foreign particle stuck.	Remove bowl and O-ring upon shutting off the compressed air then wash or replace the O-ring.
	Damage of bowl itself.	Remove bowl upon shutting off the compressed air then replace the bowl with new one.
Unable to adjust pressure.	Foreign particle stuck on rubber lining of valve seat or stuck valve stem due to tarly substance sticking over sliding surface. Stuck foreign particle on sliding surface of adaptor and valve seat.	Remove bowl upon shutting off the compressed air, disassemble and clean it.
	Direction of compressed air flow is in reverse.	Shut off the compressed air and install the unit making an arrow mark match the air flow.
	Damaged O-ring on valve stem. Broken diaphragm. Damaged rubber lining of valve seat.	Remove bowl upon shutting off the compressed air, disassemble the unit and replace damaged parts with new one.
Air leaks through diaphragm.	Broken diaphragm.	Remove bowl upon shutting off the compressed air, disassemble the unit and replace damaged parts with new one.

⚠ WARNING When a flaw, such as a crack or a scratch, is found on the bowl, replace it with a new one. Failure to follow this instruction may result in breakage of the bowl and an accident.

⚠ WARNING Check the transparent resin bowl regularly for any smears. If there are any smears or it is otherwise unclear, replace it with a new one. Failure to follow this instruction may result in breakage of the bowl and an accident.

⚠ WARNING When cleaning a transparent resin bowl, use a neutral detergent for home use and rinse it well with water. Any other cleaning method may result in breakage of the bowl and an accident.

Discontinue

5. EXPENDABLE PARTS AND REPLACING PARTS

When preparing order sheet of parts, disignate "7170-parts model code"

Pressure adjusting spring (Refer to Chapter 9, "Diaphragm ass'y replacing" as for spring replacement.)

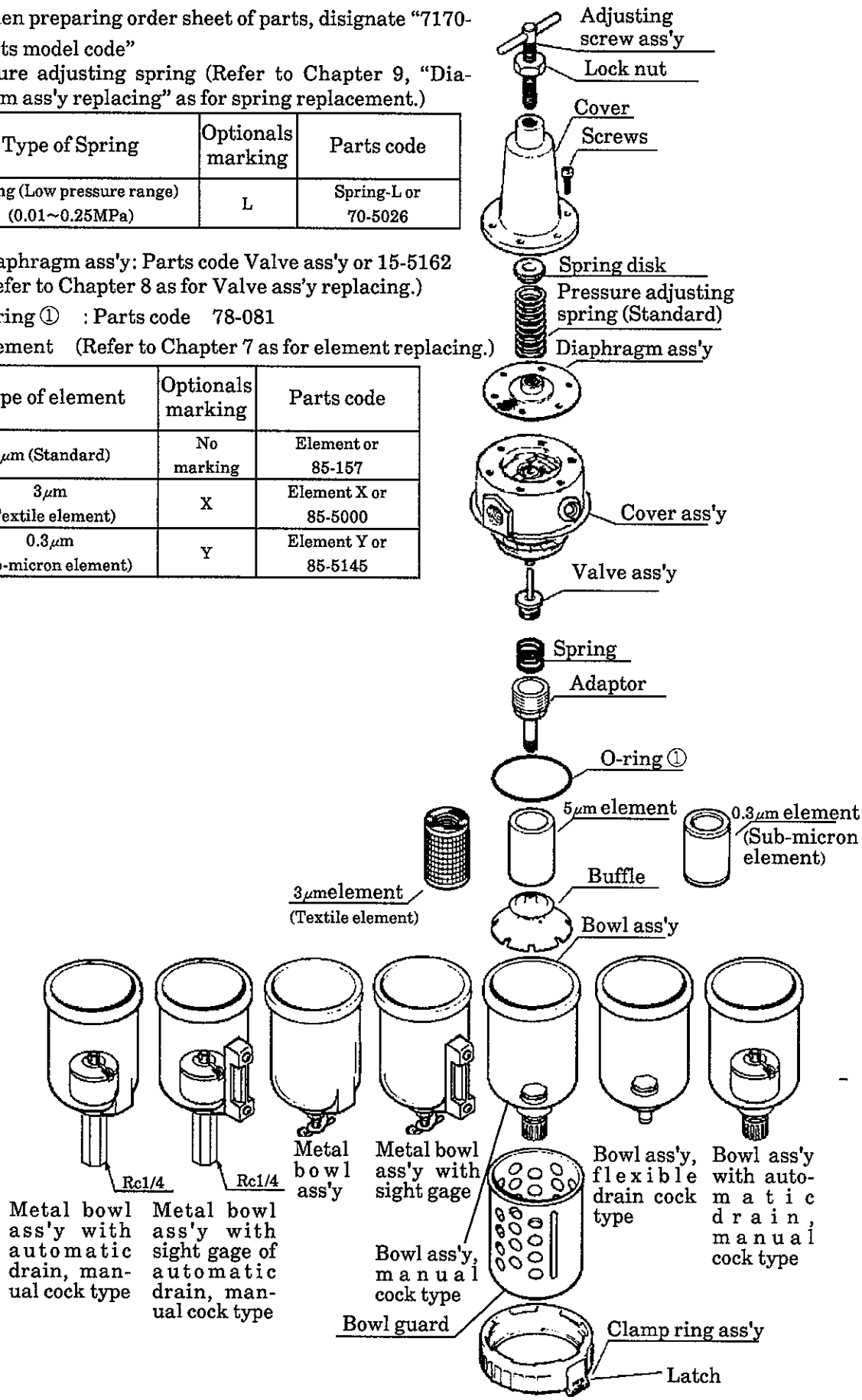
Type of Spring	Optionals marking	Parts code
Spring (Low pressure range) (0.01~0.25MPa)	L	Spring-L or 70-5026

Diaphragm ass'y: Parts code Valve ass'y or 15-5162
(Refer to Chapter 8 as for Valve ass'y replacing.)

O-ring ① : Parts code 78-081

Element (Refer to Chapter 7 as for element replacing.)

Type of element	Optionals marking	Parts code
5μm (Standard)	No marking	Element or 85-157
3μm (Textile element)	X	Element X or 85-5000
0.3μm (Sub-micron element)	Y	Element Y or 85-5145



Discontinue

Bowl ass'y (Refer to Chapter 6 as for Bowl ass'y mounting)

Size of Bowl	Purging cock	Material of bowl	Optionals marking	Parts model code	
Standard size (When no "J" is designated for optionals.)	Manual cock	Polycarbonate	No marking	Bowl	or 15-7158
		Nylon	Z	Bowl-Z	or 15-7158Z
	Flexible drain	Polycarbonate	E	Bowl-E	or 15-316
		Nylon	EZ	Bowl-EZ	or 15-316Z
	Pet cock	Metal	M	Bowl-M	or 15-5027
		Metal with sight gage	MG	Bowl-MG	or 15-5029
Jumbo size (When "J" is designated for optionals.)	Manual cock	Polycarbonate	J	Bowl-J	or 15-7159
		Nylon	JZ	Bowl-JZ	or 15-7159Z
	Flexible drain	Polycarbonate	EJ	Bowl-EJ	or 15-323
		Nylon	EJZ	Bowl-EJZ	or 15-323Z
	Pet cock	Metal	JM	Bowl-JM	or 15-5028
		Metal with sight gage	JMG	Bowl-JMG	or 15-5030
	NO automatic drain with manual cock	Polycarbonate	FJ	Bowl-FJ	or 15-7164
		Nylon	FJZ	Bowl-FJZ	or 15-7164Z
	NC automatic drain with manual cock	Polycarbonate	F1J	Bowl-F1J	or 15-7179
		Nylon	F1JZ	Bowl-F1JZ	or 15-7179Z
	Metal bowl, NO automatic drain with manual cock	Metal	FJM	Bowl-FJM	or 15-7169
		Metal with sight gage	FJMG	Bowl-FJMG	or 15-7174
	Metal bowl, NC automatic drain with manual cock	Metal	F1JM	Bowl-F1JM	or 15-7184
		Metal with sight gag	F1JMG	Bowl-F1JMG	or 15-7189

6. BOWL MOUNTING AND DISMOUNTING

Before trying to remove the bowl, shut off compressed air, set pressure value to "0" by adjusting screw, purge residual pressure by manual cock and verify no more remaining pressure in line.

1) Turn clamp ring ass'y 30° while pressing the latch on clamp ring ass'y (that is to have ⌂ mark on latch leave ▽Lock mark and match to IN▽ marking).
2) Pull the set of bowl downward as is and total ass'y of bowl and bowl guard come out.
3) To re-assemble total set, comply with the reversed steps of dismounting.
4) Before charging compressed air to the system, verify that latch is "Locked" condition. (That is the ⌂ mark on latch is made matched to ▽Lock mark on the body.).

7. ELEMENT REPLACING

1) Remove bowl complying with described steps in Chapter 6.
2) Disassemble buffle by turning it counterclockwise.
3) Take out an old element.
4) Relace a new element.
5) Mount buffle and bowl back complying with reversed steps of disassembling.
6) Make sure to verify each article in paragraph 6-4 before charging compressed air to the system.

Discontinue

8. VALVE ASS'Y EXCHANGING

1) Following the steps in Chapters 6 and 7, take out bowl and element.
2) Remove adaptor by turning it counterclockwise.
3) Take out an old valve ass'y.
4) Replace it with a new valve ass'y.
   ※ Replace an O-ring (78-029) at the same time of replacing valve ass'y. Apply grease to O-ring.
5) Follow the reversed steps of disassembling while assembling Adaptor, Element and Bowl.
6) Be sure to carry out the articles in paragraph 6-4 before supplying compressed air into line.

9. DIAPHRAGM ASS'Y EXCHANGING

Shut compresses air, set the pressure value to "0" by adjusting screw, discharge residual pressure by manual cock and verify no more remaining pressure in line before starting exchanging work.

1) Unscrew mounting screws of the regulator cover.
2) Take out cover, spring disk and spring.
3) Take out an old diaphragm ass'y.
4) Replace a new disphragm ass'y.
5) Assemble spring, spring disk, cover and cover mounting screws following reversed steps of dismounting.
6) Verify that pressure is set to value 0 (i.e., value is not yet set by adjusting screw), before supplying compressed air to line.