

Regulator Aer De Înaltă Precizie 0.5 - 2 Bar Seria IR

Precision Regulator

Series **IR1000/2000/3000**



0726.175.111 | COMPONENTE PNEUMATICE ȘI HIDRAULICE
0721.228.444 | COMPONENTE ELECTRICE
0754.075.656 | COMPONENTE MECANICE



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Bracket and pressure gauge can be mounted from 2 directions

Mounting is possible on either the front or the back

Expanded regulating pressure range

The maximum set pressure has been expanded from the conventional 0.7MPa to 0.8MPa

Compact and light weight

IR1000 width 35mm weight 140g

(previously unavailable small size added)

IR2000 width 50mm weight 300g

(▲ width 14%, weight ▲6% Compared to SMC IR200)

IR3000 width 66mm weight 640g

(▲ width 21%, weight ▲36% Compared to SMC IR400)



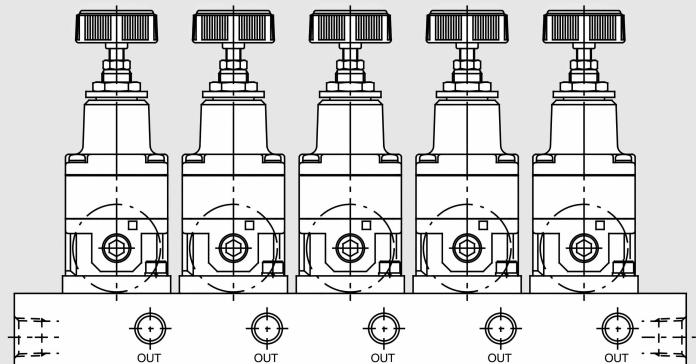
2 air operated models

Air operated style added to series IR2000



Manifolding is possible

Made to order specifications (except series IR2120, IR3000)



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Modular body introduced (-X120)

Can be combined with AF (air filter) and AFM (mist separator).



Attachments such as a pressure switch can be mounted as accessories

Applicable modular sizes **IR1000**: Modular 20 type
IR2000: Modular 30 type
IR3000: Modular 40 type

The addition of the small size Series IR1000 and the large size Series IR3000 provides an increased range of flow rates from approx. 200ℓ/min. to approx. 6000ℓ/min.



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How to Order

IR 2 0 0 0 — 02 — — — —

Precision regulator

Body size

1	IR1000
2	IR2000
3	IR3000

Type of setting

0	Basic type (Handle)
1	Air operated type (Series IR2000/3000 only)

Regulating pressure range
For series IR1000/2000

0	0.005 to 0.2 MPa
1	0.01 to 0.4 MPa
2	0.01 to 0.8 MPa

Note) Air operated type is model IR2120 only.

For series IR3000

0	0.01 to 0.2 MPa
1	0.01 to 0.4 MPa
2	0.01 to 0.8 MPa

Note) Air operated type is model IR3120 only.

Thread type

—	Rc
N	NPT*
F	G*

* Option

Port size

Symbol	size	Application		
		IR1000	IR2000	IR3000
01	1/8	●		
02	1/4		●	●
03	3/8			●
04	1/2			●

Suffix 1

—	Standard
T	For high temp. environments (–5 to 100°C) (Max. 80°C with pressure gauge.)
L	For low temp. environments (–30 to 60°C)

Suffix 2

—	None
Note) R	Pressure gauge, Bracket, Name plate, Mounting on the opposite side

Note) The standard mounting position of the pressure gauge is on the front, when viewing the regulator with the SUP side to the left and OUT side to the right.

Accessory

—	None
B	With bracket
G	With pressure gauge*

* Pressure gauge is included, (but not assembled).

Made to Order Specifications (Refer to page 8)

Symbol	Specifications/Content
X1	Non-grease specifications
X120	Compatible with modular connection brackets(Refer to page 2)
X465□	With digital pressure switch (ISE30A)

- * 1 Add prefix (10-) for the clean room specification.
- * 2 Add prefix (20-) for the copper-free and fluorine-free specification.
- * 3 Add prefix (80-) for the ozone-resistant specification.
- * 4 Manifold specification is available for IR1000 and IR2000.
(Except IR2120 and IR3000)



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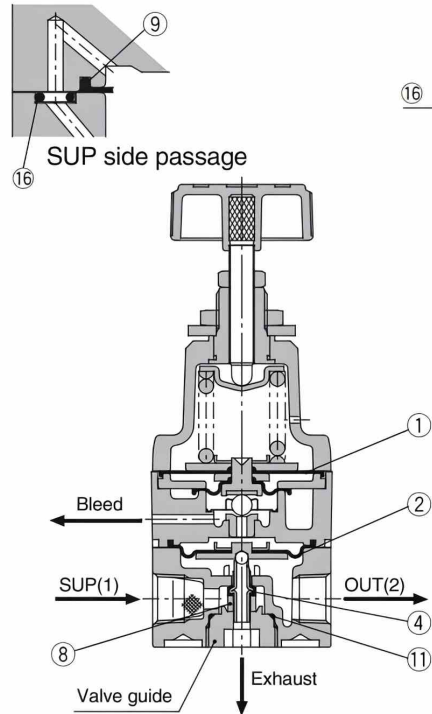
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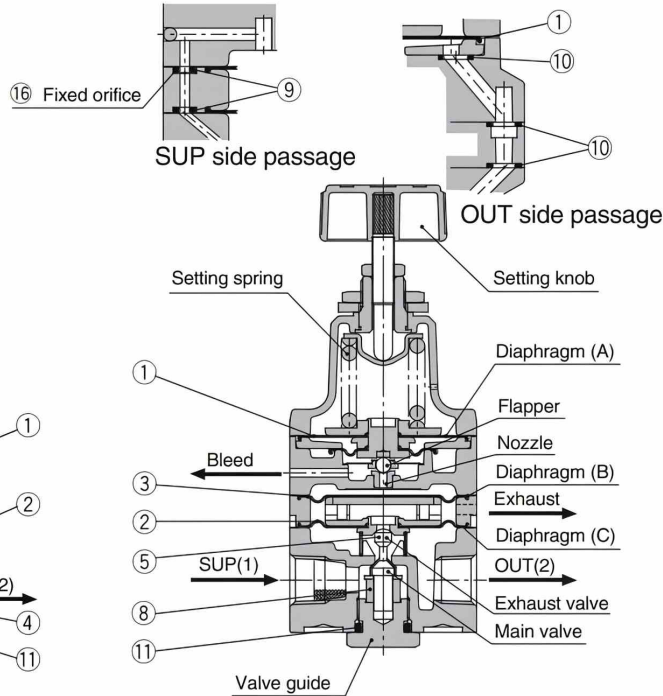
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Construction

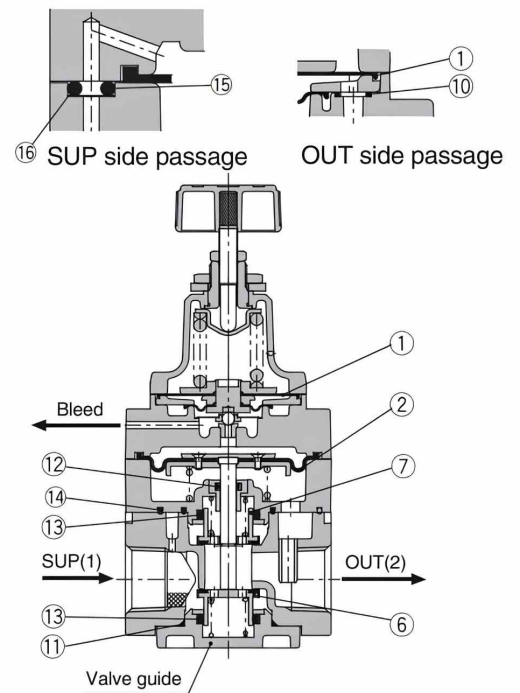
IR1000



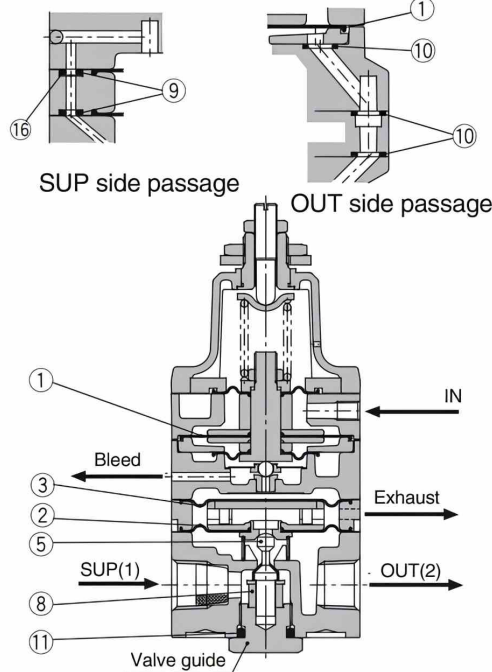
IR2000



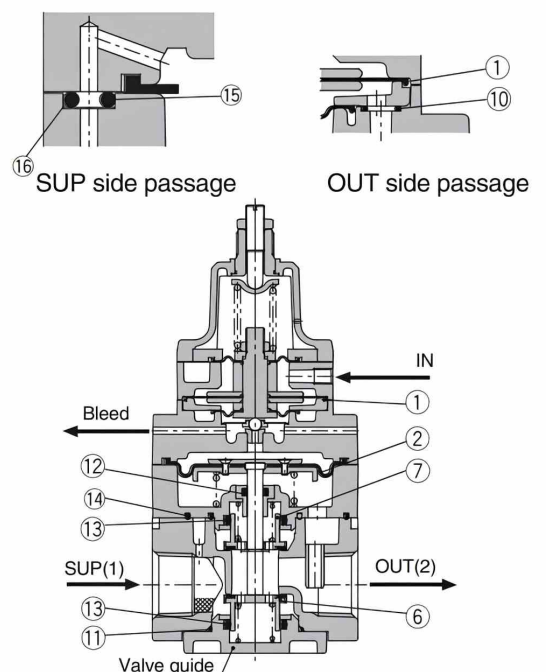
IR3000



IR2120



IR3120



Operating Principles (for IR2000)

When the setting knob is turned, the nozzle is closed by the flapper allowing the supply air that flows in from the upstream side to pass through the fixed orifice and to act on diaphragm B as nozzle back pressure, the main valve is pushed down by the generated force and the supply pressure flows out to the downstream side. The air pressure that flows in acts on diaphragm C and while opposing the force generated by diaphragm B, it also acts on diaphragm A opposing the compression force of the setting spring and becomes the set pressure. If the set pressure rises too high, diaphragm A is pushed up, the interval between the flapper and the nozzle widens, the nozzle back pressure drops, the balance of diaphragms B and C is broken, the main valve closes, the exhaust valve opens and the excess pressure from the downstream side is discharged to the atmosphere. In this way fine pressure variations are detected by the nozzle/flapper style pilot mechanism, and precise pressure adjustment is performed.



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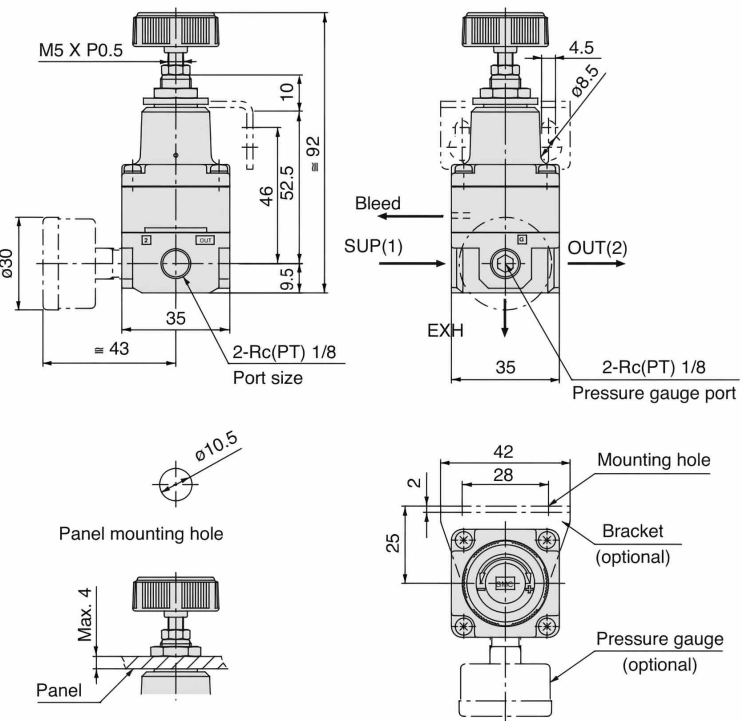
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Replacement Parts

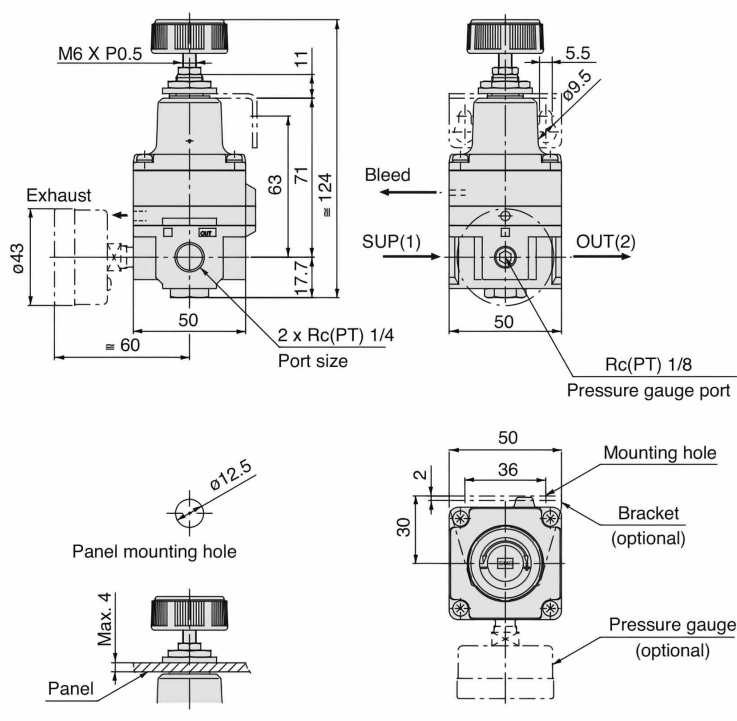
No.	Description	Material	IR10□0		IR20□0		IR30□0		IR2120		IR3120	
			Part no.	Qty.	Part no.	Qty.	Part no.	Qty.	Part no.	Qty.	Part no.	Qty.
1	Diaphragm assembly	NBR, other	P362010-1	1	P362020-2	1	P362020-2	1	P362020-13	1	P362020-13	1
2	Diaphragm assembly	NBR, other	P362010-2	1	P362020-5	1	P362030-1	1	P362020-5	1	P362030-1	1
3	Diaphragm	NBR, other	—	—	P36202019	1	—	—	P36202019	1	—	—
4	Valve	Stainless steel, NBR	P36201058	1	—	—	—	—	—	—	—	—
5	Valve	Stainless steel, NBR	—	—	P36202068#1	—	—	—	P36202068#1	1	—	—
6	Valve	Brass, NBR	—	—	—	—	P36203009#1	1	—	—	P36203009#1	1
7	Valve	Brass, NBR	—	—	—	1	P36203010#1	1	—	—	P36203010#1	1
8	Damper	NBR, other	P36201021	1	P36202026	2	—	—	P36202026	1	—	—
9	O-ring	H-NBR	ø2.5 x 1.05	3	ø1.42 x 1.52	3	—	—	ø1.42 x 1.52	2	—	—
10	O-ring	NBR	—	—	ø4.5 x 1	1	ø4.5 x 1	1	ø4.5 x 1	3	ø4.5 x 1	1
11	O-ring	NBR	ø10 x 1.3	1	JISB2401P11	—	ø27.8 x 1.5	1	JISB2401P11	1	ø27.8 x 1.5	1
12	O-ring	NBR	—	—	—	—	JISB2401P5 (Note)	1	—	—	JISB2401P5 (Note)	1
13	O-ring	NBR	—	—	—	—	JISB2401P16 (Note)	2	—	—	JISB2401P16 (Note)	2
14	Seal (A)	NBR	—	—	—	—	P36203015	1	—	—	P36203015	1
15	Seal (B)	NBR	—	—	—	1	P36203016	3	—	—	P36203016	3
16	Fixed throttle	Stainless steel	P36202018	1	P36202018	—	P36203017	1	P36202018	1	P36203017	1
Repair kit no. (A set of above nos. ① to ⑯.)			KT-IR1000		KT-IR2000		KT-IR3000		KT-IR2120		KT-IR3120	

Dimensions

IR10□0-01□



IR20□0-02□

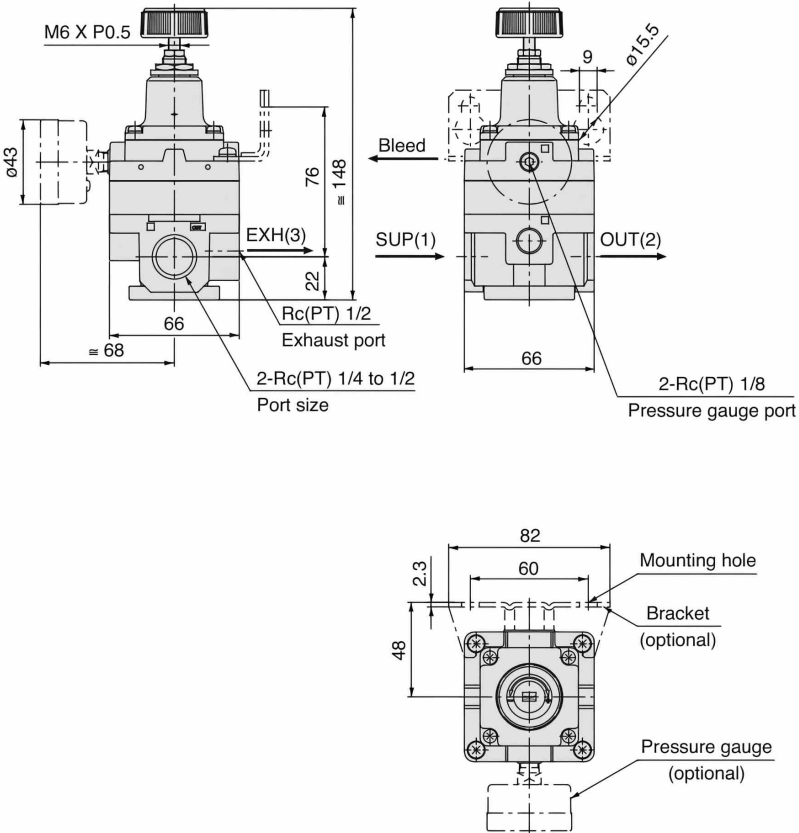


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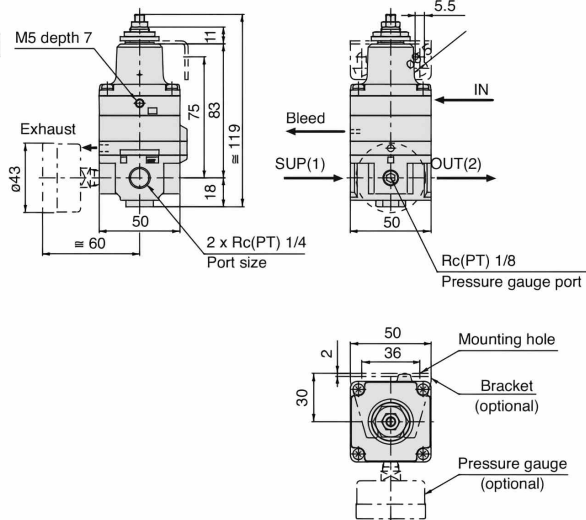
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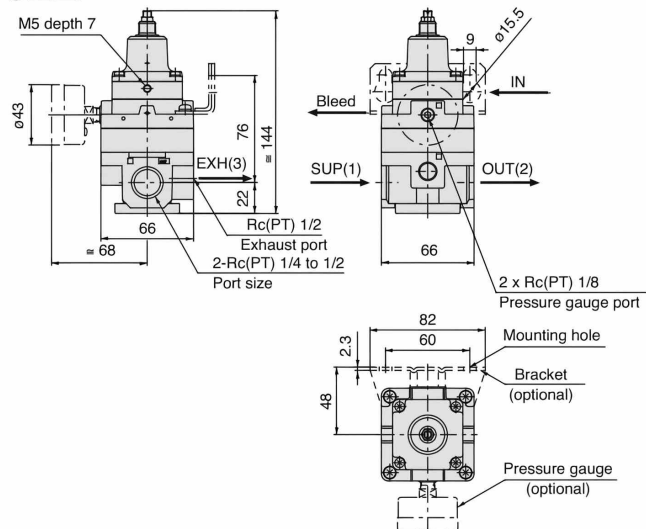
IR30□0-0□□



IR2120-02□□



IR3120-0□□□



Air Supply

Caution

1. If the supply pressure line contains drainage or dirt, etc., the fixed throttle can become clogged leading to malfunction, and therefore, in addition to an air filter (SMC Series AF) be sure to use a mist separator (SMC Series AM, AFM).

Refer to SMC's "Compressed Air Cleaning Systems" catalogue regarding air quality.

2. Never use a lubricator on the supply side of the regulator, as this will positively cause the fixed throttle to become clogged and lead to malfunction. If lubrication is required for terminal devices, connect a lubricator on the output side of the regulator.

Maintenance

Warning

1. When the valve guide (refer to construction drawing on p.1.6-6) is to be removed during maintenance, first reduce the set pressure to "0" and completely shut off the supply pressure.
2. When a pressure gauge is to be mounted, remove the plug after reducing the set pressure to "0".

Precautions for IR10□0 only

Warning

1. When remounting the valve guide after removing it for maintenance, use a tightening torque of no more than 0.6Nm. Since the valve guide on this product is made of resin, there is a danger of damage if tightened with a torque exceeding the prescribed value.

Operation

Caution

1. Do not use a precision regulator outside the range of its specifications as this can cause failure. (Refer to specifications.)
2. When mounting is performed, make connections while confirming port indications.

Operation

Caution

3. If a directional switching valve (solenoid valve, mechanical valve, etc.) is mounted on the supply side of the regulator and repeatedly switched ON and OFF, wear of the nozzle/flapper section will be accelerated and a discrepancy in the setting value may occur. Therefore, avoid using a directional switching valve on the supply side. In the event a directional switching valve will be used, install it on the output side of the regulator.
4. Air is normally discharged from the bleed port (the hole on the side of the body's mid-section). This is a necessary consumption of air based on the construction of the precision regulator, and is not an abnormality.
5. Be sure to tighten the lock nut after pressure adjustment.

Precautions for IR30□0, IR3120 only

Caution

1. The supply pressure is relatively high (approx. 0.5MPa or more), the set pressure is low (approx. 0.1MPa or less), and when operated with the output side released to the atmosphere, there may be pulsations in the setting side pressure. In this kind of situation, operate with the supply pressure reduced as much as possible, or increase the set pressure somewhat and restrict the output line (add and adjust a stop valve, etc.).
2. The capacity of the output side is large, and when used for the purpose of a relief function, the exhaust sound will be loud when being relieved. Therefore, operate with a silencer (SMC Series AN) mounted on the exhaust port (EXH port). The connection is Rc(PT) 1/2.

Precautions for IR2120, IR3120 (air operated style) only

Caution

1. Since the output of types IR2120 and IR3120 is the same pressure as the input signal pressure, select a type of regulator (general purpose or precision type) for input signal pressure adjustment according to the application.
2. The screw on the topmost section is a zero point adjustment screw which is locked at the factory and requires no adjustment for operation.



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Piping

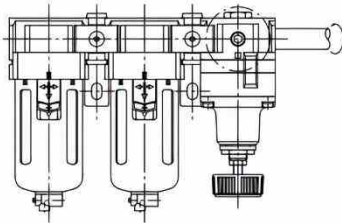
⚠ Warning

1. Screw piping together with the recommended proper torque while holding the side with female threads.

Looseness or faulty sealing will occur if tightening torque is insufficient, while thread damage will result if the torque is excessive. Furthermore, if the side with the female threads is not held while tightening, excessive force will be applied directly to piping brackets, etc. causing damage or other problems.

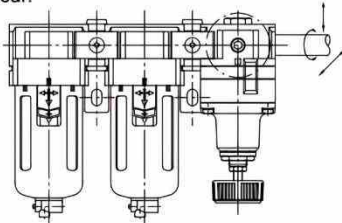
Recommended proper torque Nm

Connection thread	1/8	1/4	3/8	1/2
Torque	7 to 9	12 to 14	22 to 24	28 to 30



2. Do not allow twisting or bending moment to be applied other than the weight of the equipment itself.

Provide separate support for external piping, as damage may otherwise occur.



3. Since excessive moment loads and the propagation of vibrations, etc. can easily result from inflexible piping made of steel, etc., avoid these problems by using flexible tubing for intermediate connections.

Piping

⚠ Caution

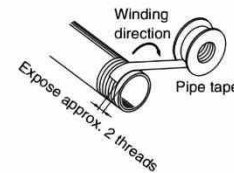
1. Preparation before piping

Before piping is connected, it should be thoroughly blown out with air (flushing) or washed to remove cutting chips, cutting oil and other debris from inside the pipe.

2. Wrapping of pipe tape

When connecting pipes and fittings, etc., be sure that cutting chips from the pipe threads and sealing material do not get inside.

Further, when pipe tape is used, leave 1.5 to 2 thread ridges exposed at the end of the pipe/fitting.



Operating Environment

⚠ Warning

1. Do not operate in locations having an atmosphere of corrosive gases, chemicals, sea water, water or steam, or where there will be contact with the same.
2. Do not operate in locations where vibration or impact occurs.
3. In locations which receive direct sunlight, provide a protective cover, etc.
4. In locations near heat sources, block off any radiated heat.
5. In locations where there is contact with spatter from water, oil or solder, etc., implement suitable protective measures.

Air Supply

⚠ Warning

1. These products are designed for use with compressed air. Contact SMC if any other fluid will be used.
2. Do not use compressed air which includes chemicals, synthetic oils containing organic solvents, salt, or corrosive gases, etc., as this can cause damage or malfunction.
3. If drainage is not removed from air filters and mist separators, it can flow out to the downstream side and lead to the malfunction of pneumatic equipment.

In cases where the management of drainage removal will be difficult, the use of filters with auto drains is recommended.



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