Discontinue

SM-11264-A/1

CKD

INSTRUCTION MANUAL

FOR

HVL42 series

- 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

The Product is to be used by those who has a basic knowledge about material, fluid, piping electricity regarding Control Valves (solenoid valves, motor valves, air operated valves and so on.)

Never use this Product by those who have no knowledge or are not well trained about Control Valves.

Should be any trouble or accident caused by a wrong selection and/or wrong use of the Product even by a person of basic knowledge about Control Valves, we are not responsible therefore.

Since any customer of the Product have a variety of its application, we are not in a position to get all the information on how and where the Product is used. There may be the cases where that the Product may not meet customers' requirement or may cause any trouble or accident, by fluid, piping or other condition that are not within the specifications of the Product.
Under such a circumstance, select with their responsibility the most suitable application and use of the Product according to the customers' requirements.

The Product incorporates a various safety arrangement, however miss-handling of the product may lead to any trouble or accident on customers side. **To avoid any possible trouble, read this INSTRUCTION MANUAL carefully and understand it fully.**

Pay your attention to the items described in this Text, as well as the items indicated below.

⚠ CAUTIONS

- **When energized, heat is generated at coil portion of solenoid valves and motor valves particularly "Class H" coil where may have a high temperature.**

- **There my have electric shock when wire connecting portion of solenoid valves or motor valves are touched. In case of disassembly or inspection, turn off power supply beforehand. Don't touch live portion by wet hands.**

- **Make piping so as not to have leakage and check for no leakage before use, because in case of control valves for high temperature fluid like steam, leakage may cause heat injury.**

Thank you very much for purchasing CKD's solenoid valve model HVL42 series for use in a high vacuum atomsphere.

This HVL42 series developed for the range from medium vacuum to high vacuum.

We are sure that CKD's strict quality control system will draw your complete satisfaction.

In order to use the CKD products more effectively, please read through this instruction manual thoroughly.

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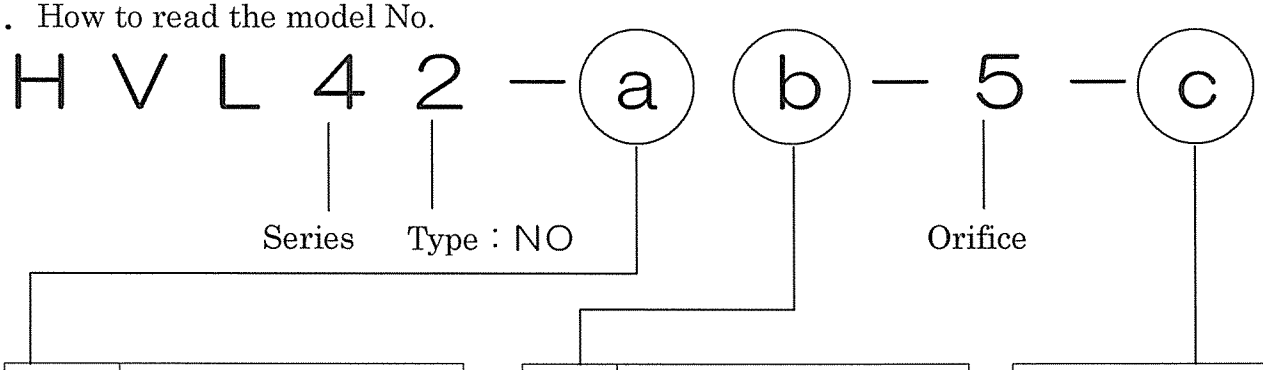
1. How to read the model No.



ⓐ	A port form
6	Rc1/8
4S	1/4inch double flareless joint
10K	NW10 flange
16K	NW16 flange

ⓑ	B port form
6	Rc1/8
4S	1/4inch double flareless joint
10K	NW10 flange
16K	NW16 flange

ⓒ Power supply voltage
DC24V
AC100V／AC200V

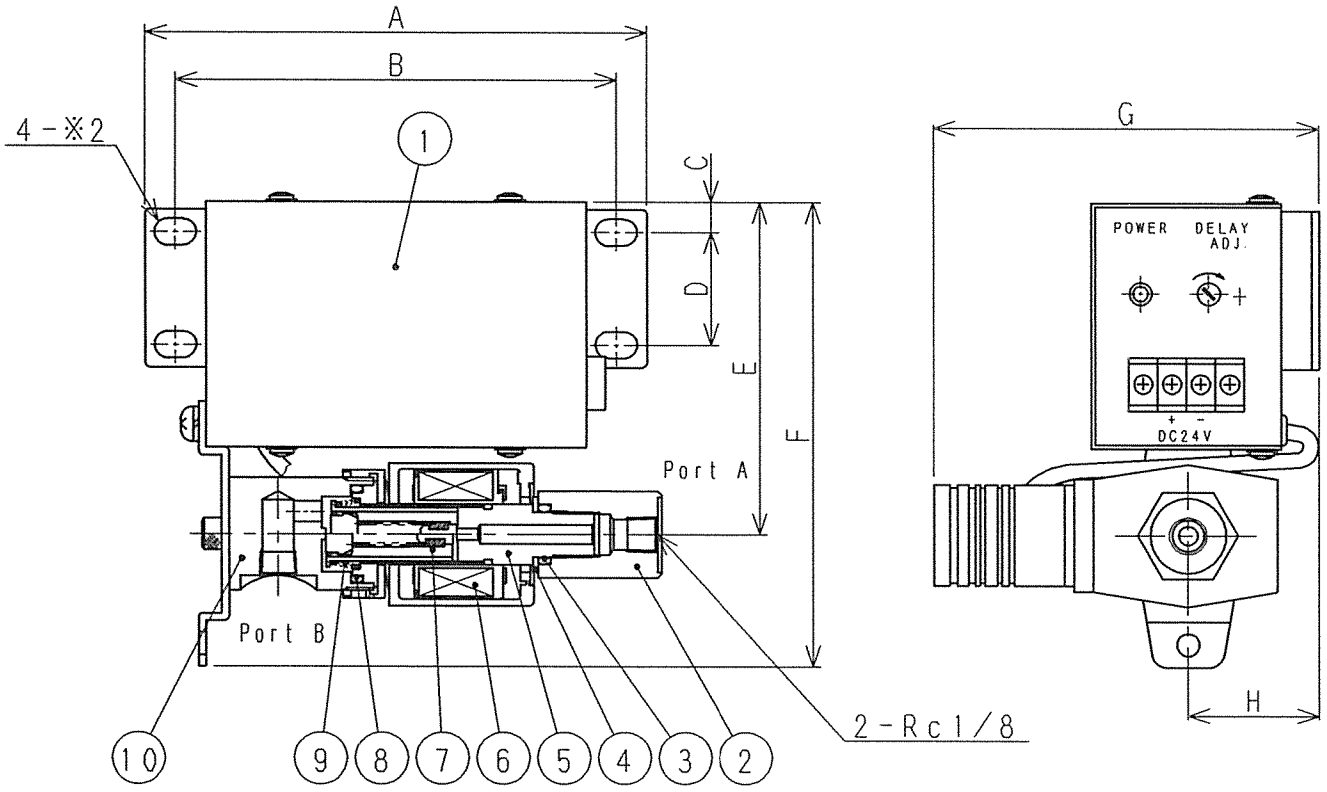
※ If Rc1/8 connectors are used for both ports A and B , the model No.will be HVL42-6-5-XX(voltage).
(HVL42-66-5- XX(voltage) is not used as a model No.)

2. Specifications

Model / A head	HVL42
Fluid	AIR, N_2
Fluid temp	5～50℃
Proof pressure	0.5MPa
Working pessure range	1.33×10^{-6}～2×10^{5}Pa(abs)
Leakage	below 1.3×10^{-9}Pa·m^3/secHe *1
External leakage	below 1.3×10^{-9}Pa·m^3/secHe *1
Voltage	DC24V , AC100V／AC200V
Electric power	4W
Ambient temp	0～50℃
Operation frequency	below 0.5times／min.
Mounting posture	Free
Piping size	Rc1/8, 1/4inch double flareless joint, NW10, NW16
Orifice	3.0mm
Cv value	0.3
Delay time	0～10sec

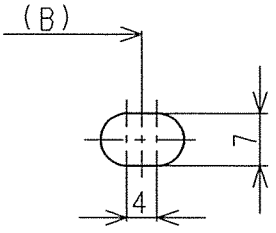
*1 The leakage dose not include the amount of He gas permeating the gasket, which is 6.7×10^{-8}Pa·m^3/sec

3. Internal Structure



No.	Parts	Materials
1	Case	Aluminum, SPCC
2	Socket	SUS303
3	O-ring	FKM
4	Washer	SUS301-CSP
5	Core ASSY	SUS403, SUS316L, SUS405
6	Coil ASSY	Nylon mold class B
7	Plunger ASSY	SUS405, FKM, PTFE
8	O-ring	FKM
9	Spring	SUS304
10	Body	SUS304

● Mounting hole (※2)

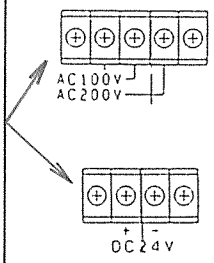


● Dimensions (mm)

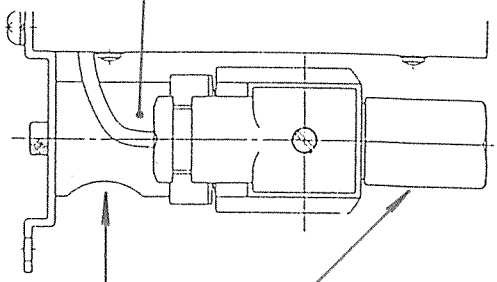
Model	A	B	C	D	E	F	G	H
-DC24V	132	116	9	30	88	123	102	35
-AC100V -AC200V	152	136	20	30	103	138	105	37

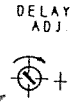
4. Description of operation (HVL42 series)

ⓐ Connector terminals
(24VDC, 100VAC and 200VAC)
The valve closes at the same time the voltage is applied.
After the power supply is disconnected, the valve will remain closed for 0 to 10 seconds before opening.



ⓑ NO type magnetic valve





ⓒ The delay time is adjustable with the trimmer within the range of 0-10 seconds. The delay time is not proportional to the amount the trimmer is rotated.An appropriate delay time shall be obtained while actually operating the machine.

ⓓ The connector ports are interchangeable.Either port A or B may be connected to the vacuum source.(They may be replaced by optional 1/4 inch double flareless joints or NW10 or NW16 flanges.)

Basic operating procedure

Apply a rated voltage to the corresponding connector terminal ⓐ. The valve will immediately close. (The NO magnetic valve ⓑ will be activated.) Continue the application of the voltage to the terminal ⓐ for two minutes or longer and then stop it.The valve will remain closed for a time corresponding to the position to which the trimmer ⓒ has been rotated,before opening. (The delay time is not proportional to the amount the trimmer is rotated.The delay time slightly varies according to the application period and ambient temperature.)

Piping method

The connector ports of HVL42 series are interchangeable. Either port A or B may be connected to the vacuum source which is more convenient for the available space for piping. They may be replaced by optional 1/4 inch double flareless joints or NW10 or NW16 flanges.

5. Cautions

5-1. Cautions for use

(1) Do not mount the valve where there is much corrosive gas, explosive gas, etc.

(2) Be sure to operate the valve within the specified pressure range, otherwise it may cause malfunction of the machine.

(3) Be sure to keep the ambient temperature and fluid temperature within the specified temperature range.

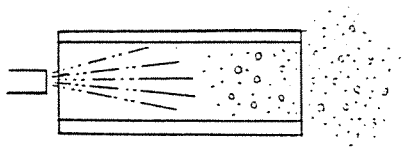
(4) The ambient temperature shall be 90% of the rating.

(5) The exhaust port can be used in two ways depending upon place of blind mounted.(However, at the time of shipping,the valve is designed to have a straight piping as shown in the right side figure below.

5-2. Cautions for piping

(1) For Rc $^1/_8$ inch type, sealing at the connection with joint shall be made with adhesive.

(2) Make flushing to remove foreign materials, swarf, etc. in the pipe before piping. If they are not completely removed, it may cause malfunction of solenoid valve operation.
(For Rc $^1/_8$ inch type, open valve and make flushing after piping.)



(4) After piping, check each connecting section for leakage.
WE recommend you to confirm leakage using a helium leak detector.

5-3. Cautions for wiring

(1) Use an electric wire having nominal sectional area of 0.5mm^2 or more.

(2) Adopt a switching circuit that does not cause chattering at the contact point.

(3) The voltage shall be within ± 10% of the rating.

(4) In the case of use of contactless relay circuit, be careful about leakage current. Select a switch whose capacity is 5% lower than the rated current.

6. Maintenance and Inspection

6-1. Periodic inspection

(1) In order to use the valve with best possible condition, be sure to carry out periodic inspection once or twice a year.

(2) Contents of inspection

(a) Check to see if any dust, foreign material, etc. is not accumulated in the plunger, body , valve seat, etc.
If souch is found, disassemble and clean the unit.

(b) Check to see if the plunger, core assembly in the actuator is not damaged or abnormally worn out.
If such is found, replace it.

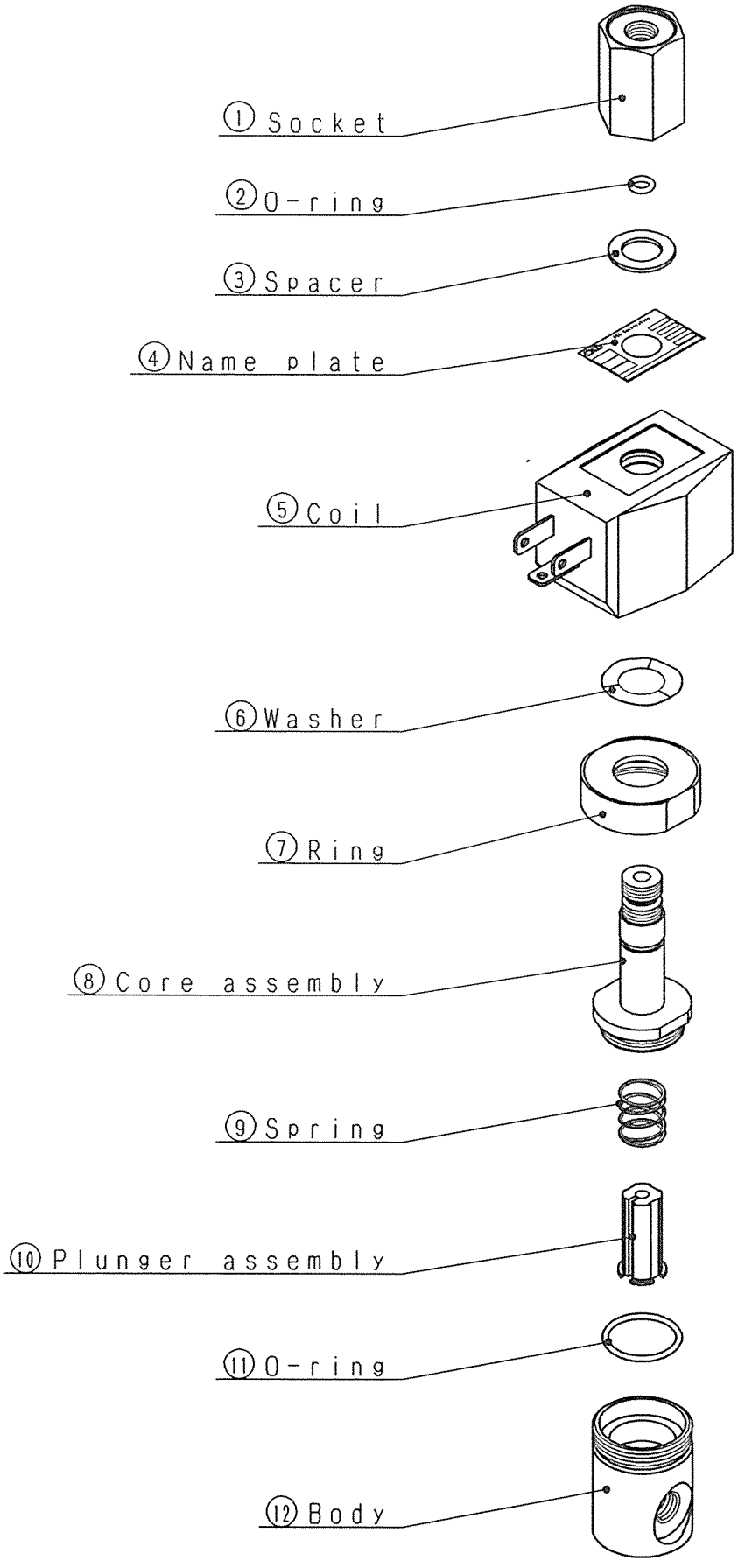
(c) Check to see if valve seat in the actuator is not damaged or abnormally worn out. If such is found, replace it.

● Assembly

The reverse order of disassembly shall be used for re-assembly.
To restore the original performance after the re-assembly, ensure that :

- There is no foreign matter sticking to the O ring, which may be a cause of external leakage.
- The surface of the seal inside the core, on the valve seat, etc. are free from scratches and foreign matter.
- The ring has been tightened to a torque of ２８～４２N・m .
- The socket has been tightened to a torque of １２～１８N・m .

6-2. Disassembly-reassembly and inspection



6-3. Troubleshooting