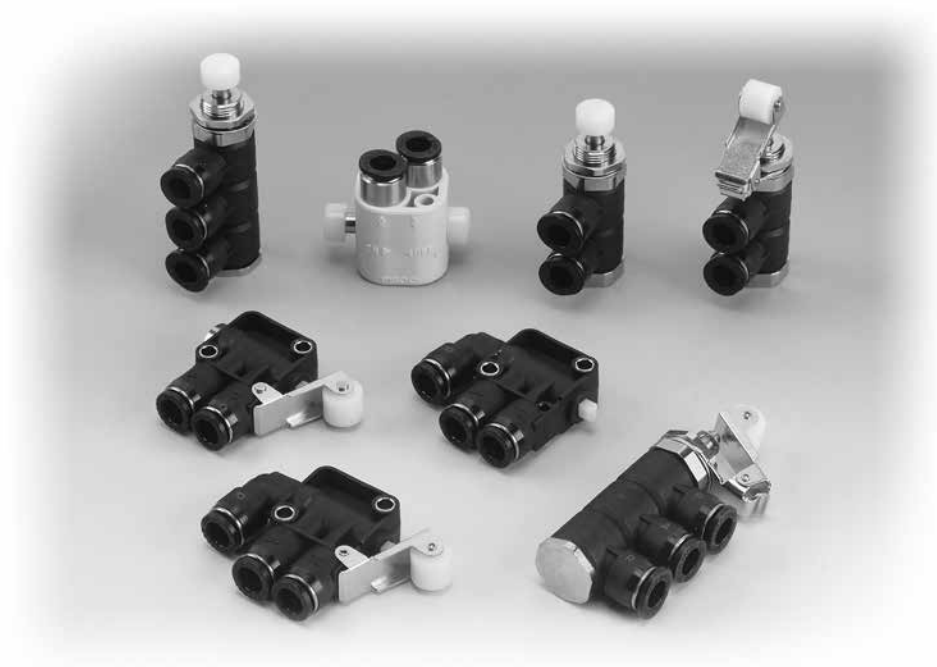
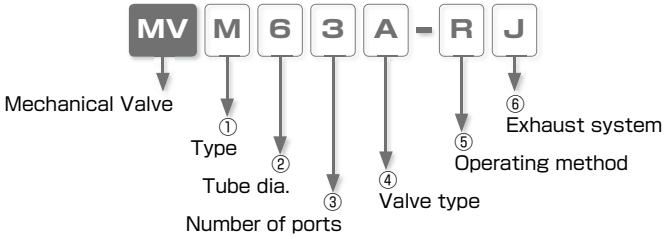


Push-In Fitting Type Mechanical Valve

Mechanical Valve Series

- *Push-type Open/Close Valve.*
- *Stable Operation by Spool Valve.*
- *Selection of Two- or Three-Directional Control Valve.*
- *Panel Mount Type with Rotatable Fitting to All Directions. Easy Tube Insertion.*

Model Designation (Example)



① Type

Code	Type	Code	Type	Code	Type	Code	Type
M	Micro Switch Type	P	Panel Mount Type	U	Air Switch Type	F	Foot Switch Type

② Tube dia.

Code	4	6
Size	ø4	ø6

③ Number of ports

Code	2	3
Number of ports	2	3

④ Valve type

No code : Normally Closed (Release ring color: Black)

A : Normally Open (Release ring color: Light-gray)

※ Only Normally Closed type is available for MVP and MVU.

⑤ Operating method

No code : Pin

R : Roller lever

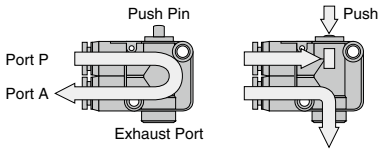
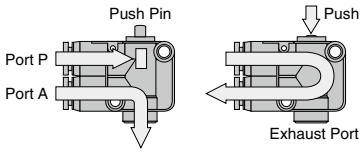
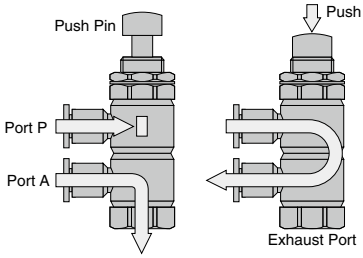
※ Only Pin type is available for MVU

⑥ Exhaust system (Three-Directional Control Valve only)

No code : Open-Air Exhaust through Silencer

J : Push-in fitting tube exhaust

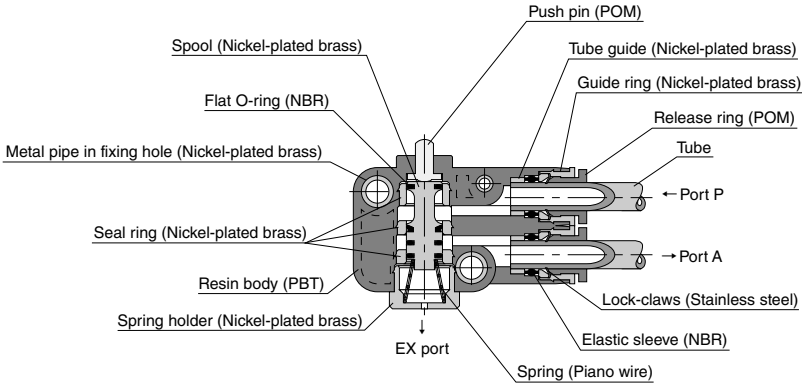
User Manual

	Normally Open	Normally Closed
Micro switch type		
Panel mount type		
Instructions	As for three-directional control valve with Normally Open valve, the compressed air from Port P flows out from Port A. The air is stopped and the residual pressure is released to Exhaust Port by pushing Push Pin.	As for three-directional control valve with Normally Closed valve, the compressed air from Port P is stopped. The air flows out from Port A by pushing Push Pin.

Specifications

Fluid medium	Air
Operating pressure range	0～0.7MPa
Operating temp. range	0 ～ 60℃ (No freezing)
Lubricant	Necessary : ISO VG32 (turbine oil class 1)

Construction (Micro Switch Type, Pin Type : MVM)



※ Release ring color / Normally closed valve type: Black, Normally open valve type: Light-gray

⚠ Detailed Safety Instructions

Before using PISCO products, be sure to read "Safety Instructions" and "Safety Instruction Manual" on page 23 to 27 and "Common Safety Instructions for Valves" on page 549 to 550.

Warning

1. Do not apply excessive load beyond the stroke limits on the push pin and the roller. It may cause damage to Mechanical Valve.
2. Do not use the valve for the applications such as cam or dog which are operated with a rapid starting. Impacts can cause damage to Mechanical Valve.
3. Do not use machine to control Air Switch and Foot Switch type. It may cause damage to Mechanical Valve.
4. When Mechanical Valve is used on the application which requires high reliability, make sure the valve performs properly before the operation. There is a possibility to cause damage to the system due to a malfunction of the valve.
5. Resin body is rotatable, but do not swing or rotate it by force or continuously. It may cause damage to the products and a fluid leakage.
6. Keep Mechanical Valve away from water / oil drops or dusts. These may cause malfunction, since the valve is not drip / dust proof.

Caution

1. Contact PISCO in case of using Mechanical Valve in applications with frequent use.
2. Confirm the number of ports and valve type by the marking on the valve body.
3. Effective area of Micro Switch and Foot Switch type may change by the stroke range. Insufficient stroke range can cause a lack of air flow rate.
4. Make sure to push the push pin of Air Switch and Foot Switch or the upper lid of Foot Switch completely until it stops. Incomplete switchover can cause a poor path connection or low flow rate.

Standard Size List

Micro Switch Type

Type	Page	Number of ports	Tube O.D.(mm)	
			4	6
MVM Open-Air Exhaust Pin Type	P.582	2	●	●
		3	●	●
MVM Pipe Exhaust Pin Type	P.582	3	●	●

Type	Page	Number of ports	Tube O.D.(mm)	
			4	6
MVM Open-Air Exhaust Roller Type	P.583	2	●	●
		3	●	●
MVM Pipe Exhaust Roller Type	P.583	3	●	●

Panel Mount Type

Type	Page	Number of ports	Tube O.D.(mm)	
			4	6
MVP Open-Air Exhaust Pin Type	P.584	2	●	●
		3	●	●
MVP Pipe Exhaust Pin Type	P.584	3	●	●

Type	Page	Number of ports	Tube O.D.(mm)	
			4	6
MVP Open-Air Exhaust Roller Type	P.585	2	●	●
		3	●	●
MVP Pipe Exhaust Roller Type	P.585	3	●	●

The Others

Type	Page	Number of ports	Tube O.D.(mm)	
			4	6
MVU Air Switch	P.586	2	●	●
		3	●	●

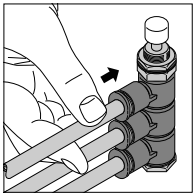
Type	Page	Number of ports	Tube O.D.(mm)	
			4	6
MVF Foot Switch	P.586	2	●	●
		3	●	●

How to insert and disconnect

1. How to insert and disconnect tubes

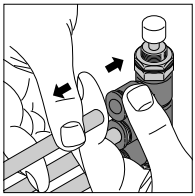
① Tube insertion

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



② Tube disconnection

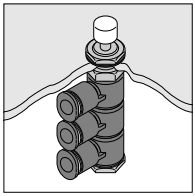
The tube is disconnected by pushing release-ring to release Lock-claws.
Make sure to stop air supply before the tube disconnection.



2. How to tighten thread

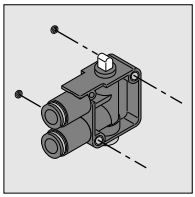
① Tightening thread

Use a spanner to tighten a hexagonal-column of Panel Mount Type.
The range of tightening torque is between 2.5 and 3.5Nm.



② How to fix valve body

In order to fix the valve body of Micro Switch Type and Air Switch Type, use the fixing holes on the body to tighten with M3 screw. Refer to the dimensional drawings of the hole pitch.



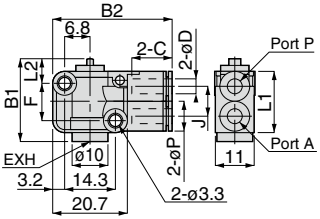
Applicable Tube and Related Products

Polyurethane Tube·····P.596
Nylon Tube·····P.608

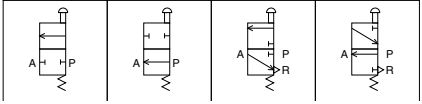
■ Micro Switch Open-Air Exhaust Pin Type

MVM Micro Switch Open-Air Exhaust Pin Type

CAD



Symbol of Pin Type			
2 ports		3 ports	
Normally Closed	Normally Open	Normally Closed	Normally Open



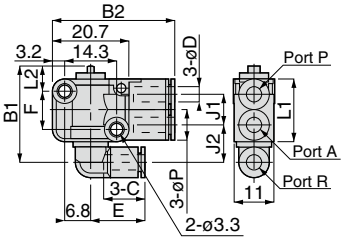
Unit：mm

Model code	Tube O.D. øD	B1 max.	B1 min.	B2	L1	L2	øP	Tube end C	J	F	Weight (g)	Effective area (mm^2)	CAD file name
MVM 4□	4	23.5	21.1	33	17	7.2	8	11	8	10.6	10	3	CHM-001
MVM 4□A													
MVM 6□	6	30.7	27.1	33.4	22	7.2	10.5	11.6	10.5	15.6	12	7	
MVM 6□A													

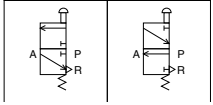
※ □ in Model code / Replaced with "2" for Two-directional control valve, "3" for Three-directional control valve.

MVM Micro Switch Tube Exhaust Pin Type

CAD



Symbol of Pin Type	
3 ports	
Normally Closed	Normally Open

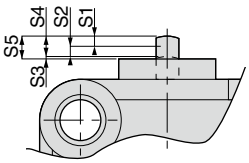


Unit：mm

Model code	Tube O.D. øD	B1 max.	B1 min.	B2	L1	L2	øP	Tube end C	J1	J2	E	F	Weight (g)	Effective area (mm^2)	CAD file name
MVM 43-J	4	26.4	24	33	17	7.2	8	11	8	10.4	15	10.6	11	3	CHM-001
MVM 43A-J															
MVM 63-J	6	34.8	31.2	33.4	22	7.2	10.5	11.6	10.5	13.9	16.4	15.6	14	7	
MVM 63A-J													15		

■ Push pin stroke dimension / Micro Switch Pin Type

Unit：mm



Tube O.D. øD	Free stroke range S1	Operating stroke range S2	Sub stroke S3	Recommended stroke S4	Limit stroke S5
4	1	1	0.4	2	2.4
6	1.6	1.6	0.4	3.2	3.6

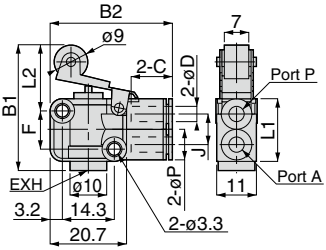
CAD CAD data is available at PISCO website.

Micro Switch Open-Air Exhaust Roller Type

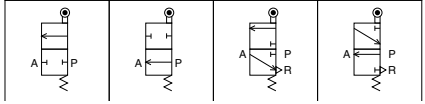
MVM Micro Switch Open-Air Exhaust Roller Type

CAD

RoHS compliant



Symbol of Roller Type			
2 ports		3 ports	
Normally Closed	Normally Open	Normally Closed	Normally Open



Unit : mm

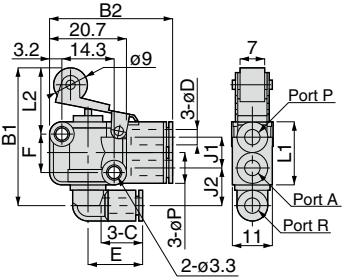
Model code	Tube O.D. øD	B1 max.	B1 min.	B2	L1	L2 max.	L2 min.	øP	Tube end C	J	F	Weight (g)	Effective area (mm^2)	CAD file name
MVM 4□-R	4	34.7	31.1	33	17	18.4	14.8	8	11	8	10.6	12	3	CHM-001
MVM 4□A-R														
MVM 6□-R	6	41.9	37	33.4	22	19.6	14.7	10.5	11.6	10.5	15.6	15	7	
MVM 6□A-R														

※ □ in Model code / Replaced with "2" for Two-directional control valve, "3" for Three-directional control valve.

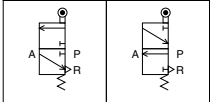
MVM Micro Switch Tube Exhaust Roller Type

CAD

RoHS compliant



Symbol of Roller Type	
3 ports	
Normally Closed	Normally Open

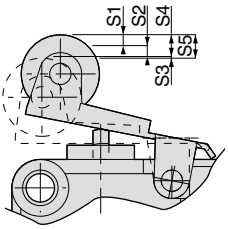


Unit : mm

Model code	Tube O.D. øD	B1 max.	B1 min.	B2	L1	L2 max.	L2 min.	øP	Tube end C	J1	J2	E	F	Weight (g)	Effective area (mm^2)	CAD file name
MVM 43-RJ	4	37.6	34	33	17	18.4	14.8	8	11	8	10.4	15	10.6	13	3	CHM-001
MVM 43A-RJ																
MVM 63-RJ	6	46	41.1	33.4	22	19.6	14.7	10.5	11.6	10.5	13.9	16.4	15.6	17	7	
MVM 63A-RJ																

Push pin stroke dimension / Micro Switch Roller Type

Unit : mm



Tube O.D. øD	Free stroke range S1	Operating stroke range S2	Sub stroke S3	Recommended stroke S4	Limit stroke S5
4	1.5	1.7	0.4	3.2	3.6
6	1.7	2.5	0.4	4.5	4.9

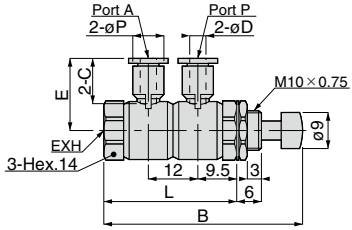
CAD CAD data is available at PISCO website.

■ Panel Mount Open-Air Exhaust Pin Type

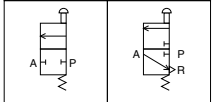
MVP Panel Mount Open-Air Exhaust Pin Type

CAD

RoHS compliant



Symbol of Pin Type	
2 ports	3 ports
Normally Closed	Normally Open



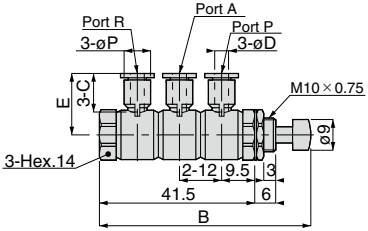
Unit：mm

Model code	Tube O.D. øD	B max.	B min.	L	øP	Tube end C	E	Weight (g)	Effective area (mm^2)	CAD file name
MVP 42	4	48.5	44.5	33	8	11	17.7	30	3	CHM-002
MVP 43		48	44	32.5				29		
MVP 62	6	48.5	44.5	33	10.5	11.6	18.3	32	5	
MVP 63		48	44	32.5				31		

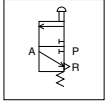
MVP Panel Mount Tube Exhaust Pin Type

CAD

RoHS compliant



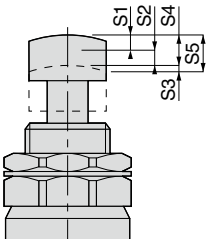
Symbol of Pin Type
3 ports
Normally Closed



Unit：mm

Model code	Tube O.D. øD	B max.	B min.	øP	Tube end C	E	Weight (g)	Effective area (mm^2)	CAD file name
MVP 43-J	4	57	53.4	8	11	17.7	32	3	CHM-002
MVP 63-J	6	57	53.4	10.5	11.6	18.3	34	5	

■ Push pin stroke dimension / Panel Mount Pin Type



Unit：mm

Tube O.D. øD	Free stroke range S1	Operating stroke range S2	Sub stroke S3	Recommended stroke S4	Limit stroke S5
4	1.8	1.8	0.4	3.6	4
6	1.8	1.8	0.4	3.6	4

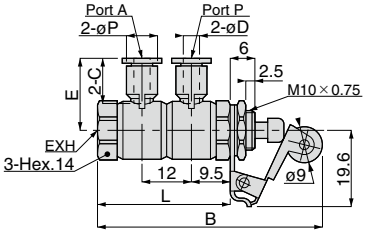
CAD CAD data is available at PISCO website.

Panel Mount Open-Air Exhaust Roller Type

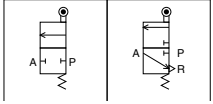
MVP Panel Mount Open-Air Exhaust Roller Type

CAD

RoHS compliant



Symbol of Roller Type	
2 ports	3 ports
Normally Closed	Normally Closed



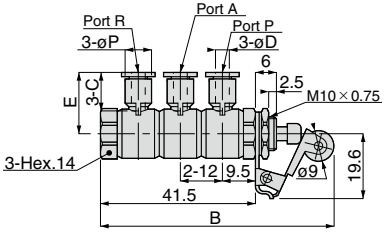
Unit : mm

Model code	Tube O.D. øD	B max.	B min.	L	øP	Tube end C	E	Weight (g)	Effective area (mm^2)	CAD file name
MVP 42-R	4	57.4	53	33	8	11	17.7	34	3	CHM-003
MVP 43-R		56.9	52.5	32.5				33		
MVP 62-R	6	57.4	53	33	10.5	11.6	18.3	35	5	
MVP 63-R		56.9	52.5	32.5				34		

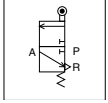
MVP Panel Mount Tube Exhaust Roller Type

CAD

RoHS compliant



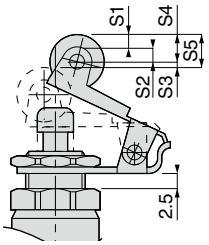
Symbol of Roller Type
3 ports
Normally Closed



Unit : mm

Model code	Tube O.D. øD	B max.	B min.	øP	Tube end C	E	Weight (g)	Effective area (mm^2)	CAD file name
MVP 43-RJ	4	65.9	61.5	8	11	17.7	36	3	CHM-003
MVP 63-RJ	6	65.9	61.5	10.5	11.6	18.3	38	5	

Push pin stroke dimension / Panel Mount Roller Type



Unit : mm

Tube O.D. øD	Free stroke range S1	Operating stroke range S2	Sub stroke S3	Recommended stroke S4	Limit stroke S5
4	1.8	2.2	0.4	4	4.4
6	1.8	2.2	0.4	4	4.4

※ This stroke dimension includes a board of 2.5mm thick. The stroke changes by a thickness of board.

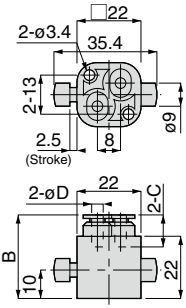
CAD CAD data is available at PISCO website.

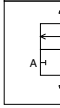
Air Switch

MVU Air Switch

RoHS compliant

CAD



Symbol of Push Button Type	
2 ports	3 ports
	

Unit：mm

Model code	Tube O.D. øD	B	Tube end C	Weight (g)	Effective area (mm^2)	CAD file name
MVU 42	4	28.6	10.9	22	3	CHM-004
MVU 43				23		
MVU 62	6	31.1	11.7	22	5	
MVU 63				23		

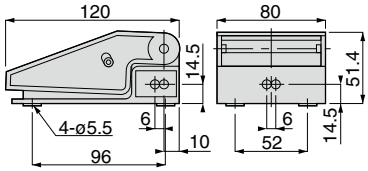
※ Body color: Light-gray / Release ring: Black

Foot Switch

MVF Foot Switch

RoHS compliant

CAD



Symbol of Pedal Type			
2 ports		3 ports	
Normally Closed	Normally Open	Normally Closed	Normally Open
			

Model code	Tube O.D. øD	Weight (g)	Effective area (mm^2)	CAD file name
MVF 4□□	4	172.5	3	CHM-004
MVF 6□□	6	174.5	7	

※ Left □ in Model code / Replaced with "2" for Two-directional control valve, "3" for Three-directional control valve.
Right □ in Model code / Replaced with "A" for Normally Open, or remained blank for Normally Closed
※ Micro Switch Pin Type(MVM4□ / MVM4□A) is used in MVF4□□.
※ Micro Switch Pin Type(MVM6□ / MVM6□A) is used in MVF6□□.

⚠ SAFETY Instructions

This safety instructions aim to prevent personal injury and damage to properties by requiring proper use of PISCO products.

Be certain to follow ISO 4414 and JIS B 8370

ISO 4414 : Pneumatic fluid power…Recomendations for the application of equipment to transmission and control systems.

JIS B 8370 : General rules and safety requirements for systems and their components.

This safety instructions is classified into “Danger”, “Warning” and “Caution” depending on the degree of danger or damages caused by improper use of PISCO products.

⚠ Danger	Hazardous conditions. It can cause death or serious personal injury.
⚠ Warning	Hazardous conditions depending on usages. Improper use of PISCO products can cause death or serious personal injury.
⚠ Caution	Hazardous conditions depending on usages. Improper use of PISCO products can cause personal injury or damages to properties.

⚠ Warning

1. Selection of pneumatic products
   ① A user who is a pneumatic system designer or has sufficient experience and technical expertise should select PISCO products.
   ② Due to wide variety of operating conditions and applications for PISCO products, carry out the analysis and evaluation on PISCO products. The pneumatic system designer is solely responsible for assuring that the user's requirements are met and that the application presents no health or safety hazards. All designers are required to fully understand the specifications of PISCO products and constitute all systems based on the latest catalog or information, considering any malfunctions.

2. Handle the pneumatic equipment with enough knowledge and experience
   ① Improper use of compressed air is dangerous. Assembly, operation and maintenance of machines using pneumatic equipment should be conducted by a person with enough knowledge and experience.

3. Do not operate machine / equipment or remove pneumatic equipment until safety is confirmed.
   ① Make sure that preventive measures against falling work-pieces or sudden movements of machine are completed before inspection or maintenance of these machine.
   ② Make sure the above preventive measures are completed. A compressed air supply and the power supply to the machine must be off, and also the compressed air in the systems must be exhausted.
   ③ Restart the machines with care after ensuring to take all preventive measures against sudden movements.

※. This safety instructions are subject to change without notice.

Disclaimer

1. PISCO does not take any responsibility for any incidental or indirect loss, such as production line stop, interruption of business, loss of benefits, personal injury, etc., caused by any failure on use or application of PISCO products.

2. PISCO does not take any responsibility for any loss caused by natural disasters, fires not related to PISCO products, acts by third parties, and intentional or accidental damages of PISCO products due to incorrect usage.

3. PISCO does not take any responsibility for any loss caused by improper usage of PISCO products such as exceeding the specification limit or not following the usage the published instructions and catalog allow.

4. PISCO does not take any responsibility for any loss caused by remodeling of PISCO products, or by combinational use with non-PISCO products and other software systems.

5. The damages caused by the defect of Pisco products shall be covered but limited to the full amount of the PISCO products paid by the customer.

⚠ SAFETY INSTRUCTION MANUAL

PISCO products are designed and manufactured for use in general industrial machines. Be sure to read and follow the instructions below.

⚠ Danger

1. Do not use PISCO products for the following applications.
   ① Equipment used for maintaining / handling human life and body.
   ② Equipment used for moving / transporting human.
   ③ Equipment specifically used for safety purposes.

⚠ Warning

1. Do not use PISCO products under the following conditions.
   ① Beyond the specifications or conditions stated in the catalog, or the instructions.
   ② Under the direct sunlight or outdoors.
   ③ Excessive vibrations and impacts.
   ④ Exposure / adhere to corrosive gas, inflammable gas, chemicals, seawater, water and vapor. *
   * Some products can be used under the condition above(④), refer to the details of specification and condition of each product.
2. Do not disassemble or modify PISCO products, which affect the performance, function, and basic structure of the product.
3. Turn off the power supply, stop the air supply to PISCO products, and make sure there is no residual air pressure in the pipes before maintenance and inspection.
4. Do not touch the release-ring of push-in fitting when there is a working pressure. The lock may be released by the physical contact, and tube may fly out or slip out.
5. Frequent switchover of compressed air may generate heat, and there is a risk of causing burn injury.
6. Avoid any load on PISCO products, such as a tensile strength, twisting and bending. Otherwise, there is a risk of causing damage to the products.
7. As for applications where threads or tubes swing / rotate, use Rotary Joints, High Rotary Joints or Multi-Circuit Rotary Block only. The other PISCO products can be damaged in these applications.
8. Use only Die Temperature Control Fitting Series, Tube Fitting Stainless SUS316 Series, Tube Fitting Stainless SUS316 Compression Fitting Series or Tube Fitting Brass Series under the condition of over 60℃ (140° F) water or thermal oil. Other PISCO products can be damaged by heat and hydrolysis under the condition above.
9. As for the condition required to dissipate static electricity or provide an antistatic performance, use EG series fitting and antistatic products only, and do not use other PISCO products. There is a risk that static electricity can cause system defects or failures.
10. Use only Fittings with a characteristic of spatter-proof such as Anti-spatter or Brass series in a place where flame and weld spatter is produced. There is a risk of causing fire by sparks.
11. Turn off the power supply to PISCO products, and make sure there is no residual air pressure in the pipes and equipment before maintenance. Follow the instructions below in order to ensure safety.
    ① Make sure the safety of all systems related to PISCO products before maintenance.
    ② Restart of operation after maintenance shall be proceeded with care after ensuring safety of the system by preventive measures against unexpected movements of machines and devices where pneumatic equipment is used.
    ③ Keep enough space for maintenance when designing a circuit.
12. Take safety measures such as providing a protection cover if there is a risk of causing damages or fires on machine / facilities by a fluid leakage.

⚠ Caution

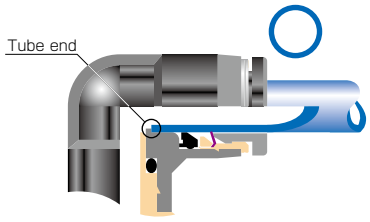
1. Remove dusts or drain before piping. They may get into the peripheral machine / facilities and cause malfunction.
2. When inserting an ultra-soft tube into push-in fitting, make sure to place an Insert Ring into the tube edge. There is a risk of causing the escape of tube and a fluid leakage without using an Insert Ring.
3. The product incorporating NBR as seal rubber material has a risk of malfunction caused by ozone crack. Ozone exists in high concentrations in static elimination air, clean-room, and near the high-voltage motors, etc. As a countermeasure, material change from NBR to HNBR or FKM is necessary. Consult with PISCO for more information.
4. Special option "Oil-free" products may cause a very small amount of a fluid leakage. When a fluid medium is liquid or the products are required to be used in harsh environments, contact us for further information.
5. In case of using non-PISCO brand tubes, make sure the tolerance of the outer tube diameter is within the limits of Table 1.

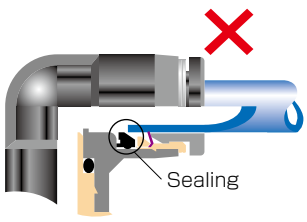
● Table 1. Tube O.D. Tolerance

mm size	Nylon tube	Polyurethane tube
ø1.8mm	—	±0.05mm
ø3mm	—	±0.15mm
ø4mm	±0.1mm	±0.15mm
ø6mm	±0.1mm	±0.15mm
ø8mm	±0.1mm	±0.15mm
ø10mm	±0.1mm	±0.15mm
ø12mm	±0.1mm	±0.15mm
ø16mm	±0.1mm	±0.15mm

inch size	Nylon tube	Polyurethane tube
ø1/8	±0.1mm	±0.15mm
ø5/32	±0.1mm	±0.15mm
ø3/16	±0.1mm	±0.15mm
ø1/4	±0.1mm	±0.15mm
ø5/16	±0.1mm	±0.15mm
ø3/8	±0.1mm	±0.15mm
ø1/2	±0.1mm	±0.15mm
ø5/8	±0.1mm	±0.15mm

6. Instructions for Tube Insertion
   ① Make sure that the cut end surface of the tube is at right angle without a scratch on the surface and deformations.
   ② When inserting a tube, the tube needs to be inserted fully into the push-in fitting until the tubing edge touches the tube end of the fitting as shown in the figure below. Otherwise, there is a risk of leakage.





Tube is not fully inserted up to tube end.

   ③ After inserting the tube, make sure it is inserted properly and not to be disconnected by pulling it moderately.

※. When inserting tubes, Lock-claws may be hardly visible in the hole, observed from the front face of the release-ring. But it does not mean the tube will surely escape. Major causes of the tube escape are the followings;
①Shear drop of the lock-claws edge
②The problem of tube diameter (usually small)
Therefore, follow the above instructions from ① to ③, even lock-claws is hardly visible.

7. Instructions for Tube Disconnection
   ① Make sure there is no air pressure inside of the tube, before disconnecting it.
   ② Push the release-ring of the push-in fitting evenly and deeply enough to pull out the tube toward oneself. By insufficient pushing of the release-ring, the tube may not be pulled out or damaged by scratch, and tube shavings may remain inside of the fitting, which may cause the leakage later.
8. Instructions for Installing a fitting
   ① When installing a fitting, use proper tools to tighten a hexagonal-column or an inner hexagonal socket. When inserting a hex key into the inner hexagonal socket of the fitting, be careful so that the tool does not touch lock-claws. The deformation of lock-claws may result in a poor performance of systems or an escape of the tube.
   ② Refer to Table 2 which shows the recommended tightening torque. Do not exceed these limits to tighten a thread. Excessive tightening may break the thread part or deform the gasket and cause a fluid leakage. Tightening thread with tightening torque lower than these limits may cause a loosened thread or a fluid leakage.
   ③ Adjust the tube direction while tightening thread within these limits, since some PISCO products are not rotatable after the installation.

● Table 2: Recommended tightening torque / Sealock color / Gasket materials

Thread type	Thread size	Tightening torque	Sealock color	Gasket materials
Metric thread	M3 × 0.5	0.7N·m	—	SUS304 NBR
	M5 × 0.8	1.0 ~ 1.5N·m		
	M6 × 1	2 ~ 2.7N·m		
	M3 × 0.5	0.5 ~ 0.6N·m		POM
	M5 × 0.8	1 ~ 1.5N·m		
	M6 × 0.75	0.8 ~ 1N·m		
	M8 × 0.75	1 ~ 2N·m		
Taper pipe thread	R1/8	7 ~ 9N·m	White	—
	R1/4	12 ~ 14N·m		
	R3/8	22 ~ 24N·m		
	R1/2	28 ~ 30N·m		
Unified thread	No.10-32UNF	1.0 ~ 1.5N·m	—	SUS304、NBR
National pipe thread taper	1/16-27NPT	7 ~ 9N·m	White	—
	1/8-27NPT	7 ~ 9N·m		
	1/4-18NPT	12 ~ 14N·m		
	3/8-18NPT	22 ~ 24N·m		
	1/2-14NPT	28 ~ 30N·m		

※ These values may differ for some products. Refer to each specification as well.

9. Instructions for removing a fitting
   ① When removing a fitting, use proper tools to loosen a hexagonal-column or an inner hex bolt.
   ② Remove the sealant stuck on the mating equipment. The remained sealant may get into the peripheral equipment and cause malfunctions.
10. Arrange piping avoiding any load on fittings and tubes such as twist, tensile, moment load, shaking and physical impact. These may cause damages to fittings, tube deformations, bursting and the escape of tubes.

⚠ Common Safety Instructions for Valves

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 the catalog or marking on the products. Installing the product with the wrong direction may cause personal injury or property damage.

2. Do not operate manual valves by machine. It may cause damage to the products.

3. Use clean air to supply and remove drainage and dusts. Place an air filter on the upstream side of valves. Impurities in the compressed air can cause malfunction of valves.

4. Avoid any load on PISCO products such as a tensile strength, twisting, bending, dropping and excessive impacts. These may cause damage to the products.

⚠ Caution

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

2. Instructions for Installing Valves
   ① Use proper tools to tighten a hexagonal-column of Hand Valve and Ball Valve with taper pipe thread.
   ② Refer to the following table which shows the recommended tightening torque to tighten thread. Excessive tightening may break the thread part or cause a fluid leakage due to the deformation of thread. Tightening thread with the tightening torque lower than these limits may cause a loosened thread or a fluid leakage.

● Table: Recommended tightening torque

Thread type	Thread size	Torque force
Taper pipe thread	R1/8	7～9N·m
	R1/4	12～14N·m
	R3/8	22～24N·m
	R1/2	28～30N·m

3. Instructions for removing Valve
   ① When removing taper pipe thread of Hand Valve and Ball Valve, use proper tools to loosen a hexagonal-column.
   ② Remove the sealant stuck on the mating equipment. The remained sealant may get into the peripheral equipment and cause malfunction.