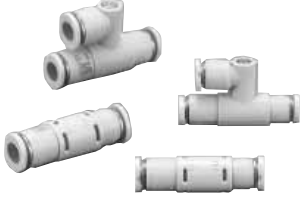
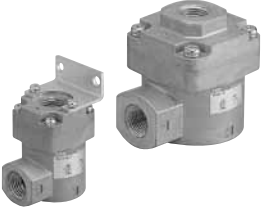







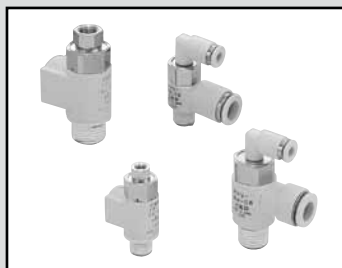
Series variation

Auxiliary valve

● Quick exhaust and circuit switching valves, etc., are available.

- F.R.L
- F (Filtr)
- R (Reg)
- L (Lub)
- PresSW
- Shutoff
- SlowStart
- FimResistFR
- Oil-ProhR
- MedPresFR
- No Cu/
PTFE FRL
- Outdrs FR
- F.R.L
(Related)
- CompFRL
- LgFRL
- PrecsR
- VacFR
- Clean FR
- ElecPneuR
- AirBoost
- SpdContr
- Silncr
- CheckV/
other
- Jnt/tube
- AirUnt
- PresCompn
- Mech/
ElecPresSw
- ContactSW
- AirSens
- PresSW
Cool
- AirFloSens/
Contr
- WaterRtSens
- TotAirSys
(Total Air)
- TotAirSys
(Gamma)
- RefrDry
- DesicDry
- HiPolymDry
- MainFiltr
- Dischrg
etc
- Ending

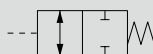
Model	Product appearance	Model No.	Port size (R or Rc)											Page		
			M5	φ4	φ6	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2			
Quick exhaust valve with push-in fitting		QEL-H44		●												700
		QEL-H66			●											
Quick exhaust valve		QEV2-6				●										702
		QEV2-8					●									
		QEV2-10						●								
		QEV2-15							●							
		QEV2-20									●					
		QEV2-25											●			
Shuttle valve		SHV2-6				●									706	
		SHV2-8					●									
		SHV2-10						●								
		SHV2-15							●							
		SHV2-20									●					
		SHV2-25											●			
Compact check valve with push-in fitting		CHL-M54	●												710	
		CHL-H44		●												
		CHL-H66			●											
Check valve		CHV2-6				●									712	
		CHV2-8-J					●									
		CHV2-8					●									
		CHV2-10-J						●								
		CHV2-10						●								
		CHV2-15							●							
		CHV2-20								●						
		CHV2-25									●					
		CHV2-32										●				
		CHV2-40											●			
Block valve		FPV-M5	●												714	
		FPV-6A				●										
		FPV-8A					●									
		FPV-10A						●								
		FPV-15A							●							
Threshold sensor		PWS-B155	●												718	
		PWS-B1882				●										
		PWS-B1992					●									
		PWS-B1332						●								
		PWS-B1222							●							



Block valve FPV Series

● Port size: (Rc or R) 1/4 to 1/2

JIS symbol



Features

- Compact valve ideal for position locking and for cylinder braking.
- Compact and lightweight
75% smaller and 50% lighter on average compared with our conventional models.
- Variety of bore sizes available
Series variations from M5 to R1/2 bore sizes enable direct cylinder installation.

Specifications

Descriptions	FPV-M5	FPV-6A			FPV-8A			FPV-10A			FPV-15A		
Port size	M5	R1/8			R1/4			R3/8			R1/2		
Main side compatible tube O.D.	φ6	φ6	φ8	Rc1/8	φ6	φ8	Rc1/4	φ8	φ10	Rc3/8	φ10	φ12	Rc1/2
Pilot side compatible tube O.D.		φ4		M5	φ4		M5	φ4		Rc1/8	φ4		Rc1/8
Working fluid	Compressed air												
Max. working pressure MPa	1.0 (≈150 psi, 10 bar)												
Min. working pressure MPa	0 (≈0 psi, 0 bar)												
Proof pressure MPa	1.5 (≈220 psi, 15 bar)												
Pilot pressure MPa	* Refer to page 715.												
Fluid temperature °C	5 (41°F) to 60 (140°F)												
Ambient temperature °C	0 (32°F) to 60 (140°F) (no freezing)												
Weight g	28	26	36		50	51	68	90	93	120	143	145	192
Effective cross-sectional area mm ²	1.3	5			10			17			27		

How to order

FPV - 6A - 06

● A Port size

● B Compatible tube O.D.

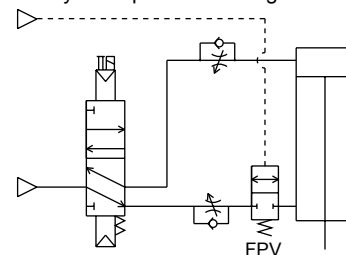
A Port size	
M5	M5
6A	R1/8
8A	R1/4
10A	R3/8
15A	R1/2

B Compatible tube O.D.		A Piping port size				
		M5	6A	8A	10A	15A
06	φ6	●	●	●		
08	φ8		●	●	●	
10	φ10				●	●
12	φ12					●
6A	Rc1/8		●			
8A	Rc1/4			●		
10A	Rc3/8				●	
15A	Rc1/2					●

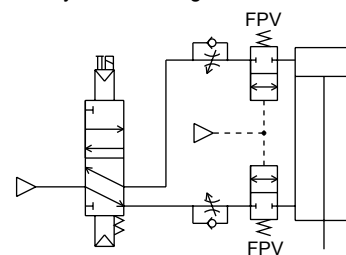
■ Not available

Applications

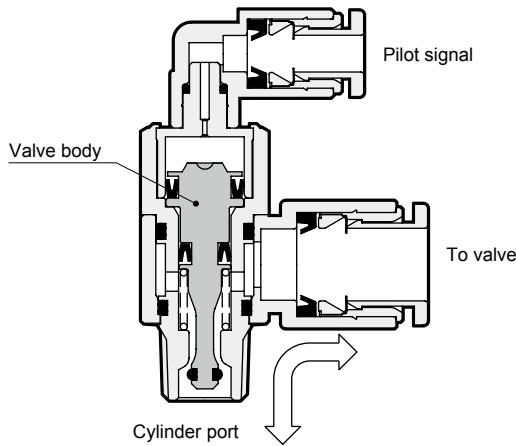
- Used for cylinder position locking circuit



- Used for cylinder braking circuit



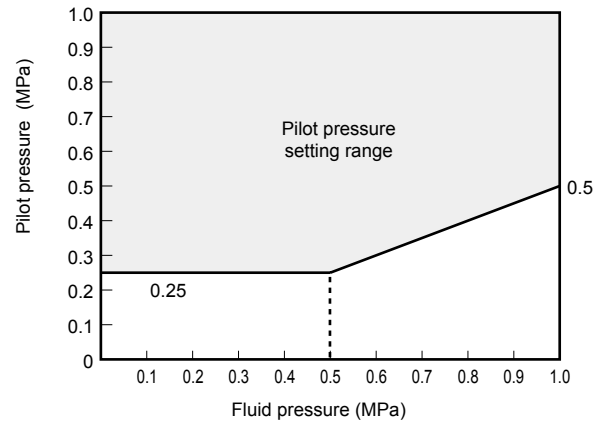
Operational principle



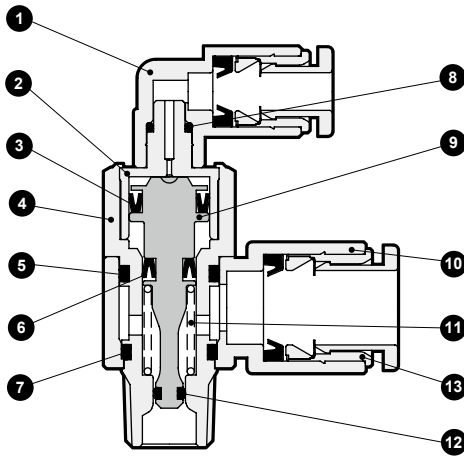
The valve opens if there is a pilot signal, but closes if the pilot signal is cut off.

Pilot pressure

Set pilot air pressure within the specified range.



Internal structure and parts list



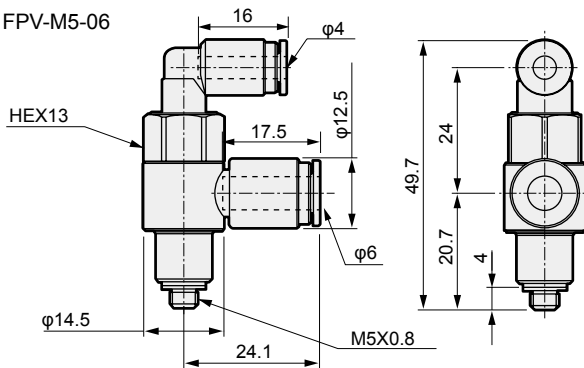
No.	Part name	Material
1	Fitting body	Polybutylene terephthalate (flame-resistant resin)
2	Rotary shaft A	Copper alloy (electroless nickeling)
3	Packing	Nitrile rubber
4	Rotary shaft B	Copper alloy (electroless nickeling)
5	O-ring	Nitrile rubber
6	Packing	Nitrile rubber
7	O-ring	Nitrile rubber
8	O-ring	Nitrile rubber
9	Valve body	Copper alloy (electroless nickeling)
10	Body	Polybutylene terephthalate (flame-resistant resin) *1
11	Spring	Stainless steel
12	O-ring	Nitrile rubber
13	Push-in fitting	

*1: Zinc alloy die-casting is applied for female thread.

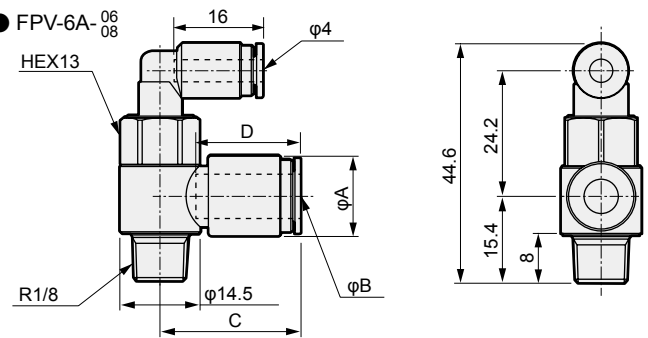
Dimensions



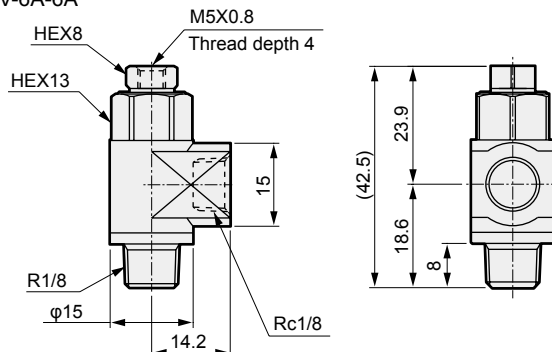
● FPV-M5-06



● FPV-6A-⁰⁶/₀₈



● FPV-6A-6A



Model No.	A	B	C	D
FPV-6A-06	φ12.5	φ6	24.1	17.5
FPV-6A-08	φ14.5	φ8	25.3	19.0

- F.R.L
- F (Filtr)
- R (Reg)
- L (Lub)
- PresSW
- Shutoff
- SlowStart
- FimResistFR
- Oil-ProhR
- MedPresFR
- No Cu/ PTFE FRL
- Outdrs FR
- F.R.L (Related)
- CompFRL
- LgFRL
- PrecsR
- VacF/R
- Clean FR
- ElecPneuR
- AirBoost
- SpdContr
- Silncr
- CheckV/ other
- Jnt/tube
- AirUnt
- PrecsCompn
- Mech/ ElecPresSw
- ContactSW
- AirSens
- PresSW Cool
- AirFloSens/ Contr
- WaterRtSens
- TotAirSys (Total Air)
- TotAirSys (Gamma)
- RefrDry
- DesicDry
- HiPolymDry
- MainFiltr
- Dischrg etc
- Ending

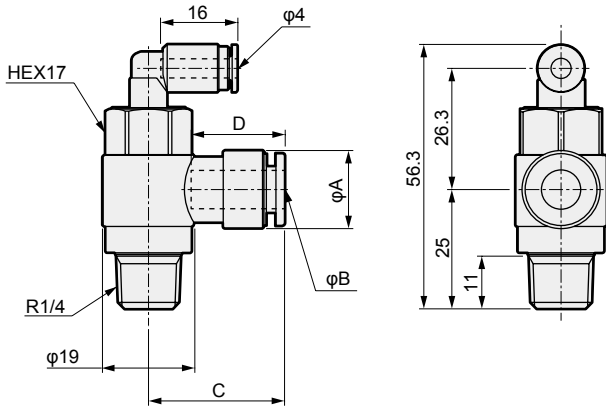
FPV Series



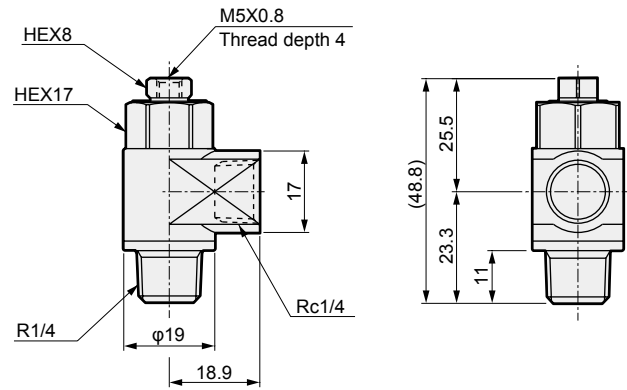
Dimensions

- F.R.L
- F (Filtr)
- R (Reg)
- L (Lub)
- PresSW
- Shutoff
- SlowStart
- FimResistFR
- Oil-ProhR
- MedPresFR
- No Cu/
PTFE FRL
- Outdrs FR
- F.R.L
(Related)
- CompFRL
- LgFRL
- PrecsR
- VacF/R
- Clean FR
- ElecPneuR
- AirBoost
- SpdContr
- Silncr
- CheckV/
other
- Jnt/tube
- AirUnt
- PrecsCompn
- Mech/
ElecPresSw
- ContactSW
- AirSens
- PresSW
Cool
- AirFloSens/
Contr
- WaterRtSens
- TotAirSys
(Total Air)
- TotAirSys
(Gamma)
- RefrDry
- DesicDry
- HiPolymDry
- MainFiltr
- Dischrg
etc
- Ending

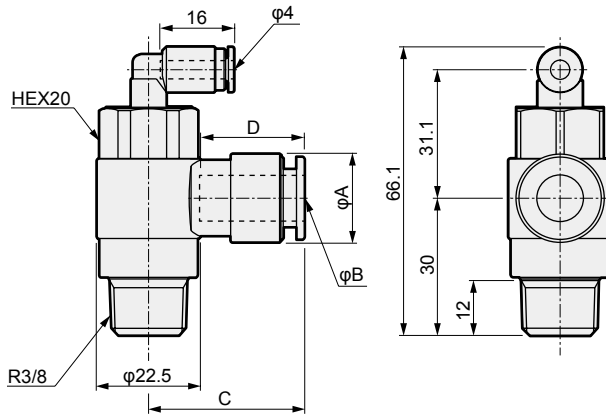
● FPV-8A-06



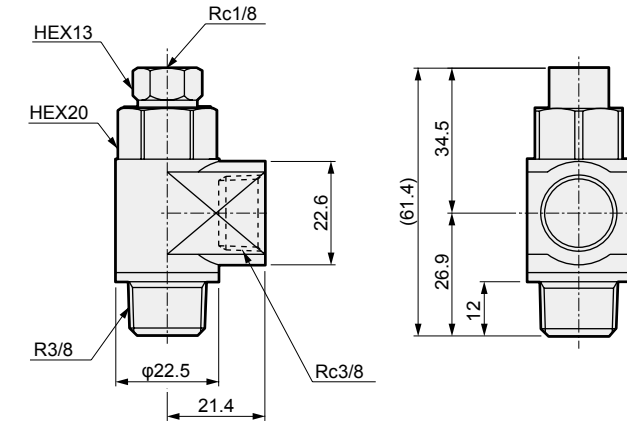
● FPV-8A-8A



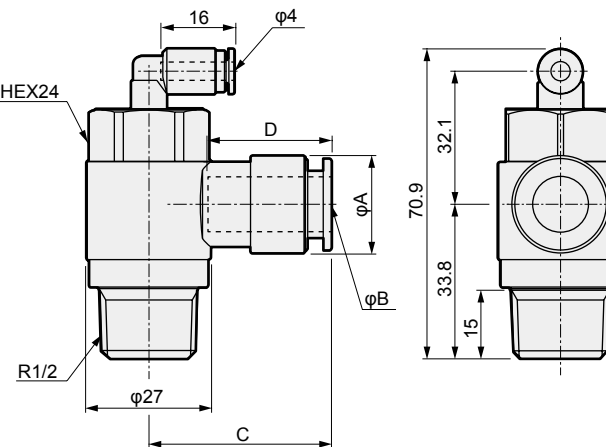
● FPV-10A-08



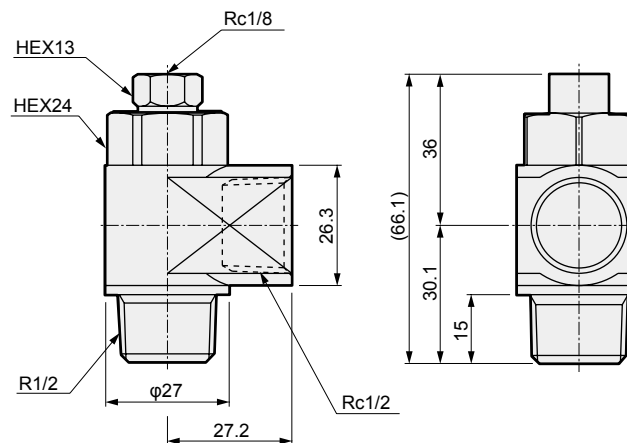
● FPV-10A-10A



● FPV-15A-10



● FPV-15A-15A



Model No.	A	B	C	D
FPV-8A-06	φ13.8	φ6	26.7	17.5
FPV-8A-08	φ16.3	φ8	27.7	19
FPV-10A-08	φ16.3	φ8	29.4	19
FPV-10A-10	φ19.3	φ10	32.2	21.5
FPV-15A-10	φ19.3	φ10	34.5	21.5
FPV-15A-12	φ21.3	φ12	37.7	23

Safety precautions

■ Design/selection

- Confirm whether PTFE can be used.
 - The sealant contains PTFE (polytetrafluoroethylene resin) powder. Check that this poses no problem during use.

■ Mounting, installation and adjustment

[Piping]

- When supplying compressed air after connecting pipes, check for air leaks at all piping connections and actuator sections.
 - Position locking and braking may not work correctly.
- Set pilot and main pressure within the specified pressure.
 - If actuator load factor is high, main pressure increases and cannot be maintained.

F.R.L
F (Filtr)
R (Reg)
L (Lub)
PresSW
Shutoff
SlowStart
FmResistFR
Oil-ProhR
MedPresFR
No Cu/ PTFE FRL
Outdrs FR
F.R.L (Related)
CompFRL
LgFRL
PrecsR
VacF/R
Clean FR
ElecPneuR
AirBoost
SpdContr
Silncr
CheckV/ other
Jnt/tube
AirUnt
PrecsCompn
Mech/ ElecPresSw
ContactSW
AirSens
PresSW Cool
AirFloSens/ Contr
WaterRtSens
TotAirSys (Total Air)
TotAirSys (Gamma)
RefrDry
DesicDry
HiPolymDry
MainFiltr
Dischrg etc
Ending



Pneumatic components (auxiliary valve)

Safety Precautions

Be sure to read this section before use.

Refer to Intro Page 63 for general precautions regarding pneumatic components and refer to "▲ Safety precautions" for detailed precautions for individual series.

Design/selection

▲ CAUTION

■ Use the product in the range of conditions specified for the product. Consult with CKD when using the product for special applications.

- Use of the product exceeding the specifications range may result in insufficient performance and its safety cannot be guaranteed.

- This product may not be usable in special applications and environments.

For example, use for applications requiring safety, including nuclear energy, railways, aircraft, vehicles, medical devices, devices in contact with beverages or foodstuffs, amusement devices, emergency cutoff circuits, press machines, brake circuits, or safety devices or applications.

■ Confirm before use that the product will withstand the working environment.

- Cannot be used in environments where its functions will be impeded.

Such environments include high temperatures, chemical atmospheres, or where chemical liquids, vibration, moisture, water dripping or gas is present. Environments where ozone is generated.

- Do not use the product in a place where it could come in direct contact with cutting oil, coolant or spatter, etc.

■ Understand the characteristics of compressed air before designing a pneumatic circuit.

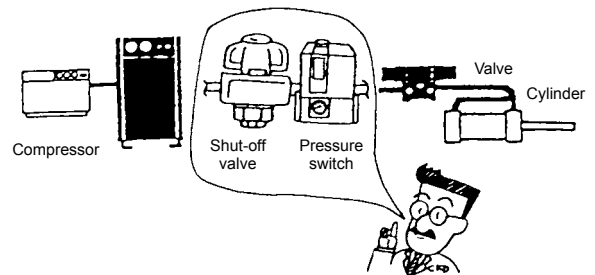
- The same functions as the mechanical, hydraulic and electrical methods cannot be anticipated if instantaneous stopping and holding are required during an emergency stop.

- Pop-out, air discharge, or leakage due to air compression and expansion may occur.

■ This valve cannot be used as a stop valve that requires no leakage. Slight leakage is allowed for in this product's specifications.

■ Install a "pressure switch" and "shut-off valve" on the device's compressed air supply side.

- The pressure switch will disable operation until the set pressure is reached. The shut-off valve releases compressed air into the pneumatic pressure circuit to prevent accidents caused by operation of pneumatic components under residual pressure.



■ Indicate the maintenance conditions in the device's instruction manual.

- The product's performance may drop too low to maintain an appropriate safety level depending on usage conditions, working environment and maintenance status. With correct maintenance, the product functions can be used to the fullest.

■ Rubber parts deteriorate and service life is shortened if ultra dry air is used.

F.R.L
F (Filtr)
R (Reg)
L (Lub)
PresSW
Shutoff
SlowStart
FimResistFR
Oil-ProhR
MedPresFR
No Cu/ PTFE FRL
Outdrs FR
F.R.L (Related)
CompFRL
LgFRL
PrecsR
VacFR
Clean FR
ElecPneur
AirBoost
SpdContr
Silncr
CheckV/ other
Jnt/tube
AirUnt
PrecsCompn
Mech/ ElecPresSw
ContactSW
AirSens
PresSW Cool
AirFloSens/ Contr
WaterRtSens
TotAirSys (Total Air)
TotAirSys (Gamma)
RefrDry
DesicDry
HiPolymDry
MainFiltr
Dischrg etc
Ending

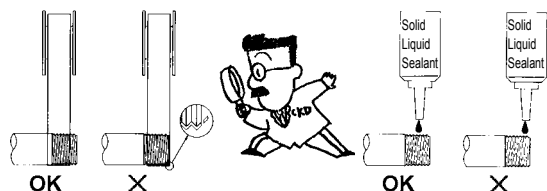
Mounting, installation and adjustment

Piping

CAUTION

- Do not remove the package or seal cap on the piping port until just before piping the product.
 - Removing the piping port cap before piping work may cause foreign matter to enter the pneumatic components from the piping port, resulting in failure or malfunction.

- When connecting pipes, wrap sealing tape in the opposite direction to the threading, from the inside position to within 2 mm from the pipe end.
 - If sealing tape protrudes from the pipe threads, it could be cut when screwing the bolts in. This could cause the tape to enter the pneumatic components, causing failures.



- Handling push-in fittings and tubes
 - Refer to fitting and tube warnings and cautions (pages 822 to 825) for handling push-in fittings and tubes.

- Always flush just before piping pneumatic components.
 - Any foreign matter that has entered during piping must not enter the pneumatic components.

- When supplying compressed air after connecting pipes, do not suddenly apply high pressure.
 - The pipe connection could dislocate, causing the pipe tube to fly out, leading to accidents.

- After connecting the pipes, always check all pipe connections for air leaks before supplying compressed air.
 - Apply a leakage detection agent to pipe connections with a brush and check for air leaks.

- Apply the recommended tightening torque when connecting pipes.

- The purpose is to prevent air leakage and damage to bolts.
- First tighten the bolts by hand to ensure that the threads are not damaged, then use a tool.
- Do not tighten while pressure is applied.



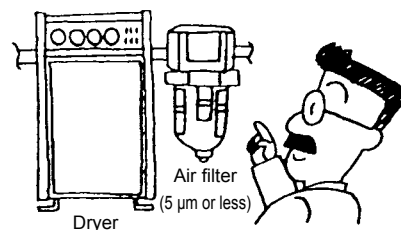
[Recommended tightening torque]

Port thread	Tightening torque N·m
M5	1.0 to 1.5
Rc1/8	3 to 5
Rc1/4	6 to 8
Rc3/8	13 to 15
Rc1/2	16 to 18
Rc3/4	19 to 40
Rc1	41 to 70
Rc1 1/4	43 to 75
Rc1 1/2	45 to 80

- Connect piping so that connections are not dislocated by equipment movement, vibration, tension, etc.
 - Control of actuator speed will be disabled if piping on the exhaust side of the pneumatic circuit is disengaged.
 - When using the chuck holding mechanism, the chuck may be released, creating a hazardous state.

- Around the pneumatic components, keep space for installation, removal and piping work.

- Install a pneumatic filter just before the pneumatic component in the circuit.



F.R.L
F (Filtr)
R (Reg)
L (Lub)
PresSW
Shutoff
SlowStart
FmResistFR
Oil-ProhR
MedPresFR
No Cu/ PTFE FRL
Outdrs FR
F.R.L (Related)
CompFRL
LgFRL
PrescR
VacF/R
Clean FR
ElecPneuR
AirBoost
SpdContr
Silncr
CheckV/ other
Jnt/tube
AirUnt
PresCompn
Mech/ ElecPresSw
ContactSW
AirSens
PresSW Cool
AirFloSens/ Contr
WaterRISens
TotAirSys (Total Air)
TotAirSys (Gamma)
RefrDry
DesicDry
HiPolymDry
MainFiltr
Dischrg etc
Ending

Auxiliary valve

F.R.L
F (Filtr)
R (Reg)
L (Lub)
PresSW
Shutoff
SlowStart
FilmResistFR
Oil-ProhR
MedPresFR
No Cu/ PTFE FRL
Outdrs FR
F.R.L (Related)
CompFRL
LgFRL
PrecsR
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ElecPneuR
AirBoost
SpdContr
Silncr
CheckV/ other
Jnt/tube
AirUnt
PrecsCompn
Mech/ ElecPresSw
ContactSW
AirSens
PresSW Cool
AirFloSens/ Contr
WaterRtSens
TotAirSys (Total Air)
TotAirSys (Gamma)
RefrDry
DesicDry
HiPolymDry
MainFiltr
Dischrg etc
Ending

- Observe the following precautions when using nylon or urethane tubes as the piping material.
 - Use the designated tube and CKD plastic plug (GWP Series). Do not use a metal plug as it may cause problems.
 - Tube outer diameter accuracy
 - Polyamide tube.....Within ± 0.1 mm
 - Polyurethane tube (up to $\phi 6$)..... Within ± 0.1 mm
 - (up to $\phi 8$) Within $\begin{matrix} +0.1 \\ -0.15 \end{matrix}$ mm
- Use a tube with hardness of 92° or more. If a tube that does not satisfy the diameter accuracy or hardness is used, the chucking force may decrease, the tube may come off or be difficult to insert. Contact CKD when using a non-designated tube or plug.
- Cut the tube with a dedicated cutter and always at a right angle.
- Use the tubing so that it does not become worn or damaged. Tubing could collapse or rupture.
- A used tube could be deteriorated or deformed and so always use a new tube.
- Do not let the tube directly contact other surfaces, as there is a risk of wear or damage.

- Do not use this product for applications involving constant rotation or oscillations, or in which tubes move violently.
- Use the tubing so that it is within the min. bending radius and long enough to avoid sharp bends.
 - Consider changes in tubing length caused by pressure when tubing is connected and provide sufficient length within the min. tube bending radius.
- Make sure that there is no torsion, tension or moment load applied to the fitting or the tube.
- Do not tighten while pressure is applied.

Use/maintenance

WARNING

- Stop air flow and confirm that there is no residual pressure before replacing the tube.