CKD

SM－358399－A

INSTRUCTION MANUAL

SHUTTLE VALVE

SHV2

- 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:
Additionally, the caution is classified into the following three groups, “CAUTION”, “WARNING”, and “DANGER”, to identify the degree of the danger it presents and possible hazard.

⚠ DANGER : **Failure to pay attention to DANGER notices may cause a situation that results in a fatality or serious injury and that requires urgent addressing.**

⚠ WARNING : **Failure to pay attention to WARNING notices may result in a fatality or serious injury.**

⚠ CAUTION : **Failure to pay attention to WARNING notices may result in injury or damage to equipment or facilities.**

*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

[SM-358398-A]

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SHUTTLE VALVE

Manual No. SM-358399-A

1. UNPACKING

⚠ CAUTION : **Bags containing product should be opened only when you are ready to connect the product to the pipes immediately afterward.**

- **It bags are opened before the product are ready to be connected to the pipes, the entry of foreign matter from the piping ports could cause the product to fail or malfunction.**

1) Check the model number imprinted on the product to make sure that the product you received is exactly the product you ordered.
2) Check the exterior of the product for any damage.

2. MOUNTING AND INSTALLATION

⚠ CAUTION :

1) Before tube exchange, the supply of compressed air and confirm the absence of residual pressure.

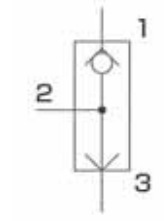
2) Tighten pipes with appropriate torque to prevent screw slack, air leakage and screw damage.

3) Carry out the piping work after checking the JIS symbols stated on the nameplate attached to the main body. If the piping is connected in an incorrect direction, this may cause the customer's equipment to break.

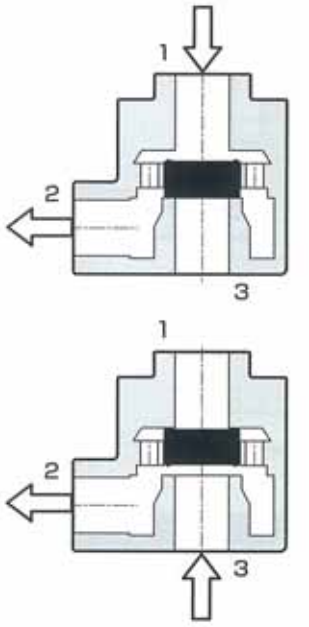
4) When conducting piping work, use tools to tighten at the hexagonal circumference .

5) Do not apply any lateral load to the main body during mounting and after mounting.

2.1 Explanation of activation



JIS symbol



1→2
The pressure added to port 1 causes port 3 of the valve to be closed, forcing air to flow to port 2.

3→1
The pressure added to port 3 causes port 1 of the valve to be closed, forcing air to flow to port 2.

2.2 Piping

1) Lightly tighten the pipe into the connecting port temporarily by hand, and then tighten the width across flat firmly using the tool.
   At this time, always tighten the pipe within a recommended tightening torque range.

[Appropriate tightening torque]

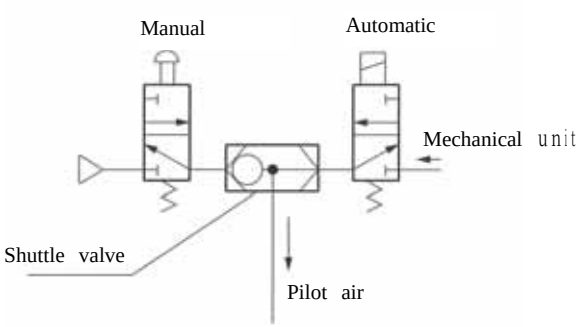
Port dia.	Tightening torque N·m
Rc1/8	3 to 5
Rc1/4	6 to 8
Rc3/8	13 to 15
Rc1/2	16 to 18
Rc3/4	19 to 40
Rc1	41 to 70

2.3 Orientation of installation

1) There is no orientation in installation, but operation may be slow with a small differential pressure (within 0.05MPa).

2.4 Usage examples

●Manual/automatic switchover



3. MAINTENANCE

3.1 Disassembling

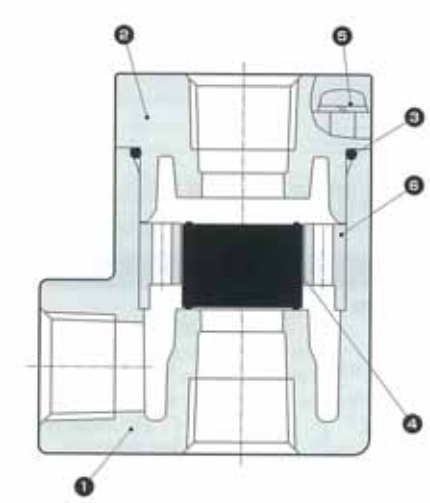
1) Loosen the cross recessed pan head screw to disconnect the plug.
Take out the inside valve in this state.

3.2 Trouble shooting

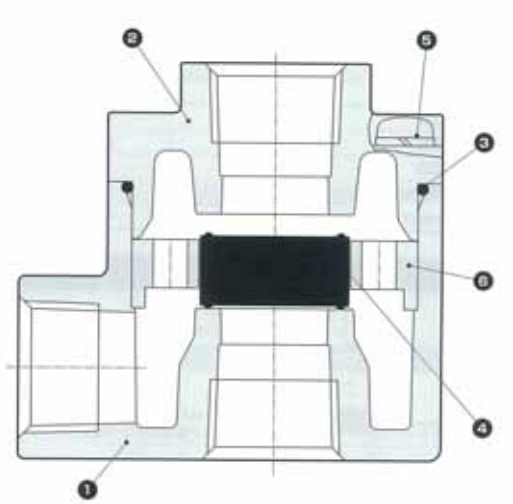
Motion troubles	Possible cause	Remedies
Though air flows in the shutting direction, air keeps flowing.	Dust stuck at valve seat	Flush air to remove dust.
External air leakage	Broken O-ring or caught foreign matter	Replace with a new part or flush air to remove foreign matter.
No flow	Wrong piping direction	Check the piping port instruction and connect pipes again.

4. INTERNAL STRUCTURE AND LISTS OF PARTS

●SHV2-6･8



●SHV2-10･15～20･25

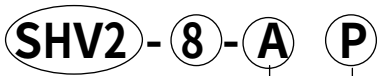


No.	Part name	Material
1	Body	Aluminum die cast
2	Plug	Aluminum die cast
3	O-ring	Nitrile rubber (fluororubber)
4	Valve	Hydrogenated-nitrile-rubber (fluororubber)
5	Cross recessed pan head screw with SW	Stainless stell
6	Guide ring	Aluminum alloy

※ Description in parentheses ( ) is for option A (fluororubber specification).

5. PRODUCT SPECIFICATIONS

5.1 How to order



(a) Port size	
6	Rc1/8
8	Rc1/4
10	Rc3/8
15	Rc1/2
20	Rc3/4
25	Rc1

(b) Option	
No code	No option
A	Fluoro rubber type

(c) Accessory	
No code	No option
P	Attachment board appending

(c) Accessory Note 1

Note 1 : The Attachment board is supplied only with SHV2-6 and SHV2-8

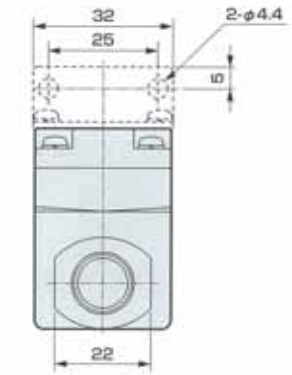
5.2 Specifications

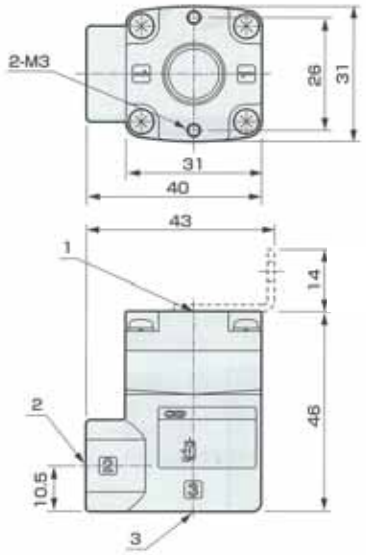
Item		SHV2-6	SHV2-8	SHV2-10	SHV2-15	SHV2-20	SHV2-25
Media		Compressed air					
Maximum working pressure	MPa	1					
Minimum working pressure	MPa	0.05					
Proof pressure	MPa	1.5					
Fluid temperature	℃	5 to 60					
Ambient temperature	℃	0 to 60 (Not be frozen)					
Port size		1/8	1/4	3/8	1/2	3/4	1
Product mass	g	86	82	270	270	760	700
Installation attitud		Arbitrary					
Effective sectional area	1→2	20	28	90	105	205	245
	3→2	22	32	95	115	210	250

5.2 Dimensioned drawing

●SHV2－6･8

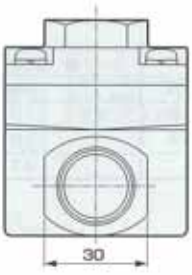
Model	Port position		
	1	2	3
SHV2-6	Rc1/8		
SHV2-8	Rc1/4		

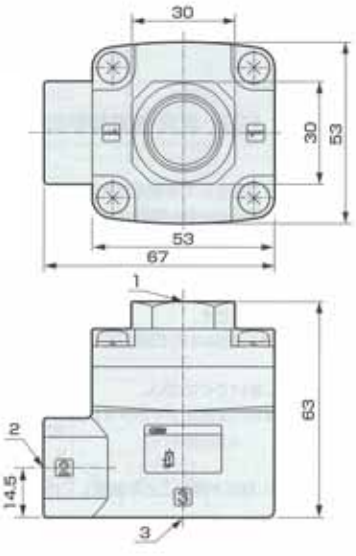




●SHV2-10･15

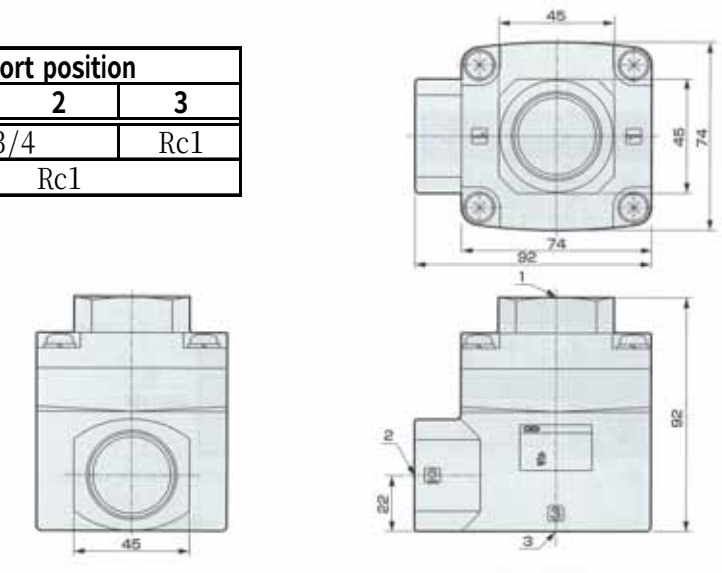
Model	Port position		
	1	2	3
SHV2-10	Rc3/8		
SHV2-15	Rc1/2		





●SHV2—20·25

Model	Port position		
	1	2	3
SHV2-20	Rc3/4		Rc1
SHV2-25	Rc1		



【Piping port indication】

Indication	Description
1	A(inlet)
2	OUT(outlet)
3	B(inlet)