A free mount cylinder with a vacuum passage in the rod to meet the requirements for

Air cylinder + Vacuum pad.

A vacuum passage has been provided in the rod of the CUK cylinder to enable a vacuum pad to be installed on the end of the rod.

Not necessary to provide vacuum tubing space at the end of the rod.

The area around the vacuum pad is uncluttered.

● Non-rotationg rod

A guide is provided as standard equipment

Non-rotating rod accuracy (no load: when the rod is retracted on the detent plate side):

ø10, ø16 ——— ±0.8°

ø20, ø25, ø32 ——— ±0.5°

Do not apply a lateral load to the piston rod. Because the piston rod is a hollow rod, a lateral load can cause the piston rod to bend or break.

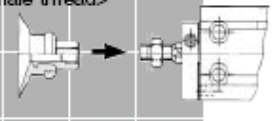
● Auto switch

Reed switch:
D-A9□ (Heavy-duty cord, in-line entry)
D-A9□V (Heavy-duty cord, perpendicular entry)

Solid state switch:
D-M9□, D-F9□W (Heavy-duty cord, in-line entry)
D-M9□V, D-F9□WV (Heavy-duty cord, perpendicular entry)

● Vacuum pad (Pad diameter: ø2 to ø50)

<Perpendicular female thread> <Male thread>



<Direct mounting>

<Barb fitting>

● How to provide piping to the vacuum side

Cap piping

The piston rod of the vacuum side does not protrude. Also, the vacuum outlet tube does not move when the piston is operating.
Vacuum port pressure range: –101 kPa to 0.6 MPa
Pressurize only when releasing the vacuum. At that time, use it under the cylinder operating pressure.

Rod piping

Lighter weight than the cap piping.
Can also be used for air blowing.
Vacuum port pressure range: –101 kPa to 0.6 MPa

Applicable Auto Switch/Refer to page 68 to 72 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage DC		Load voltage AC	Auto switch model: Perpendicular	Auto switch model: In-line	Lead wire length (m)*: 0.5 (Nil)	3 (L)	5 (Z)	Pre-wired connector	Applicable load	
Reed switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	A96V	A96	●	●	—	—	IC circuit	—
			Yes	2-wire	24 V	12 V	100 V	A93V	A93	●	●	—	—	—	Relay, PLC
			No			5 V, 12 V	100 V or less	A90V	A90	●	●	—	—	IC circuit	
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	M9NV	M9N	●	●	○	○	IC circuit	Relay, PLC
				3-wire (PNP)				M9PV	M9P	●	●	○	○		
				2-wire		12 V		M9BV	M9B	●	●	○	○	—	
	Diagnostic indication (2-color indication)			3-wire (NPN)		5 V, 12 V		F9NWV	F9NW	●	●	○	○	IC circuit	
				3-wire (PNP)				F9PWV	F9PW	●	●	○	○		
				2-wire		12 V		F9BWV	F9BW	●	●	○	○	—	

* Lead wire length symbols: 0.5 m·····Nil (Example) M9N
3 m·····L (Example) M9NL
5 m·····Z (Example) M9NZ

* Solid state switches marked with "○" are produced upon receipt of order.

⚠ Precautions

Be sure to read before handling. Refer to back page 1 through to 6 for Safety Instructions, Actuator Precautions and Auto Switch Precautions. Also see page 13-1-5 for Vacuum Equipment Precautions in the Best Pneumatics 2004 Vol. 13 catalog.

⚠ Caution

1. **Do not place your finger in the clearance between the detent plate and the cylinder tube.**
   Never put your finger between the non-rotating plate and cylinder tube. Your finger may be pinched when the piston rod retracts.
   If your finger is caught, it could injure your finger because the cylinder outputs a considerable amount of force.
2. Make sure that rotational torque is not applied to the piston rod. If this is unavoidable, operate the cylinder within the allowable rotational torque listed in the table below.

Allowable Rotational Torque

Bore size (mm)	ø10	ø16	ø20	ø25	ø32
Allowable rotational torque (N·m)	0.02	0.04	0.10	0.15	0.20

3. To secure a workpiece to the end of the piston rod, tighten the workpiece onto the piston rod with the piston rod fully retracted so that torque is not applied to the piston rod.

Proper Tightening Torque

Bore size (mm)	Hexagon socket head bolt diameter (mm)	Proper tightening torque (N·m)
ø10	M3	1.08 ±10%
ø16	M4	2.45 ±10%
ø20, ø25	M5	5.10 ±10%
ø32	M6	8.04 ±10%

Specifications

Fluid	Air
Proof pressure	1.05 MPa
Maximum operating pressure	0.7 MPa
Vacuum port pressure	−101 kPa to 0.6 MPa (At vacuum release 0 to 0.6 MPa) Note)
Ambient and fluid temperature	Without auto-switch: −10 to +70°C (No freezing) With auto-switch: −10 to +60°C (No freezing)
Lubrication	Not required
Piston speed	50 to 500mm/s
Cushion	Rubber bumper on both sides
Stroke allowance	$^{+1.0}_{0}$
Thread tolerance	JIS Class 2
Rod tip screw	With or without (Pad direct mounting)
Mounting	Basic style
Applicable pad	Refer to next page for details.

Note) For a cap style, supply pressure only when vacuum is released. That pressure should be less than the cylinder pressure.

Non-rotating Rod Accuracy
(No load/At retraction of the rod at the locking plateside)

Bore size (mm)	ø10	ø16	ø20	ø25	ø32
Non-rotating rod accuracy	±0.8°		±0.5°		

Minimum Operating Pressure

(MPa)

Bore size (mm)	ø10	ø16	ø20	ø25	ø32
Min. Operating Pressure (MPa)	0.13	0.13	0.11	0.11	0.11

Bore size (mm)	Mounting pitch ℓ (mm)
10	20
16	30
20	40
25	46
32	56