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CKD

SM-8157-A

INSTRUCTION MANUAL

CMF $\frac{1}{2}$ - PC

●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.

Ver.3

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For Safety Use

To use this product safely, 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 instruction 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

[SM-8157-A]

Discontinue

INDEX

CMF $\frac{1}{2}$ -PC

Manual No. SM-8157-A

1. PRODUCTS
   - 1.1 General Description and Features ····· 3
   - 1.2 Specification ····· 3
   - 1.3 External Dimensions and Internal Structure ····· 4
   - 1.4 Air circuit diagram ····· 4
2. CAUTION ····· 5
3. OPERATION PRINCIPLE ····· 6
4. INSTALLATION ····· 7
5. MAINTENANCE ····· 7
6. HOW TO ORDER ····· 7

1. PRODUCT

1.1 General Description and Features

Use this residual pressure release air pilot check valve spacer as an intermediate spacer to lock the air cylinder in position or to stop and hold the air cylinder in an intermediate position.

1.2 Specification

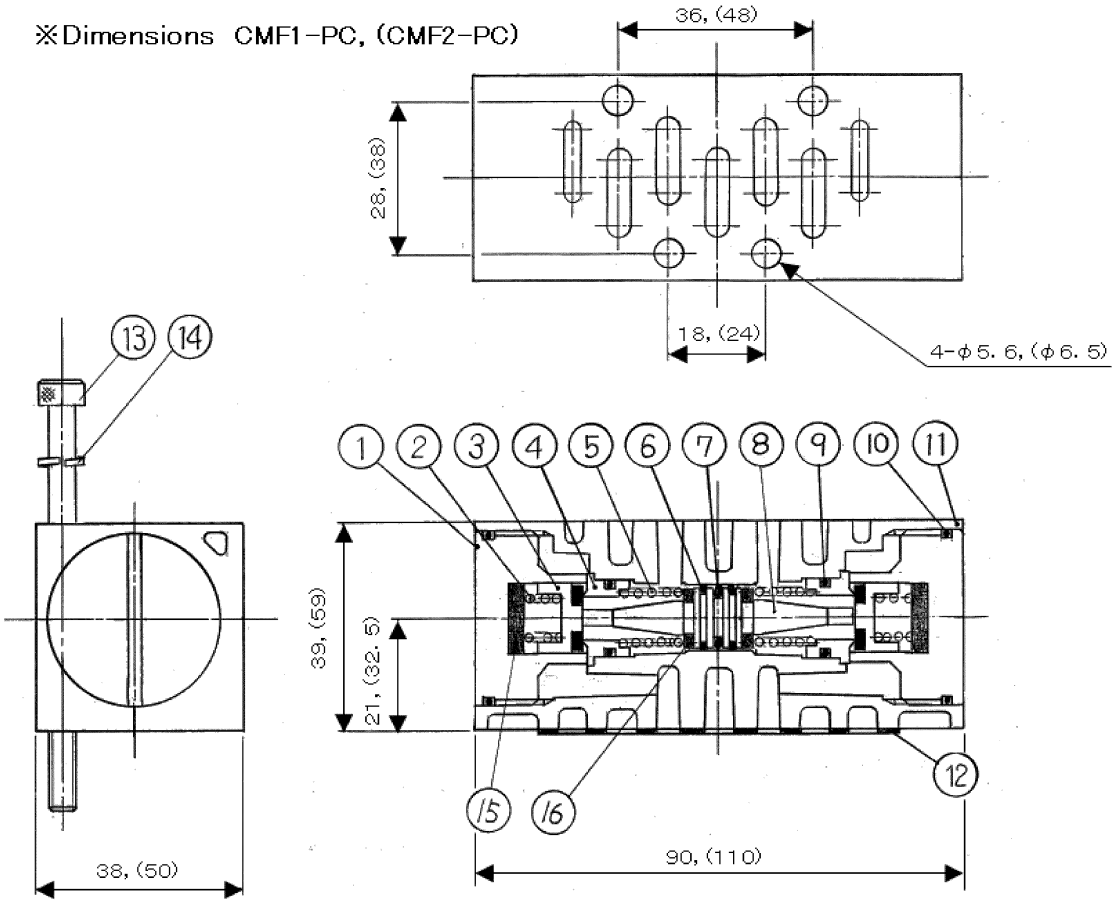
Specifications		CMF1－PC	CMF2－PC
Working pressure range MPa		0.1～0.97	
Temperature range ℃		-5～60 (No freezing)	
Initial check valve pressure MPa		0.03	
Check valve leak rate cm^3/min		0.3 or less (when below 0.5MPa)	
Weight kg		0.25	0.7
Sonic conductance, C $dm^3/(s \cdot bar)$	P-P'	7.1	15.8
	A-A'	5.3	10.1
	B-B'	5.2	10.1
	R1-R1'	5.8	13.3
	R2-R2'	5.9	12.8

This air pilot check valve spacer is applicable to the valves and spacers shown in the following table:

Purpose	Applicable valve/spacer	Remarks
Position locking	PV5G-$\frac{6}{8}$-FG-S-※ PV5G-$\frac{6}{8}$-FG-D-※ PV5G-$\frac{6}{8}$-FJG-D-※	When it is not necessary to activate position locking instantaneously in case of an emergency stop. (To activate position locking at the end of operation after primary air is cut off.)
	PV5G-$\frac{6}{8}$-FJG-D-※ +individual exhaust spacer	When it is necessary to activate position locking instantaneously in case of an emergency stop. (When the work or equipment may be damaged even if the cylinder lowers gradually.)
Intermediate stop	PV5G-$\frac{6}{8}$-FJG-D-※ +individual exhaust spacer	

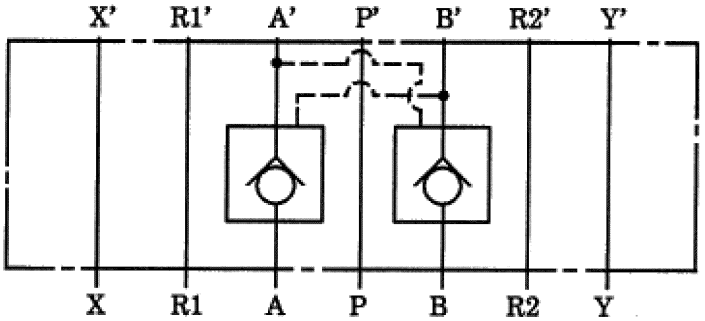
1.3 External Dimensions and Internal Structure

※Dimensions CMF1-PC, (CMF2-PC)



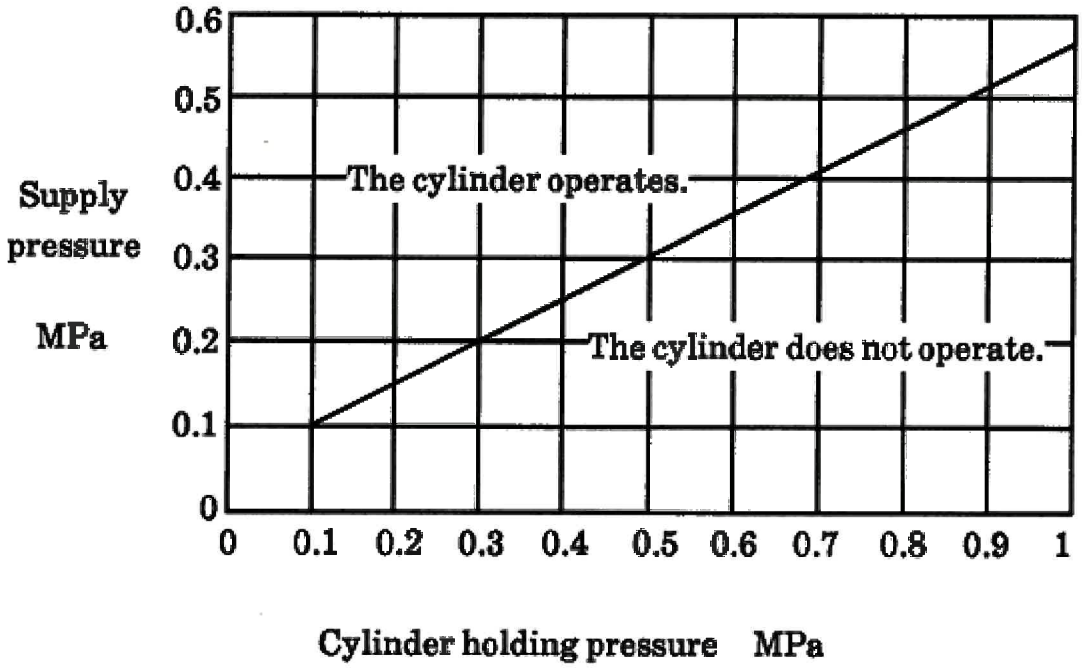
No.	Part Name	Material	Qty	No.	Part Name	Material	Qty
1	Bottom plug	POM	2	9	O-ring	Nitrile rubber	2
2	Spring (1)	Stainless steel	2	10	O-ring	Nitrile rubber	2
3	Valve sheet	Stainless steel / Nitrile rubber	2	11	Body	Aluminum die casting	1
4	Bottom sheet	Stainless steel	2	12	Gasket	Nitrile rubber	1
5	Spring (2)	Stainless steel	2	13	Hex. soc. head cap screw	Steel	4
6	Back-up ring	TEFLON	2	14	Spring・Washer	Steel	4
7	Packing	Nitrile rubber	1	15	Polyurethane sheet	Polyurethane rubber	2
8	Spool	Stainless steel	1	16	Polyurethane sheet	Polyurethane rubber	2

1.4 Air circuit diagram



2. CAUTION

1) If the pressure subsequently supplied is too low while the cylinder is held by this pilot check valve spacer, the cylinder may not operate because of the imbalance between the primary and secondary pressure of the poppet valve.

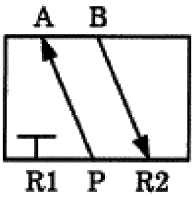
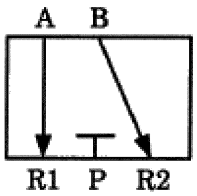
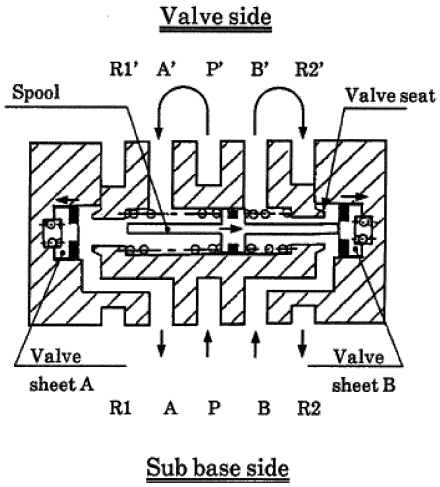
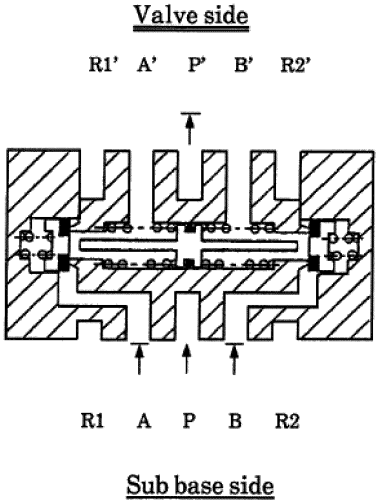


2) Use this pilot check valve spacer with an individual exhaust spacer so as not to apply back pressure to the exhaust ports R1 and R2 because back pressure will lower the cylinder or deteriorate the intermediate stop accuracy.

3) Equipment which requires the operator to place his/her hands under a vertical cylinder during operation, may not ensure position locking only with this air pilot check valve spacer. If necessary, take safety measures such as using a balance weight, as well as taking the load and the operation speed into account.

4) If the air cylinder is depressurized, the cylinder may operate unexpectedly due to the natural lowering by its own weight. Thus, take either of the following measures:
(1) Place a safety block (support) to prevent natural lowering.
(2) First confirm that other operators are away from the cylinder, and release the residual pressure gradually.

3. OPERATION PRINCIPLE

Valve status	When the direction is switched from P to A and from B to R2  	When the 3-position FJG type valve is deenergized  Or when air is not supplied to P of the 3-position or 2-position valve
PC operation	 	
Description	The compressed air supplied to A' and flowing from A' to A pushes the valve sheet A in the direction of the arrow. The air also pushes the spool in the direction of the arrow, which in turn moves the valve sheet B to open the passage from B to B'. The cylinder thus operates as the direction of the valve is switched.	If no compressed air is supplied to A' and B', the spool is pushed back to the middle of the stroke by the balanced springs on both sides. The springs return the valve sheets A and B respectively to the valve seat. The compressed air trapped in A and B will be cut off and sealed there.

4. INSTALLATION

1) Install the spacer with the spool shaft horizontal.

2) Connect the piping carefully so that air will not leak out of the cylinders or piping. It is advisable to confirm air leakage using soapy water.

3) Spacer placement

1. Valve+PC

Valve	Mounting bolt	
PC	CMF1	CMF2
Base	M5×75	M6×105

P (individual supply spacer)

2. Valve+R (individual exhaust spacer) +PC

Valve	Mounting bolt	
P or R	CMF1	CMF2
PC	M5×105	M6×145
Base		

P

3. Valve+SR (interface regulator) +PC

Valve	Mounting bolt	
SR	CMF1	CMF2
PC	M5×115	M6×160
Base		

4. Valve+SR+R+PC

Valve	Mounting bolt	
SR	CMF1	CMF2
P or R	M5×145	M6×200
PC		
Base		

5. MAINTENANCE

Unless otherwise required, do not disassemble the spacer because special disassembling tools are required.

6. HOW TO ORDER

CMF1-PC : ISO size 1 type pilot check valve
CMF2-PC : ISO size 2 type pilot check valve