

# INSTRUCTION MANUAL FOR

MICRO SOL

MODEL P5142·B5142·P5042·B5042

Please read this operation manual carefully before using this product, particularly the section describing safety.

Retain this operation 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 very much for purchasing the CKD products.

This INSTRUCTION MANUAL deals with the basic items regarding the installation, operation, maintenance, etc. required for bringing the efficiency of the product into full play.

Our products are produced under severe quality control.

You are requested to thoroughly go through this INSTRUCTION MANUAL before using the valve, and to perform correct operation and maintenance.

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## 1. SPECIFICATIONS

## 1-1 Specification of main body

Item	Specification
Fluid used	Compressed air, inactive gas
Working pressure range	1.5 -- 7.0 kgf/cm <sup>2</sup> {0.15 - 0.7 MPa}
Proof pressure	15.0 kgf/cm <sup>2</sup> {1.5 MPa}
Ambient temp. range	- 10 -- 50°C (fluid shall not freeze.)
Oiling	Unnecessary (Use 1st grade turbine oil ISO UG32, if oiling is necessary.)
Connecting pipe size	—
Orifice	1.2 mm dia.
Effective sectional area	P(S) → A(C1), B(C2) : 0.45, A(C1), B(C2) → R1(E1), R2(E2) : 0.55 mm <sup>2</sup>
Operating system	Poppet
Manual device	Upper direction non lock system

## 1-2 Specification of coil

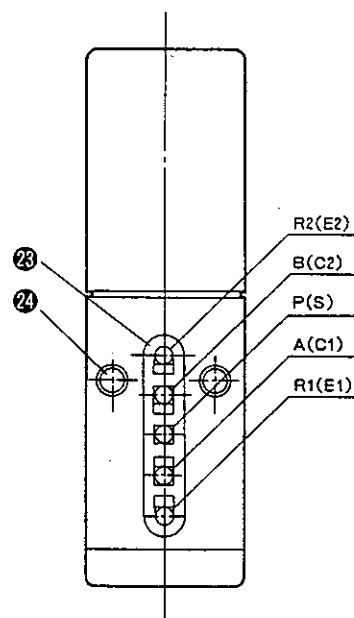
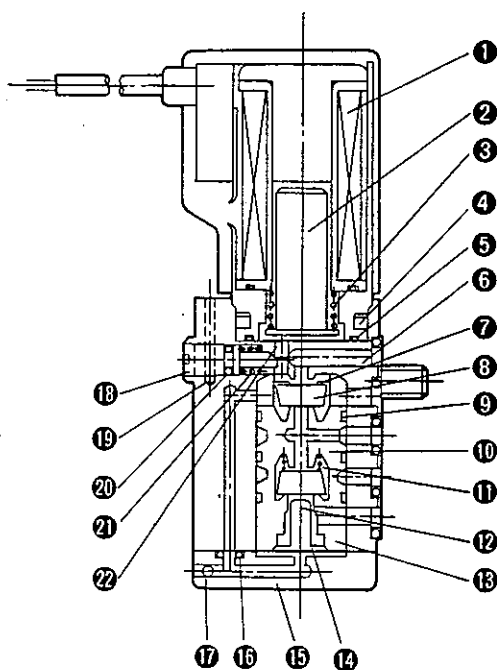
Voltage Item	AC100V (50/60Hz)	AC200V (50/60Hz)	DC12V	DC24V
Starting current A	0.056/0.044	0.028/0.022	0.150	0.075
Holding current A	0.028/0.022	0.014/0.011		
Power consumption W	1.8/1.4	1.8/1.4	1.8	1.8
Voltage fluctuation range	± 10%			
Insulation class	B class			
Temperature rise	45oC			

Note: AC100V (50/60Hz) type is useable in both AC110V and 220V (60Hz).

## 2. INTERNAL STRUCTURE AND PARTS LIST

o P (Pilot type)

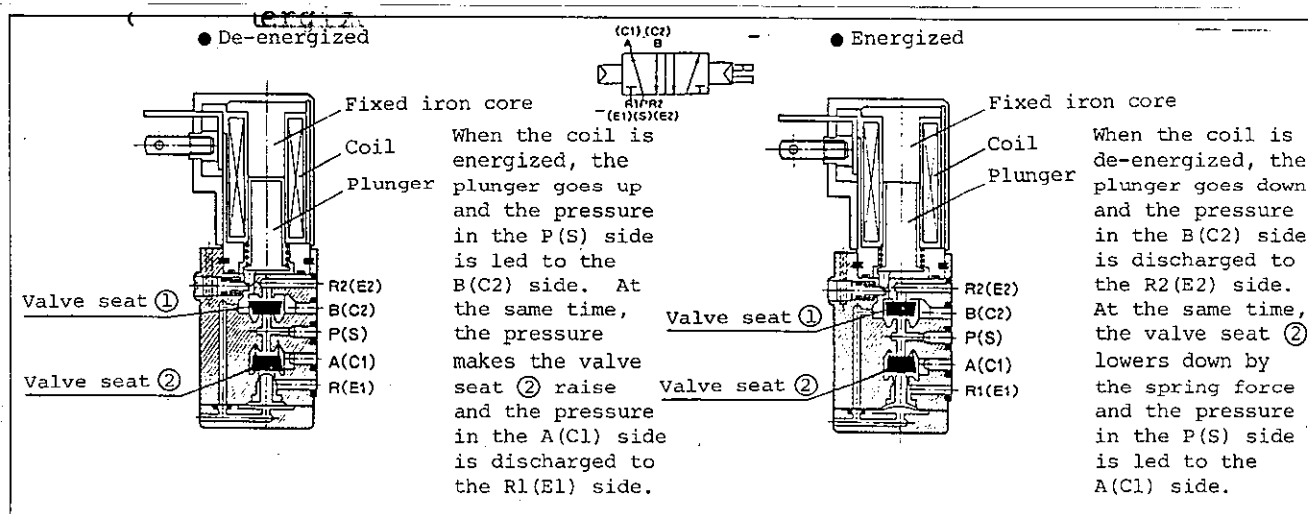
o B (Sub-base type)



No.	Part name	Material	Remarks
1	Actuator assembly	---	
2	Plunger	SUS305	
3	Plunger spring	SUS304	
4	Wave pin	SWP	Blackening finish
5	O-ring	FKM	
6	Body	ZDC	Chromate
7	Metal disc	SUS304	
8	Valve disc	NBR	
9	O-ring	NBR	
10	Bottom seat A	B3604	
11	LP spring	SUS304	
12	Piston	B3604	
13	Bottom seat B	B3604	
14	Diaphragm	NBR	
15	Cap	ZDC	Chromate
16	O-ring	FKM	
17	Steel ball	SUJ	
18	Manual shaft	PA	
19	Parallel pin	SUS303	
20	O-ring	FKM	

No.	Part name	Material	Remarks
21	Manual spring	SUS304	
22	Manual pin	PA	
23	Body gasket	NBR	
24	Cross recessed pan head screw with spring washer	SWRH SWRM	Zinc chromate

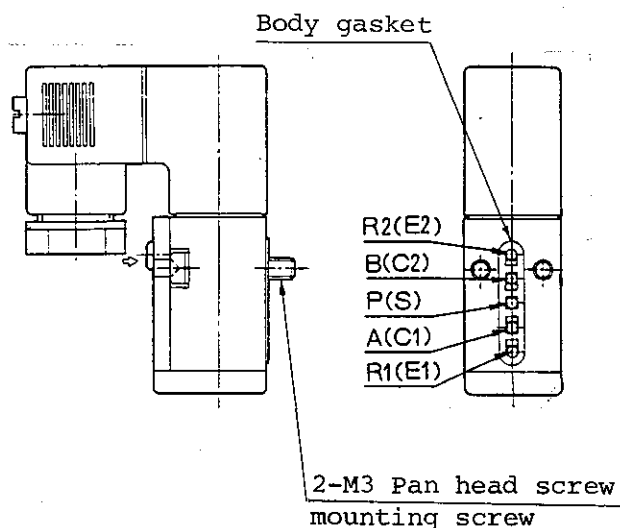
### 3. EXPLANATION OF OPERATION



### 4. HANDLING PROCEDURES

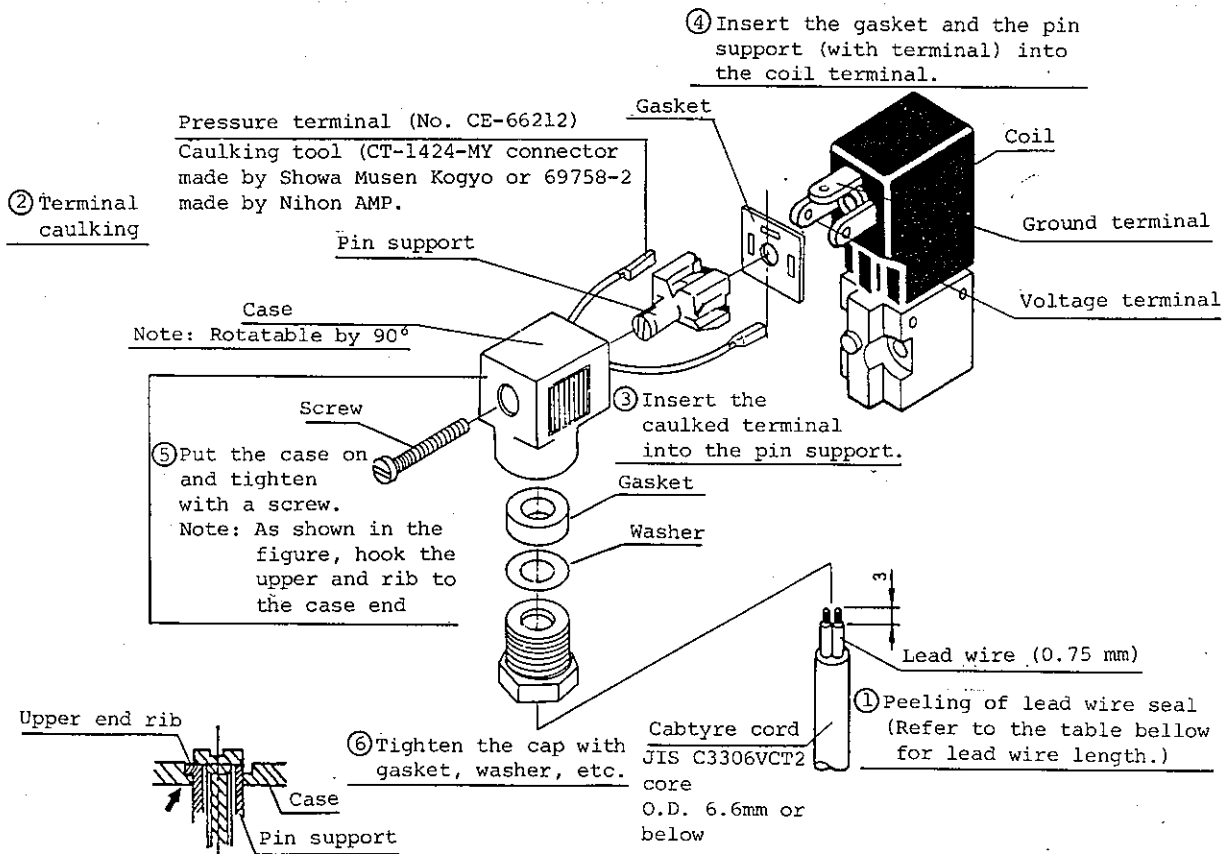
#### 4-1 Installation method

- (1) Check to see that the body gasket is attached.
- (2) Remove foreign materials (dust) attached on opposing installing surface and body gasket surface by flushing air.
- (3) Apply seal oil (turbine oil grade 1 ISO VG32 or equivalent one) over the surface of body gasket.
- (4) Set the attached pan head screws (2-M3) to the opposing side.



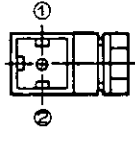
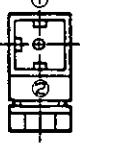
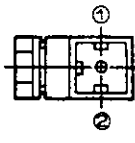
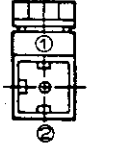
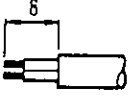

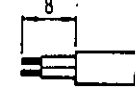
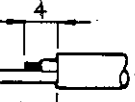
## 4-2 Connection method of small terminal box

Connect the wires for the small terminal box (B) in the order from ① -- ⑥ by referring the drawing below.



o Lead wire length

The length of lead wire varies depending upon case installing direction. Refer to the table below.

Case of installing direction				
Length of lead wire				

## 5. CAUTION FOR USE

### 5-1 Ambient condition

- o In the case of use of the valve in the dusty place, install a silencer or an elbow joint, facing downward so that no dust enters, to the EXT port.
- o Should any water drop splashes over the solenoid valve directly, provide a cover or a panel to protect from it.

### 5-2 What to do about drain

A large quantity of drain (water, oxidized oil, tar, foreign material) is contained in the compressed air. They may tremendously lower reliability of air compressors. Take a following measure to remove drain.

- o A method for drain removal

Improve air quality by employing after cooler, dryer for dehumidifying, filter for removal of foreign material, tar removing filter for tar removal, etc.

### 5-3 Cautions for piping

- o Rust, etc. in the pipe may cause malfunction of operation, leakage from valve seat, etc. Attach a filter right before solenoid valve.

### 5-4 Caution for installation of auxiliary equipment

- o Filter

Use a filter whose filter element is 5  $\mu$  or finer.

- o Lubricator

No lubricator is necessary since the MICROSOL is of oilless operation type. (Should any necessity of oiling arise, use turbine oil grade 1, ISO VG32 (#90) or equivalent one.)

## 5-5 Cautions for installation

### o Mounting style

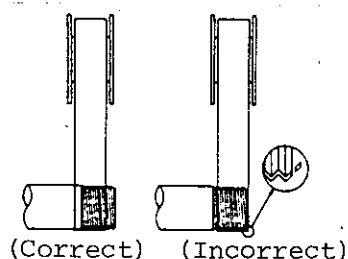
There is not special restrictions. However the best mounting style is installation on the plain surface or horizontal installation.

Do not install the valve where there is 5G or more vibration.

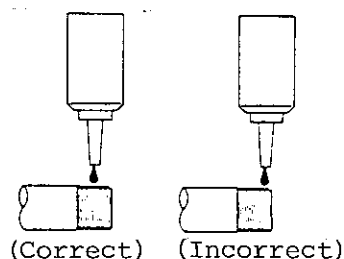
### o Sealant

If sealant is used pay attention not to let anything enter inside the piping. Also watch out for external leakage.

#### o Seal tape



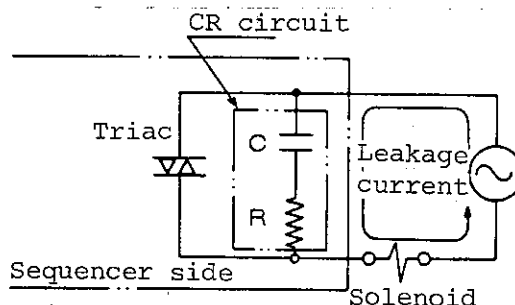
#### o Solid or liquid sealant



## 5-6 Restriction of leakage current

In case of use of sequencer, etc. which protects switching element by absorbing surge voltage with a CR circuit, a leakage current flows through the CR element and badly affects the products.

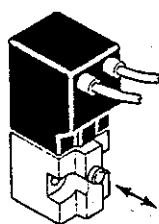
Keep the residue leakage current below 1.5 mA at AC 200V, 3 mA at AC 100V and 1.8 mA at DC.



## 6. MANUAL OPERATION METHOD

This valve permits manual operation. Use it at trial operation or while the valve is stopped. However this manual device is of non lock type. It returns to original position when a hand is released.

See the drawing below for manual operation.



Push the rod of less than 2 mm in dia.