Discontinue

CKD

CM-0368-A

INSTRUCTION MANUAL

PCD 02/03/04 -37 NC/NO -1

- Please read this instruction manual carefully before using this product, particularly the section describing safety.
- Retain this instruction manual with the product for further consultation whenever necessary.

CKD Corporation

For Safety Use

To use this product safely, basic knowledge of pneumatic equipment, including materials, piping, electrical system and mechanism, is required (to the level pursuant to JIS B 8370 Pneumatic System Rules).

We do not bear any responsibility for accidents caused by any person without such knowledge or arising from improper operation.

Our customers use this product for a very wide range of applications, and we cannot keep track of all of them. Depending on operating conditions, the product may fail to operate to maximum performance, or cause an accident. Thus, before placing an order, examine whether the product meets your application, requirements, and how to use it.

This product incorporates many functions and mechanisms to ensure safety. However, improper operation could result in an accident. To prevent such accidents, read this operation manual carefully for proper operation.

Observe the cautions on handling described in this manual, as well as the following instructions :

⚠ Precautions

- Do not touch electric wiring connections (exposed live parts) : this will cause an electric shock. During wiring, keep the power off. Also, do not touch these live parts with wet hands.

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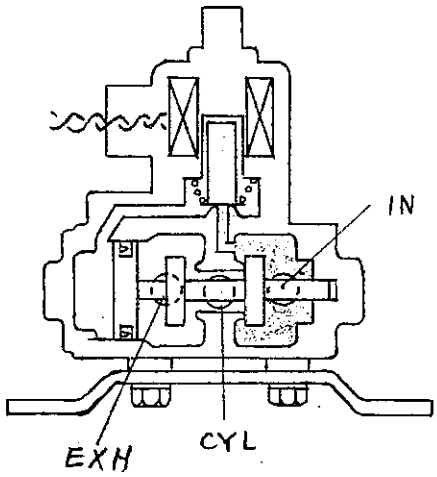
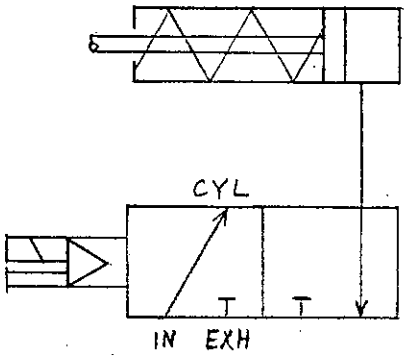
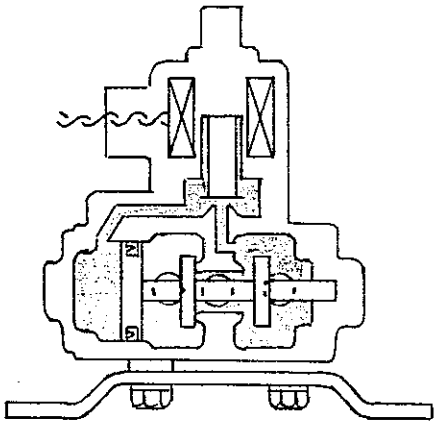
1-1. PRINCIPLE OF OPERATION (NC TYPE)

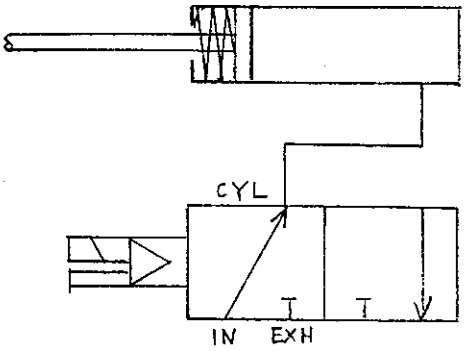
o Energized





o De-energized





When speed control of the cylinder is necessary, mount the speed controller on the cylinder side.

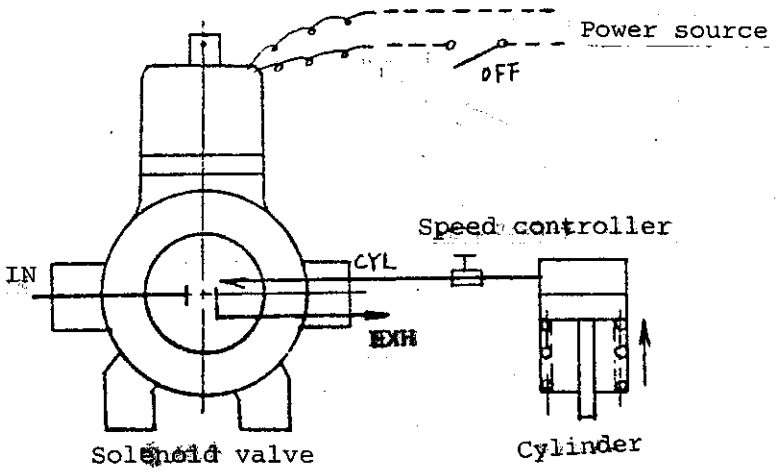
o Pressure used

(1) Air pressure shall be within the range from 0.1 to 0.7 MPa.

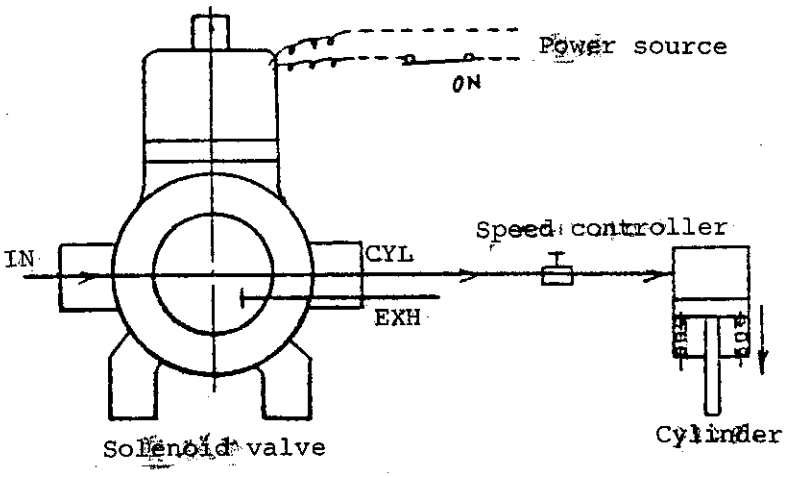
(2) Since this solenoid valve is a pilot type, the valve may not function under low pressure range (0.2to 0.3 MPa) if the IN side pressure lowers down. (Where the pressure from the IN side is smaller, that is, either the pipe size at IN side is smaller than that of at OUT side or there is such a part.)

1-2 PRINCIPLE OF OPERATION (NO TYPE)

o Energized



o De-energized



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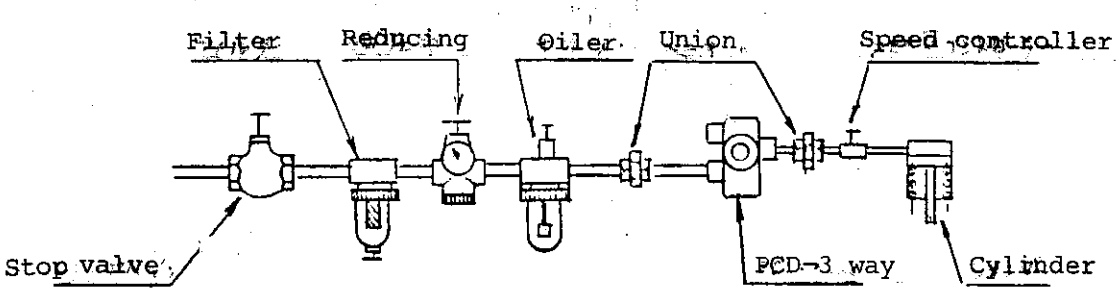
2. PIPING

Standard piping



Cautions at piping

(1) Clean inside the pipes before mounting the solenoid valve.

(2) Use care to flowing direction of the fluid.

(3) Mount as filter before solenoid valve.

(4) Never try to do any piping work by utilizing the head of solenoid valve (coil section).
(The pipe section in the core assembly may deform.)

(5) Avoid exposing the coil section from rain. For an outdoor use, cover it with an appropriate material.

(6) Use a union, if possible, for piping for easy attaching and detaching.

(7) Piping shall be so made that the valve body may not deform. Failure to do so will sometimes cause malfunction of the valve.

(8) Mounting of pressure gauge, oiler, regulator, etc. is recommended.

3. WIRING

(1) Use electric wires whose sectional area is 0.75 mm^2 or over.

(2) Provide a fuse of 1A rating for the purpose of electric circuit protection.

(3) Employ a snap action type switch or a relay as much as possible.

(4) The electric circuit employed shall be the one with less voltage drop.

4. TEST PROCEDURE

(1) Check if specified voltage and current have been supplied.

(2) Turn on and off the switch without supplying fluid and see if the solenoid valve functions properly.
If any chick sound can not be heard, the electric circuit is defective.

(3) Check for leakage by supplying fluid.

(4) With the power on, carry out the functional test several times and check for leakage from EXH side.

5. TROUBLESHOOTING

Symptoms	Causes	Points defective	Means of detection	Counter-measures
Fluid does not switch over.	1. Electric circuit failure	1. Power source o Voltage drop o Frequency o See if power is properly supplied.	Tester	
		2. Fuse disconnection	Tester	
		3. Switching circuit failure	Tester	
	2. Coil failure	1. Coil voltage, incorrect coil frequency	Tester	
		2. Poor connection (wiring)	Tester	Check
		3. Damage due to seizure	Tester	Replace
		4. Disconnection		
	3. Pressure	1. Too high Too low	Pressure gauge	Adjust Adjust
	4. Caused by foreign materials	1. Piston	Dis-assemble	Clean
	5. Shortage of oil	1. Oiler	Visual	Readjust
	6. Residual magnetism	1. Aged spring	Dis-assembly	Replace
	7. Incomplete piping	1. IN and EXH are opposite.	Visual	Correct
		2. Pipe dia. at EXH is 6 mmφ or below.	Visual	Check piping
	8. Incomplete assembling	1. Piston	Dis-assemble	Reassemble

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Symptoms	Causes	Points defective	Means of detection	Counter-measures
	9. Reformation	1. Valve body or pipe	Visual	Correct
Burned and damaged coil	1. Electric circuit	1. Power source: Excessively large or small voltage. Frequency	Voltage gauge	Correct
	2. Improper coil	1. Coil	Visual	Replace
	3. Incomplete assembling	1. Bonnet core and plunger are improper		Replace
	4. Defective coil insulation	1. Coil	Tester	Replace
	5. Plunger lock	1. Intrusion of foreign material	Visual	Clean
Leakage	O Leakage from EXH during energizing			
	1. Scratched valve seat at IN-side.	Refer to Cause section.	Visual	Replace
	2. Scratched valve at IN-side.	Refer to Cause section.	Visual	Replace body
	3. Defective O-ring for valve seat at IN-side.	Refer to Cause section.	Visual	Replace O-ring
	4. Aged spring	Refer to Cause section.	Visual	Replace
	5. Insufficiently tightened hex. nut for valve seat.	Refer to Cause section.	Visual	Retighten
	6. Foreign material is bit in.	Slide surface, valve seat, plunger and valve bar guide hole.	Visual	Clean or replace.
Leakage	O Leakage from EXH side at de-energized.			
	1. Scratched valve seat at EXH side.	Refer to Cause section.	Visual	Replace body
	2. Scratched valve seat at EXH side.	Refer to Cause section.	Visual	Replace valve seat
	3. Scratched packing slide surface.	Refer to Cause section.	Visual	Replace body
	4. Defective Y-type packing	Refer to Cause section.	Visual	Replace packing
	5. Defective O-ring for packing	Refer to Cause section.	Visual	Replace O-ring
	6. Defective O-ring for valve seat at EXH side.	Refer to Cause section.	Visual	Replace O-ring

Symptoms	Causes	Points defective	Means of detection	Counter-measures
	7. Insufficient tightening of valve bar nut	Refer to Cause section.	Visual	Retighten
	8. Foreign material is bit in	Slide surface, valve seat, plunger and valve bar guide hole.	Visual	Clean or replace
	O Leakage from pilot pressure exhaust hole at de-energized. (Leakage from the cap above the name plate.)			
	1. Scratched valve seat on lower pilot.	Refer to Cause section.	Visual	Replace body
	2. Scratched valve seat at lower position of the plunger.	Refer to Cause section.	Visual	Replace plunger
	O Leakage from pilot pressure exhaust hole at energizing.			
	1. Scratched valve seat on upper pilot.	Refer to Cause section.	Visual	Replace core
	2. Scratched valve seat at upper part of the plunger	Refer to Cause section.	Visual	Replace plunger

6. DISASSEMBLING METHOD

Cautions

(1) NEVER utilize the valve head when making removal.

(2) Do not swing the valve with the lead wire grasped when removing the coil.

(3) ALWAYS use the attached tools for removal of core assembly, use of a pipe wrench, plier, etc. may deform the core assembly, resulting in malfunction of the valve.

o Method

(1) The round lid on both sides is of a screwed type.

(2) Take the valve bar by removing the lid on both sides and loosening the 6 mm dia. nut for valve plug and slide packing tightening.

(3) At reassembly of valve bar, do not forget attach the O-ring. Also firmly tighten the 6 mm dia. hex. nut. Inversing the position of spring and direction of slide

packing may cause malfunction of the valve.

(4) As for disassembly of the pilot valve (upper valve):

1 The bonnet can be removed by pushing it upward with the hex. nut for bonnet tightening loosened.

2 The coil comes with the bonnet. Then core assembly can be taken out. Since the core assembly is made of a stainless steel tube (wall thickness 0.7 t), do not utilize, by all means, this part when disassembling, otherwise it may deform.

7. REASSEMBLY

(1) In all cases, remove foreign materials attached when re-assembling.

(2) Pay attention not to scratch valve seat, rubber surface, etc.

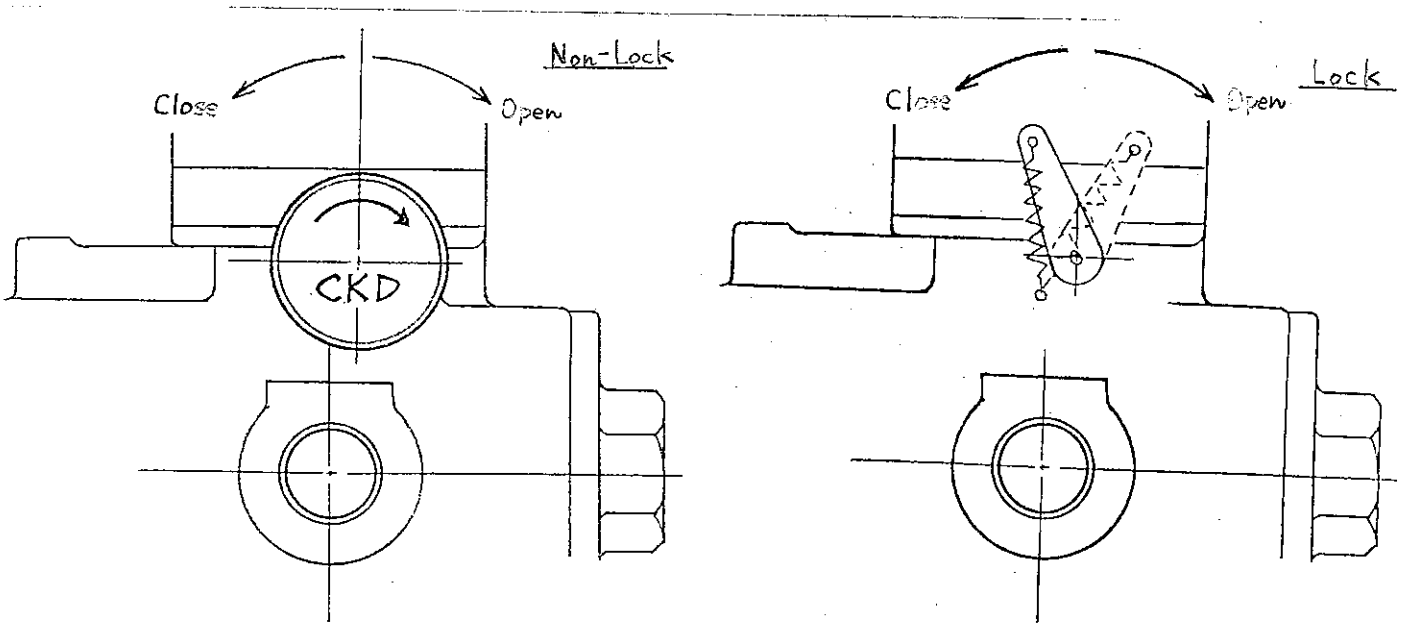
(3) Do not forget to fit O-ring, spring, etc. at reassembly.

8. MANUAL OPERATION

The valve can be manually operated with a manual knob.

(1) To energize, turn the knob fully clockwise.

(2) To de-energize, turn the knob fully counterclockwise.



Note (1) Turn off the power while making manual operation.
(If the power is on, the valve does not switch even if the handle is turned.)

(2) Return the handle to "close" position after completion of manual operation.
(If the handle is not returned, the valve does not switch even if the power is turned on and off.)