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CKD

SM－2003－A

INSTRUCTION MANUAL

SELEXVALVE

4L3 (Plug-in Type)

- 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.

Thank you for purchasing this quality CKD SELEX valve, 4L3 series (plug-in type).

The SELEX is a solenoid valve which was developed as a result of long experience in this field, with the hope that it will be used by as many customers as possible in wide array of applications.

All CKD products are manufactured under the strictest quality control, which guarantees their capacity for everyday use.

CKD hopes this instruction manual will be of assistance in using this quality CKD product.

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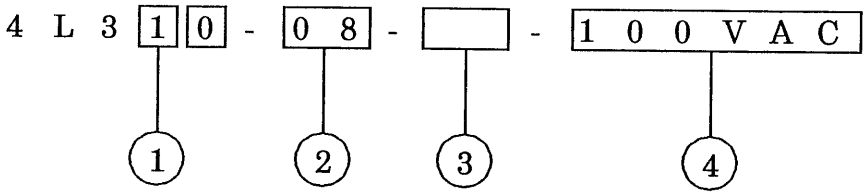
1. HOW TO ORDER



※ The above coding represents a 2-position single solenoid with a solenoid port size PT 1/4, manual non lock with a rated voltage of 100 VAC.

※ The lamp, air indicator and surge suppresser are standard equipment.

①	Position				
1	2-position single	Standard	5	3-position P.A. B port	Option
2	2-position double		6	Exhaust pressurization 2-position single	
3	3-position closed center		7	Exhaust pressurization 2-position double	
4	4-position exhaust center				

②	Port	
	A · B ports	P · R_1 · R_2 ports
08	PT 1/4 Side porting	PT 1/2 Side porting
10	PT 3/8 〃	〃
08Y	PT 1/4 Bottom porting	〃
10Y	PT 3/8 〃	〃

③	Option
No symbol	Manual non lock
M1	Manual non lock
N	No lamp
K	External pilot

2. OPERATIONAL PRINCIPLES

2-1. Operational description

- 2-position, single

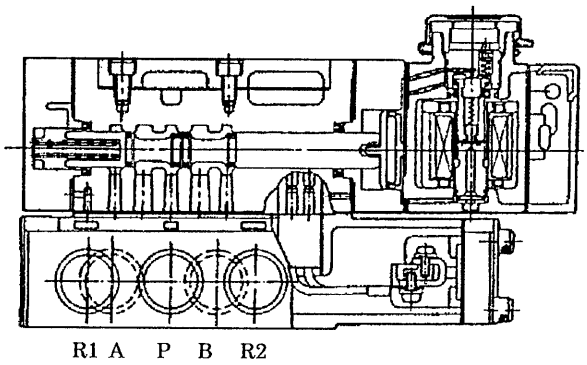
  The cylinders advance (retreat) when the solenoid is energized.
  The cylinders retreat (advance) when the solenoid is de-energized.

De-energized
P → A
B → R2
R1 → Stop

Green air indicator appears

Energized
P → B
A → R1
R2 → Stop

Red air indicator appears



- 2-position, double

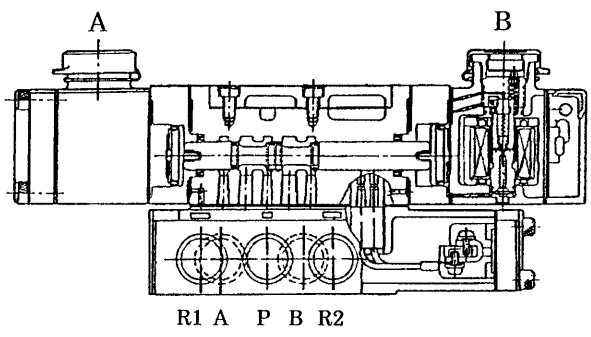
  The cylinders advance (retreat) when one solenoid is energized, while returning to the previous status when de-energized.
  The cylinders retreat (advance) when the other solenoid is energized. The solenoids can also be used for self-maintenance (the cylinders do not move even during a power failure).

When solenoid A is energized
P → A
B → R2
R1 → Stops

Green air indicator appears

When solenoid B is energized
P → B
A → R1
R2 → Stops

Red air indicator appears



- 3-position closed center

  The cylinders stop at the middle positions (when de-energized). After the cylinders have stopped, they are locked and will not be actuated by any outer force.

When neither solenoid is de-energized, P, A, B, R1, and R2 will stop. No air indicator appears.	When solenoid A is energized, P → A B → R2 R1 → Stops Green air indicator appears	When solenoid B is energized (refer to the drawing below) P → B A → R1 R2 → Stops Red air indicator appears

- 3-position exhaust center

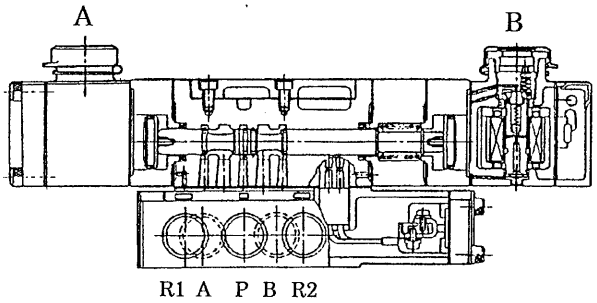
  The function of stopping in the middle positions is the same as the all port block, but the cylinders can be actuated by external force after them have stopped.

When solenoids are de-energized: P → Stops A → R1 B → R2 No indicator appears	When solenoid A is energized: P → A B → R2 R1 → Stops Green air indicator appears	When solenoid B is energized (refer to the drawing below) P → B A → R1 R2 → Stops Red air indicator appears

- 3-position, PAB ports

  The function of stopping in the middle positions is the same as the all port block, but since the cylinders are pressurized (C1 and C2) in the middle positions, they will be actuated unless the surface pressure of the cylinders is equal.

When solenoids are de-energized: P → A · B R1 → Stops R2 → Stops Both green and red air indicators appear	When the solenoid A is energized: P → A B → R2 R1 → Stops Green air indicator appears	When solenoid B is energized: (refer to the drawing below) P → B A → R1 R2 → Stops Red air indicator appears



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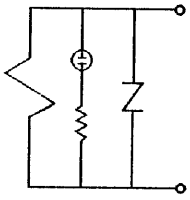
3. CAUTIONS DURING OPERATION

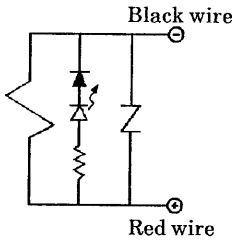
3-1. Cautions during operation

(1) Electrical indicator circuit

- 100VAC (blue)
  200VAC (red)



- 24VDC



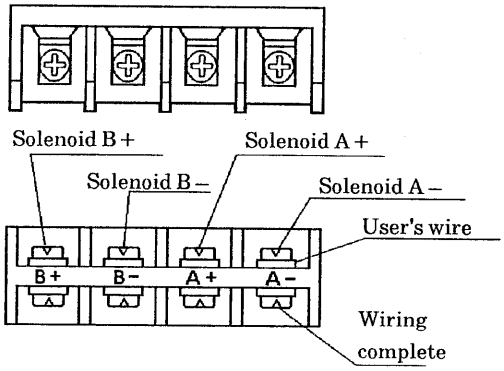
(2) Installing and removing the main body of the solenoid valve.

When installing or removing the main body of the solenoid valve, move the body vertically. Moving it diagonally will cause many faults.

(3) Terminal connections

Connect the terminals as per A+, A-, B+ and B- marked on the terminals.

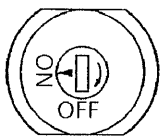
- Terminals



(4) Lock type manual button

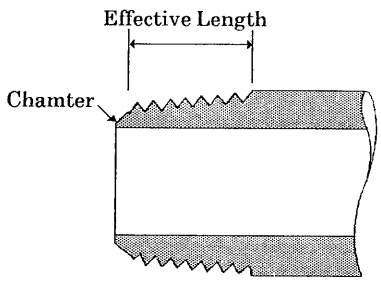
Turn the button 70 to 80 degrees with a screw driver from the ON to OFF position. (Do not turn the button more than 90 degrees)

- Lock type manual button

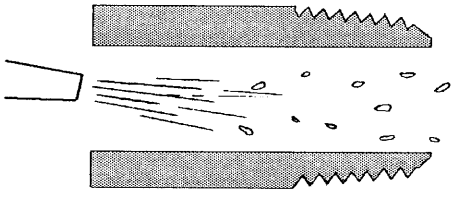


3-2. Cautions during pipe installation

(1) The screw length used for the gas pipe should be within the effective screw length. Apply a chamfering finish to the surface from the screw tip to about half a pitch from the tip.

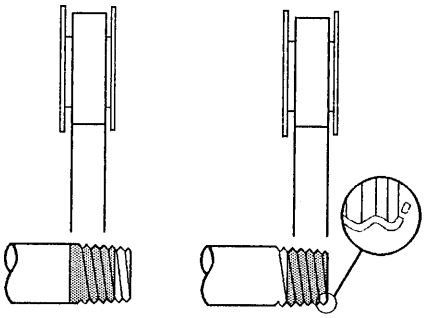


(2) Before starting pipe installation, flush the pipe to remove the foreign materials or chips inside.



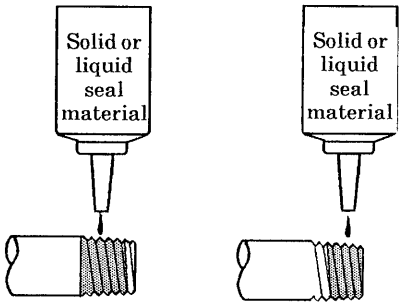
(3) When connecting the pipe to this product, use care while applying sealant material or seal tape to prevent them from entering the pipe.

● Seal tape



(Correct) (Incorrect)

● Solid or liquid seal material



(Correct) (Incorrect)

3-3. Cautions during wiring

(1) Use wires with a nominal cross-sectional area of 0.5 mm^2 or more.
When using wires equipped with a DIN terminal box, the nominal cross-sectional areas of the wires should be 0.5 - 1.5 mm^2. If water proof types are required, use the cabtyer codes with outer diameters of 9 to 11.

(2) Use a non oscillating switching circuit.

(3) Install a fuse (1A) in the electrical circuit.

(4) The voltage to be used should be within ±10% of the rated voltage.

(5) When using a proximity relay circuit, beware of leakage current.
Select the following switches for:
an AC coil within 15% of the rated current
a DC coil within 1% of the rated current

4. MAINTENANCE AND INSPECTION

4-1. Periodical inspection

(1) Perform an inspection once a year to keep the solenoid valve in optimum condition.

(2) Inspection items

(a) Check to see if dirt or foreign material has built up or viscous material has become stuck in the valve.

If any problems are found, disassemble the valve and clean it.

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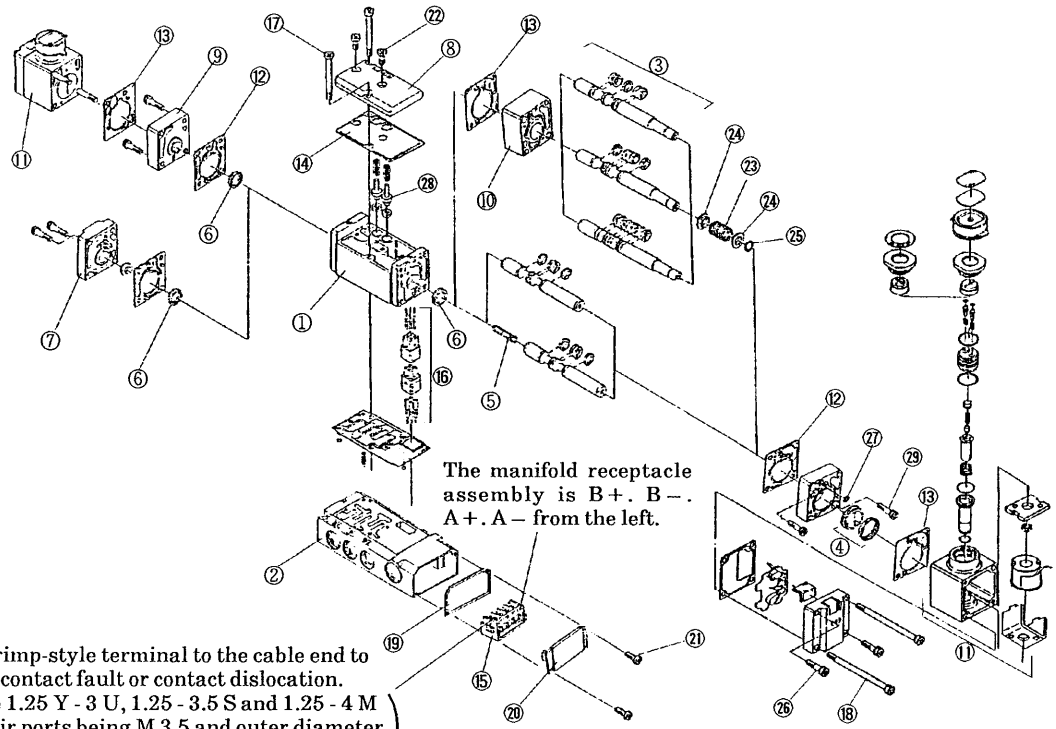
5. EXPLODED VIEW



Apply a crimp-style terminal to the cable end to prevent a contact fault or contact dislocation.
(e.g.: Use 1.25 Y - 3 U, 1.25 - 3.5 S and 1.25 - 4 M with their ports being M 3.5 and outer diameter 7 mm or less.)

Part No.	Part Name	Material	Re marks	Part No.	Part Name	Material	Re marks
①	Body	ADC12	Painting	⑯	Receptacle	Nylon 66	
②	Sub-base	ADC12	Painting	⑰	Allen screw	SCM3	Black oxide finish
③	Soft spool assembly	ADC12		⑱	Allen screw	SCM3	Black oxide finish
④	Piston	POM		⑲	Sub-base cover gasket	NBR	
⑤	Spring	SUS-304-WPB		⑳	Sub-vase cover	ADC12	Painting
⑥	Spool packing	NBR		㉑	Allen screw	SCM3	Black oxide finish
⑦	Body cover	ADC12	Painting	㉒	Allen screw	SCM3	Black oxide finish
⑧	Body cap	ADC12	Painting	㉓	Return spring	SUS-304-WPB	
⑨	Piston chamber	ADC12	Painting	㉔	Spring bearing	SUS-303	
⑩	Return main body	ADC12		㉕	E-shaped snap ring	S60CM	
⑪	Actuator assembly			㉖	Allen screw	SCM3	
⑫	Body gasket	NBR		㉗	O-ring	NBR	Black oxide finish
⑬	Gasket in the piston chamber	NBR		㉘	Allen screw	SCM3	Black oxide finish
⑭	Body cap gasket	NBR		㉙	Air indicator rod	POM	
⑮	Terminal	Nylon 66					

- Note: All paints to be used should be Munsell 10 Y 4.5/2.

Consumables list

Part No., Part name / Model No.	③ Soft spool assembly	④ Piston	⑥ Spool packing	⑪ Actuator assembly
4L310, 4L360	4L9-104	4L9-108	4L9-300	4L9-002
4L320, 4L370	4L9-104	4L9-108	4L9-300	4L9-002
4L330	4L9-105	4L9-108	4L9-300	4L9-002
4L340	4L9-106	4L9-108	4L9-300	4L9-002
4L350	4L9-107	4L9-108	4L9-300	4L9-002