

Polypropylene + SUS304 Flow Control Valve for Clean Environment

Flow Control Valve **PP Series**

Copper alloy
free material

Non-
grease

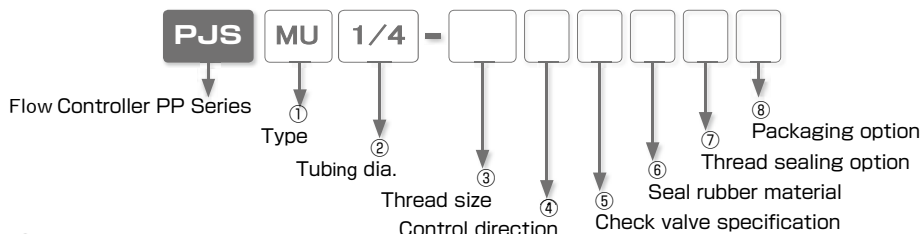
Clean-room
packaging
option



- **PP (polypropylene)** Material for Clean Environment.
- **SUS304** for Metallic Parts.
- EPDM for Seal Rubber (Option: FKM or NBR).
- Very low check valve cracking pressure of In-line straight type
0.725psi (.005MPa)
- Visible Fluid by Translucent Body Color.
- Clean-Room Packaging Option.

Flow Control Valve PolyPropylene Series

Model Designation (Example)



① Type

Code	Type	Code	Type
MU	In-line Straight	C	Elbow

② Tubing dia.

Code	Inch size					mm size		
	4	1/4	8	3/8	1/2	6	10	12
mm size	ø4	ø6.35	ø8	ø9.53	ø12.7	ø6	ø10	ø12
Inch O.D.	ø5/32"	ø1/4"	ø5/16"	ø3/8"	ø1/2"			

※. Inch sizes are for In-line type PJSMU type only. Specify 4 for 5 /32" and 8 for 5 /16"

③ Thread size

Thread size	Metric thread (mm)		Taper pipe thread			
Code	M3	M5	01	02	03	04
Size	M3×0.5	M5×0.8	R1/8	R1/4	R3/8	R1/2

❖ R thread is same as BSPT

④ Control direction

Code	A	B
Control direction	<p>Meter-out</p> <p>■ Air from thread side is controlled. Air from tube side is not controlled and flows out from thread side.</p>	<p>Meter-in</p> <p>■ Air from tube side is controlled. Air from thread side is not controlled and flows out from tube side.</p>
Identification	"A" is marked on the top of needle knob.	"B" is marked on the top of needle knob.

⑤ Check valve specification

No code : Standard

K : Low cracking pressure type = cracking pressure : 2.4psi (0.02MPa)

operating pressure range : 7.25~72.5psi (0.05~0.5MPa)

※ "K" is marked on the top of needle (Elbow type only).

⑥ Seal rubber material

Code	No code	-F(※1)	-HN(※1)
Material	EPDM	FKM	HNBR

※ 1. FKM and HNBR are not available for K: low cracking pressure type.

※ 2. The material of valve packing for In-line union straight (PJSMU) type is FKM only.

⑦ Thread sealing option (For Taper pipe thread only)

No code: Standard (No Sealock and seal tape)

-S : Sealock on thread

-TP : Seal tape on thread

⑧ Packaging option

No code : Standard package

C : Clean-room package

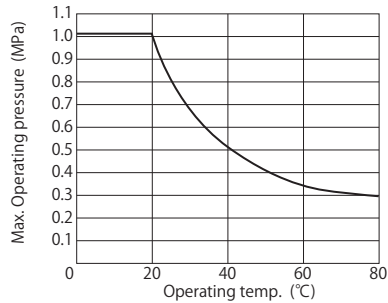
Specifications

Type	Union Straight (In-line type)	Elbow
Fluid medium	Air, Others (※1)	
Operating pressure range	7.25 ~ 145psi (0.05~1.0MPa) at 32 ~ 68°F (0 ~ 20°C)※2	14.5 ~ 145psi (0.1~1.0MPa) Low cracking pressure type: 7.25~72.5psi (0.05~0.5MPa) at 32 ~ 68°F (0 ~ 20°C)※2
Check valve cracking pressure	0.725psi (0.005MPa)	7.25psi (0.05MPa) Low cracking pressure type : 2.4psi (0.02MPa)
Operating temp. range	32 ~ 176° F (0 ~ 80°C) (No freezing)	

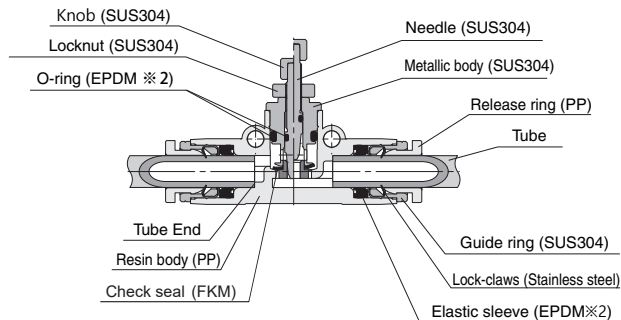
△ Warning

- ※ 1. The specification above may not be applied, depending on the kind of mixed gases, etc. used as fluid medium. Contact us and make sure to use PISCO products after verifying their suitability on the user side.
- ※ 2. If operating temp. exceeds 68°F (20°C), refer to the following chart "Relation of Operating Temp. & Max. Operating Pressure".

Relation of Operating Temp. & Max. Operating Pressure



Construction (Union: PJSMU) - IN-LINE type



※ 2. FKM / HNBR for option

■ Seal rubber material

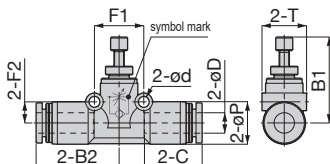
Parts name	Seal rubber material		
	EPDM (Standard)	FKM (Option)	HNBR (Option)
Elastic sleeve	EPDM	FKM	HNBR
O-ring			FKM
Diaphragm	FKM		FKM

In-Line Connection

PJSMU

In-Line Straight

RoHS compliant



Unit : mm

Model code	Tube O.D. øD	B1		B2	øP	T	Tube end C	ød	F1	F2	Weight (g)	CAD file name
		max.	min.									
PJSMU1/4 ^{⑥⑧}	1/4"	25.3	21.5	24.6	12.5	13.1	17.1	3.2	14.8	6.2	13	PJSMU1_4_
PJSMU3/8 ^{⑥⑧}	3/8"	32.7	28.9	32	18.2	19.7	20.4	4.2	22.2	8.7	42	PJSMU3_8_
PJSMU1/2 ^{⑥⑧}	1/2"	35.2	31.5	37.4	21.2	22.7	23.9	4.2	25.7	10.2	57	PJSMU1_2_
PJSMU4 ^{⑥⑧}	4 (5/32")	21	18.6	21.1	10	10.5	15	3.2	12.7	4.8	7.9	PJSMU4_
PJSMU6 ^{⑥⑧}	6	25.3	21.5	24.6	12.5	13.1	17.1	3.2	14.8	6.2	13	PJSMU6_
PJSMU8 ^{⑥⑧}	8 (5/16")	28.6	24.9	28	14.8	15.4	18.1	3.2	18.2	7.2	23	PJSMU8_
PJSMU10 ^{⑥⑧}	10	32.7	28.9	32	18.2	19.7	20.4	4.2	22.2	8.7	42	PJSMU10_
PJSMU12 ^{⑥⑧}	12	35.2	31.5	37.1	21.2	22.7	23.6	4.2	25.7	10.2	58	PJSMU12_

※1. Specify "-F" (FKM) or "- HN(HNBR)" in ^⑥ of the model code for a substitute material (FKM comes as the valve packing material even when "-NH" is specified)

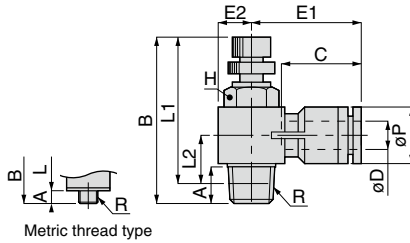
※2. ^⑧ in Model code / Replaced with "C" for Clean-room package

Polypropylene Flow Control Valve

Flow Controller PP Series

PJSC Elbow

RoHS compliant



Unit : mm

Model code	Tube O.D. øD	R	A	B		L1		L2	øP	Tube end C	E1	E2	Hex. H	Weight (g)
				max.	min.	max.	min.							
PJSC4-M5 □ (K) ⑥⑦	4	M5×0.8	2.9	29.7	27	26.8	24.1	7.2	9.9	15	20	4.9	8	7
PJSC4-01 □ (K) ⑥⑦⑧		R1/8	8	40.5	34.4	36.5	30.4	10.7	10		21.5	7.2	12	18
PJSC6-M5 □ (K) ⑥⑦	6	M5×0.8	2.9	29.7	27	26.8	24.1	8.4	12.4	17.1	24.1	4.9	8	8
PJSC6-01 □ (K) ⑥⑦⑧		R1/8	8	40.5	34.4	36.5	30.4	10.9			23.6	7.2	12	19
PJSC6-02 □ (K) ⑥⑦⑧		R1/4	11.1	47.6	41.4	41.6	35.4	12.2			25.6	9.2	16	38
PJSC6-03 □ ⑥⑦⑧		R3/8	13.2	53.5	46.5	47.1	40.1	15.4			14.4	16.9	28.9	11
PJSC8-01 □ (K) ⑥⑦⑧	8	R1/8	8	40.5	34.4	36.5	30.4	11.9	14.4	18.1	26.9	7.2	12	22
PJSC8-02 □ (K) ⑥⑦⑧		R1/4	11.1	47.6	41.4	41.6	35.4	13.2			28.4	9.2	16	41
PJSC8-03 □ ⑥⑦⑧		R3/8	13.2	53.5	46.5	47.1	40.1	15.4			28.9	11	21	69
PJSC8-04 □ ⑥⑦⑧		R1/2	16	58.9	52.3	50.7	44.1	18			31	14	27	103
PJSC10-02 □ (K) ⑥⑦⑧	10	R1/4	11.1	47.6	41.4	41.6	35.4	14.8	17.6	20.4	31.1	9.2	16	44
PJSC10-03 □ ⑥⑦⑧		R3/8	13.2	53.5	46.5	47.1	40.1	16.7			31.4	11	21	71
PJSC10-04 □ ⑥⑦⑧		R1/2	16	58.9	52.3	50.7	44.1	18			20.2	33.6	14	27
PJSC12-03 □ ⑥⑦⑧	12	R3/8	13.2	53.5	46.5	47.1	40.1	18.4	21	23.6	37.1	11	21	74
PJSC12-04 □ ⑥⑦⑧		R1/2	16	58.9	52.3	50.7	44.1	19.7			36.6	14	27	109

※ 1. "L1" and "L2" are reference values for height dimensions after tightening taper thread.

※ 2. □ in Model code / Replaced with "A" for Meter-out, "B" for Meter-in

※ 3. ⑥ in Model code / Replaced with "F" (FKM), or "N" (NBR) for Seal rubber material change (FKM is not available for low cracking pressure type.)

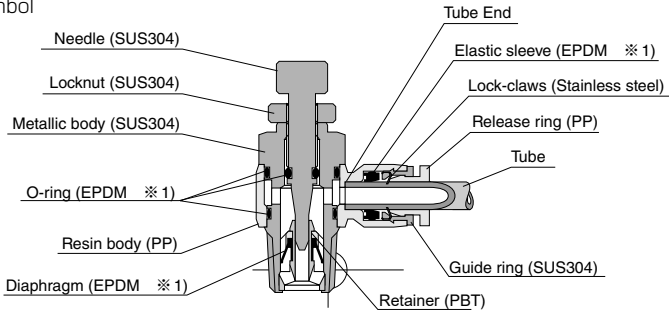
※ 4. ⑦ in Model code / Replaced with "S" for Sealock or "TP" for Seal tape on thread

※ 5. ⑧ in Model code / Replaced with "C" for Clean-room package

Construction (Elbow (Banjo): PJSC)



Symbol



※1. FKM / NBR for option

※2. Gasket material of metric thread: SUS316+FKM

Standard Size List

Connection: Tube ⇔ Tube

Type	Tube O.D.							
	1/4"	3/8"	1/2"	4	6	8	10	12
PJSC In-line Straight	●	●	●	●	●	●	●	●

◇ 4mm is same size as 5/32" and 8mm as 5/16"

Connection: Thread ⇔ Tube

Type	Thread size	Tube O.D.				
		4	6	8	10	12
PJSC Elbow (Banjo)	M3×0.5	●				
	M5×0.8	●	●			
	R1/8	●		●		
	R1/4			●	●	
	R3/8		●	●	●	●
	R1/2			●	●	●

⚠ Detailed Safety Instructions

Before using PISCO products, be sure to read "Safety Instructions" and "Safety Instruction Manual" and "Common Safety Instructions for Controllers".

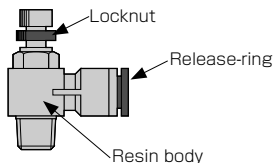
Warning

- When controlling the speed of actuators, slowly release the air by adjusting the needle from a fully closed state. In case the needle is opened, actuator can move suddenly. Turn needle in the clockwise direction to close, and in the counterclockwise to open.
- Do not use this series under the condition with vibration or physical impact. These may cause damage to the products, the escape of tubes and a fluid leakage.
- Resin can be deteriorated by being exposed to direct sunlight or ultraviolet rays.

Caution

- A small amount of air leakage is permitted for Flow controllers. Do not use the products for the application which requires no leakage.
- The seal rubber material EPDM is not suitable for general air pipings, due to its inferior durability against mineral oil.
- When applying sealant or seal tape on the thread, 1.5 to 2 thread ridges from the face of thread should be left unapplied.
- If there is a possibility of fire or damage by a fluid leakage, implement specific countermeasures such as using a protective cover in order to prevent machines / facilities from damages or fire.
- Due to its oil-free spec., the tubing insertion is tighter than regular Flow Controller Series. Make sure to insert tubing up to Tube end. When inserting a tubing, put a liquid like water on the tubing surface, which does not affect the product and the tubing, in order to improve the tubing installation.
- The material of the retainer is polybutyleneterephthalate (PBT). Do not use this series for the applications which may cause a problem by this material.
- For In-line straight type, the material of a valve seat of the needle is resin. Do not turn the needle with excessive torque. Otherwise a flow characteristic may change due to the deformed resin valve seat, or the valve seat may not be sealed properly.
- The check valve cracking pressure of In-line straight type may be higher than the specification mentioned above, depending on the supply pressure, pressurized duration and ambient temperature, etc.

How to identify the series of Flow Controller



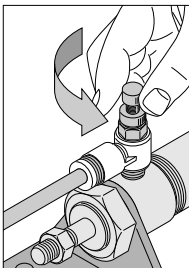
Series	Release-ring shape/color	Resin body color	Locknut color		Marking on needle	
			A type	B type	A type	B type
Standard	Oval, Round / Black	Black	Silver	Black	A (AK)	B (BK)
Clean-room package	Oval, Round / Light-blue	Light-gray				
High-flow Series	Round / Black	Black	Blue	—	AG	—
Low-flow Series	Oval, Round / Black	Black	Silver	Black	AT	BT
SUS303 Series	Oval, Round / Dark-blue	Black	Silver	Black	A	B
PP Series	Round / Semitransparent	Semitransparent	Silver	Silver	A (AK)	B (BK)

※ 1. () is for low cracking pressure type.

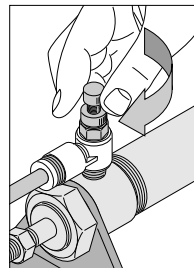
How to adjust the speed

1. Speed adjustment of actuators

- ① Increasing speed
Turn the needle in the counterclockwise direction from a fully closed state. The more the needle is opened, the faster the actuator moves. Make sure to tighten the locknut at the desired speed. The speed setting can be changed without tightening the locknut.



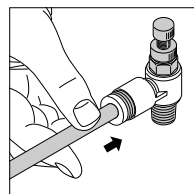
- ② Reducing speed
Turn the needle in the clockwise direction when the speed is too fast. Make sure to tighten the locknut at the desired speed. The speed setting can be changed without tightening the locknut.



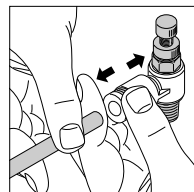
2. How to insert and disconnect

1. How to insert and disconnect tubings

- ① Tubing insertion
Insert a tubing into Push-In Fitting up to the tube end. Lock-claws bite the tubing and fix it automatically, then the elastic sleeve seals around the tubing. Refer to "2. Instructions for Tubing Insertion" under "Common Safety Instructions for Fittings".

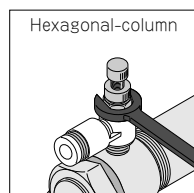


- ② Tubing disconnection
The tubing is disconnected by pushing release-ring to release Lock-claws. Make sure to stop air supply before the tubing disconnection.



2. How to tighten thread

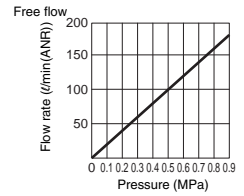
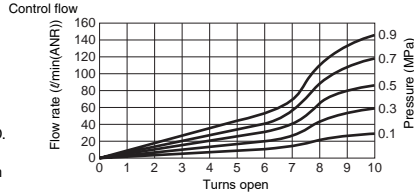
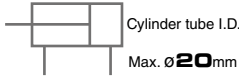
- ① Tightening thread
Use a spanner to tighten a hexagonal-column. Refer to "Table: Recommended tightening torque" under "2. Instructions for Installing Con-trollers" in "Common Safety Instructions for Controllers".



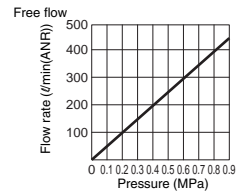
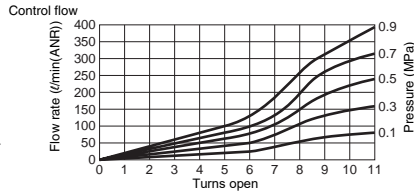
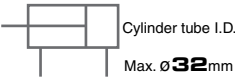
Flow characteristic

In-line Straight

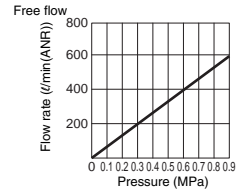
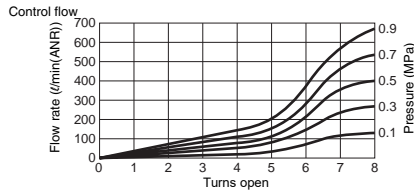
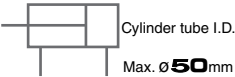
PJSMU 4 (PJSMU 5/32)



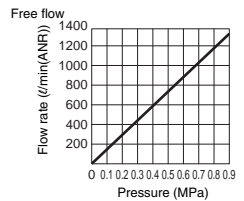
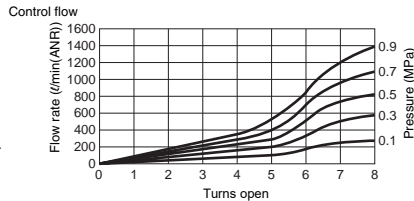
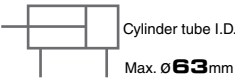
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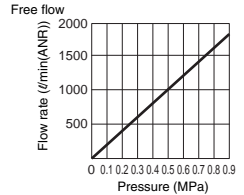
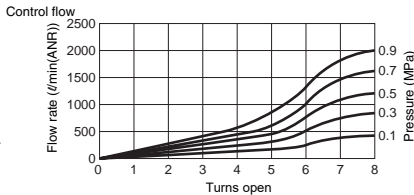
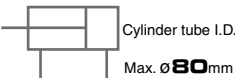
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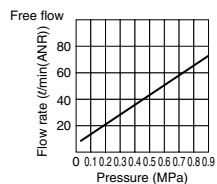
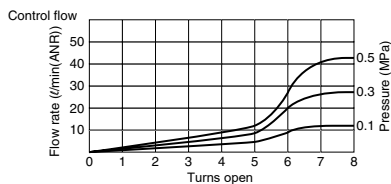
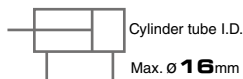
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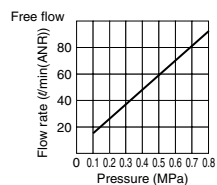
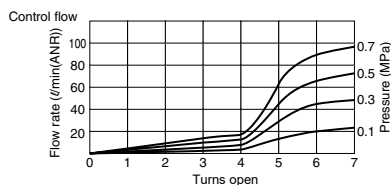
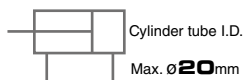
PJSMU 1/2 PJSMU 12



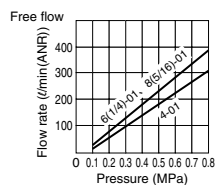
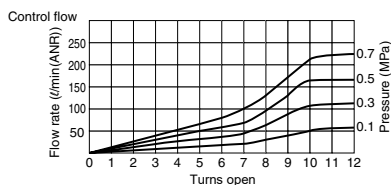
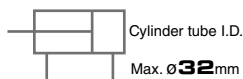
PJSC 4-M5K
6-M5K



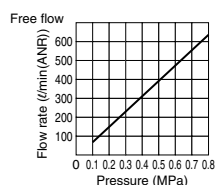
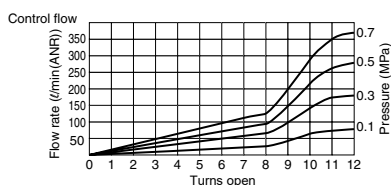
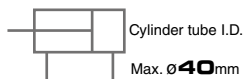
PJSC 4-M5
6-M5



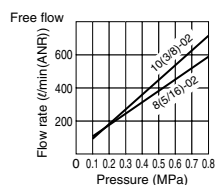
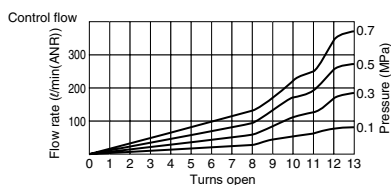
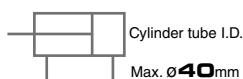
PJSC 4-01
6-01
8-01



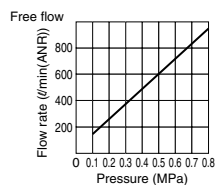
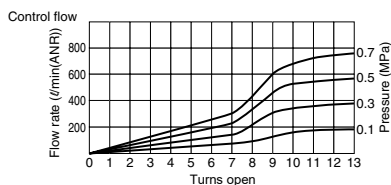
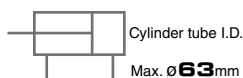
PJSC 6-02



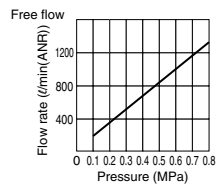
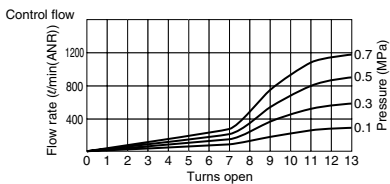
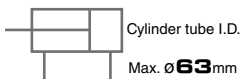
PJSC 8-02
10-02



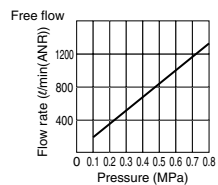
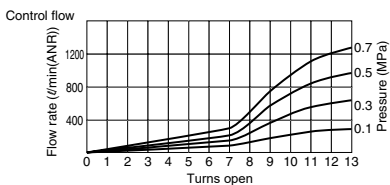
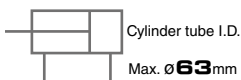
PJSC 6-03



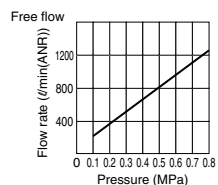
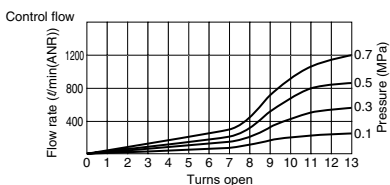
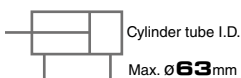
PJSC 8-03



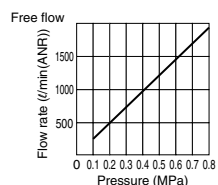
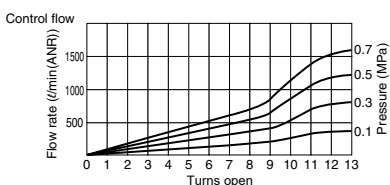
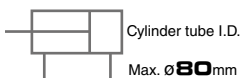
PJSC 10-03



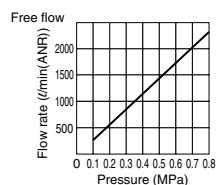
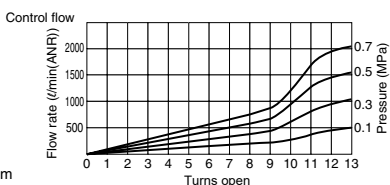
PJSC 12-03



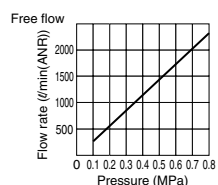
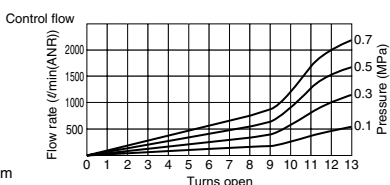
PJSC 8-04



PJSC 10-04



PJSC 12-04



Common Safety Instructions for Controllers

Before selecting or using PISCO products, read the following instructions. Read the detailed instructions for individual series as well as the instructions below.

Warning

1. Some products have an air direction to control. Make sure to distinguish the direction by marking on the products. Installing the product with the wrong direction may cause personal injury or property damage.
2. Avoid any load on PISCO products such as a tensile strength, twisting, bending, dropping and excessive impacts. These may cause damage to the products.
3. Locknut needs to be tightened by hand. Do not use any tool. Using tools to tighten the locknut may cause damage to the products. Also, inadequate tightening may loosen the locknut and the initial setting can be changed.
4. Use clean air to supply. Dusts and sludge may result in the change of the initial setting.

⚠ Caution

1. Refer to “Common Safety Instructions for Fittings” for the safety instructions for fitting part.

2. Instructions for Installing Controllers

① Use proper tools to tighten a hexagonal-column or a knurling, when installing the controller.

② Refer to the following table which shows the recommended tightening torque to tighten thread. Excessive tightening may break the thread part or deform the gasket to cause a fluid leakage. Tightening thread with the tightening torque lower than these limits may cause a loosened thread or a fluid leakage.

● Table: Recommended tightening torque (hexagonal-column)

Thread type	Thread size	Tightening torque
Metric thread	M3 × 0.5	0.7Nm
	M5 × 0.8	1 ~ 1.5Nm
	M6 × 1	2 ~ 2.7Nm
Taper pipe thread	R1/8	7 ~ 9Nm
	R1/4	12 ~ 14Nm
	R3/8	22 ~ 24Nm
	R1/2	28 ~ 30Nm
Unified thread	No.10-32UNF	1.5 ~ 1.9Nm
National pipe thread taper	1/16-28NPT	7 ~ 9Nm
	1/8-27NPT	7 ~ 9Nm
	1/4-18NPT	12 ~ 14Nm
	3/8-18NPT	22 ~ 24Nm
	1/2-14NPT	28 ~ 30Nm
Parallel pipe thread	G3/8	After hand tightening 1/2~1 turns
	G1/2	

(knurling)

Thread type	Thread size	Tightening torque
Metric thread	M5 × 0.8	1/6 turns after hand tightening
	M6 × 1	
	M10 × 1	
Parallel pipe thread	G3/8	1/2~1 turns after hand tightening
	G1/2	

3. Instructions for removing Controller

① When removing controllers, use proper tools to loosen a hexagonal-column or a knurling.

② Remove the sealant stuck on the mating equipment. The remained sealant may get into the peripheral equipment and cause malfunctions.

4. Orifice Fittings and Pre-set (Orifice) Flow Control Valves have deviation of flow rate. Contact us, in case a very accurate amount of flow rate is required.

5. If PISCO products generate heat by an adiabatic compression, total temperature including the heat from the product must be controlled within the range of the specification.