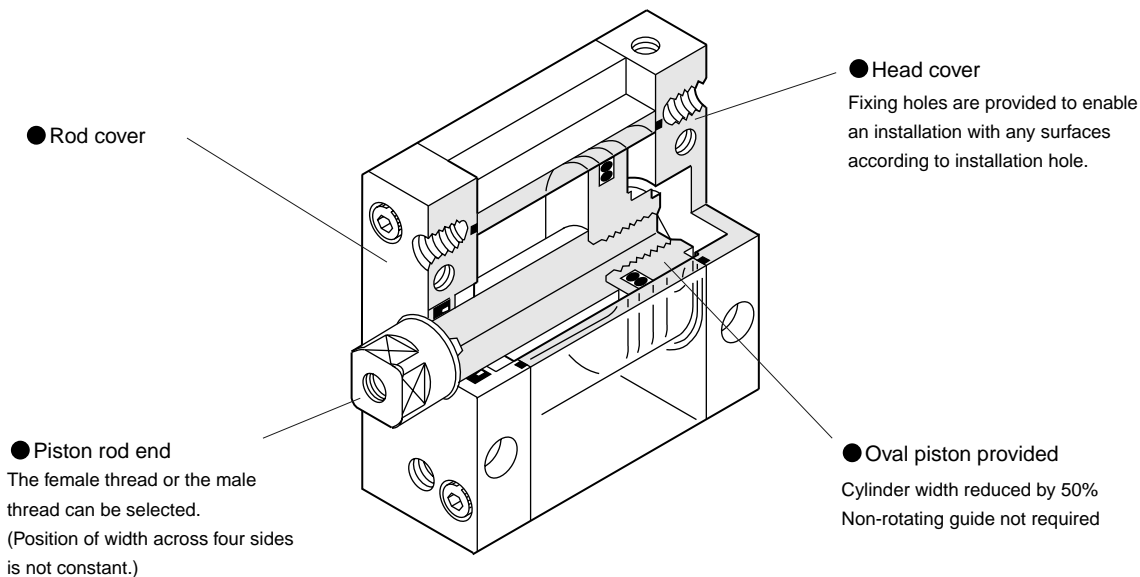


● : Standard, ○ : Option, ■ : Not available

Variation	Model no. JIS symbol	Bore size (mm)	Standard stroke length (mm)					Min. stroke length (mm)	Custom stroke length (per mm)	Max. stroke length (mm)			Option				Switch	Page	
			5	10	15	20	25			30	40	50	Piston rod material change	Rod end male thread	With socket and spigot	Copper and PTFE free			
																			M
Single acting extend type with switch	FCS FCS-L	φ 25, φ 32 or equivalent	●	●	■	■	■	1	1	■	■	■	10	○	○	○	○	○	1104
			■	●	■	●	■							20	○	○	○		
Single acting retract type with switch	FCH FCH-L	φ 25, φ 32 or equivalent	●	●	■	■	■	1	1	■	■	■	10	○	○	○	○	○	1104
			■	●	■	●	■							20	○	○	○		
Double acting single rod type with switch	FCD FCD-L	φ 25, φ 32, φ 40, φ 50, φ 63 or equivalent	●	●	●	●	●	1	1	●	●	●	50	○	○	○	○	○	1112
Double acting double rod type with switch	FCD-D FCD-DL	φ 25, φ 32, φ 40, φ 50, φ 63 or equivalent	●	●	●	●	●	1	1	●	●	●	50	○	○	○	○	○	1118
Double acting cushioned with switch	FCD-K FCD-KL	φ 25, φ 32, φ 40, φ 50, φ 63 or equivalent	●	●	●	●	●	1	1	●	●	●	150	○	○	○	○	○	1124

Product introduction



SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

Flat and compact cylinder
Space saving structure

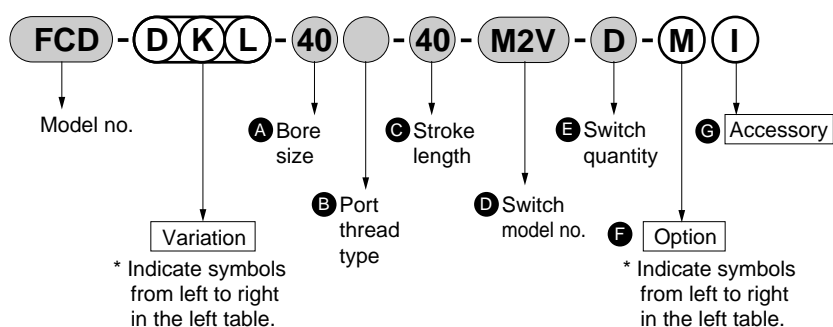
Variation and option selection table

◎ : Option
 ○ : Available (custom order)
 △ : Available depending on condition (consult CKD)
 X : Not available

Code	Code	Variation							Port thread		Option					
		Symbol	No	K	S	H	D	DK	L	N	G	M	N	N**	P6	R
		Double acting basic type	Double acting cushioned	Single acting extend type	Single acting spring extend type	Double acting double rod type	Double acting double rod cushioned	With cylinder switch	NPT Note 1	G Note 1	Piston rod material stainless steel	Piston rod end male thread	Customized piston rod end form	Copper and PTFE free	With socket and spigot	
SCP*2	Blank								◎	○	○	◎	◎	○	◎	◎
CMK2	FCD-K			X	X	○	X	◎	○	○	◎	◎	○	◎	◎	◎
CMA2	FCS				X	X	X	◎	○	○	◎	◎	○	◎	◎	◎
SCM	FCH					X	X	◎	○	○	◎	◎	○	◎	◎	◎
SCG	FCD-D							◎	○	○	◎	◎	○	◎	◎	◎
SCA2	FCD-DK							○	○	○	◎	◎	○	◎	◎	◎
SCS	L								○	○	◎	◎	○	◎	◎	◎
CKV2	N								X		○	○	○	○	○	○
CA/OV2	G										○	○	○	○	○	○
SSD	M										◎	○	○	○	○	○
CAT	N											○	◎	◎	◎	◎
MDC2	N**												○	○	○	○
MVC	P6													○	○	○
SMD2	R														○	○
MSD*																
FC*																
STK																
ULK*																
JSK/M2																
JSG																
JSC3																
USSD	Listed on Ending	X	X	X	X	X	X	◎	○	○	◎	◎	○	◎	◎	◎
USC	I	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
JSB3	Y	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
LMB																
STG																
STS/L																
LCS																
LCG																
LCM																
LCT																
LCY																
STR2																
UCA2																
HCM																
HCA																
SRL2																
SRG																
SRM																
SRT																
MRL2																
MRG2																
SM-25																
CAC3																
UCAC																
RCC2																
MFC																
SHC																
GLC																

Note 1: Available only ϕ 40 or more.

<Example of model number>



Model no.: Flat cylinder

● Variation: Double rod cushioned with switch

- A** Bore size : ϕ 40mm
- B** Port thread type : Rc thread
- C** Stroke length : 40mm
- D** Switch model no. : Proximity M2V, lead wire 1m
- E** Switch quantity : 2
- F** Option : Piston rod material (stainless steel)
- G** Accessory : Rod eye

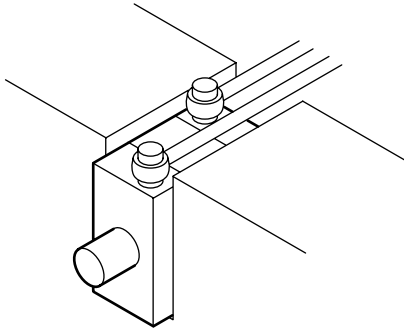
SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

Flat and compact cylinder
Space saving structure

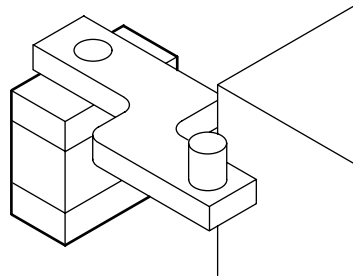
Applications

Various automation, previously not possible, is now available

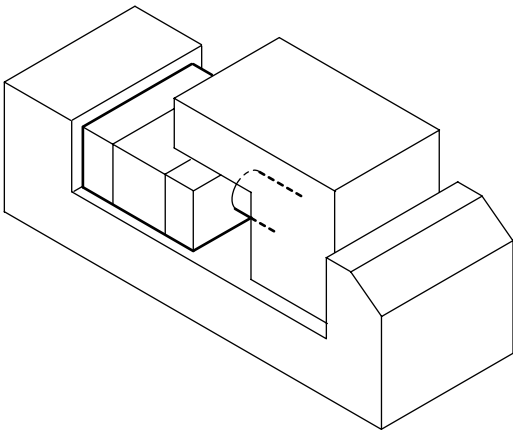
● Narrow space installation



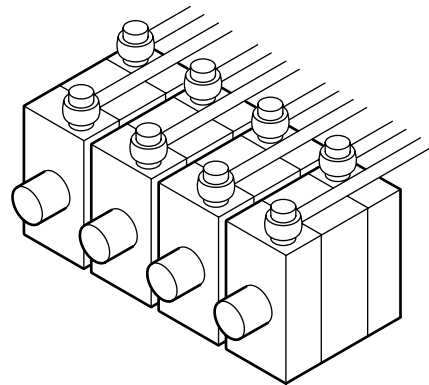
● Positioning near an obstacle (non-rotating function)



● Clamp



● Use arranged in a row



SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending



Pneumatic components

Safety precautions

Always read this section before starting use.

Refer to Intro 71 for general precautions of the cylinder, and to Intro 78 for general precautions of the cylinder switch.

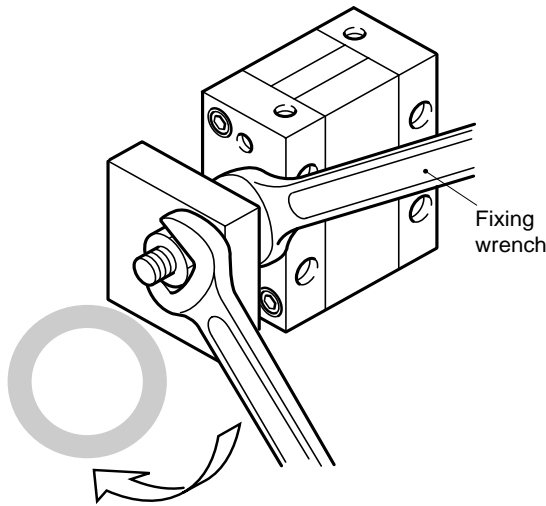
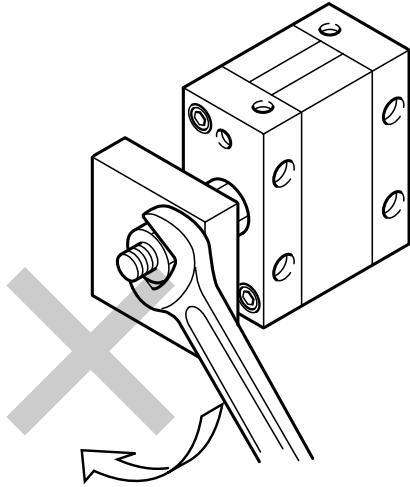
Flat and compact cylinder FC* Series

Installation & Adjustment

1. COMMON

⚠ CAUTION

- When installing a load onto the end of the male screw, fix the across flat section for wrench at the end of the rod with a wrench and install.



- When fixing onto a female screw, fix the across flat section for wrench at the end of the rod with a wrench using a standard tool (hexagonal wrench), and tighten.

- Apply the load to the piston rod so it is in the piston rod's axial direction. Avoid using in such a way that torque is applied. If unavoidable, use within allowable torque range.

Descriptions	Model no.	φ 25	φ 32	φ 40	φ 50	φ 63
Allowable torque (N·m)		1	1.6	2.5	3.9	5.9

- Avoid using in such a way that rotary torque is applied with impact or the direction of the torque load immediately changes.

2. Single acting FCS/FCH

⚠ CAUTION

- Do not leave the single acting cylinder in the pressurized state. If left pressurized, the piston rod may not return with spring power when pressure is released.

SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

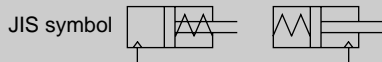
Flat and compact cylinder
Space saving structure

Flat and compact cylinder Single acting extend type/single acting retract type



FCS Series/FCH Series

● Bore size: ϕ 25, ϕ 32, ϕ 40, ϕ 50, ϕ 63



Specifications

Descriptions	FCS FCS-L					FCH FCH-L				
	ϕ 25 or equivalent	ϕ 32 or equivalent	ϕ 40 or equivalent	ϕ 50 or equivalent	ϕ 63 or equivalent	ϕ 25 or equivalent	ϕ 32 or equivalent	ϕ 40 or equivalent	ϕ 50 or equivalent	ϕ 63 or equivalent
Bore size mm	ϕ 25 or equivalent	ϕ 32 or equivalent	ϕ 40 or equivalent	ϕ 50 or equivalent	ϕ 63 or equivalent	ϕ 25 or equivalent	ϕ 32 or equivalent	ϕ 40 or equivalent	ϕ 50 or equivalent	ϕ 63 or equivalent
Actuation	Single acting spring return type					Single acting spring extend type				
Working fluid	Compressed air									
Max. working pressure MPa	0.7									
Min. working pressure MPa	0.12									
Withstanding pressure MPa	1.05									
Ambient temperature $^{\circ}$ C	-10 to 60 (no freezing)									
Port size	M5		Rc1/8		Rc1/4	M5		Rc1/8		Rc1/4
Stroke tolerance mm	+0.5 0 (to 50)									
Working piston speed mm/s	50 to 500									
Cushion	None									
Lubrication	Not required (when lubricating, turbine oil Class 1 ISOVG32)									
Allowable energy absorption J	0.015	0.02	0.026	0.04	0.05	0.015	0.02	0.026	0.04	0.05

Note: Do not leave the single acting cylinder in the pressurized state. If left in the pressurized state, the piston rod may not return with spring force when pressure is released.

Non-rotating accuracy/allowable torque

Descriptions	ϕ 25 or equivalent	ϕ 32 or equivalent	ϕ 40 or equivalent	ϕ 50 or equivalent	ϕ 63 or equivalent
Revolvable angle tolerance Note 2	$\pm 1^{\circ}$	$\pm 0.8^{\circ}$	$\pm 0.5^{\circ}$	$\pm 0.5^{\circ}$	$\pm 0.5^{\circ}$
Allowable torque N·m	1	1.6	2.5	3.9	5.9

Note 1: Avoid the use that torque is applied with a big impact or the direction of torque load is suddenly changed with a big impact.

Note 2: "Revolvable angle tolerance" is the value at 10% of "allowable torque" because piston and piston rod deforming are not included in this clattering rate.

Stroke length

Model no.	Bore size (mm)	Standard stroke length (mm) *	Max. stroke length (mm)	Min. stroke length (mm)
FCS	ϕ 25, ϕ 32 or equivalent	5, 10	10	1
FCH	ϕ 40, ϕ 50, ϕ 63 or equivalent	10, 20	20	

Note 1: Custom stroke length is available per 1mm increment.

Note 2: Min. stroke length may differ depending on switch installation method. Refer to the table below.

Min. stroke length of type with switch

With switch		With 2 switches
Rod side installation	Head side installation	Different surface installation
10mm		15mm

Switch specifications

● Proximity switch

Descriptions	Proximity 2 wire		Proximity 3 wire		
	M2V	M2WV (2 color indicator type)	M3V	M3PV (Custom order)	M3WV (2 color indicator type)
Applications	Programmable controller		Programmable controller, relay, IC circuit, small solenoid valve		
Output method	-	NPN output	NPN output	PNP output	NPN output
Power voltage	-		4.5 to 28 VDC		10 to 28 VDC
Load voltage	10 to 30 VDC		30 VDC or less		
Load current	5 to 30mA		200mA or less	100mA or less	150mA or less
Light	LED (ON lighting)	Red/green LED (ON lighting)	LED (ON lighting)	Yellow LED (ON lighting)	Red/green LED (ON lighting)
Leakage current	1mA or less		10 μA or less	0.05mA or less	10 μA or less

● Reed switch

Descriptions	Reed 2 wire	
	M0V	M5V
Applications	Programmable controller, relay	Programmable controller, relay, IC circuit (without indicator light), serial connection
Light	5 to 50mA with 12/24 VDC	50mA or less with 5/12/24 VDC
Load voltage	7 to 20mA with 110 VAC	20mA with 110 VAC
Load current	LED (ON lighting)	Without indicator light
Leakage current	0mA	

Note 1: Refer to Ending 1 for other switch specifications.

Cylinder weight (For types with switch, weight of two switches, bracket and lead wire 1m are included)

(Unit: g)

Descriptions, mounting style	Product weight when stroke length (S) = 0mm				Additional weight per 10mm
	FCS		FCH		
	Without switch	With switch	Without switch	With switch	
φ 25 or equivalent	155	261	135	241	26
φ 32 or equivalent	220	354	190	324	37
φ 40 or equivalent	345	512	310	477	46
φ 50 or equivalent	545	777	485	717	71
φ 63 or equivalent	1090	1270	965	1020	90

(E.g) Product weight of FCS-32-10 ————

- Product weight when S = 0mm 220g
- Additional weight at S = 10mm $37g \times \frac{10}{10} = 37g$
- Product weight $220g + 37g = 257g$

FCS/FCH spring load

(Unit: N)

Bore size (mm)	Stroke length (mm)	At stroke length 0	Full stroke length during operation
φ25 or equivalent	5	27.4	35.3
	10	19.6	
φ32 or equivalent	5	36	47.5
	10	24.5	
φ40 or equivalent	10	38.5	47.6
	20	29.4	
φ50 or equivalent	10	56.5	74.9
	20	38.2	
φ63 or equivalent	10	92.2	119.8
	20	61.7	

SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

Flat and compact cylinder
Space saving structure

How to order

Without switch

FCS - **25** - **10** - **N**

With switch

FCS-L - **25** - **10** - **M2V** - **R** - **N**

A Model no.

B Bore size

C Port thread type

D Stroke length

E Switch model no.

* indicates lead wire length.

F Switch quantity

G Option
Note 2

Note on model no. selection

Note 1: Refer to page 1104 for min. stroke length with switch.
Note 2: Dimensions of copper and PTFE free "P6" are same as standard type.

Symbol	Descriptions		
A Model no.			
FCS	Single acting extend type		
FCS-L	Single acting extend type/with switch		
FCH	Single acting retract type		
FCH-L	Single acting retract type/with switch		
B Bore size (mm)			
25	ϕ 25		
32	ϕ 32		
40	ϕ 40		
50	ϕ 50		
63	ϕ 63		
C Port thread type			
Blank	Rc thread		
NN	NPT thread (ϕ 40 and over) custom order		
GN	G thread (ϕ 40 and over) custom order		
D Stroke length (mm)			
Bore size	Stroke length Note 1	Custom stroke length	
ϕ 25, ϕ 32	1 to 10	1 mm increment	
ϕ 40 to ϕ 63	1 to 20		
E Switch model no.			
Radial lead wire	Contact	Indicator	Lead wire
M2V*	Proximity	1 color indicator type	2-wire
M2WV*		2 color indicator type	
M3V*		1 color indicator type	3-wire
M3WV*		2 color indicator type	
M3PV*	1 color indicator type (custom order)		
M0V*	Reed	1 color indicator type	2-wire
M5V*		Without indicator light	
*Lead wire length			
Blank	1m (standard)		
3	3m (option)		
5	5m (option)		
F Switch quantity			
R	1 on rod end		
H	1 on head end		
D	Two		
G Option			
Blank	Rod end female thread		
M	Piston rod material (stainless steel)		
N	Rod end male thread		
R	With socket and spigot		
P6	Copper and PTFE free (copper and Teflon material not used)		

<Example of model number>

FCS-L-25-10-M2V-R-M

Model: Flat and compact cylinder

- A** Model no. : Single acting extend type
- B** Bore size : ϕ 25mm
- C** Port thread type : Rc thread
- D** Stroke length : 10mm
- E** Switch model no. : Proximity switch M2V
- F** Switch quantity : One on rod end
- G** Option : Piston rod material (stainless steel)

How to order switch

● Switch body + mounting bracket

FCS - **M2V**



Switch model no.
(Item previous page)

● Only switch body

SW - **M2V**



Switch model no.
(Item previous page)

● Mounting bracket

FCS - **M**



Bracket

SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
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SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

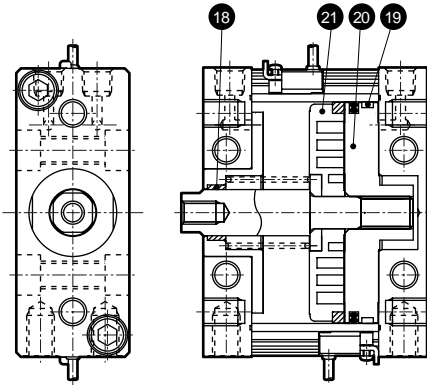
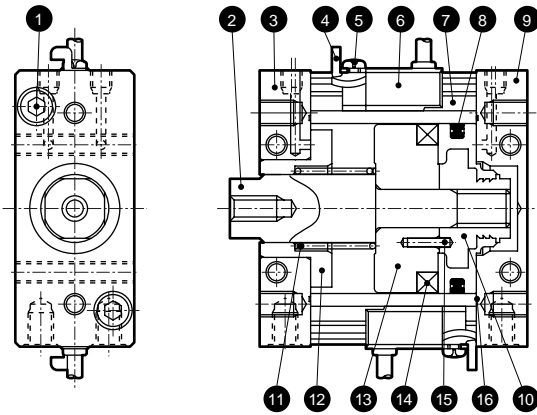
Flat and compact cylinder
Space saving structure

Internal structure and parts list

● FCS-L (single acting extend type with switch)

* ϕ 25 to ϕ 50 or equivalent

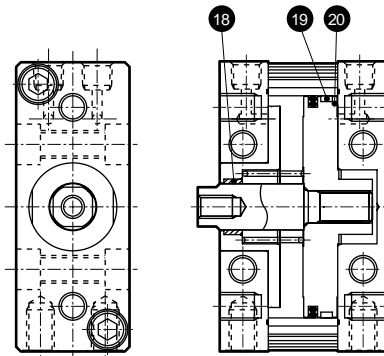
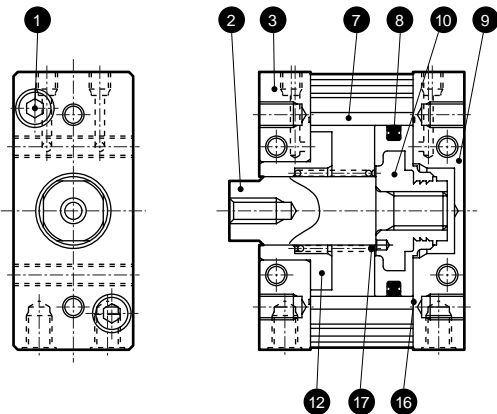
* ϕ 63 or equivalent



● FCS (single acting/extend type)

* ϕ 25 to ϕ 50 or equivalent

* ϕ 63 or equivalent



No.	Parts name	Material	Remarks	No.	Parts name	Material	Remarks
1	Hexagon socket head cap bolt	Steel		11	Spring	Steel	
2	Piston rod	Steel		12	Bush spacer	Aluminum alloy	
3	Rod cover	Aluminum alloy		13	Spacer	Aluminum alloy	
4	Switch bracket	Stainless steel		14	Magnet	Plastic	
5	Cross headed pan	Steel		15	Spring pin	Steel	
6	Switch			16	Guard gasket	Nitrile rubber	
7	Tube	Aluminum alloy		17	Spring holder	Stainless steel	
8	Piston packing seal	Nitrile rubber		18	Bush Note 1	Aluminum alloy	
9	Head cover	Aluminum alloy		19	Wear ring	Acetar resin	
10	Piston	Aluminum alloy die cast + polyacetal		20	Piston	Aluminum alloy	
				21	Spacer	Polyamide resin	

Note 1: Special aluminum is used for copper and PTFE free.

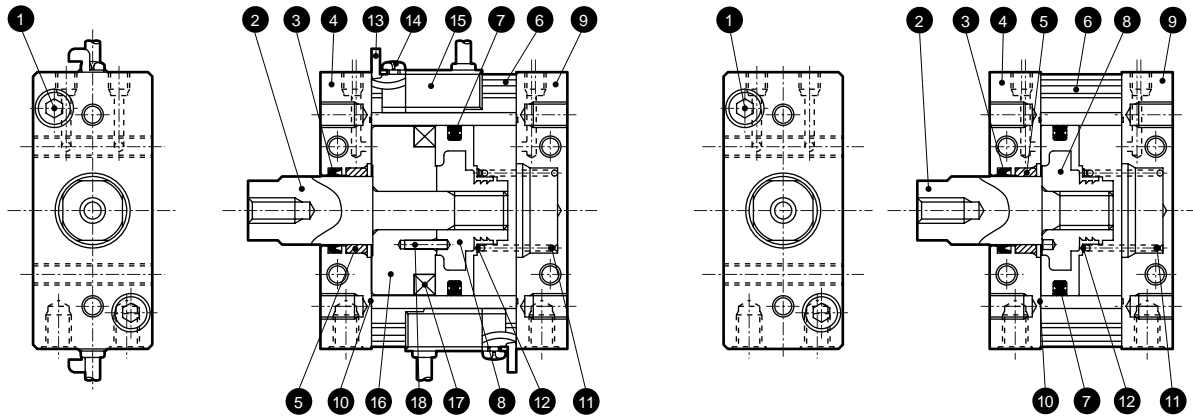
Repair parts list (common for types with switch and without switch)

Bore size (mm)	Kit No.	Repair parts number
ϕ 25 or equivalent	FCS-25K	8 16
ϕ 32 or equivalent	FCS-32K	
ϕ 40 or equivalent	FCS-40K	
ϕ 50 or equivalent	FCS-50K	
ϕ 63 or equivalent	FCS-63K	

Internal structure and parts list

● FCH-L (single acting retract type with switch)

● FCH



SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

No.	Parts name	Material	Remarks	No.	Parts name	Material	Remarks
1	Hexagon socket head cap bolt	Steel		10	Guard gasket	Nitrile rubber	
2	Piston rod	Steel		11	Spring	Steel	
3	Rod packing seal	Nitrile rubber		12	Spring holder	Stainless steel	
4	Rod cover	Aluminum alloy		13	Switch bracket	Stainless steel	
5	Bush	Special bearing material	Note 1	14	Cross headed pan	Steel	
6	Tube	Aluminum alloy		15	Switch		
7	Piston packing seal	Nitrile rubber		16	Spacer	Aluminum alloy	
8	Piston	Aluminum alloy die cast + polyacetal		17	Magnet	Plastic	
9	Head cover	Aluminum alloy		18	Spring pin	Steel	

Note 1: Special aluminum is used for copper and PTFE free.

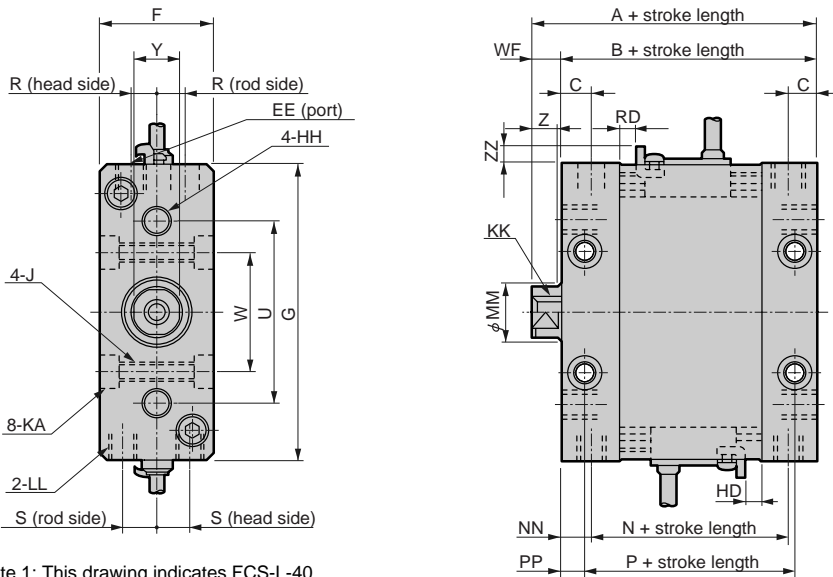
Repair parts list (common for types with switch and without switch)

Bore size (mm)	Kit No.	Repair parts number
φ 25 or equivalent	FCH-25K	3 7 10
φ 32 or equivalent	FCH-32K	
φ 40 or equivalent	FCH-40K	
φ 50 or equivalent	FCH-50K	
φ 63 or equivalent	FCH-63K	

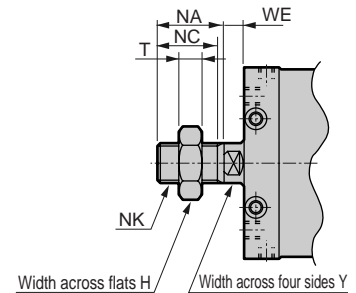
Flat and compact cylinder
Space saving structure

Dimensions

● FCS-L (single acting extend type with switch)



● Rod end male thread dimensions (Option symbol N)

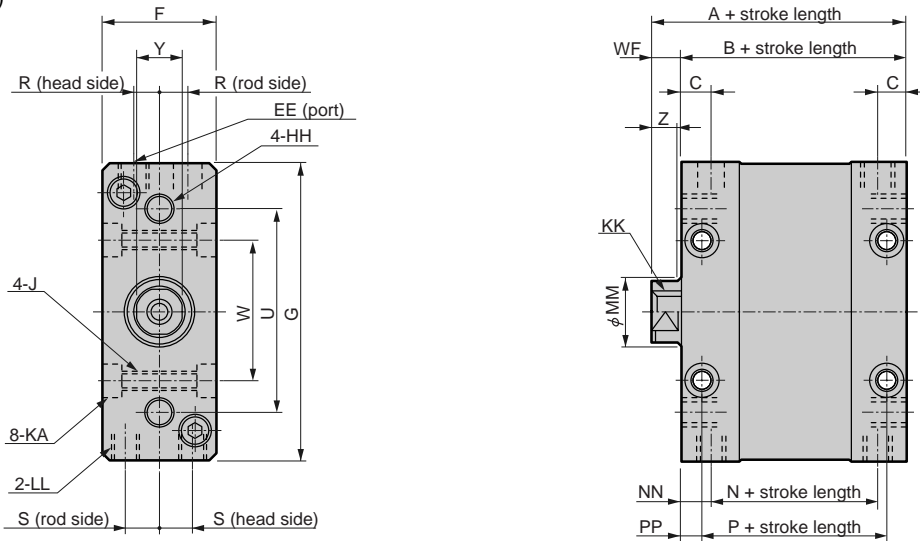


Note 1: This drawing indicates FCS-L-40.

Note 2: Position of width across four sides of Y part is not constant.

Note 3: When installing 2 switches on the surface, more than 35 mm stroke is required for 25 to 50 mm bore cylinders, while 30 mm stroke is required for 63 mm bore cylinder. When shorter than these length, switches installed on the both ends.

● FCS (without switch)



Note 1: This drawing indicates FCS-40.

Note 2: Position of width across four sides of Y part is not constant.

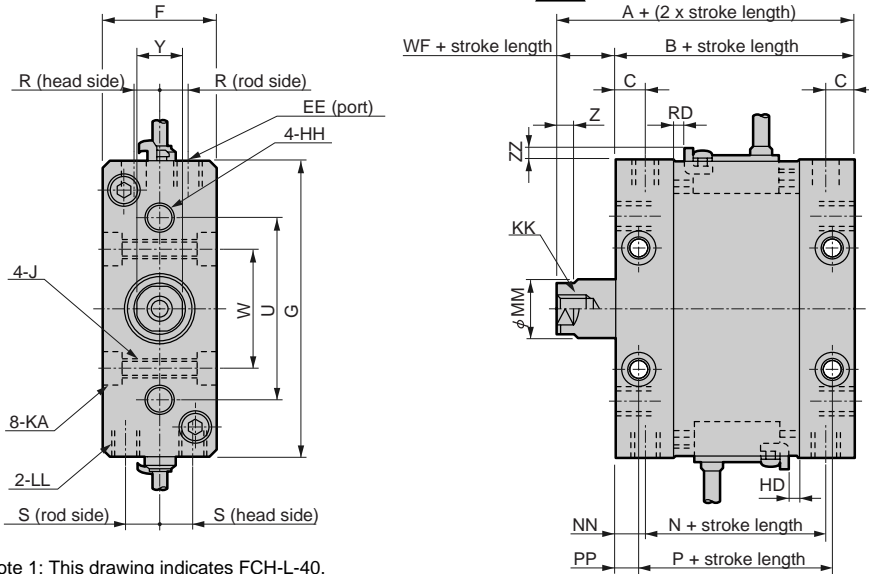
Symbol	Dimensions, without switch				Dimensions, with switch				Common dimensions							
	A	B	N	P	A	B	N	P	C	EE	F	G	HH	J	KA	
Bore size (mm)																
φ 25 or equivalent	42	37	25	29	57	52	40	44	7.5	M5 depth 4	25	55	M5 depth 7	M5 (penetrating)	-	
φ 32 or equivalent	45	38	26	30	60	53	41	45	7.5	M5 depth 4	28	65	M6 depth 8	M5 (penetrating)	-	
φ 40 or equivalent	54	46	30	34	69	61	45	49	8.5	Rc1/8	32	83	M8 depth 10	M6 (penetrating)	9.5 spot face depth 5.4	
φ 50 or equivalent	60.5	51	34	32	75.5	66	49	47	10.5	Rc1/8	39	101	M10 depth 12	M10 (penetrating)	11 spot face depth 6.5	
φ 63 or equivalent	71.5	62	42	42	86.5	77	57	57	11.5	Rc1/4	49	125	M12 depth 15	M12 (penetrating)	17.5 spot face depth 10.5	
Symbol	Common dimensions, with switches															
Bore size (mm)	KK	LL	MM	NN	PP	R	S	U	W	WF	ZZ	RD	HD	Y	Z	
φ 25 or equivalent	M5 depth 9	M5 depth 7	12	6	4	4.7	7	38	24	5	5.5 or less	3.5	0	10	5	
φ 32 or equivalent	M6 depth 11	M6 depth 8	16	6	4	6.2	8	45	30	7	5.5 or less	4.5	0	14	7	
φ 40 or equivalent	M8 depth 13	M8 depth 10	16	8	6	7.5	9	52	34	8	5.5 or less	4.5	0	14	7	
φ 50 or equivalent	M8 depth 13	M10 depth 12	20	8.5	9.5	9	10	62	40	9.5	5.5 or less	4.5	0.5	17	8	
φ 63 or equivalent	M10 depth 15	M12 depth 18	20	10	10	10.5	14	86	54	9.5	5.5 or less	4.5	4.5	17	8	

● Rod end male thread dimensions table

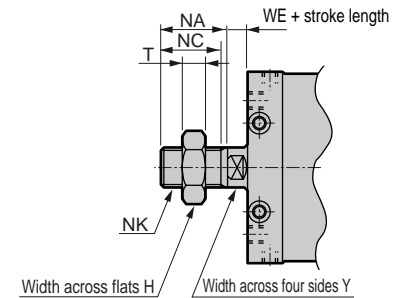
Symbol	H	NA	NC	NK	T	WE
Bore size (mm)						
φ 25 or equivalent	17	22	20	M10 x 1.25	6	5
φ 32 or equivalent	22	22	20	M14 x 1.5	8	7
φ 40 or equivalent	22	22	20	M14 x 1.5	8	7
φ 50 or equivalent	27	28	26	M18 x 1.5	11	8
φ 63 or equivalent	27	28	26	M18 x 1.5	11	8

Dimensions

● FCH-L (single acting spring extend type with switch)



● Rod end male thread dimensions (Option symbol N)

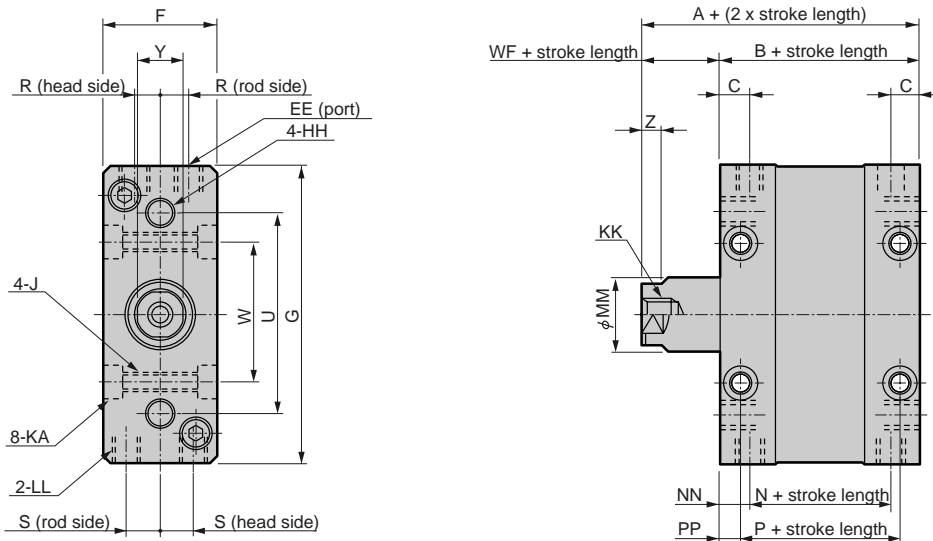


Note 1: This drawing indicates FCH-L-40.

Note 2: Position of width across four sides of Y part is not constant.

Note 3: When installing 2 switches on the surface, more than 35 mm stroke is required for 25 to 50 mm bore cylinders, while 30 mm stroke is required for 63 mm bore cylinder. When shorter than these length, switches installed on the both ends.

● FCH (without switch)



Note 1: This drawing indicates FCH-40.

Note 2: Position of width across four sides of Y part is not constant.

Symbol	Dimensions, without switch				Dimensions, with switch				Common dimensions										
	A	B	N	P	A	B	N	P	C	EE	F	G	HH	J	KA				
φ 25 or equivalent	37	32	20	24	52	47	35	39	7.5	M5 depth 4	25	55	M5 depth 7	M5 (penetrating)	-				
φ 32 or equivalent	40	33	21	25	55	48	36	40	7.5	M5 depth 4	28	65	M6 depth 8	M5 (penetrating)	-				
φ 40 or equivalent	49	41	25	29	64	56	40	44	8.5	Rc1/8	32	83	M8 depth 10	M6 (penetrating)	9.5 spot face depth 5.4				
φ 50 or equivalent	55.5	46	29	27	70.5	61	44	42	10.5	Rc1/8	39	101	M10 depth 12	M8 (penetrating)	11 spot face depth 6.5				
φ 63 or equivalent	66.5	57	37	37	81.5	72	52	52	11.5	Rc1/4	49	125	M12 depth 15	M12 (penetrating)	17.5 spot face depth 10.5				
Symbol	Common dimensions, with switches																		
Bore size (mm)	KK	LL	MM	NN	PP	R	S	U	W	WF	ZZ	RD	HD	Y	Z				
φ 25 or equivalent	M5 depth 9	M5 depth 7	12	6	4	4.7	7	38	24	5	5.5 or less	0	0	10	5				
φ 32 or equivalent	M6 depth 11	M6 depth 8	16	6	4	6.2	8	45	30	7	5.5 or less	0	0	14	7				
φ 40 or equivalent	M8 depth 13	M8 depth 10	16	8	6	7.5	9	52	34	8	5.5 or less	0	0	14	7				
φ 50 or equivalent	M8 depth 13	M10 depth 12	20	8.5	9.5	9	10	62	40	9.5	5.5 or less	0	0.5	17	8				
φ 63 or equivalent	M10 depth 15	M12 depth 18	20	10	10	10.5	14	86	54	9.5	5.5 or less	0	4.5	17	8				

● Rod end male thread dimensions table

Symbol	H	NA	NC	NK	T	WE
φ 25 or equivalent	17	22	20	M10 x 1.25	6	5
φ 32 or equivalent	22	22	20	M14 x 1.5	8	7
φ 40 or equivalent	22	22	20	M14 x 1.5	8	7
φ 50 or equivalent	27	28	26	M18 x 1.5	11	8
φ 63 or equivalent	27	28	26	M18 x 1.5	11	8

SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

Flat and compact cylinder
Space saving structure

Flat and compact cylinder Double acting single rod type

FCD Series

● Bore size: $\phi 25, \phi 32, \phi 40, \phi 50, \phi 63$



Specifications

Descriptions	FCD FCD-L					
	$\phi 25$ or equivalent	$\phi 32$ or equivalent	$\phi 40$ or equivalent	$\phi 50$ or equivalent	$\phi 63$ or equivalent	
Bore size mm	$\phi 25$ or equivalent	$\phi 32$ or equivalent	$\phi 40$ or equivalent	$\phi 50$ or equivalent	$\phi 63$ or equivalent	
Actuation	Double acting					
Working fluid	Compressed air					
Max. working pressure MPa	0.7					
Min. working pressure MPa	0.07					
Withstanding pressure MPa	1.05					
Ambient temperature $^{\circ}\text{C}$	-10 to 60 (no freezing)					
Port size	M5		Rc1/8		Rc1/4	
Stroke tolerance mm	+0.5 0 (to 50)					
Working piston speed mm/s	50 to 500					
Cushion	None					
Lubrication	Not required (when lubricating, turbine oil Class 1 ISOVG32)					
Allowable energy absorption J	0.015	0.02	0.026	0.04	0.05	

Non-rotating accuracy/allowable torque

Descriptions	$\phi 25$ or equivalent	$\phi 32$ or equivalent	$\phi 40$ or equivalent	$\phi 50$ or equivalent	$\phi 63$ or equivalent
Revolvable angle tolerance Note 2	$\pm 1^{\circ}$	$\pm 0.8^{\circ}$	$\pm 0.5^{\circ}$	$\pm 0.5^{\circ}$	$\pm 0.5^{\circ}$
Allowable torque N·m	1	1.6	2.5	3.9	5.9

Note 1: Avoid the use that torque is applied with a big impact or the direction of torque load is suddenly changed with a big impact.

Note 2: "Revolvable angle tolerance" is the value at 10% of "allowable torque" because piston and piston rod deforming are not included in this clattering rate.

Stroke length

Model no.	Bore size (mm)	Standard stroke length (mm) *	Max. stroke length (mm)	Min. stroke length (mm)
FCD	$\phi 25, \phi 32, \phi 40, \phi 60, \phi 63$ or equivalent	5, 10, 15, 20, 25, 30, 40, 50	50	1

Note 1: Custom stroke length is available per 1mm increment.

Note 2: Min. stroke length may differ depending on switch installation method. Refer to the table below.

Min. stroke length of type with switch

With switch		With 2 switches	
Rod side installation	Head side installation	Different surface installation	Same surface installation
10mm		15mm	35mm ($\phi 25, 32, 40, 50$) 30mm ($\phi 63$)

Switch specifications

● Proximity switch

Descriptions	Proximity 2 wire		Proximity 3 wire		
	M2V	M2WV (2 color indicator type)	M3V	M3PV (Custom order)	M3WV (2 color indicator type)
Applications	Programmable controller		Programmable controller, relay, IC circuit and small solenoid valve		
Output method	-	NPN output	NPN output	PNP output	NPN output
Power voltage	-		4.5 to 28 VDC		10 to 28 VDC
Load voltage	10 to 30 VDC		30 VDC or less		
Load current	5 to 30mA		200mA or less	100mA or less	150mA or less
Light	LED (ON lighting)	Red/green LED (ON lighting)	LED (ON lighting)	Yellow LED (ON lighting)	Red/green LED (ON lighting)
Leakage current	1mA or less		10 μA or less	0.05mA or less	10 μA or less

● Reed switch

Descriptions	Reed 2 wire	
	M0V	M5V
Applications	Programmable controller, relay	Programmable controller, relay, IC circuit (without indicator light), serial connection
Load voltage	5 to 50mA with 12/24 VDC	50mA or less with 5/12/24 VDC
Load current	7 to 20mA with 110 VAC	20mA with 110 VAC
Light	LED (ON lighting)	Without indicator light
Leakage current	0mA	

Note 1: Refer to Ending 1 for other switch specifications.

Cylinder weight (For types with switch, weight of two switches, bracket and lead wire 1m are included)

(Unit: g)

Descriptions, mounting style	Product weight when stroke length (S) = 0mm		Additional weight per 10mm
	FCD		
Bore size (mm)	Without switch	With switch	
φ 25 or equivalent	130	236	26
φ 32 or equivalent	185	319	37
φ 40 or equivalent	300	467	46
φ 50 or equivalent	470	702	71
φ 63 or equivalent	950	1130	90

(E.g.) Product weight of FCD-32-20

- Product weight when S = 0mm 319g
- Additional weight at S=20mm $37g \times \frac{20}{10} = 74g$
- Product weight 319g + 74g = 393

SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

Flat and compact cylinder
Space saving structure

How to order

Without switch

FCD - **25** - **10** - **N**

With switch

FCD-L - **25** - **10** - **M2V** - **R** - **N**

A Model no.

B Bore size

C Port thread type

D Stroke length

E Switch model no.

* indicates lead wire length.

F Switch quantity

G Option
Note 2

Note on model no. selection

Note 1: Refer to page 1112 for min. stroke length with switch.

Note 2: Dimensions of copper and PTFE free " P6 " are same as standard type.

Symbol	Descriptions		
A Model no.			
FCD	Double acting		
FCD-L	Double acting with switch		
B Bore size (mm)			
25	φ 25		
32	φ 32		
40	φ 40		
50	φ 50		
63	φ 63		
C Port thread type			
Blank	Rc thread		
NN	NPT thread (φ 40 and over) custom order		
GN	G thread (φ 40 and over) custom order		
D Stroke length (mm)			
Bore size	Stroke length Note 1	Custom stroke length	
φ25 to φ63	1 to 50	1 mm increment	
E Switch model no.			
Radial lead wire	Contact	Indicator	Lead wire
M2V*	Proximity	1 color indicator type	2-wire
M2WV*		2 color indicator type	
M3V*		1 color indicator type	3-wire
M3WV*		2 color indicator type	
M3PV*		1 color indicator type (custom order)	
MOV*	Reed	1 color indicator type	2-wire
M5V*		Without indicator light	
*Lead wire length			
Blank	1m (standard)		
3	3m (option)		
5	5m (option)		
F Switch quantity			
R	1 on rod end		
H	1 on head end		
D	Two		
T	Three		
G Option			
Blank	Rod end female thread		
M	Piston rod material (stainless steel)		
N	Rod end male thread		
R	With socket and spigot		
P6	Copper and PTFE free (copper and Teflon material not used)		

<Example of model number>

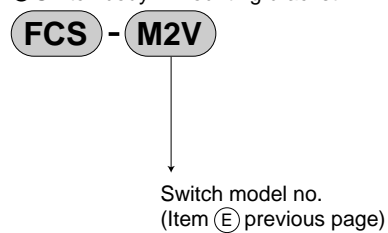
FCD-L-25-10-M2V-R-M

Model: Flat and compact cylinder

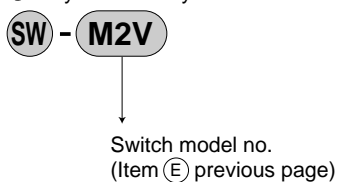
- A** Model no. : Double acting with switch
- B** Bore size : φ 25mm
- C** Port thread type : Rc thread
- D** Stroke length : 10mm
- E** Switch model no. : Proximity switch M2V
- F** Switch quantity : One on rod end
- G** Option : Piston rod material (stainless steel)

How to order switch

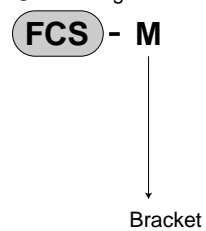
● Switch body + mounting bracket



● Only switch body



● Mounting bracket



SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

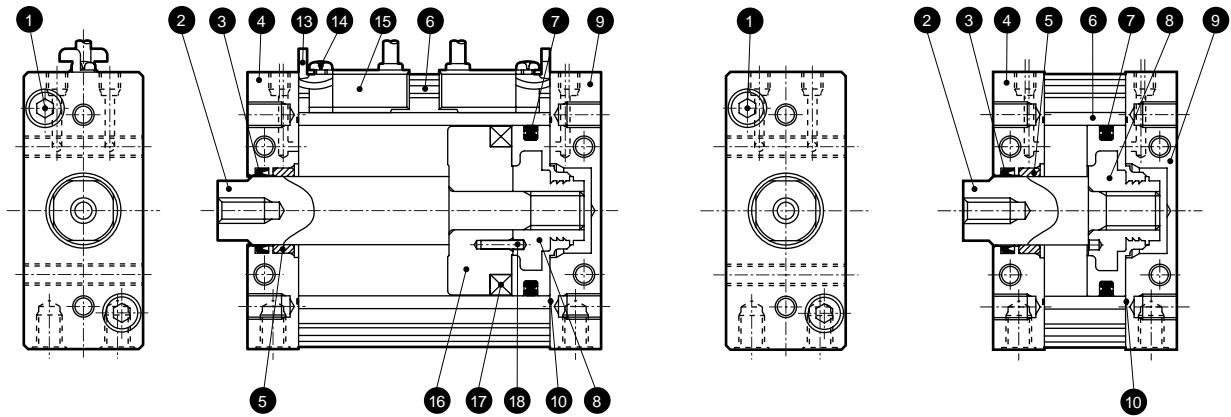
Flat and compact cylinder
Space saving structure

Internal structure and parts list

- SCP*2
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS
- CKV2
- CA/OV2
- SSD
- CAT
- MDC2
- MVC
- SMD2
- MSD*
- FC*
- STK
- ULK*
- JSK/M2
- JSG
- JSC3
- USSD
- USC
- JSB3
- LMB
- STG
- STS/L
- LCS
- LCG
- LCM
- LCT
- LCY
- STR2
- UCA2
- HCM
- HCA
- SRL2
- SRG
- SRM
- SRT
- MRL2
- MRG2
- SM-25
- CAC3
- UCAC
- RCC2
- MFC
- SHC
- GLC
- Ending

● FCD-L (with switch)

● FCD



No.	Parts name	Material	Remarks	No.	Parts name	Material	Remarks
1	Hexagon socket head cap bolt	Steel		9	Head cover	Aluminum alloy	
2	Piston rod	Steel		10	Guard gasket	Nitrile rubber	
3	Rod packing seal	Nitrile rubber		11	Switch bracket	Stainless steel	
4	Rod cover	Aluminum alloy		12	Cross headed pan	Steel	
5	Bush	Special bearing material	Note 1	13	Switch		
6	Tube	Aluminum alloy		14	Spacer	Aluminum alloy	
7	Piston packing seal	Nitrile rubber		15	Magnet	Plastic	
8	Piston	Aluminum alloy die cast + polyacetal		16	Spring pin	Steel	

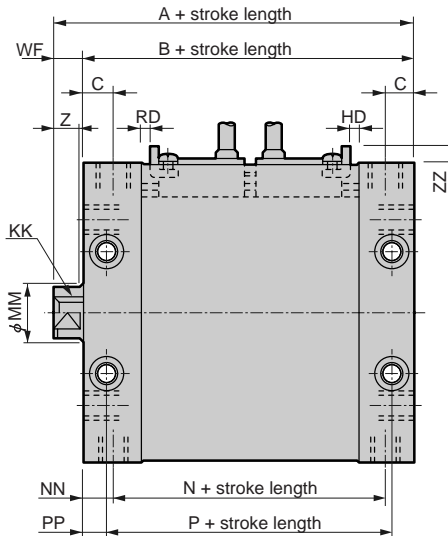
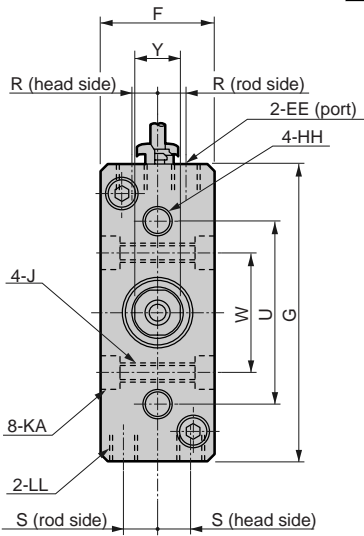
Note 1: Special aluminum is used for copper and PTFE free.

Repair parts list (common for types with switch and without switch)

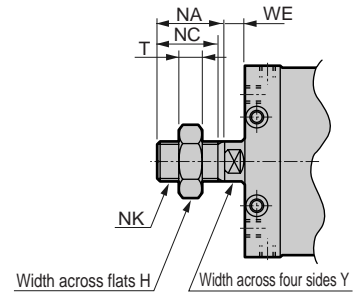
Bore size (mm)	Kit No.	Repair parts number
φ 25 or equivalent	FCD-25K	3 7 10
φ 32 or equivalent	FCD-32K	
φ 40 or equivalent	FCD-40K	
φ 50 or equivalent	FCD-50K	
φ 63 or equivalent	FCD-63K	

Dimensions

● FCD-L (double acting with switch)



● Rod end male thread dimensions (Option symbol N)

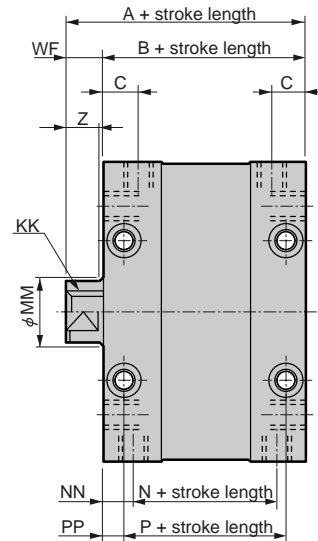
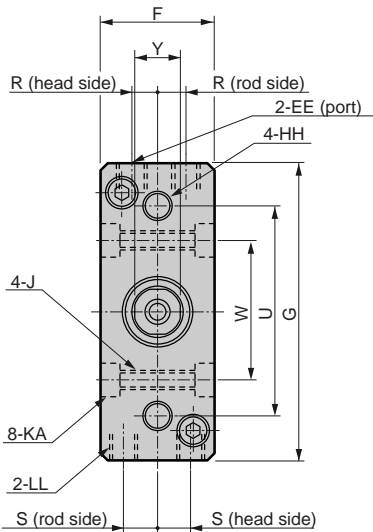


Note 1: This drawing indicates FCD-L-40.

Note 2: When installing 2 switches on the surface, more than 35 mm stroke is required for 25 to 50 mm bore cylinders, while 30 mm stroke is required for 63 mm bore cylinder. When shorter than these length, switches installed on the both ends.

Note 3: Position of width across four sides of Y part is not constant.

● FCD (without switch)



Note 1: This drawing indicates FCD-40.

Note 2: Position of width across four sides of Y part is not constant.

Symbol	Dimensions, without switch				Dimensions, with switch				Common dimensions							
	A	B	N	P	A	B	N	P	C	EE	F	G	HH	J	KA	
φ 25 or equivalent	37	32	20	24	52	47	35	39	7.5	M5 depth 4	25	55	M5 depth 7	M5 (penetrating)	-	
φ 32 or equivalent	40	33	21	25	55	48	36	40	7.5	M5 depth 4	28	65	M6 depth 8	M5 (penetrating)	-	
φ 40 or equivalent	49	41	25	29	64	56	40	44	8.5	Rc1/8	32	83	M8 depth 10	M6 (penetrating)	9.5 spot face depth	5.4
φ 50 or equivalent	55.5	46	29	27	70.5	61	44	42	10.5	Rc1/8	39	101	M10 depth 12	M8 (penetrating)	11 spot face depth	6.5
φ 63 or equivalent	66.5	57	37	37	81.5	72	52	52	11.5	Rc1/4	49	125	M12 depth 15	M12 (penetrating)	17.5 spot face depth	10.5

Symbol	Common dimensions, with switches															
	KK	LL	MM	NN	PP	R	S	U	W	WF	ZZ	RD	HD	Y	Z	
φ 25 or equivalent	M5 depth 9	M5 depth 7	12	6	4	4.7	7	38	24	5	5.5 or less	0	0	10	5	
φ 32 or equivalent	M6 depth 11	M6 depth 8	16	6	4	6.2	8	45	30	7	5.5 or less	0	0	14	7	
φ 40 or equivalent	M8 depth 13	M8 depth 10	16	8	6	7.5	9	52	34	8	5.5 or less	0	0	14	7	
φ 50 or equivalent	M8 depth 13	M10 depth 12	20	8.5	9.5	9	10	62	40	9.5	5.5 or less	0	0.5	17	8	
φ 63 or equivalent	M10 depth 15	M12 depth 18	20	10	10	10.5	14	86	54	9.5	5.5 or less	0	4.5	17	8	

● Rod end male thread dimensions table

Symbol	H	NA	NC	NK	T	WE
φ 25 or equivalent	17	22	20	M10 x 1.25	6	5
φ 32 or equivalent	22	22	20	M14 x 1.5	8	7
φ 40 or equivalent	22	22	20	M14 x 1.5	8	7
φ 50 or equivalent	27	28	26	M18 x 1.5	11	8
φ 63 or equivalent	27	28	26	M18 x 1.5	11	8

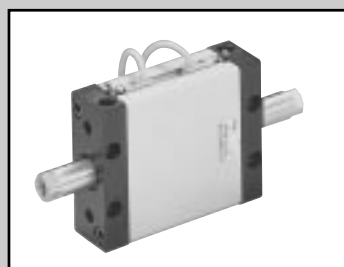
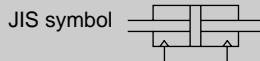
SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

Flat and compact cylinder
Space saving structure

Flat and compact cylinder Double acting double rod type

FCD-D Series

● Bore size: ϕ 25, ϕ 32, ϕ 40, ϕ 50, ϕ 63



Specifications

Descriptions	FCD-D FCD-DL				
	ϕ 25 or equivalent	ϕ 32 or equivalent	ϕ 40 or equivalent	ϕ 50 or equivalent	ϕ 63 or equivalent
Bore size mm	ϕ 25 or equivalent	ϕ 32 or equivalent	ϕ 40 or equivalent	ϕ 50 or equivalent	ϕ 63 or equivalent
Actuation	Double acting double rod type				
Working fluid	Compressed air				
Max. working pressure MPa	0.7				
Min. working pressure MPa	0.10				
Withstanding pressure MPa	1.05				
Ambient temperature $^{\circ}$ C	-10 to 60 (no freezing)				
Port size	M5		Rc1/8		Rc1/4
Stroke tolerance mm	+0.5 0 (to 50)				
Working piston speed mm/s	50 to 500				
Cushion	None				
Lubrication	Not required (when lubricating, turbine oil Class 1 ISOVG32)				
Allowable energy absorption J	0.015	0.02	0.026	0.04	0.05

Non-rotating accuracy/allowable torque

Descriptions	ϕ 25 or equivalent	ϕ 32 or equivalent	ϕ 40 or equivalent	ϕ 50 or equivalent	ϕ 63 or equivalent
Revolvable angle tolerance Note 2	$\pm 1^{\circ}$	$\pm 0.8^{\circ}$	$\pm 0.5^{\circ}$	$\pm 0.5^{\circ}$	$\pm 0.5^{\circ}$
Allowable torque N·m	1	1.6	2.5	3.9	5.9

Note 1: Avoid the use that torque is applied with a big impact or the direction of torque load is suddenly changed with a big impact.

Note 2: "Revolvable angle tolerance" is the value at 10% of "allowable torque" because piston and piston rod deforming are not included in this clattering rate.

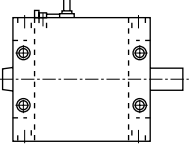
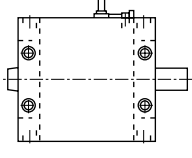
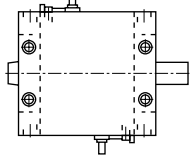
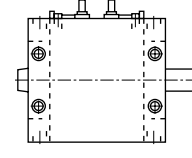
Stroke length

Model no.	Bore size (mm)	Standard stroke length (mm) *	Max. stroke length (mm)	Min. stroke length (mm)
FCD-D	ϕ 25, ϕ 32 ϕ 40, ϕ 60 ϕ 63 or equivalent	5, 10, 15, 20, 25, 30, 40, 50	50	1

Note 1: Custom stroke length is available per 1mm increment.

Note 2: Min. stroke length may differ depending on switch installation method. Refer to the table below.

Min. stroke length of type with switch

With switch		With 2 switches	
Rod side installation	Head side installation	Different surface installation	Same surface installation
			
10mm		15mm	35mm (ϕ 25, 32, 40, 50) 30mm (ϕ 63)

Switch specifications

● Proximity switch

Descriptions	Proximity 2 wire		Proximity 3 wire		
	M2V	M2WV (2 color indicator type)	M3V	M3PV (Custom order)	M3WV (2 color indicator type)
Applications	Programmable controller		Programmable controller, relay, IC circuit and small solenoid valve		
Output method	-	NPN output	NPN output	PNP output	NPN output
Power voltage	-		4.5 to 28 VDC		10 to 28 VDC
Load voltage	10 to 30 VDC		30 VDC or less		
Load current	5 to 30mA		200mA or less	100mA or less	150mA or less
Light	LED (ON lighting)	Red/green LED (ON lighting)	LED (ON lighting)	Yellow LED (ON lighting)	Red/green LED (ON lighting)
Leakage current	1mA or less		10 μA or less	0.05mA or less	10 μA or less

● Reed switch

Descriptions	Reed 2 wire	
	M0V	M5V
Applications	Programmable controller, relay	Programmable controller, relay, IC circuit (without indicator light), serial connection
Load voltage	5 to 50mA with 12/24 VDC	50mA or less with 5/12/24 VDC
Load current	7 to 20mA with 110 VAC	20mA with 110 VAC
Light	LED (ON lighting)	Without indicator light
Leakage current	0mA	

Note 1: Refer to Ending 1 for other switch specifications.

Cylinder weight (For types with switch, weight of two switches, bracket and lead wire 1m are included)

(Unit: g)

Descriptions, mounting style	Product weight when stroke length (S) = 0mm		Additional weight per 10mm
	FCD-D		
Bore size (mm)	Without switch	With switch	
φ25 or equivalent	145	264	35
φ32 or equivalent	215	374	53
φ40 or equivalent	330	522	62
φ50 or equivalent	545	817	96
φ63 or equivalent	1050	1270	115

(E.g.) Product weight of FCD-D-32-20

- Product weight when S = 0mm 215g
- Additional weight at S=20mm $37g \times \frac{20}{10} = 74g$
- Product weight $215g + 74g = 289g$

SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

Flat and compact cylinder
Space saving structure

How to order

Without switch

FCD-D - **25** - **10** - **N**

With switch

FCD-DL - **25** - **10** - **M2V** - **R** - **N**

A Model no.

B Bore size

C Port thread type

D Stroke length

E Switch model no.
* indicates lead wire length.

F Switch quantity

G Option
Note 2

Note on model no. selection

Note 1: Refer to page 1118 for min. stroke length with switch.
Note 2: Dimensions of copper and PTFE free " P6 " are same as standard type.

Symbol	Descriptions		
A Model no.			
FCD-D	Double acting double rod type		
FCD-DL	Double acting double rod type with switch		
B Bore size (mm)			
25	φ 25		
32	φ 32		
40	φ 40		
50	φ 50		
63	φ 63		
C Port thread type			
Blank	Rc thread		
NN	NPT thread (φ 40 and over) (custom order)		
GN	G thread (φ 40 and over) (custom order)		
D Stroke length (mm)			
Bore size	Stroke length Note 1	Custom stroke length	
φ 25 to φ 63	1 to 50	1 mm increment	
E Switch model no.			
Radial lead wire	Contact	Indicator	Lead wire
M2V*	Proximity	1 color indicator type	2-wire
M2WV*		2 color indicator type	
M3V*		1 color indicator type	3-wire
M3WV*		2 color indicator type	
M3PV*		1 color indicator type (custom order)	
MOV*	Reed	1 color indicator type	2-wire
M5V*		Without indicator light	
*Lead wire length			
Blank	1m (standard)		
3	3m (option)		
5	5m (option)		
F Switch quantity			
R	1 on rod end		
H	1 on head end		
D	Two		
T	Three		
G Option			
Blank	Rod end female thread		
M	Piston rod material (stainless steel)		
N	Rod end male thread		
R	With socket and spigot		
P6	Copper and PTFE free (copper and Teflon material not used)		

<Example of model number>

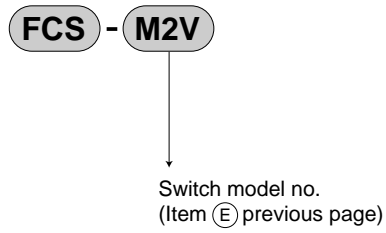
FCD-DL-25-10-M2V-R-M

Model: Flat and compact cylinder

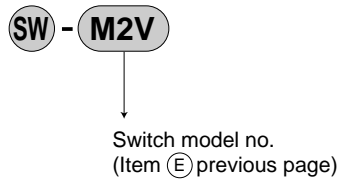
- A** Model no. : Double acting double rod type with switch
- B** Bore size : φ 25mm
- C** Port thread type : Rc thread
- D** Stroke length : 10mm
- E** Switch model no. : Proximity switch M2V
- F** Switch quantity : One on rod end
- G** Option : Piston rod material (stainless steel)

How to order switch

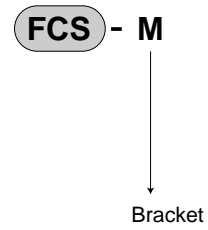
● Switch body + mounting bracket



● Only switch body



● Mounting bracket



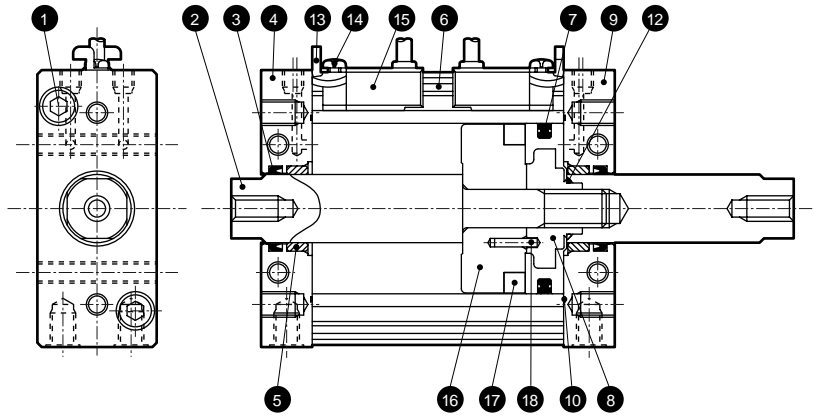
SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

Flat and compact cylinder
Space saving structure

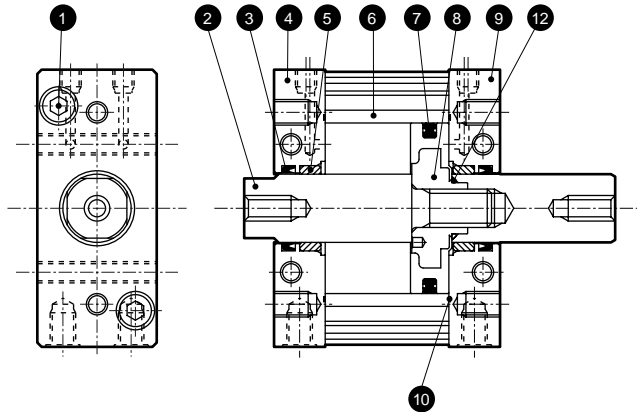
Internal structure and parts list

- SCP*2
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS
- CKV2
- CA/OV2
- SSD
- CAT
- MDC2
- MVC
- SMD2
- MSD*
- FC***
- STK
- ULK*
- JSK/M2
- JSG
- JSC3
- USSD
- USC
- JSB3
- LMB
- STG
- STS/L
- LCS
- LCG
- LCM
- LCT
- LCY
- STR2
- UCA2
- HCM
- HCA
- SRL2
- SRG
- SRM
- SRT
- MRL2
- MRG2
- SM-25
- CAC3
- UCAC
- RCC2
- MFC
- SHC
- GLC
- Ending

● FCD-DL (with switch)



● FCD-D



No.	Parts name	Material	Remarks	No.	Parts name	Material	Remarks
1	Hexagon socket head cap bolt	Steel		9	Head cover	Aluminum alloy	
2	Piston rod	Steel		10	Guard gasket	Nitrile rubber	
3	Rod packing seal	Nitrile rubber		11	Piston gasket	Nitrile rubber	
4	Rod cover	Aluminum alloy		12	Switch bracket	Stainless steel	
5	Bush	Special bearing material	Note 1	13	Cross headed pan	Steel	
6	Tube	Aluminum alloy		14	Switch		
7	Piston packing seal	Nitrile rubber		15	Spacer	Aluminum alloy	
8	Piston	Aluminum alloy die cast + polyacetal		16	Magnet	Plastic	
				17	Spring pin	Steel	

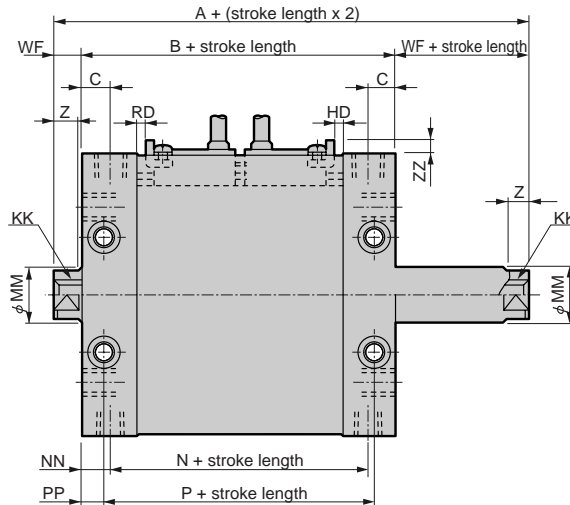
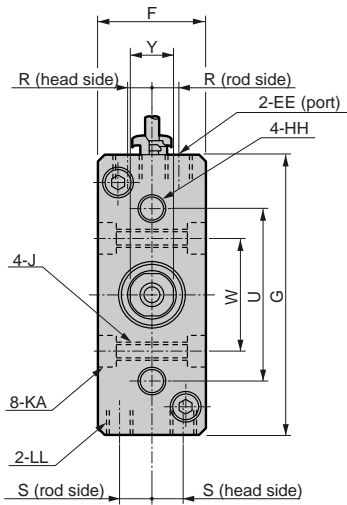
Note 1: Special aluminum is used for copper and PTFE free.

Repair parts list (common for types with switch and without switch)

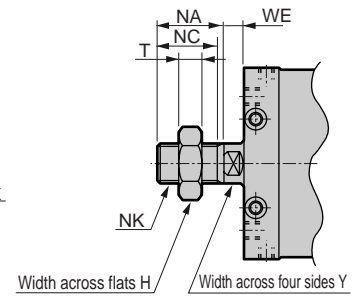
Bore size (mm)	Kit No.	Repair parts number
φ 25 or equivalent	FCD-D-25K	3 7 10
φ 32 or equivalent	FCD-D-32K	
φ 40 or equivalent	FCD-D-40K	
φ 50 or equivalent	FCD-D-50K	
φ 63 or equivalent	FCD-D-63K	

Dimensions

● FCD-DL (double acting double rod type with switch)



● Rod end male thread dimensions (Option symbol N)

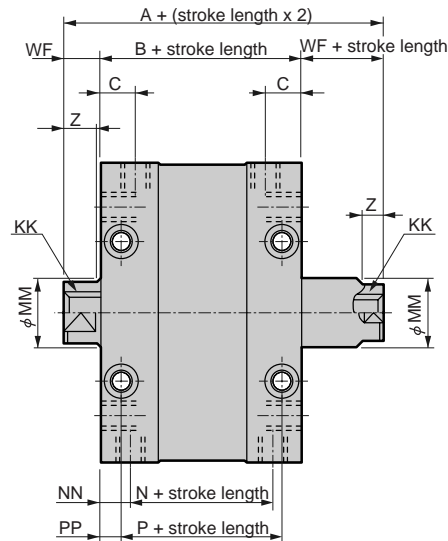
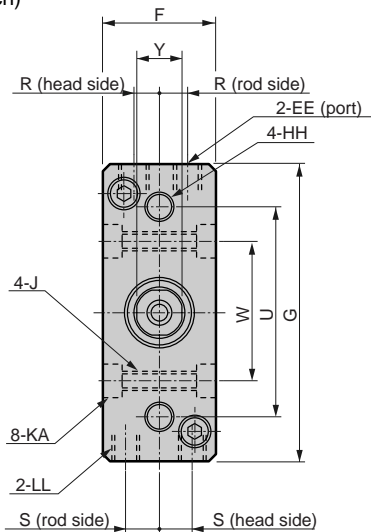


Note 1: This drawing indicates FCD-DL-40.

Note 2: When installing 2 switches on the surface, more than 35 mm stroke is required for 25 to 50 mm bore cylinders, while 30 mm stroke is required for 63 mm bore cylinder. When shorter than these length, switches installed on the both ends.

Note 3: Position of width across four sides of Y part is not constant.

● FCD-D (without switch)



Note 1: This drawing indicates FCD-D-40.

Note 2: Position of width across four sides of Y part is not constant.

Symbol	Dimensions, without switch				Dimensions, with switch				Common dimensions							
	A	B	N	P	A	B	N	P	C	EE	F	G	HH	J	KA	
φ25 or equivalent	42	32	20	24	57	47	35	39	7.5	M5 depth 4	25	55	M5 depth 7	M5 (penetrating)	-	
φ32 or equivalent	47	33	21	25	62	48	36	40	7.5	M5 depth 4	28	65	M6 depth 8	M5 (penetrating)	-	
φ40 or equivalent	57	41	25	29	72	56	40	44	8.5	Rc1/8	32	83	M8 depth 10	M6 (penetrating)	9.5 spot face depth 5.4	
φ50 or equivalent	65	46	29	27	80	61	44	42	10.5	Rc1/8	39	101	M10 depth 12	M8 (penetrating)	11 spot face depth 6.5	
φ63 or equivalent	76	57	37	37	91	72	52	52	11.5	Rc1/4	49	125	M12 depth 15	M12 (penetrating)	17.5 spot face depth 10.5	

Symbol	Common dimensions, with switches															
	KK	LL	MM	NN	PP	R	S	U	W	WF	ZZ	RD	HD	Y	Z	
φ25 or equivalent	M5 depth 9	M5 depth 7	12	6	4	4.7	7	38	24	5	5.5 or less	0	0	10	5	
φ32 or equivalent	M6 depth 11	M6 depth 8	16	6	4	6.2	8	45	30	7	5.5 or less	0	0	14	7	
φ40 or equivalent	M8 depth 13	M8 depth 10	16	8	6	7.5	9	52	34	8	5.5 or less	0	0	14	7	
φ50 or equivalent	M8 depth 13	M10 depth 12	20	8.5	9.5	9	10	62	40	9.5	5.5 or less	0	0.5	17	8	
φ63 or equivalent	M10 depth 15	M12 depth 18	20	10	10	10.5	14	86	54	9.5	5.5 or less	0	4.5	17	8	

● Rod end male thread dimensions table

Symbol	H	NA	NC	NK	T	WE
φ25 or equivalent	17	22	20	M10 x 1.25	6	5
φ32 or equivalent	22	22	20	M14 x 1.5	8	7
φ40 or equivalent	22	22	20	M14 x 1.5	8	7
φ50 or equivalent	27	28	26	M18 x 1.5	11	8
φ63 or equivalent	27	28	26	M18 x 1.5	11	8

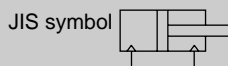
- SCP*2
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS
- CKV2
- CA/OV2
- SSD
- CAT
- MDC2
- MVC
- SMD2
- MSD*
- FC*
- STK
- ULK*
- JSK/M2
- JSG
- JSC3
- USSD
- USC
- JSB3
- LMB
- STG
- STS/L
- LCS
- LCG
- LCM
- LCT
- LCY
- STR2
- UCA2
- HCM
- HCA
- SRL2
- SRG
- SRM
- SRT
- MRL2
- MRG2
- SM-25
- CAC3
- UCAC
- RCC2
- MFC
- SHC
- GLC
- Ending

Flat and compact cylinder
Space saving structure

Flat and compact cylinder Double acting cushioned

FCD-K Series

● Bore size: $\phi 25$, $\phi 32$, $\phi 40$, $\phi 50$, $\phi 63$



Specifications

Descriptions	FCD-K FCD-KL				
	$\phi 25$ or equivalent	$\phi 32$ or equivalent	$\phi 40$ or equivalent	$\phi 50$ or equivalent	$\phi 63$ or equivalent
Bore size mm	$\phi 25$ or equivalent	$\phi 32$ or equivalent	$\phi 40$ or equivalent	$\phi 50$ or equivalent	$\phi 63$ or equivalent
Actuation	Double acting cushioned				
Working fluid	Compressed air				
Max. working pressure MPa	0.7				
Min. working pressure MPa	0.07				
Withstanding pressure MPa	1.05				
Ambient temperature $^{\circ}\text{C}$	-10 to 60 (no freezing)				
Port size	M5		Rc1/8		Rc1/4
Stroke tolerance mm	+1.5 (to 50), 0 (to 150), +2.5 (to 150)				
Working piston speed mm/s	50 to 500				
Cushion	Rubber cushion				
Lubrication	Not required (when lubricating, turbine oil Class 1 ISOVG32)				
Allowable energy absorption J	0.034	0.54	0.67	1.02	1.56

Non-rotating accuracy/allowable torque

Descriptions	$\phi 25$ or equivalent	$\phi 32$ or equivalent	$\phi 40$ or equivalent	$\phi 50$ or equivalent	$\phi 63$ or equivalent
Revolvable angle tolerance Note 2	$\pm 1^{\circ}$	$\pm 0.8^{\circ}$	$\pm 0.5^{\circ}$	$\pm 0.5^{\circ}$	$\pm 0.5^{\circ}$
Allowable torque N·m	1	1.6	2.5	3.9	5.9

Note 1: Avoid the use that torque is applied with a big impact or the direction of torque load is suddenly changed with a big impact.

Note 2: "Revolvable angle tolerance" is the value at 10% of "allowable torque" because piston and piston rod deforming are not included in this clattering rate.

Stroke length

Model no.	Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)
FCD-K	$\phi 25, \phi 32$ $\phi 40, \phi 60$ $\phi 63$ or equivalent	5, 10, 15, 20, 25 30, 40, 50	150	1

Note 1: Custom stroke length is available per 1mm increment.

Note 2: Min. stroke length may differ depending on switch installation method. Refer to the table below.

Min. stroke length of type with switch

With switch		With 2 switches	
Rod side installation	Head side installation	Different surface installation	Same surface installation
10mm		15mm	35mm ($\phi 25, 32, 40, 50$) 30mm ($\phi 63$)

Switch specifications

● Proximity switch

Descriptions	Proximity 2 wire		Proximity 3 wire		
	M2V	M2WV (2 color indicator type)	M3V	M3PV (Custom order)	M3WV (2 color indicator type)
Applications	Programmable controller		Programmable controller, relay, IC circuit and small solenoid valve		
Output method	-	NPN output	NPN output	PNP output	NPN output
Power voltage	-		4.5 to 28 VDC		10 to 28 VDC
Load voltage	10 to 30 VDC		30 VDC or less		
Load current	5 to 30mA		200mA or less	100mA or less	150mA or less
Light	LED (ON lighting)	Red/green LED (ON lighting)	LED (ON lighting)	Yellow LED (ON lighting)	Red/green LED (ON lighting)
Leakage current	1mA or less		10 μA or less	0.05mA or less	10 μA or less

● Reed switch

Descriptions	Reed 2 wire	
	M0V	M5V
Applications	Programmable controller, relay	Programmable controller, relay, IC circuit (without indicator light), serial connection
Load voltage	5 to 50mA with 12/24 VDC	50mA or less with 5/12/24 VDC
Load current	7 to 20mA with 110 VAC	20mA with 110 VAC
Light	LED (ON lighting)	Without indicator light
Leakage current	0mA	

Note 1: Refer to Ending 1 for other switch specifications.

Cylinder weight (For types with switch, weight of two switches, bracket and lead wire 1m are included)

(Unit: g)

Descriptions, mounting style	Product weight when stroke length (S) = 0mm		Additional weight per 10mm
	FCD-K		
Bore size (mm)	Without switch	With switch	
φ25 or equivalent	155	265	26
φ32 or equivalent	225	260	37
φ40 or equivalent	355	525	46
φ50 or equivalent	550	785	71
φ63 or equivalent	1135	1240	90

(E.g) product weight of FCD-K-32-20

- Product weight when S = 0mm 225g
- Additional weight at S=20mm $37g \times \frac{20}{10} = 74g$
- Product weight $225g + 74g = 299g$

SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

Flat and compact cylinder
Space saving structure

How to order

Without switch

FCD-K - **25** - **10** - **N**

With switch

FCD-KL - **25** - **10** - **M2V** - **R** - **N**

A Model no.

B Bore size

C Port thread type

D Stroke length

E Switch model no.
* indicates lead wire length.

F Switch quantity

G Option
Note 2

Note on model no. selection

Note 1: Refer to page 1124 for min. stroke length with switch.
Note 2: Dimensions of copper and PTFE free " P6 " are same as standard type.

<Example of model number>

FCD-KL-25-10-M2V-R-M

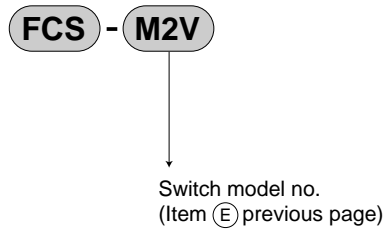
Model: Flat and compact cylinder

- A** Model no. : Double acting cushioned with switch
- B** Bore size : ϕ 25mm
- C** Port thread type : Rc thread
- D** Stroke length : 10mm
- E** Switch model no. : Proximity switch M2V
- F** Switch quantity : One on rod end
- G** Option : Piston rod material (stainless steel)

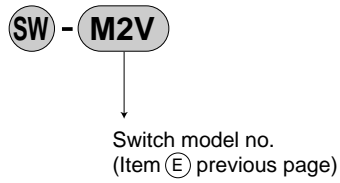
Symbol	Descriptions		
A Model no.			
FCD-K	Double acting cushioned		
FCD-KL	Double acting cushioned with switch		
B Bore size (mm)			
25	ϕ 25		
32	ϕ 32		
40	ϕ 40		
50	ϕ 50		
63	ϕ 63		
C Port thread type			
Blank	Rc thread		
NN	NPT thread (ϕ 40 and over) (custom order)		
GN	G thread (ϕ 40 and over) (custom order)		
D Stroke length (mm)			
Bore size	Stroke length Note 1	Custom stroke length	
ϕ 25 to ϕ 63	1 to 150	1 mm increment	
E Switch model no.			
Radial lead wire	Contact	Indicator	Lead wire
M2V*	Proximity	1 color indicator type	2-wire
M2WV*		2 color indicator type	
M3V*		1 color indicator type	3-wire
M3WV*		2 color indicator type	
M3PV*		1 color indicator type (custom order)	
MOV*	Reed	1 color indicator type	2-wire
M5V*		Without indicator light	
*Lead wire length			
Blank	1m (standard)		
3	3m (option)		
5	5m (option)		
F Switch quantity			
R	1 on rod end		
H	1 on head end		
D	Two		
T	Three		
G Option			
Blank	Rod end female thread		
M	Piston rod material (stainless steel)		
N	Rod end male thread		
R	With socket and spigot		
P6	Copper and PTFE free (copper and Teflon material not used)		

How to order switch

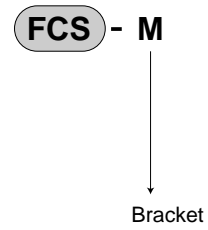
● Switch body + mounting bracket



● Only switch body



● Mounting bracket



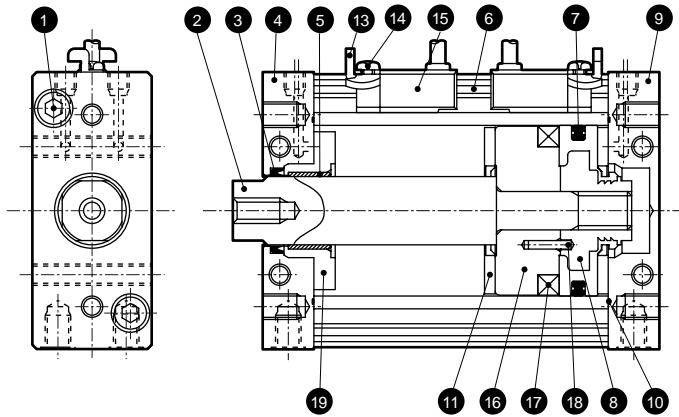
SCP*2
CMK2
CMA2
SCM
SCG
SCA2
SCS
CKV2
CA/OV2
SSD
CAT
MDC2
MVC
SMD2
MSD*
FC*
STK
ULK*
JSK/M2
JSG
JSC3
USSD
USC
JSB3
LMB
STG
STS/L
LCS
LCG
LCM
LCT
LCY
STR2
UCA2
HCM
HCA
SRL2
SRG
SRM
SRT
MRL2
MRG2
SM-25
CAC3
UCAC
RCC2
MFC
SHC
GLC
Ending

Flat and compact cylinder
Space saving structure

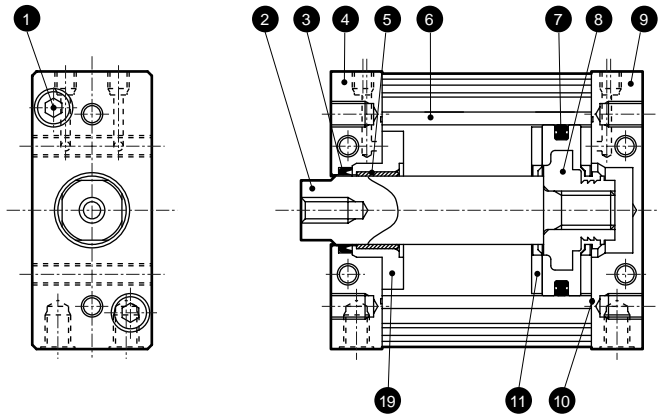
Internal structure and parts list

- SCP*2
- CMK2
- CMA2
- SCM
- SCG
- SCA2
- SCS
- CKV2
- CA/OV2
- SSD
- CAT
- MDC2
- MVC
- SMD2
- MSD*
- FC***
- STK
- ULK*
- JSK/M2
- JSG
- JSC3
- USSD
- USC
- JSB3
- LMB
- STG
- STS/L
- LCS
- LCG
- LCM
- LCT
- LCY
- STR2
- UCA2
- HCM
- HCA
- SRL2
- SRG
- SRM
- SRT
- MRL2
- MRG2
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● FCD-KL (with switch)



● FCD-K



No.	Parts name	Material	Remarks	No.	Parts name	Material	Remarks
1	Hexagon socket head cap bolt	Steel		10	Guard gasket	Nitrile rubber	
2	Piston rod	Steel		11	Cushion rubber	Urethane rubber	
3	Rod packing seal	Nitrile rubber		12	Piston gasket	Nitrile rubber	
4	Rod cover	Aluminum alloy		13	Switch bracket	Stainless steel	
5	Bush	Special bearing material	Note 1	14	Cross headed pan	Steel	
6	Tube	Aluminum alloy		15	Switch		
7	Piston packing seal	Nitrile rubber		16	Spacer	Aluminum alloy	
8	Piston	Aluminum alloy die cast + polyacetal		17	Magnet	Plastic	
9	Head cover	Aluminum alloy		18	Spring pin	Steel	
				19	Bush spacer	Aluminum alloy	

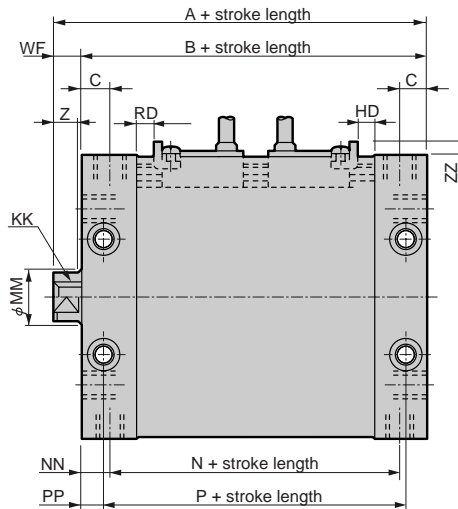
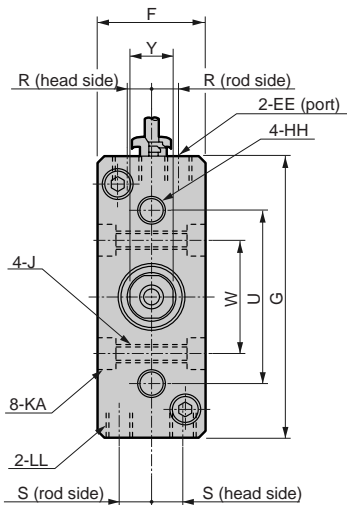
Note 1: Special aluminum is used for copper and PTFE free.

Repair parts list (common for types with switch and without switch)

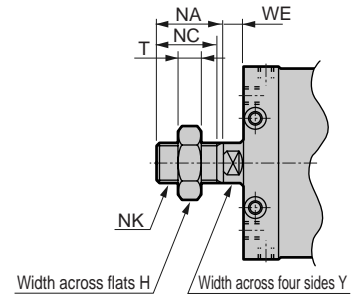
Bore size (mm)	Kit No.	Repair parts number
φ 25 or equivalent	FCD-K-25K	
φ 32 or equivalent	FCD-K-32K	
φ 40 or equivalent	FCD-K-40K	
φ 50 or equivalent	FCD-K-50K	
φ 63 or equivalent	FCD-K-63K	

Dimensions

● FCD-KL (double acting cushioned with switch)



● Rod end male thread dimensions (Option symbol N)

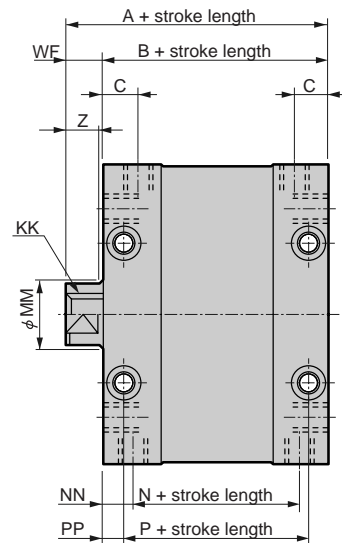
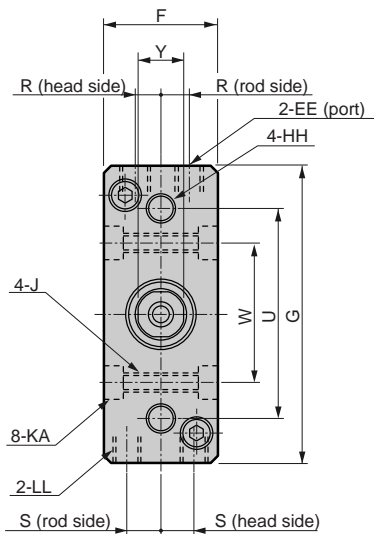


Note 1: This drawing indicates FCD-KL-40.

Note 2: When installing 2 switches on the surface, more than 35 mm stroke is required for 25 to 50 mm bore cylinders, while 30 mm stroke is required for 63 mm bore cylinder. When shorter than these length, switches installed on the both ends.

Note 3: Position of width across four sides of Y part is not constant.

● FCD-K (without switch)



Note 1: This drawing indicates FCD-K-32.

Note 2: Position of width across four sides of Y part is not constant.

Symbol	Dimensions, without switch				Dimensions, with switch				Common dimensions							
	A	B	N	P	A	B	N	P	C	EE	F	G	HH	J	KA	
φ 25 or equivalent	47	42	30	34	62	57	45	49	7.5	M5 depth 4	25	55	M5 depth 7	M5 (penetrating)	-	
φ 32 or equivalent	50	43	31	35	65	58	46	50	7.5	M5 depth 4	28	65	M6 depth 8	M5 (penetrating)	-	
φ 40 or equivalent	59	51	35	39	74	66	50	54	8.5	Rc1/8	32	83	M8 depth 10	M6 (penetrating)	9.5 spot face depth 5.4	
φ 50 or equivalent	65.5	56	39	37	80.5	71	54	52	10.5	Rc1/8	39	101	M10 depth 12	M8 (penetrating)	11 spot face depth 6.5	
φ 63 or equivalent	76.5	67	47	47	91.5	82	62	62	11.5	Rc1/4	49	125	M12 depth 15	M12 (penetrating)	17.5 spot face depth 10.5	

Symbol	Common dimensions, with switches															
	KK	LL	MM	NN	PP	R	S	U	W	WF	ZZ	RD	HD	Y	Z	
φ 25 or equivalent	M5 depth 9	M5 depth 7	12	6	4	4.7	7	38	24	5	5.5 or less	6	1	10	5	
φ 32 or equivalent	M6 depth 11	M6 depth 8	16	6	4	6.2	8	45	30	7	5.5 or less	7	1	14	7	
φ 40 or equivalent	M8 depth 13	M8 depth 10	16	8	6	7.5	9	52	34	8	5.5 or less	7	2	14	7	
φ 50 or equivalent	M8 depth 13	M10 depth 12	20	8.5	9.5	9	10	62	40	9.5	5.5 or less	7	3	17	8	
φ 63 or equivalent	M10 depth 15	M12 depth 18	20	10	10	10.5	14	86	54	9.5	5.5 or less	7	7	17	8	

● Rod end male thread dimensions table

Symbol	H	NA	NC	NK	T	WE
φ 25 or equivalent	17	22	20	M10 x 1.25	6	5
φ 32 or equivalent	22	22	20	M14 x 1.5	8	7
φ 40 or equivalent	22	22	20	M14 x 1.5	8	7
φ 50 or equivalent	27	28	26	M18 x 1.5	11	8
φ 63 or equivalent	27	28	26	M18 x 1.5	11	8

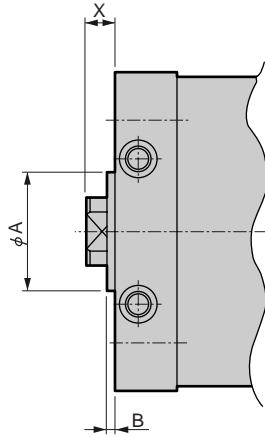
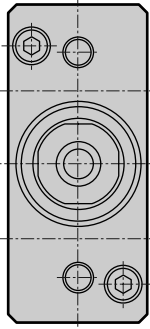
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Flat and compact cylinder
Space saving structure

FC* Series common dimensions: Option (with socket and spigot)



● With socket and spigot dimensional drawing (option symbol R)



Symbol	A	B	X
Bore size (mm)			
φ 25 or equivalent	20 h9 $\begin{pmatrix} 0 \\ -0.052 \end{pmatrix}$	2 $\begin{pmatrix} 0 \\ -0.4 \end{pmatrix}$	5
φ 32 or equivalent	24 h9 $\begin{pmatrix} 0 \\ -0.052 \end{pmatrix}$	2 $\begin{pmatrix} 0 \\ -0.4 \end{pmatrix}$	7
φ 40 or equivalent	28 h9 $\begin{pmatrix} 0 \\ -0.052 \end{pmatrix}$	2 $\begin{pmatrix} 0 \\ -0.4 \end{pmatrix}$	8
φ 50 or equivalent	32 h9 $\begin{pmatrix} 0 \\ -0.062 \end{pmatrix}$	2 $\begin{pmatrix} 0 \\ -0.4 \end{pmatrix}$	9.5
φ 63 or equivalent	32 h9 $\begin{pmatrix} 0 \\ -0.062 \end{pmatrix}$	2 $\begin{pmatrix} 0 \\ -0.4 \end{pmatrix}$	9.5

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