TUBE FITTING



Information

Answering customer's needs with its originality and high-quality products. PISCO supplies wide variety of pneumatic equipment

PISCO supplies wide variety of pneumatic equipment supporting all industrial activity.

Not only standard products, but also custom-made products are flexibly coped with.

PISCO's Quality Policy
To win customer's trust and satisfaction.



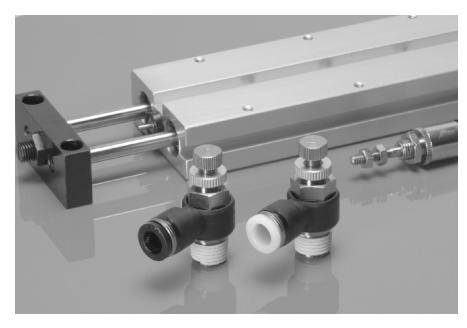
Environmental Policy – Slogan PISCO, Doing its best to Help Keep the Earth Health!





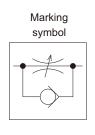


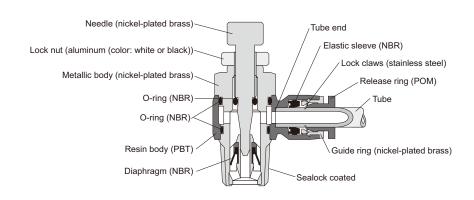
Maintaining basic functions, this low-cost Speed controller achieves high-cost performance.



- The speed controller controls the operation speed of a driving device.
- The lead-out directions are free thanks to rotation of the resin body and joint.

Construction





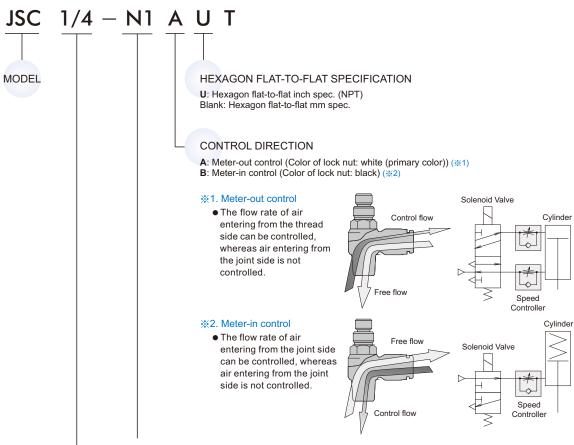
Specification

Fluid admitted	Air
Max. service pressure	0.9 MPa
Check valve operating pressure	0.05 MPa
Service temperature range	0 ~ 60℃





Order example



THREAD SIZE (R)

	Metric thread	Taper pipe thread					
Code	M5	01	02	03	04		
Size	M5×0.8	R1/8	R1/4	R3/8	R1/2		
	Unified fine thread	American standard taper pipe thread					
Code	U10	N1	N2	N3	N4		
Size	10-32UNF	NPT1/8	NPT1/4	NPT3/8	NPT1/2		

TUBE DIA. (ØD)

	mm size					
Code	4	6	8	10	12	
Dia. (mm)	4	6	8	10	12	
	inch size					
Code	5/32	1/4	5/16	3/8	1/2	
Dia. (inch)	5/32	1/4	5/16	3/8	1/2	





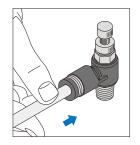
Connection and disconnection

1. How to fit and release tubing

(1) Tube insertion

Simply insert a tubing to the end of Speed Controller. The lock claws automatically fix the tubing and the elastic sleeve seals the tube surround.

Please refer to "2. Cautions on the fitting of tube" in "Common Safety Instructions for Quick-Fitting Joint" for other instructions.



2. How to tighten the screw

Tighten the outside hexagon by a spanner. (Please refer to the text for detail.)

Please refer to "Table.
Recommended Tightening Torque"
in "1. Notes on installation" on
"Common Safety Instructions for
Controllers".



(2) Tube release

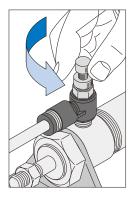
In case of releasing the tube, push the release ring. The lock claws open and the tube can be released. Before releasing the tube, make certain that the pressure inside the tube is zero.



Speed adjustment

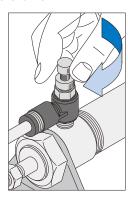
1. How to run the driving devise faster

Turn the needle counterclockwise from fully closed position, and the driving devise will run faster. Tighten the Lock nut at desirable speed in order to keep same speed.



2. How to run the driving devise slower

Turn the needle clockwise, and the driving devise will run slower.
Tighten the Lock nut at desirable speed in order to keep same speed.



⚠ Detailed safety instructions

Before using the PISCO device, be sure to read the "Safety Instructions", "Common Safety Instructions for Products Listed in This Manual" on page 8-20 to 22 and "Common Safety Instructions for Controllers" on page 8-25.

Warning

- 1. Adjust the speed of the actuator by opening the needle gradually from the fully closed position. With the needle open, there are chances of the actuator flying out. Turn the needle clockwise to close or counterclockwise to open.
- 2. Do not subject the product with a rotatable resin to forcible swinging or rotation. Otherwise the body may suffer damage or develop leakage.

Caution

1. The Speed Controller is designed to tolerate some air flow at fully closed position. Therefore do not use it for applications that permits no air flow.

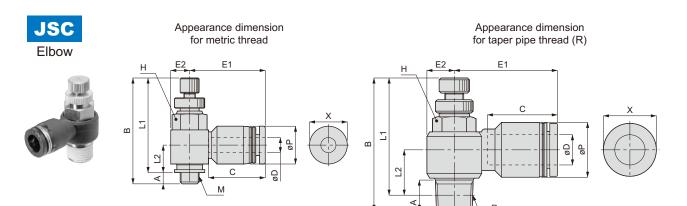


T series



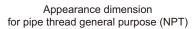
Unit: mm

SPEED CONTROLLER

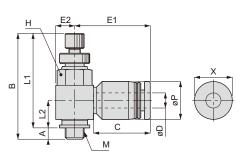


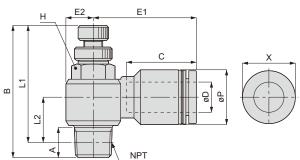
øD В L1 Weight Н M/R Model øΡ C E1 E2 Χ Α L2 (Tube dia. max min max min (Hex.) (g) JSC4-M5□T M5×0.8 2.9 29.7 26.8 24.1 7.2 19.9 4.9 8 8.5 4 10 14.9 9.9 R1/8 JSC4-01□T 8 40.7 34.4 36.7 30.4 10.7 21.4 10 18 JSC6-M5□T $M5 \times 0.8$ 2.9 29.7 27 26.8 24.1 8.4 24 4.9 8 9.5 JSC6-01□T 6 R1/8 8 40.7 34.4 36.7 30.4 10.9 12.5 17 23.5 7.2 10 11.8 19 JSC6-02□T R1/4 11 47.8 41.4 41.8 35.4 12.2 25.5 9.2 14 36 JSC8-01□T R1/8 8 40.7 34.4 36.7 30.4 11.9 26.9 7.2 10 20 14.5 18.1 13.8 JSC8-02□T R1/4 11 47.8 41.4 41.8 35.4 13.2 28.4 9.2 14 38 JSC10-02□T R1/4 11 47.8 41.4 41.8 35.4 14.8 30.9 9.2 14 41 10 17.5 20.2 16.8 46.5 JSC10-03□T R3/8 12 53.7 47.3 40.1 16.7 31.2 11 19 68 JSC12-03□T R3/8 12 53.7 46.5 47.3 40.1 18.4 36.9 11 19 71 21 23.4 19.8 19.7 JSC12-04□T R1/2 15 59.3 52.3 51.1 44.1 36.4 14 24 108

Appearance dimension for unified thread









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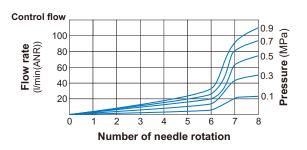
Model	ø D	UBF/NPT	Α	E	3	L	.1	L2	øΡ	С	E1	E2	Н	_	Weight
Model	(Tube dia.)	UDF/NF I	A	max	min	max	min	LZ	ØF	٥	E1	EZ	(Hex.)	^	(g)
JSC5/32-U10□U	T 5/32	No.10-32UNF	2.9	29.7	27	26.8	24.1	7.2	10	14.9	19.9	4.9	5/16	9.9	8.5
JSC5/32-N1□UT	3/32	NPT1/8	8	40.7	34.4	36.7	30.4	10.7	10	14.5	21.4	7.2	7/16	9.9	18
JSC1/4-U10□UT		No.10-32UNF	2.9	29.7	27	26.8	24.1	8.4			24	4.9	5/16		9.5
JSC1/4-N1□UT	1/4	NPT1/8	8	40.7	34.4	36.7	30.4	10.9	12.5	17	23.5	7.2	7/16	11.8	19
JSC1/4-N2□UT		NPT1/4	11	47.8	41.4	41.8	35.4	12.2			25.5	9.2	9/16		36
JSC5/16-N1□UT	5/16	NPT1/8	8	40.7	34.4	36.7	30.4	11.9	14.5	18.1	26.9	7.2	7/16	13.8	20
JSC5/16-N2□UT	3/10	NPT1/4	11	47.8	41.4	41.8	35.4	13.2	14.5	10.1	28.4	9.2	9/16	13.0	38
JSC3/8-N2□UT	3/8	NPT1/4	11	47.8	41.4	41.8	35.4	14.8	17.5	20.2	30.9	9.2	9/16	16.8	41
JSC3/8-N3□UT	3/0	NPT3/8	12	53.7	46.5	47.3	40.1	16.7	17.5	20.2	31.2	11	3/4	10.0	68
JSC1/2-N3□UT	1/2	NPT3/8	12	53.7	46.5	47.3	40.1	18.4	21	23.4	36.9	11	3/4	19.8	71
JSC1/2-N4□UT	1/2	NPT1/2	15	59.3	52.3	51.1	44.1	19.7		23.4	36.4	14	1	19.0	108

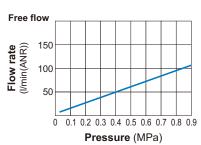




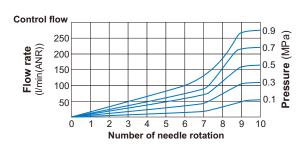
Characteristics

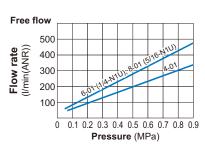
JSC 4-M5□T 6-M5□T 5/32-U10□UT 1/4-U10□UT



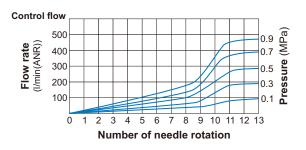


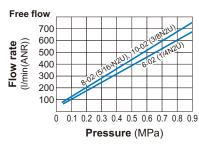
JSC 4-01 □ T 6-01 □ T 8-01 □ T 5/32-N1 □ UT 1/4-N1 □ UT 5/16-N1 □ UT



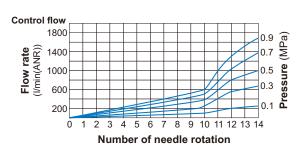


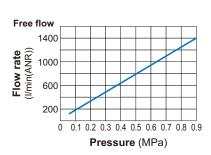
JSC 6-02 □ T 8-02 □ T 10-02 □ T 1/4-N2 □ UT 5/16-N2 □ UT 3/8-N2 □ UT



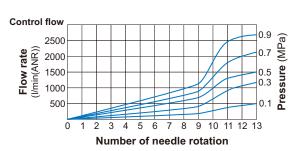


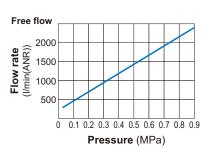
JSC 10-03 □ T 12-03 □ T 3/8-N3 □ UT 1/2-N3 □ UT





JSC 12-04 □ T 1/2-N4 □ UT







T series



SAFETY INSTRUCTIONS

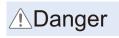
These Safety Instructions aim to prevent injuries to human bodies and damage to properties by requiring proper use of PISCO devices.

Also the relevant requirements of ISO 4414 and JIS B8370 must be observed.

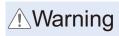
ISO 4414: Pneumatic fluid power \cdots Recommendations for the application of equipment to transmission and control systems.

JIS B 8370: General standards for pneumatic systems

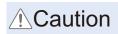
Safety instructions are classified into "Danger", "Warning" and "Caution", categories depending on the degree of danger or damage involved when the safety instructions are not complied with in handling the equipment.



Failure to heed the warning of apparent danger may result in death or serious injuries.



Failure to heed the warning of conditionally dangerous situations may result in death or serious injuries.



Failure to heed the warning of conditionally dangerous situations may result in minor or not too serious injuries or damage to properties.

* Safety Instructions are subject to change without advance notice.







Common Safety Instructions for Products Listed in This Manual

PISCO products are designed and manufactured for use with general industrial machinery and equipment. Therefore be sure to observe the following safety instructions.

- Danger 1. Do not use PISCO devices with the following equipment.
 - (1) Equipment used for the sustenance or control of people's health or lives
 - (2) Equipment used for the movement or transport of people
 - (3) Equipment used specifically to ensure safety

- Warning 1. Avoid the following uses for PISCO devices.
 - (1) Use under conditions not specified for the device
 - (2) Use in any outdoor environment
 - (3) Use in locations where the device is exposed to excessive vibration or shocks
 - (4) Use in locations where the device is exposed to any corrosive gas, inflammable gas, chemicals, seawater, or vapor.
 - Certain PISCO devices, however, can be used in environments as described above. Therefore check on the specifications for the use of individual devices.
 - 2. Do not disassemble or remodel the PISCO devices in such a way as may affect the basic structure, performance or function of them.
 - 3. Carry out maintenance and checks of the PISCO devices only after turning power off, shutting air off and making certain that the pressure in the piping has dropped to zero.
 - 4. Never touch the release ring of the Quick-Fitting Joint when there is pressure working on it. Touching may release the ring, which in turn may cause the tube to fall out.
 - 5. Avoid too frequent switching of air pressure. Otherwise the device body may heat up to cause burns
 - 6. Do not allow tension, twist or bending forces to act on the joints. Undue forces may damage the joint
 - 7. For applications in which the threaded side or the tube connection side is subject to vibration, use Rotary Joints, High Rotary Joints or Multi-Circuit Rotary Blocks only. Swinging or rotation may damage the joint body.
 - 8. For applications with hot water of 60 or above or thermal oil, use no other joints than Die Temperature Control Fitting. Heat or hydrolysis may damage the joint body.
 - 9. For applications in which the scattering of static electricity or charging must be prevented, use no other joints than EG Joints. Static electricity may cause system malfunction or trouble.

♠ Caution

- 1. In installing the piping, be sure to remove dust or drainage from within the piping. Dust or drainage left unremoved may enter other equipment, thus causing troubles.
- 2. When using an ultrasoft tube to connect to a Quick-Fitting Joint, be sure to use an insert ring in the bore of the tube. Otherwise the tube may fall out to cause leakage.
- 3. When you use tubes of brands other than ours, be sure to confirm that the outside diameter of the tubes satisfies the tolerance specified (Table 1).

Table 1. Tube O.D. tolerance

mm size	Nylon tube	Urethane 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	Urethane tube
ø1/8	±0.0039in.	±0.0059in.
ø5/32	±0.0039in.	±0.0059in.
ø3/16	±0.0039in.	±0.0059in.
ø1/4	±0.0039in.	±0.0059in.
ø5/16	±0.0039in.	±0.0059in.
ø3/8	±0.0039in.	±0.0059in.
ø1/2	±0.0039in.	±0.0059in.
ø5/8	±0.0039in.	±0.0059in.



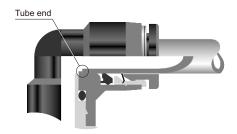
series



Common Safety Instructions for Products Listed in This Manual

! Caution 4. Cautions on the fitting of tube

- (1) Make certain that the end of the tube is cut at right angles, the tube surface is free from flaws, and the tube is not deformed into an ellipse.
- (2) When fitting a tube, refer to the dimensional specification of (Table 2). To prevent leaks, insert the tube to end (C) completely.



(3) On completion of fitting, make certain that the tube does not come out at your pulling.

5. Cautions on the release of tube

- (1) Before releasing the tube, make certain that the pressure inside the tube is zero.
- (2) Push the release ring fully inside and pull out the tube. Unless you push it completely in, the tube may not come out and scrapings of tube may be left inside the joint.

6. Cautions on the installation of joint body

- (1) When installing the joint body, tighten it with a proper tool, using the outside or inside hexagon.
- (2) In tightening the screw, use the tightening torque recommended in (Table 2).
 - Use of a torque higher than the recommended level may damage thread or deform gasket, thus causing leaks.
 - Use of a torque lower than the recommended level may cause loose screw and leakage.
- (3) With the joint whose piping direction will not change after tightening, make adjustment within the recommended range of tightening torques.

Table 2. Tightening torque, sealock color and gasket material

Thread type	Thread size	Tightening torque	Sealock color	Gasket material
	M3×0.5	0.7N·m (0.52lbf·ft)		
	$M5 \times 0.8$	1.0 ~ 1.5N·m (0.74 ~ 1.11lbf·ft)		SUS304, NBR
Metric thread	M6×1.0	1.8 ~ 2.3N·m (1.33 ~ 1.70lbf·ft)	_	
Metric tillead	$M6 \times 0.75$	0.8 ~ 1.0N·m (0.59 ~ 0.74lbf·ft)		BOM
	$M8 \times 0.75$	1.0 ~ 2.0N·m (0.74 ~ 1.48lbf·ft)		POM (Polyacetal)
	M5×0.8	1.0 ~ 1.5N·m (0.74 ~ 1.11lbf·ft)		(i diyacetai)
	R1/8	7 ~ 9N·m (5.16 ~ 6.64lbf·ft)		
Tanar nina throad	R1/4	12 ~ 14N·m (8.85 ~ 10.33lbf·ft)	White	
Taper pipe thread	R3/8	22 ~ 24N·m (16.23 ~ 17.70lbf·ft)	vvriite	_
	R1/2	28 ~ 30N·m (20.65 ~ 22.13lbf·ft)		
Uniied thread	N0.10-32UNF	1.0 ~ 1.5N·m (0.74 ~ 1.11lbf·ft)	-	SUS304, NBR
	1/16-28NPT	7 ~ 9N·m (5.16 ~ 6.64lbf·ft)		
Pipe thread	1/8-27NPT	7 ~ 9N·m (5.16 ~ 6.64lbf·ft)		
General purpose	1/4-18NPT	12 ~ 14N·m (8.85 ~ 10.33lbf·ft)	Gray	-
(inch)	3/8-18NPT	22 ~ 24N·m (16.23 ~ 17.70lbf·ft)		
	1/2-14NPT	28 ~ 30N·m (20.65 ~ 22.13lbf·ft)		

7. Cautions on the removal of joint body

- (1) When removing the joint body, loosen it with a proper tool, using the outside or inside hexagon.
- (2) Remove sealant sticking to the thread on the mating equipment. The sealant left sticking may enter the peripheral equipment and cause trouble.







Common Safety Instructions for Quick-Fitting Joint

Be sure to read the following instructions before selecting and using the PISCO devices. Also read the detailed instructions for individual series.

- / Warning 1. Never use the Quick-Fitting Joint with fluids other than air or water (usable with some models). For applications with fluids other than air or water, contact PISCO for instructions.
 - 2. Never use joints other than Spatter Joint or Brass Joint where they are exposed to spatter. Otherwise spatter can cause fire.
 - 3. For applications in which the threaded side or the tube connection side is subject to vibration or rotation, use Rotary Joints, High Rotary Joints or Multi-Circuit Rotary Blocks only. Swinging or rotation may damage the joint body.
 - 4. For applications with hot water of 60°C (140°F) or above or thermal oil, use no other joints than Die Temperature Control Fittings. Heat or hydrolysis may damage the joint body.
 - 5. For applications in which the scattering of static electricity or charging must be prevented, use no other joints than EG Joints. Static electricity may cause system malfunction or trouble.
 - 6. Do not allow tension, twist or bending forces to act on the joints. Undue forces may damage the joint body.

! Caution 1. When you use tubes of brands other than ours, be sure to confirm that the outside diameter of the tubes satisfies the tolerance specified in (Table 1).

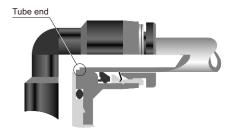
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mm size	Nylon tube	Urethane tube
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ø4mm	±0.1mm	±0.15mm
ø6mm	±0.1mm	±0.15mm
ø8mm	±0.1mm	±0.15mm
ø10mm	±0.1mm	±0.15mm
ø12mm	±0.1mm	±0.15mm
ø16mm	±0.1mm	±0.15mm

inch size	Nylon tube	Urethane tube
ø1/8	±0.0039in.	±0.0059in.
ø5/32	±0.0039in.	±0.0059in.
ø3/16	±0.0039in.	±0.0059in.
ø1/4	±0.0039in.	±0.0059in.
ø5/16	±0.0039in.	±0.0059in.
ø3/8	±0.0039in.	±0.0059in.
ø1/2	±0.0039in.	±0.0059in.
ø5/8	±0.0039in.	±0.0059in.

2. Cautions on the fitting of tube

- (1) Make certain that the end of the tube is cut at right angles, the tube surface is free from flaws, and the tube is not deformed into an ellipse.
- (2) When fitting a tube, refer to the dimensional specification of (Table 2). To prevent leaks, insert the tube to end (C) completely.
- (3) On completion of fitting, make certain that the tube does not come out at your pulling.



3. Cautions on the release of tube

- (1) Before releasing the tube, make certain that the pressure inside the tube is zero.
- (2) Push the release ring fully inside and pull out the tube. Unless you push it completely in, the tube may not come out and scrapings of tube may be left inside the joint.



series



Common Safety Instructions for Quick-Fitting Joint

Caution 4. Cautions on the installation of joint body

- (1) When installing the joint body, tighten it with a proper tool, using the outside or inside hexagon.
- (2) In tightening the screw, use the tightening torque recommended in (Table 2).
 - Use of a torque higher than the recommended level may damage thread or deform gasket, thus causing leaks.
 - Use of a torque lower than the recommended level may cause loose screw and leakage.
- (3) With the joint whose piping direction will not change after tightening, make adjustment within the recommended range of tightening torques.

Table 2. Tightening torque, sealock color and gasket material

Thread type	Thread size	Tightening torque	Sealock color	Gasket material
	M3×0.5	0.7N·m (0.52lbf·ft)		
	$M5 \times 0.8$	1.0 ~ 1.5N·m (0.74 ~ 1.11lbf·ft)		SUS304, NBR
Metric thread	$M6 \times 1.0$	1.8 ~ 2.3N·m (1.33 ~ 1.70lbf·ft)	_	
Wellic lilleau	$M6 \times 0.75$	0.8 ~ 1.0N·m (0.59 ~ 0.74lbf·ft)	_	DOM
	$M8 \times 0.75$	1.0 ~ 2.0N·m (0.74 ~ 1.48lbf·ft)		POM (Polyacetal)
	$M5 \times 0.8$	1.0 ~ 1.5N·m (0.74 ~ 1.11lbf·ft)		(i diyacetai)
	R1/8	7 ~ 9N·m (5.16 ~ 6.64lbf·ft)		
Taper pipe thread	R1/4	12 ~ 14N·m (8.85 ~ 10.33lbf·ft)	White	_
laper pipe trireau	R3/8	22 ~ 24N·m (16.23 ~ 17.70lbf·ft)	vviille	_
	R1/2	28 ~ 30N·m (20.65 ~ 22.13lbf·ft)		
Uniied thread	N0.10-32UNF	1.0 ~ 1.5N·m (0.74 ~ 1.11lbf·ft)	-	SUS304, NBR
	1/16-28NPT	7 ~ 9N·m (5.16 ~ 6.64lbf·ft)		
Pipe thread	1/8-27NPT	7 ~ 9N·m (5.16 ~ 6.64lbf·ft)		
General purpose	1/4-18NPT	12 ~ 14N·m (8.85 ~ 10.33lbf·ft)	Gray	_
(inch)	3/8-18NPT	22 ~ 24N·m (16.23 ~ 17.70lbf·ft)		
	1/2-14NPT	28 ~ 30N·m (20.65 ~ 22.13lbf·ft)		

5. Cautions on the removal of joint body

- (1) When removing the joint body, loose it with a proper tool, using the outside or inside hexagon.
- (2) Remove sealant sticking to the thread on the mating equipment. The sealant left sticking may enter the peripheral equipment and cause trouble.







Common Safety Instructions for Controllers

Be sure to read the following instructions before selecting and using the PISCO devices. Also read the detailed instructions for individual series.

- Warning 1. Each device has its control direction, so check it is manual and by the mark on the device before use. Mistaking the control direction may cause injuries on the operator or damage to the equipment.
 - 2. Do not give tension, twist or bending to the controllers. Also, do not drop or give excessive shocks to them. Such careless handling can inflict damage to them.
 - 3. When the controller has a lock nut on it, tighten it by hand without using a tool. Tightening with a tool may damage the lock nut or the controller body. Also, incomplete may lead to a loose lock nut, which in turn may render the initial setting useless.
 - 4. Use clean air as the pressure source. Dust or sludge may upset the control setting.

⚠ Caution 1. Notes on installation

- (1) Tighten with a proper tool, using hexagonal or knurled part.
- (2) In tightening the screw, use the tightening torque recommended in the following table. Use of a torque higher than the recommended level may damage thread or deform gasket, thus causing leaks. Use of a torque lower than the recommended level may cause loose screw and leakage.

Table. Recommended tightening torque

■ Hexagonal part

Thread type	Thread size	Tightening torque
	M3×0.5	0.7N·m (0.52lbf·ft)
Metric thread	M5×0.8	1.0 ~ 1.5N·m (0.74 ~ 1.11lbf·ft)
	M6×1.0	1.8 ~ 2.3N·m (1.33 ~ 1.70lbf·ft)
	R1/8	7 ~ 9N·m (5.16 ~ 6.64lbf·ft)
Taper pipe thread	R1/4	12 ~ 14N·m (8.85 ~ 10.33lbf·ft)
laper pipe triread	R3/8	22 ~ 24N·m (16.23 ~ 17.70lbf·ft)
	R1/2	28 ~ 30N·m (20.65 ~ 22.13lbf·ft)
Uniied ine thread	No.10-32UNF	1.5 ~ 1.9N·m (1.11 ~ 1.40lbf·ft)
	1/16-28NPT	7 ~ 9N·m (5.16 ~ 6.64lbf·ft)
Pipe thread	1/8-27NPT	7 ~ 9N·m (5.16 ~ 6.64lbf·ft)
general purpose	1/4-18NPT	12 ~ 14N·m (8.85 ~ 10.33lbf·ft)
(inch)	3/8-18NPT	22 ~ 24N·m (16.23 ~ 17.70lbf·ft)
	1/2-14NPT	28 ~ 30N·m (20.65 ~ 22.13lbf·ft)
Parallel pipe thread	G3/8	1/2 ~ 1 turn after hand-tightening
r araller pipe triread	G1/2	1/2 - I turn arter hand-tightening

Knurled part

Thread type	Thread size	Tightening torque
Metric thread	M5×0.8	1/6 turn after hand-tightening
	M6×1.0	
	M10×1.0	
Parallel pipe thread	G1/8	1/2 ~ 1 turn after hand-tightening
	G1/4	

2. Notes on removal

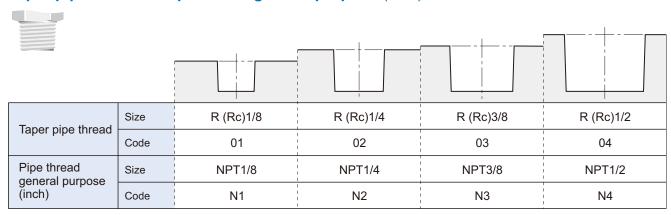
- (1) Loosen it with a proper tool, using the hexagonal or knurled part.
- (2) Remove sealant sticking to the thread on the mated equipment. The sealant left sticking may enter the peripheral equipment and cause trouble.



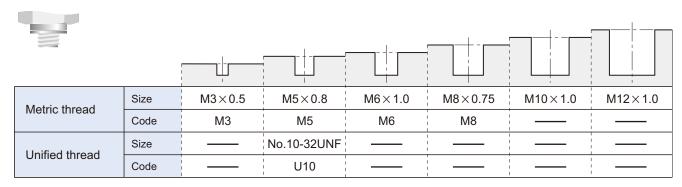
Thread and Tube Size Full Scale Chart

• If you do not know exact size of your equipment, confirm it by using reference table below.

Taper pipe thread & Pipe thread general purpose (inch)



Metric thread & Unified thread



Tube diameter (mm size & inch size)

