
INSTRUCTION MANUAL

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- 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 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.**

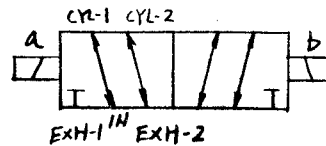
Observe the cautions on handling described in this manual, as well as the following instructions :

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.

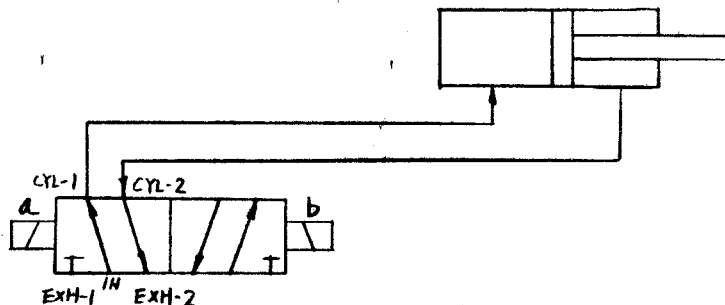
Operating Methods

- a SOLENOID ON $IN \rightleftharpoons CYL-1$ $CYL-2 \rightleftharpoons EXH-2$ $EXH-1 \dots$ stop
- b SOLENOID ON $IN \rightleftharpoons CYL-2$ $CYL-1 \rightleftharpoons EXH-1$ $EXH-2 \dots$ stop

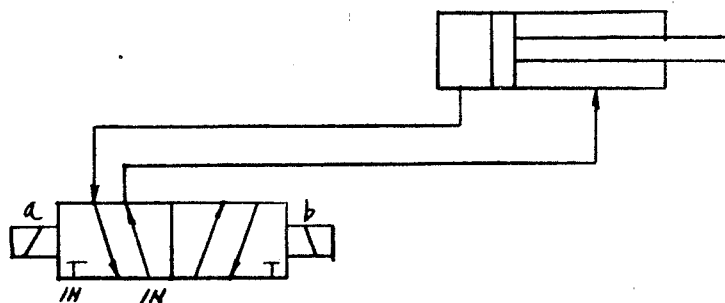


"JIS" SYMBOL

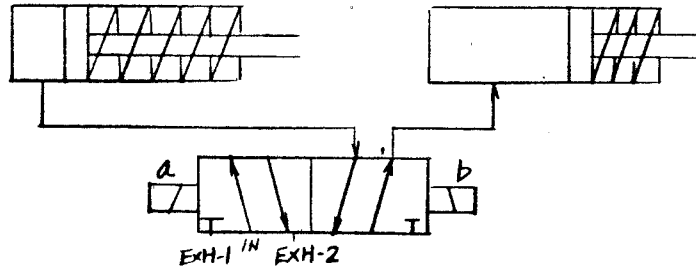
1. In case of operating the cylinder which the pressure is applied to its both sides.



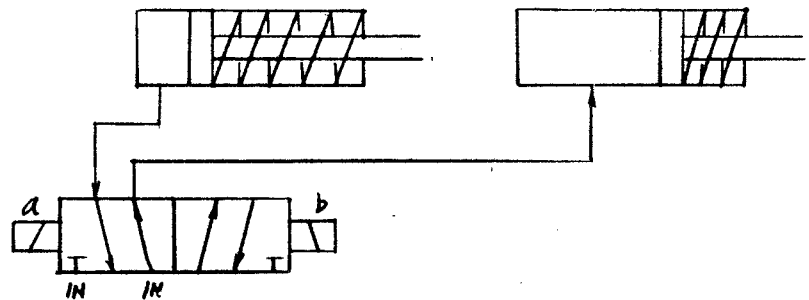
2. When the different pressures are respectively applied out of two exhaust ports, it is possible that, in the cylinder which the pressure is applied to its both sides, each reciprocity outlet port can be intentionally changed or equalized.



3. In case of operating an one-side cylinder alternatively or a desired one out of both cylinders, as a 3-way.



4. In case of changing the pressure of each cylinder by that a pressure cylinder is by turns operated by an one-side-cylinder according to the different air pressures supplied respectively out of two exhaust port, as a 4-way.



5. Others

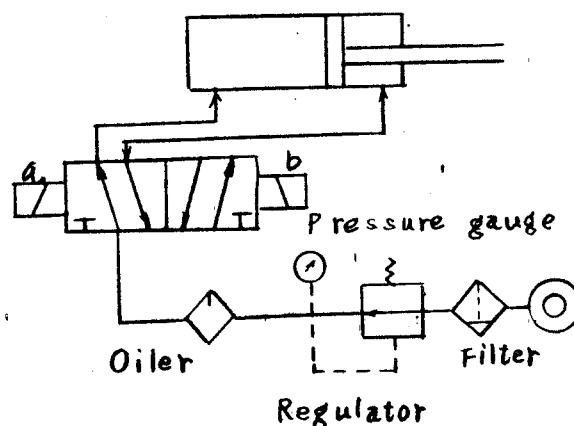
(1) This electromagnetic valve is of two-positioned type, having no neutral position.

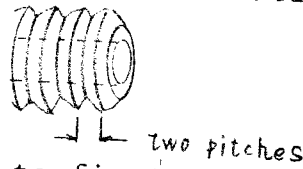
- (2) When the speed control on the cylinder is required, connect a metering valve (Needle type) to the exhaust side.
- (3) Besides the operation according to electrical signals, it is possible to operate manually by means of pushing a push rod fitted to the solenoid.

Wiring

1. Use electrical wires with cable core of diameter more than 0.75mm^2 .
2. Insert a fuse of capacity 3A for protection of electrical circuits.
3. Whenever possible, use electrical circuit switches or relays of snap action with contact capacity more than 10A.
4. The voltage is indicated on the solenoid housing.
5. The diameter of the screw at the lead wire inlet is PF 1/2.

Piping



1. Thoroughly clean up inside pipes before installation of the electromagnetic valve.
 - (a) Remove dust and flashes.
 - (b) Do not apply the sealing agent to first two pitches of the screw.
2. Install the filter and the oiler in front of the valve. Use turbine oil #90.
3. The valve should be installed in such a position as its contact surface is level with the spool (of the piston assembly).
4. Upon installation, do not apply an excessive force to the electromagnetic valve.
5. Select a place with the least possible amount of vibration or shock for installation of pipes.
6. After completion of the piping, thoroughly check every part for leakage.
7. Secure the space for tool maneuver in the event of maintenance services.

Maintenance Service

(A) Disassembly

1. Disassembly of the Valve
 - (1) Remove the cover (FD2, FD3, FD4 and FD5 only).
 - (2) Remove the solenoid.

(3) Remove the stopper-A.

(4) Pull out the spool.

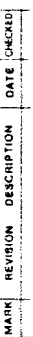
(5) Pull out the sleeve.

For details refer to the disassembly diagram.

2. Caution

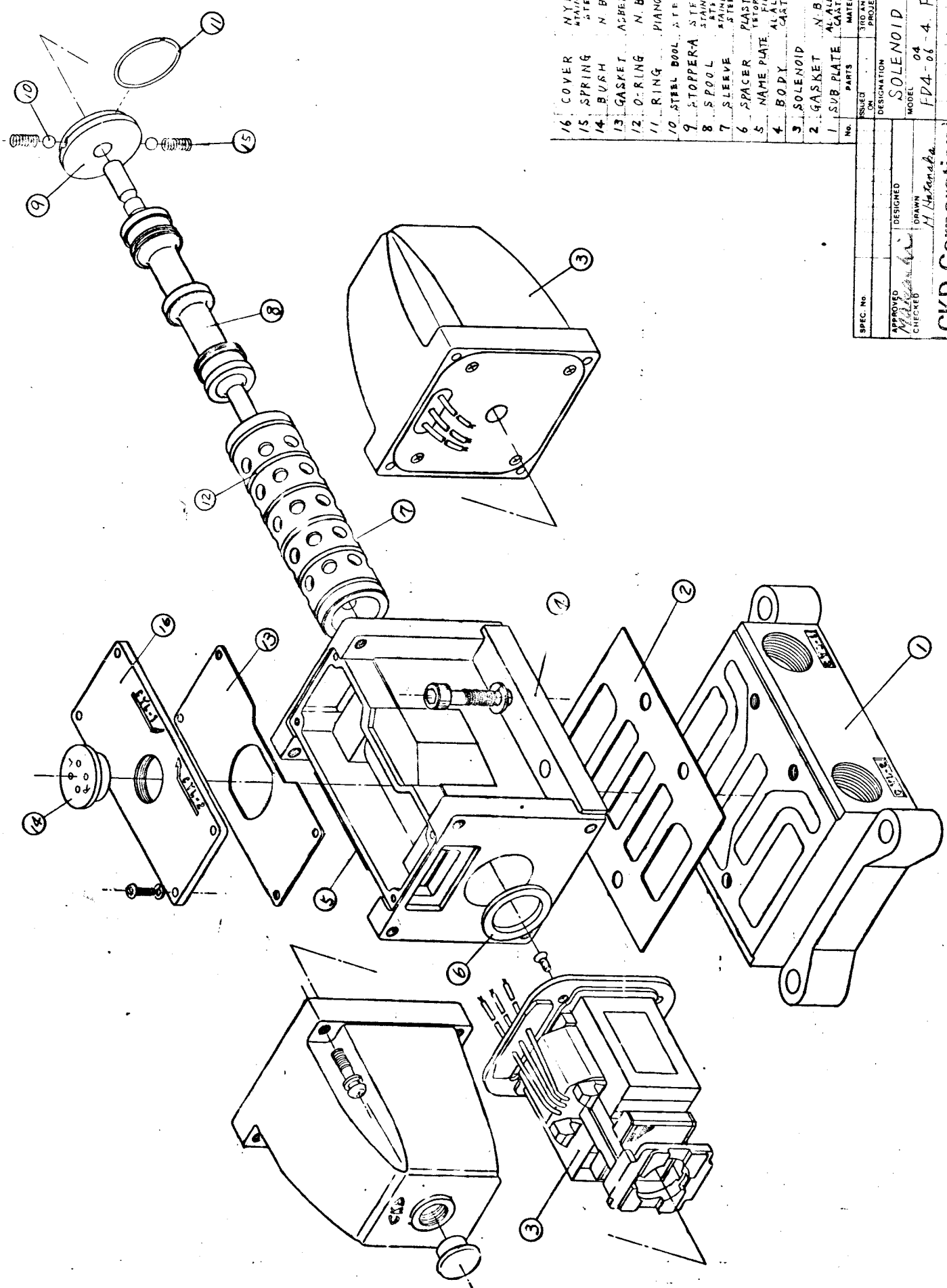
- (1) Do not leave the spool in the atmosphere too long a period after its removal. (It's good to keep it dipped in oil.)
- (2) Whenever possible, do not remove the sleeve. (O-ring may be broken upon removal of the sleeve.)
- (3) Be sure to wear gloves when extracting the sleeve and the spool. Never handle them with bare hands because the corrosion may develop where their hands touched.
- (4) Before assembly of the unit, thoroughly clean and remove dust off such places as the outer surface of the piston, and the inside of the sleeve.
- (5) Fix the solenoid firmly. (They are liable to come off when the valve is subjected to frequent operation.)

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Discontinue



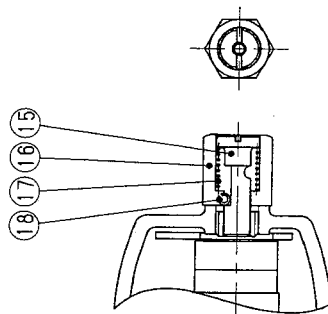
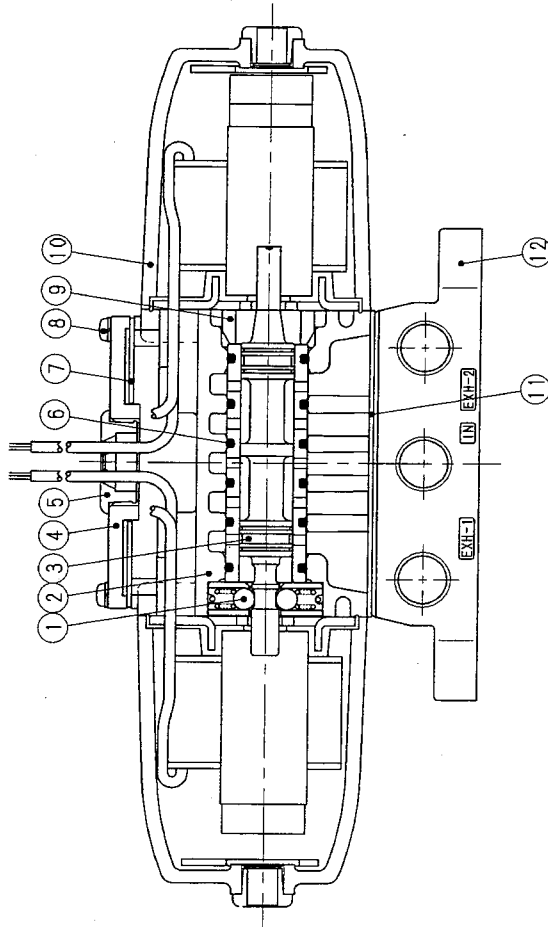
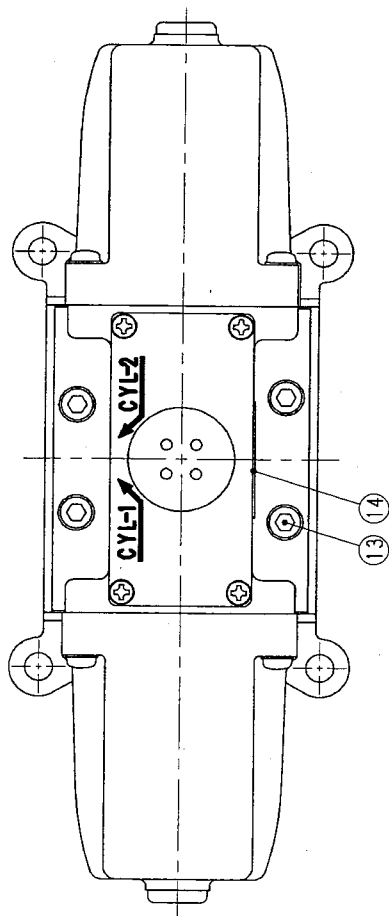
No.	Part	QTY	Material	Remarks
16	COVER	1	NYLON	
15	SPRING	2	STAINLESS	
14	BUSH	1	N.B.R.	
13	GASKET	1	ACETOS	
12	O-RING	6	N.B.R.	
11	RING	1	PIANO WIRE	
10	STEEL BALL	2	STEEL	
9	STOPPER	1	STEEL	
8	SPOOL	1	STAINLESS	
7	SLEEVE	1	STAINLESS	
6	SPACER	1	PLASTICS	
5	NAME PLATE	1	TETRON	
4	BODY	1	ALLOY	
3	SOLENOID	2	CASTING	
2	GASKET	1	N.B.R.	
1	SUB PLATE	1	ALLOY	

DESIGNATION	SCALE	REMARK
SOLENOID VALVE	1/1	

APPROVED	CHECKED	DESIGNED	DRAWN

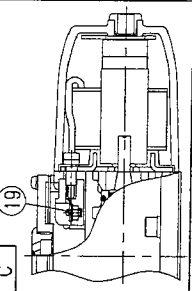
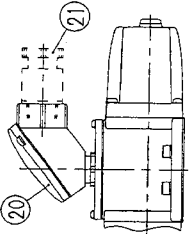
MODEL	DATE	REVISION
FD4-06-4	FD5-06-4	

Part No.	Part Name	Part Description
C C - 583298		



※2 P: Lock-type manual override

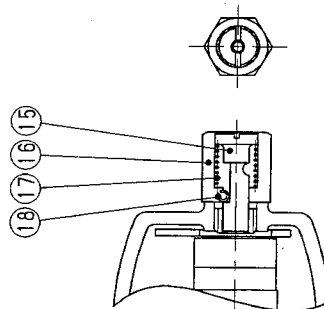
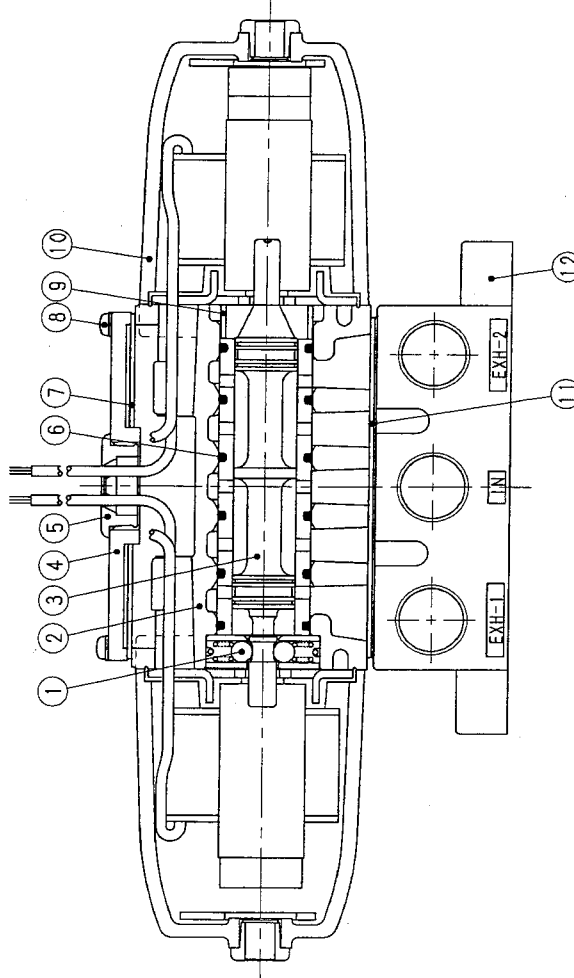
※1 Port size		※2 Option	
02	Rc1/4	No option (Lead wire type)	C
03	Rc3/8	Lock-type manual override	P
※3 Rated voltage		Push-in connector	C
AC100V (50/60Hz)		Circular terminal box	B
AC200V (50/60Hz)		Circular terminal box with gland	G
		Acid proof painting	U



品番 No	仕様書 SPEC No	品名 DESCRIPTION	部 品 名 PARTS	材 質 / 図 番 MATERIAL / DRAW NO	数 量 QTY	備 考 REMARK
21		Gland			1	
20		Circular terminal box			1	
19		Connector assy.			2	
18		Spring pin		Steel	2	
17		Spring		Steel	2	
16		Guide		Steel	2	
15		Bushing rod		Steel	2	
14		Identification plate		Tetron film	1	
13		Hex. soc. hd. cap screw with spring washer		Alloy steel	4	M5x18
12		Sub base		Aluminum alloy die casting	1	
11		Gasket		Acrylonitrile-butadiene rubber	1	
10		Solenoid assy.			2	
9		Collar		Steel	1	
8		Pan head small screw with spring washer		Steel	4	M3x10
7		Gasket		Acrylonitrile-butadiene rubber	1	
6		O-ring		Acrylonitrile-butadiene rubber	6	
5		Bushing		Acrylonitrile-butadiene rubber	1	
4		Cover		Polyamide	1	
3		Sleeve spool assy.			1	
2		Body		Aluminum alloy die casting	1	
1		Stopper assy.			1	

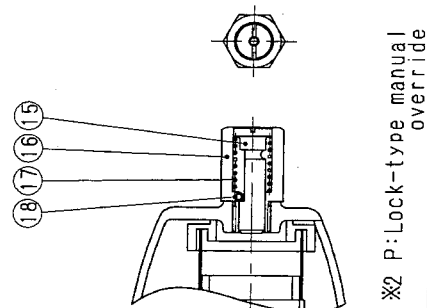
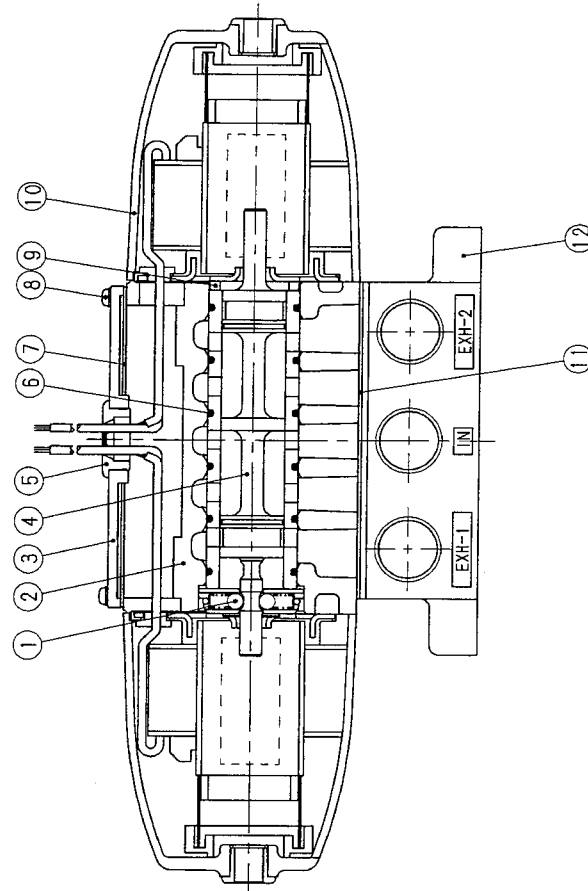
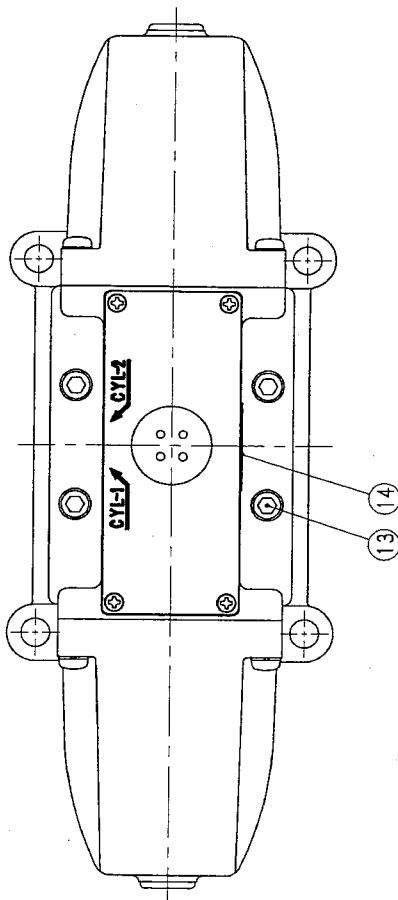
記 号 MARK	変 更 理 由 REVISIONS	日 付 DATE	当 担 承 認 CH'D APP'D	度 度 SCALE
MAY. 08. 2003		MAY. 07. 2003		R SCALE
M. ITO		M. KOIKE		NO SCALE
承 認 APP'D	査 閲 CH'D	設 計 DES'D	第 三 角 法 ④ - ③	

知



※2 P: Lock-type manual
override

TE-106



※2 P: Lock-type manual override

品番 No	部品名 PARTS	材質/図番 MATERIAL/DRAW NO	数量 Q'TY	備考 REMARK
21	Gland	-	1	
20	Circular terminal box	-	1	
19	Connector assy.	-	2	
18	Spring pin	Steel	2	
17	Spring	Steel	2	
16	Guide	Steel	2	
15	Bushin rod	Steel	2	
14	Identification plate	Tetron film	1	
13	Hex. soc. hd. cap screw with spring washer	Alloy steel	4	M6x25
12	Sub base	Aluminum alloy die casting	1	
11	Gasket	Acrylonitrile-butadiene rubber	1	
10	Solenoid assy.	-	2	
9	Collar	Polyacetal	1	
8	Pan head small screw with spring washer	Steel	4	M3x10
7	Gasket	Acrylonitrile-butadiene rubber	1	
6	O-ring	Acrylonitrile-butadiene rubber	6	
5	Bushing	Acrylonitrile-butadiene rubber	1	
4	Sleeve spool assy.	-	1	
3	Cover	Polyamide	1	
2	Body	Aluminum alloy die casting	1	
1	Stopper assy.	-	1	

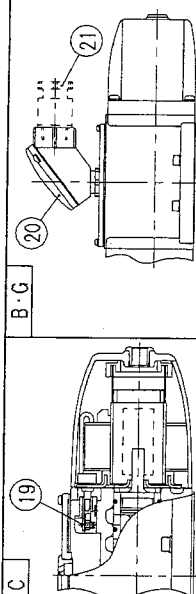
DIRECT OPERATED 4 WAY VALVE
(Internal structure drawings)

FD4-4-1-24-A

CKD Corporation
CAD

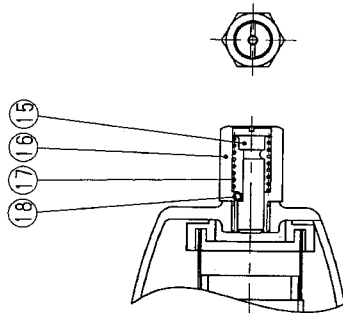
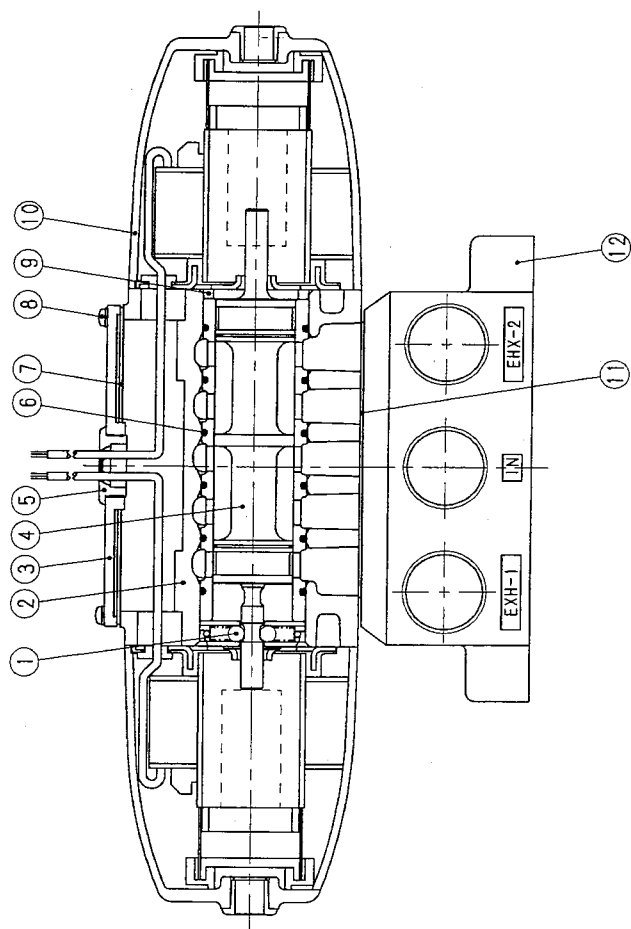
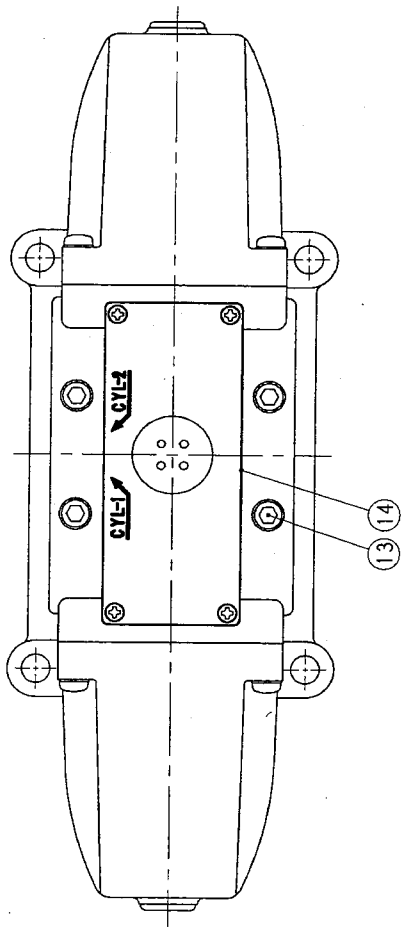
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MAY. 08. 2003		MAY. 07. 2003		R SCALE
M. ITO		M. K. OIKE		NO SCALE
承認 APP'D	査閲 CH'D	設計 DES'D	第三角法 ③	

※2 Option



No Code	No option (Lead wire type)	C	B-G
P	Lock-type manual override		
C	Push-in connector		
B	Circular terminal box		
G	Circular terminal box with gland		
U	Acid proof painting		

※1 Port size	04 Rc1/2	06 Rc3/4
※3 Rated voltage	AC100V (50/60Hz)	AC200V (50/60Hz)



※2 P:Lock-type manual override

※1 Port size	※2 Option
06 Rc3/4	No option (Lead wire type)
10 Rcl	Lock-type manual override
※3 Rated voltage	Push-in connector
AC100V (50/60Hz)	Circular terminal box
AC200V (50/60Hz)	Circular terminal box with gland
	Acid proof painting

品番 NO	部 品 名 PARTS	材 質 / 図 番 MATERIAL / DRAW NO	数 量 Q' TY	備 考 REMARK
21	Gland	-	1	
20	Circular terminal box	-	1	
19	Connector assy.	-	2	
18	Spring pin	Steel	2	
17	Spring	Steel	2	
16	Guide	Steel	2	
15	Bushinrod	Steel	2	
14	Identification plate	Tetronfilm	1	
13	Hex. soc. hd. cap screw with spring washer	Alloy steel	4	M6x25
12	Sub base	Aluminum alloy casting	1	
11	Gasket	Acrylonitrile-butadiene rubber	1	
10	Solenoid assy.	-	2	
9	Spacer	Polyacetal	1	
8	Pan head small screw with spring washer	Steel	4	M3x10
7	Gasket	Acrylonitrile-butadiene rubber	1	
6	O-ring	Acrylonitrile-butadiene rubber	6	
5	Bushing	Acrylonitrile-butadiene rubber	1	
4	Sleeve spool assy.	-	1	
3	Cover	Polyamide	1	
2	Body	Aluminum alloy die casting	1	
1	Stopper assy.	-	1	

品 名
DIRECT OPERATED 4 WAY VALVE
(Internal structure drawings)

仕 様 書 NO
SPEC NO

図 番
DRAW NO

MODEL
FD5-4-1-3-A

CKD Corporation
CAD

記 号
MARK

変 更 理 由
REVISIONS

日 付
DATE

当 担 承 認
CH'D APP'D

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SCALE

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SCALE

NO
SCALE

設 計
DES'D

第 三 角 法