CKD

SM－200650－A

INSTRUCTION MANUAL

MANUALLY CONTROLLED VALVES

HMVC2, HSVC2

HMVO2, HSVO2 (NPT, G)

- 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 safety, basic knowledge of pneumatic equipment, including materials, piping, electrical system and mechanism, is required (ISO 4414 *1, JIS B 8370 *2).

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:

⚠ CAUTION :

- 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.

*1) ISO 4414 : Pneumatic fluid power ··· Recommendations for the application of equipment to transmission and control systems.

*2) JIS B 8370 : General rule for pneumatic systems

INDEX

HMVC2, HSVC2
HMVO2, HSVO2
Manually Controlled Valves

1. PRODUCT

1-1. Specifications

Media	Compressed air
Fluid temperature	5~50°C
Ambient temperature	−10~50°C (Not frozen)
Working pressure range	0~0.97MPa
Proof pressure	1.5MPa

Effective sectional area

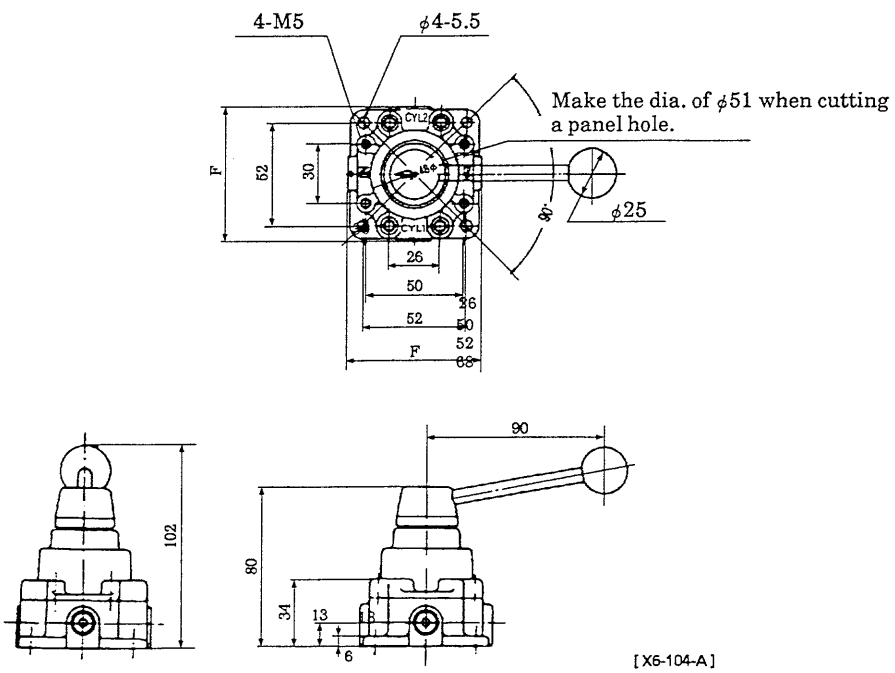
Item \ Model No.	HMV$^{C}_{O}$2	HSV$^{C}_{O}$2			
Port size NPT,G	1/8	1/8	1/4	3/8	1/2
Effective sectional area mm²	8	40	50	55	55

1-2. External dimensions and JIS Symbol

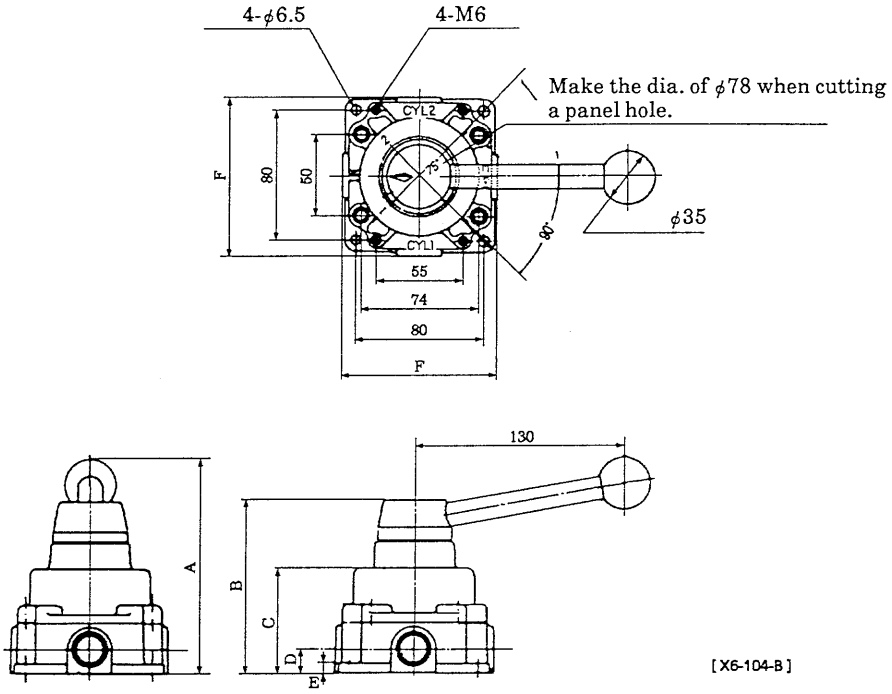
1) External dimensions

●**HMVC2-8N(G)-4H,4V**

●**HMVO2-8N(G)-4H,4V**



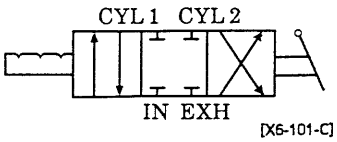
●HSVC2-8~20N(G)-4H,4V
●HSVO2-8~20N(G)-4H,4V



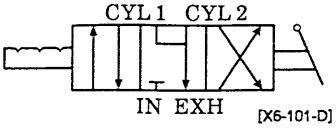
Model No. \ Symbol	A	B	C	D	E	F
HSV※2-8~15N(G)-4H	132	105	42	15	6	98
HSV※2-8~15N(G)-4V	132	105	42	15	6	104
HSV※2-20N(G)-4H	137	110	47	18	10	98
HMV※2-8N(G)-4H						68
HMV※2-8N(G)-4V						74

2) JIS Symbol

● HMVC2, HSVC2 (All port blocking)



● HMVO2, HSVO2 (CYL 1, CYL 2, EXH. Connection)



1-3. Fundamental circuit diagram

Normal application of manually operated directional control valve is as per illustrated below, generally

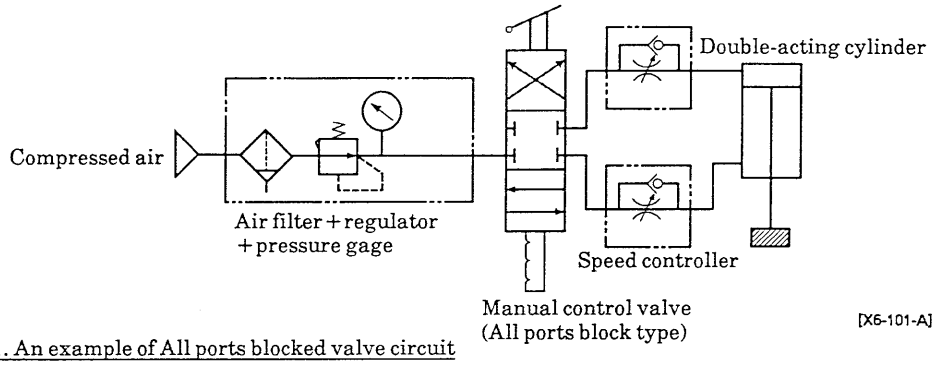


Fig. 1. An example of All ports blocked valve circuit

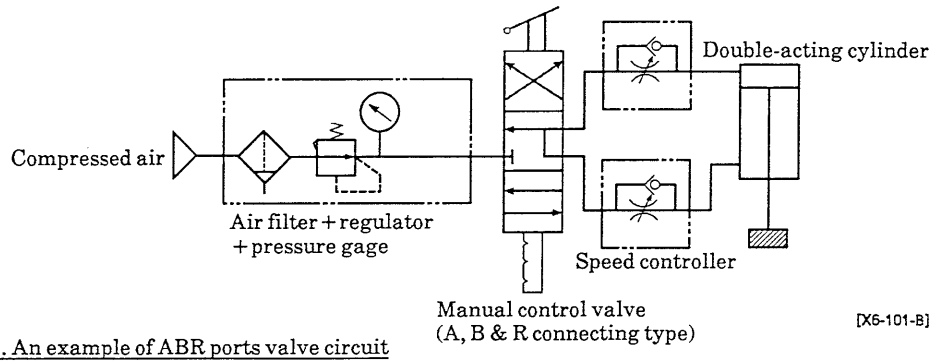


Fig. 2. An example of ABR ports valve circuit

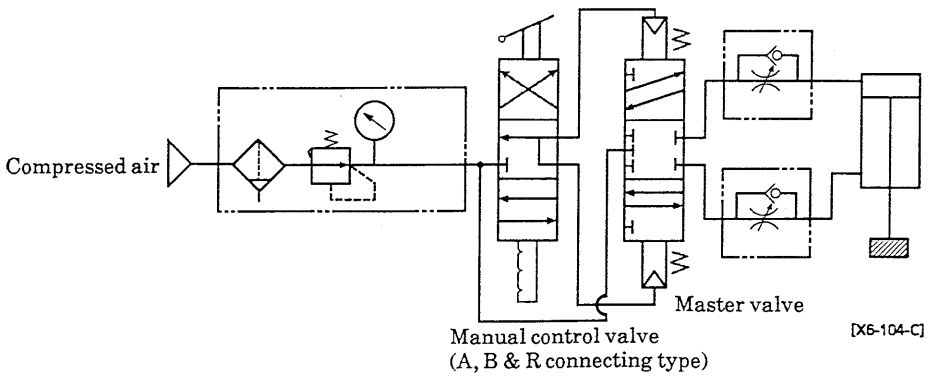


Fig. 3. An example of ABR ports valve circuit combined with a master valve

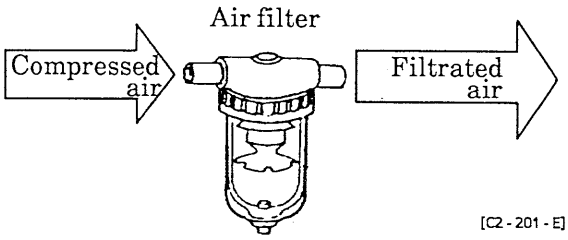
CAUTION

1. Make sure to use "IN" port to supply compressed air to the manual shifting valve. There will be internal leakage otherwise.
2. Due to non-elastic seals being used to build the main valve (manual shifting), internal leakage of valve is estimated to be fairly noticeable volume as follows (although it is to be about 1/10of it at ex-factory).
   HMV type = Below 500Ncm^3/min ANR
   HSV type = Below 1000Ncm^3/min ANR
   Beware, therefore, cylinder may slide when it is left for long at an intermediate stop position when circuit is built with all ports blocked valve.
   As for a counter measure. it is recommended to combine a master valve (internal leakage below 10Ncm^3/min ANR) (FIG. 3).
3. For only two-position operation, use a manual shifting valve, all ports blocked and shift it to either "1" or "2" only, passing over the position "N" (neutral).

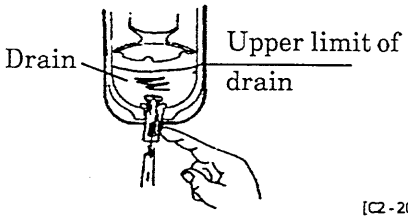
2. CAUTION

2-1. Fluid

1) Use the compressed air, filtrated and dehumidified. Carefully select a filter of an adequate filtration rate (5μm or lower preferred), flow rate and its mounting location (as closest to directional control valve as possible).
2) Be sure to drain out the accumulation in filter periodically.
3) Note that the intrusion of carbide of compressor oil (such as carbon or tarry substance) into the circuit causes malfunction of solenoid valve and cylinder. Be sure to carry out thorough inspection and maintenance of compressor.
4) Use "Turbine oil, class 1, ISO VG32" or equivalent, when lubrication is reqired.
5) Within the ambient of much dusts or small particles, prevent them from falling into circuit system by installing a silencer at Exh. port or similar measure.



[C2-201-E]



[C2-201-F]

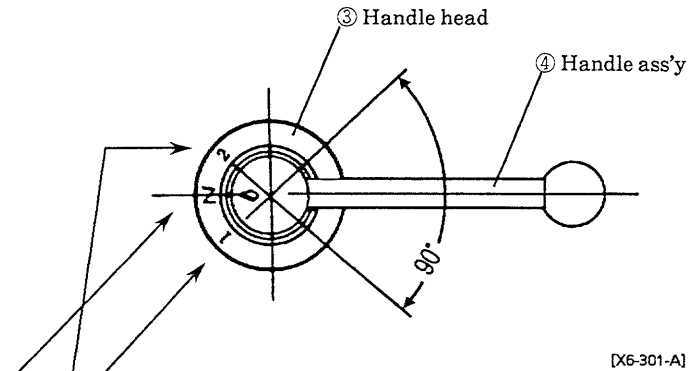
3. OPERATION

3-1. Mounting a handle bar

Screw the handle ass'y ④ with a red ball at a handle end into tapped thread on the handle head ③ tightly. (Loosen play wears out thread shortly.)

3-2. Shifting the direction of flow

Control it with this handle bar. Swing the bar until it clicks at required marking such as 1, 2 or Neutral.



[X6-301-A]

Direction of flow is shifted as follows by the number the arrow mark points.

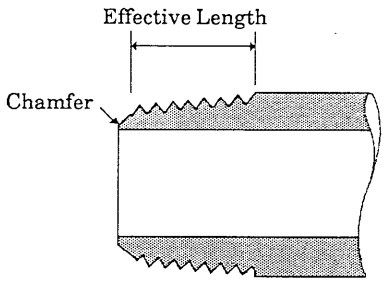
When it points 1 : IN → CYL 1, CYL 2 → EXH
When it points 2 : IN → CYL 2, CYL 1 → EXH
When it points N : All ports are blocked (HMVC2 & HSVC2)
: CYL 1, CYL 2 & EXH. Ports Connection (HMVO2 & HSVO2)

4. INSTALLATION

4-1. Piping

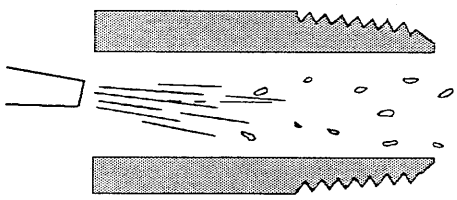
1) For piping beyond the filter, use pipes that hardly get corroded such as galvanized pipes, nylon tubes, rubber tubes, etc.

2) Strictly observe the effective thread length of gas pipe and give a chamfer of approx. 1/2 pitch from the threaded end.



[CD-400-A]

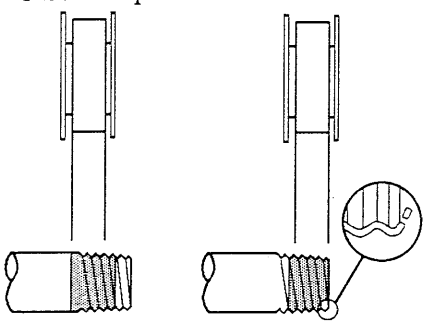
3) Flush air into the pipe to blow out foreign substances and chips before piping.



[CD-400-B]

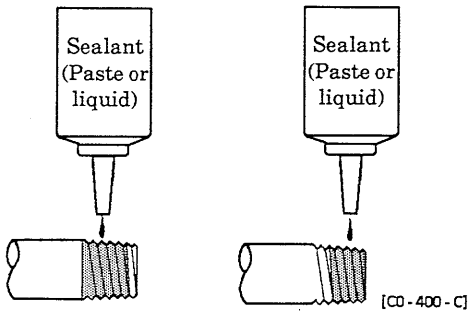
4) Refrain applying sealant or sealing tape approx. two pitches of thread off the tip of pipe to avoid residual substances from falling into piping system.

● Seal Tape



Right　　False

● Sealant (Paste or liquid)



[CD-400-C]

Right　　False

4-2. Tightening torque

Apply the torque range as specified in the table to the right so as to prevent air leakage and possible damage as well.

Port dia	Appropriate tightening torque N・m
Rc1/4	6 to 8
Rc3/8	13 to 15
Rc1/2	16 to 18
Rc3/4	18 to 21

4-3. On panel mounting

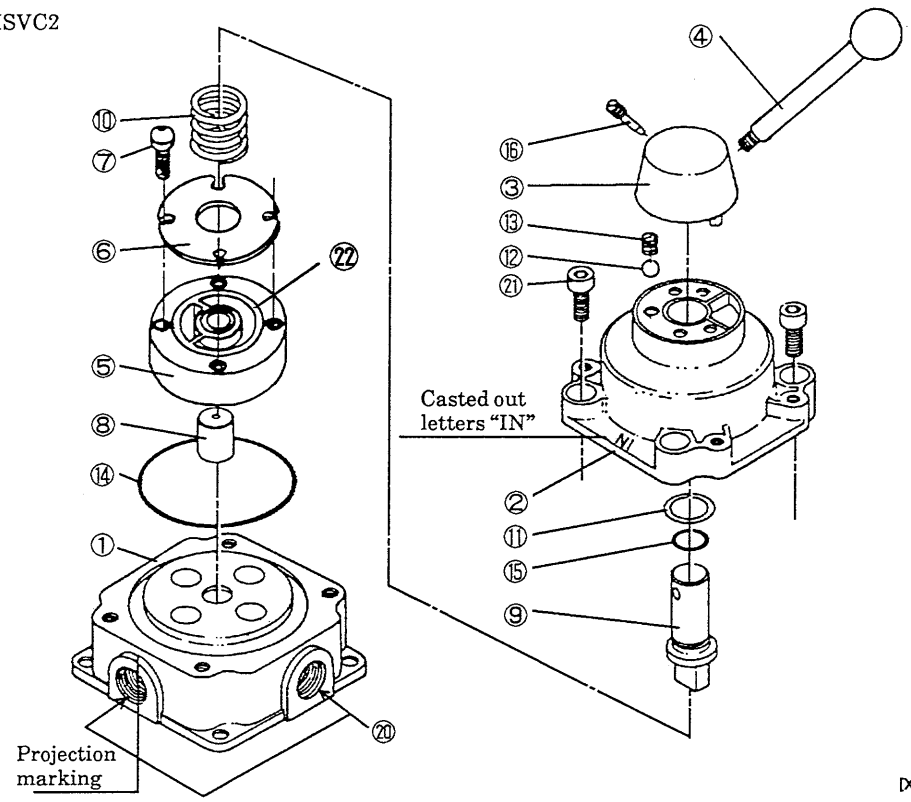
For on panel mounting, use the following mounting screws respectively, referring to "1-2 External dimensions drawing". 4 M6 screws for HSV as well as 4 M5 screws for HMV

5. MAINTENANCE

5-1. Disassembling

1) Reference drawin

HMVC2
HSVC2



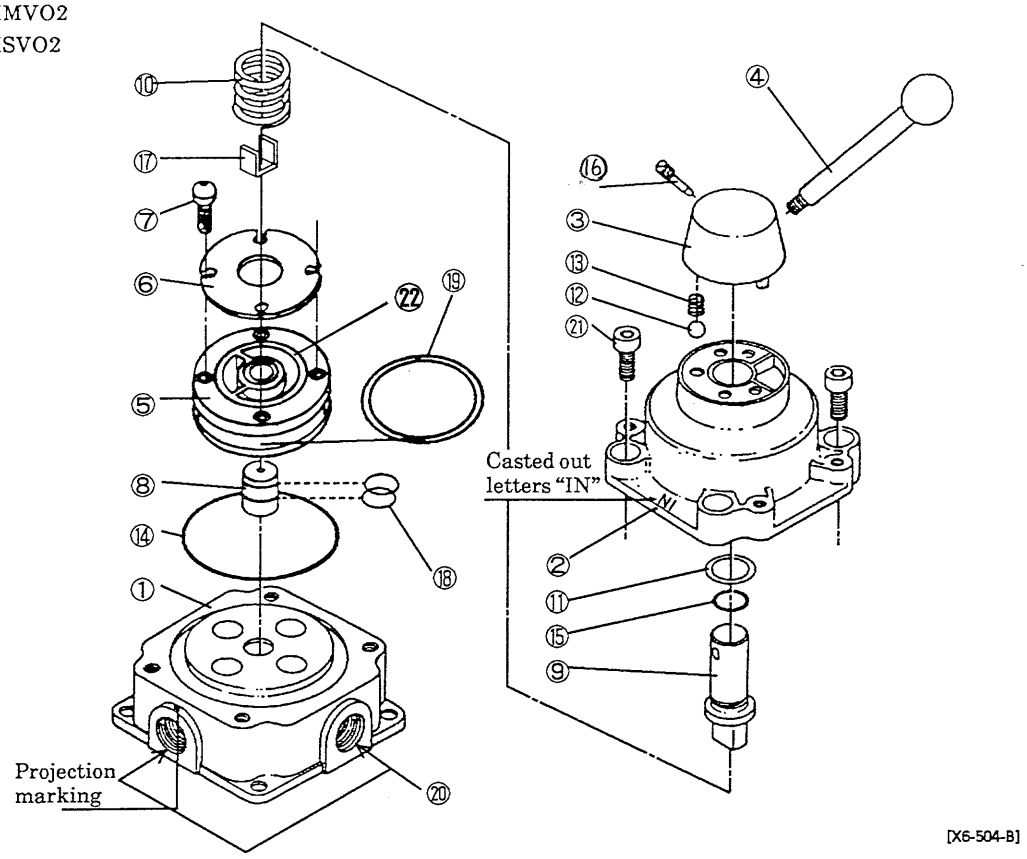
CAUTION at assembling

When building this unit, make those three points match with each other such as IN mark on cover ②, projected point on slide ring ⑤ and projected point on body ①.

NO	Name of parts	Material	Qty	Remarks	NO	Name of parts	Material	Qty	Remarks
①	Body ass'y	ZDC2	1		⑪	Washer	PE	1	
②	Cover ass'y	ZDC2	1		⑫	Ball	SUS304	1	
③	Handle head	ZDC2	1		⑬	Spring	SUS304	1	
④	Handle ass'y	SS41	1		⑭	O ring	NBR	1	JISB2401G75 (G45)
⑤	Slide ring	ZDC2	1		⑮	O ring	NBR	1	JISB2401P12 (P5)
⑥	Plate ass'y	SPCC	1		⑯	Pin	SS41	1	
⑦	CROSS RECESSED HEAD TAPPING SCREW	SWRM	4(3)		⑳	Hex.socket head plug	SS400	4	Use this port for vertivcal piping (V).
⑧	Rod	SS41	1		㉑	Hex.socket head plug	SCM3	4	M6×12 (M5×12)
⑨	Spindle	SS41	1						
⑩	Spring	SWP	1		㉒	GASKET	NBR	1	

(specs)are for model HMVC2

HMVO2
HSVO2



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NO	Name of parts	Material	Qty	Remarks
①	Body ass'y	ZDC2	1	
②	Cover ass'y	ZDC2	1	
③	Handle head	ZDC2	1	
④	Handle ass'y	SS41	1	
⑤	Slide ring	ZDC2	1	
⑥	Plate ass'y	SPCC	1	
⑦	CROSS RECESSED HEAD TAPPING SCREW	SWRM	4(3)	
⑧	Rod	SS41	1	
⑨	Spindle	SS41	1	
⑩	Spring	SWP	1	

NO	Name of parts	Material	Qty	Remarks
⑪	Washer	PE	1	
⑫	Ball	SUS304	1	
⑬	Spring	SUS304	1	
⑭	O ring	NBR	1	JISB2401G75 (G45)
⑮	O ring	NBR	1	JISB2401P12 (P5)
⑯	Pin	SS41	1	
⑰	Spindle guide	SPCC	1(0)	
⑱	O ring	NBR	2	JISB2401P7 (KS2)
⑲	O ring	NBR	1	JISB2401G65 (special)
⑳	Hex.socket head plug	SS400	4	Use this port for vertivcal piping (V).
㉑	Hex.socket head plug	SCM3	4	M6×12 (M5×12)
㉒	GASKET	NBR	1	

(specs)are for model HMVO2

2) Apply Silicone grease to every sliding metal part such as Slide ring, Steel ball, Spindle, O ring etc when assemblying the valve.

6. MODEL CODING

H(A)V(B)2 —(C)— 4(D)

Ⓐ Type		Ⓑ Shifting position classification	
M	Miniature	C	3-pos. All ports blocked
S	Standard	O	3-pos. ABR ports connection

Ⓒ Port size	
8N	NPT1/4 ※1
10N	NPT3/8
15N	NPT1/2
20N	NPT3/4 ※2
8G	G1/4 ※1
10G	G3/8
15G	G1/2
20G	G3/4 ※2

Ⓓ Direction of piping	
H	Horizontal piping
V	Vertical piping

※2 Vertical piping of dia. 20N or G is unavailable.

※1 Connecting ports of HMV type is NPT or G1/4 only.