Product MAP with brake function

1) Cylinder with position locking and brake

Model	Function	Structure/Operational principle		Driving cylinder	Features
ULKP	With brake (Stop when operating)	**Swash plate** ● Brake operating principle — Brake spring, Brake plate Ⓐ, Brake plate Ⓑ, Cover, Port Ⓐ, Fulcrum	When air is discharged from port A, the brake plates A and B tilt to the arrow direction from the fulcrum. This boosts the brake force by generating cylinder thrust, enabling retention of the piston rod.	SCP*2 φ16	Cylinder with brake. It can be stopped or held stationary during operation. JSG saves more space in the brake area when compared to the conventional JSC3 Series. The ULK also saves more space by reducing the brake height compared to the conventional JSK2 Series.
ULK		● Brake release principle — Port Ⓐ	When air is supplied from port A, the brake plates A and B are pushed by the release piston. The brake plates A and B become perpendicular to the piston rod, and the piston rod becomes free to move.	CMK2 φ20 to φ40	
JSK2		**Rod clamping** ● Brake release principle — Port A, Piston, Lever, Eccentric ring, Piston rod, Spring, Eccentric	Air supplied from port A pushes the piston under it and opens the lever. The eccentric rings directly connected to the lever rotate and release the piston rod.	CMK2 φ20 to φ40	[Applications] (1) When multipoint positioning is required (2) When position locking is required (3) When emergency stop is required (4) When locking a workpiece
JSM2				CMA2 φ20 to φ40	
JSG		● Brake operating principle — Port A	If air is discharged from port A, the eccentric rings rotate with the spring force, generating an eccentric load to brake the piston rod.	SCG φ40 to φ100	
JSC3 . JSC4				SCA2 φ40 to φ100	
				SCS2 φ125 to φ180	
USSD	Free position locking (Retain stationary state)	**Round slit method** — Port A, Lock metal B, F, A, M, Rod contact surface, View A, View B, When locked, When unlocked	New long life position locking mechanism is used. Applying torque M to the lock metal generates axial force F. This force holds the rod.	SSD φ25 to φ100	Cylinder with position locking mechanism (for holding cylinder stationary). 2 lock direction. Opposite locking direction is free.
UFCD				FCD φ25 to φ63	[Application] When position locking is required
USC				SCA2 φ40 to φ100	

2) Braking unit

Model	Function	Size	Features
JSB3	Brake (Stop when operating)	Rod size φ16 to φ45	A module of the brake mechanism of JSC3 Series. Able to stop the movable rod immediately and lock it firmly, it can be used in safety mechanisms and clamping mechanisms of many kinds of devices.
LMB	Stationary state locked	THK Rail width: 15/20/25	A lock unit installed in a linear guide. When used with a system incorporating a linear guide, this lock unit can be used to lock a workpiece after moving it to a specified position, or to enable emergency stop for safety, etc. LMB is narrower than LML, and LML is lower-profile than LMB.
LML		THK, IKO Rail width: 15/20/25/30/35	

CKD

UFCD

Free position locking flat cylinder

φ25/φ32/φ40/φ50/φ63

With brake/position locking

LCW
LCR
LCG
LCX
LCM
STM
STG
STS/STL
STR2
UCA2
ULK*
JSK/M2
JSG
JSC3/JSC4
USSD
UFCD
USC
JSB3
LMB
LML
HCM
HCA
LBC
CAC4
UCAC2
CAC-N
UCAC-N
RCC2
RCS
PCC
SHC
MCP
GLC
MFC
BBS
RRC
GRC
RV3*
NHS
HR
LN
Hand
Chuk
MecHnd/Chuk
ShkAbs
FJ
FK
SpdContr
Ending

Overview

Cylinder equipped with position locking mechanism capable of stopping at any position of the stroke length for FCD Series flat cylinders.

CONTENTS

Free-position flat cylinder FCD Series with position locking!

Saves space and ensures the safety of workpieces or the like during power failures or accidents.
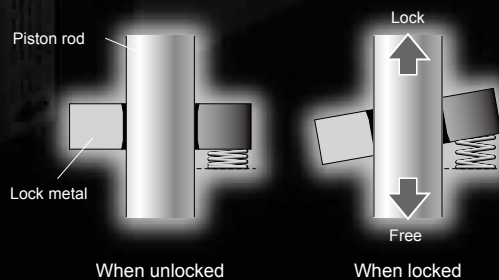
UFCD Series

With free position locking mechanism

● The locking position can be at any point as long as the piston rod remains still
● The direction of the lock can either be forward or backward
● It moves freely in the reverse lock direction, and is therefore easy to remove even with workpiece clamped.

Space saving/simple design

● A flat type that can be installed in a tight space or arranged side-by-side
● Even with its position locking mechanism, it has a simple design that can work with any device.

Rotation-stop is not required

● Due to the oval piston structure, the cylinder body has a rotation-stop function. Therefore, there is no need to provide a separate rotation-stop mechanism.

Piston rod

Lock metal

When unlocked

Lock

Free

When locked

RoHS compliant
Free from environmentally harmful substances such as lead and hexavalent chromium.

CKD

●: Standard ◎: Option

Variation	Model No.	Bore size (mm)	Standard stroke length (mm)								Min. stroke length (mm)	Custom stroke length (/mm)	Max. stroke length (mm)	Option Rod end male thread N	Switch	Page
			5	10	15	20	25	30	40	50						
Double acting/ single rod	UFCD-KL	φ25 equivalent/ φ32 equivalent/ φ40 equivalent/ φ50 equivalent/ φ63 equivalent	●	●	●	●	●	●	●	●	1	1	150	◎	◎	878

LCW
LCR
LCG
LCX
LCM
STM
STG
STS/STL
STR2
UCA2
ULK*
JSK/M2
JSG
JSC3/JSC4
USSD
UFCD
USC
JSB3
LMB
LML
HCM
HCA
LBC
CAC4
UCAC2
CAC-N
UCAC-N
RCC2
RCS
PCC
SHC
MCP
GLC
MFC
BBS
RRC
GRC
RV3*
NHS
HR
LN
Hand
Chuk
MecHnd/Chuk
ShkAbs
FJ
FK
SpdContr
Ending

Free position locking flat cylinder double acting/single rod

UFCD Series

● Bore size: φ25/φ32/φ40/φ50/φ63

RoHS   CAD

Specifications

Descriptions		UFCD-KL				
Bore size mm	φ25 or equiv.	φ32 or equiv.	φ40 or equiv.	φ50 or equiv.	φ63 or equiv.
Actuation	Double acting				
Working fluid	Compressed air				
Max. working pressure MPa	0.7 (≈100 psi, 7 bar)				
Min. working pressure MPa	0.25 (≈36 psi, 2.5 bar)				
Proof pressure MPa	1.05 (≈150 psi, 10.5 bar)				
Ambient temperature °C	-10 (14°F) to 60 (140°F) (no freezing)				
Port size	M5		Rc1/8		Rc1/4
Stroke tolerance mm	$^{+1.5}_{0}$(to 50) $^{+2.0}_{0}$(to 150)				
Working piston speed mm/s	50 to 500				
Cushion	Rubber cushion				
Lubrication	Not required (turbine oil class 1 ISO VG32 if necessary for lubrication)				
Holding force N	345	543	904	1350	2220
Allowable absorbed energy J	0.34	0.54	0.67	1.02	1.56

Rotation-stop precision/Allowable torque

Descriptions		φ25 or equiv.	φ32 or equiv.	φ40 or equiv.	φ50 or equiv.	φ63 or equiv.
Non-rotating accuracy	*2	±1°	±0.8°	±0.5°	±0.5°	±0.5°
Allowable torque	N·m	1	1.6	2.5	3.9	5.9

*1: Avoid applying rotation torque with impact, or with violent changes in torque load direction.
*2: "Non-rotating accuracy" is the value when a torque load equivalent to 10% of "allowable torque" is applied
to the end of the piston rod.

Stroke length

Model No.	Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)
UFCD-KL	φ25, φ32 φ40, φ50 φ63 or equiv.	5/10/15/20/25 30/40/50	150	1

*1: The custom stroke length is available in 1 mm increments.
*2: The min. stroke length varies depending on switch mounting method. Refer to the following table.

Min. stroke length with switch

1		2	
Rod side installation	**Head side installation**	**Different surface mounting**	**Same surface mounting**
10 mm		15 mm	35 mm(φ25/32/40/50) 30 mm(φ63)

CKD

Switch specifications

● Proximity switch

Descriptions	Proximity 2-wire		Proximity 3-wire		
	M2V	M2WV (2-color display)	M3V	M3PV (Custom order)	M3WV (2-color display)
Applications	Dedicated for programmable controller		Programmable controller, relay, IC circuit, small solenoid valve		
Output method	-	NPN output	NPN output	PNP output	NPN output
Power supply voltage	-		4.5 to 28 VDC		10 to 28 VDC
Load voltage	10 to 30 VDC		30 VDC or less		
Load current	5 to 30 mA		100 mA or less	100 mA or less	100 mA or less
Indicator lamp	LED (Lit when ON)	Red/green LED (Lit when ON)	LED (Lit when ON)	Yellow LED (Lit when ON)	Red/green LED (Lit when ON)
Leakage current	1 mA or less		10 µA or less	0.05 mA or less	10 µA or less
Weight g	1 m:22 3 m:57 5 m:93				

● Reed switch

Descriptions	Reed 2-wire			
	MOV		M5V	
Applications	Programmable controller, relay		For programmable controller, relay, IC circuit (without indicator lamp), serial connection	
Power supply voltage	-		-	
Load voltage	12/24 VDC	110 VAC	5/12/24 VDC	110 VAC or less
Load current	5 to 50 mA	7 to 20 mA	50 mA or less	20 mA or less
Indicator lamp	LED (Lit when ON)		Without indicator lamp	
Leakage current	0 mA			
Weight g	1 m:22 3 m:57 5 m:93			

*1: Refer to Ending Page 1 for other switch specifications.
*2: Dimensions depend on switch model No. Refer to Ending Page 13 for details.

Cylinder weight

(Unit: g)

Bore size (mm)	Product weight when stroke length (S) = 0 mm	Additional weight per S = 10 mm	Switch weight	Mounting bracket weight
φ25 or equiv.	454	26	Refer to the weight in the switch specifications.	2
φ32 or equiv.	613	37		
φ40 or equiv.	1046	46		
φ50 or equiv.	1730	71		
φ63 or equiv.	3088	90		

(Example) Product weight of UFCD-KL-32-20

● Product weight when S = 0 mm .... 613 g
● Additional weight when S = 20 mm .... $37 \text{ g} \times \dfrac{20}{10} = 74 \text{ g}$
● Product weight .... 613 g + 74 g = 687 g

Theoretical thrust table

(Unit: N)

Bore size (mm)	Operating direction	Working pressure MPa					
		0.2	0.3	0.4	0.5	0.6	0.7
φ25	Push	98.5	1.48×10^2	1.97×10^2	2.46×10^2	2.96×10^2	3.45×10^2
	Pull	75.9	1.14×10^2	1.52×10^2	1.90×10^2	2.28×10^2	2.66×10^2
φ32	Push	1.55×10^2	2.33×10^2	3.10×10^2	3.88×10^2	4.66×10^2	5.43×10^2
	Pull	1.15×10^2	1.73×10^2	2.30×10^2	2.88×10^2	3.45×10^2	4.03×10^2
φ40	Push	2.58×10^2	3.87×10^2	5.16×10^2	6.45×10^2	7.75×10^2	9.04×10^2
	Pull	2.18×10^2	3.27×10^2	4.36×10^2	5.45×10^2	6.54×10^2	7.63×10^2
φ50	Push	3.86×10^2	5.80×10^2	7.73×10^2	9.66×10^2	1.16×10^3	1.35×10^3
	Pull	3.24×10^2	4.85×10^2	6.47×10^2	8.09×10^2	9.71×10^2	1.13×10^3
φ63	Push	6.36×10^2	9.53×10^2	1.27×10^3	1.59×10^3	1.91×10^3	2.22×10^3
	Pull	5.73×10^2	8.59×10^2	1.15×10^3	1.43×10^3	1.72×10^3	2.00×10^3

UFCD Series

How to order

● With switch (built-in magnet for switch)

UFCD-KL - **25** - ◯ - **10** - **F** - **M2V** - **R** - **N**

Ⓐ Model No.

Ⓑ Bore size

Ⓒ Port thread

Ⓓ Stroke length

Ⓔ Lock direction

Ⓕ Switch model No.
* indicates the lead wire length.

Ⓖ Switch quantity

Ⓗ Option

Code	Content
Ⓐ Model No.	
UFCD-KL	Double acting/cushioned/with switch
Ⓑ Bore size (mm)	
25	φ25
32	φ32
40	φ40
50	φ50
63	φ63
Ⓒ Port thread	
Blank	Rc thread
NN	NPT thread (φ40 and over) (custom order product)
GN	G thread (φ40 and over) (custom order product)

Ⓓ Stroke length (mm)

Bore size	Stroke length *1	Custom stroke length
φ25 to φ63	**1 to 150**	In 1 mm increments

Code	Content
Ⓔ Lock direction	
F	Forward locking
B	Backward locking

Ⓕ Switch model No.

Radial lead wire	Contact	Voltage AC	Voltage DC	Display	Lead wire
M2V*	Proximity		●	1-color display	2-wire
M2WV*			●	2-color display	2-wire
M3V*			●	1-color display	3-wire
M3WV*			●	2-color display	3-wire
M3PV*			●	1-color display (custom)	3-wire
M0V*	Reed	●	●	1-color display	2-wire
M5V*		●	●	Without indicator lamp	2-wire

* Lead wire length	
Blank	1 m (standard)
3	3 m (option)
5	5 m (option)

Code	Content
Ⓖ Switch quantity	
R	1 on rod side
H	1 on head side
D	2
T	3
Ⓗ Option	
Blank	Rod end female thread
N	Rod end male thread

⚠ Precautions for model No. selection

*1: Refer to page 878 for the min. stroke length with switch.

[Example of model No.]

UFCD-KL-25-10-F-M2V-R-N

Model: Free position locking flat cylinder

Ⓐ Model No.   : Double acting/cushioned/with switch
Ⓑ Bore size   : φ25 mm
Ⓒ Port thread   : Rc thread
Ⓓ Stroke length   : 10 mm
Ⓔ Lock direction   : Forward locking
Ⓕ Switch model No.   : Proximity switch M2V, lead wire 1 m
Ⓖ Switch quantity   : 1 on rod side
Ⓗ Option   : Rod end male thread

CKD

How to order switch

● Switch body + mounting bracket set

(FCS)-(M2V)

↓

Switch model No.
(Item Ⓕ on the previous page)

● Switch body only

(SW)-(M2V)

↓

Switch model No.
(Item Ⓕ on the previous page)

● Mounting bracket set

(FCS)-M

↓

Mounting bracket

UFCD Series

LCW
LCR
LCG
LCX
LCM
STM
STG
STS/STL
STR2
UCA2
ULK*
JSK/M2
JSG
JSC3/JSC4
USSD
UFCD
USC
JSB3
LMB
LML
HCM
HCA
LBC
CAC4
UCAC2
CAC-N
UCAC-N
RCC2
RCS
PCC
SHC
MCP
GLC
MFC
BBS
RRC
GRC
RV3*
NHS
HR
LN
Hand
Chuk
MecHnd/Chuk
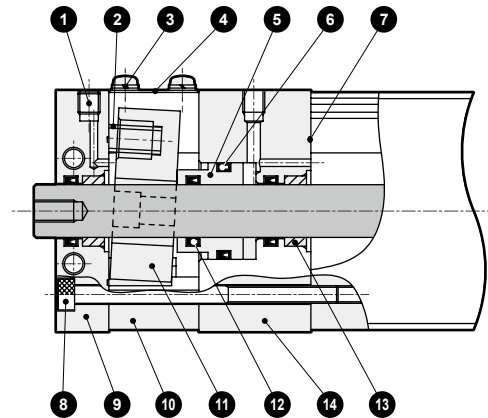ShkAbs
FJ
FK
SpdContr
Ending

Internal structure and parts list (Refer to the internal structure of FCD-KL regarding the cylinder)

● UFCD-KL-25, 32

• Lock direction: F (forward locking)
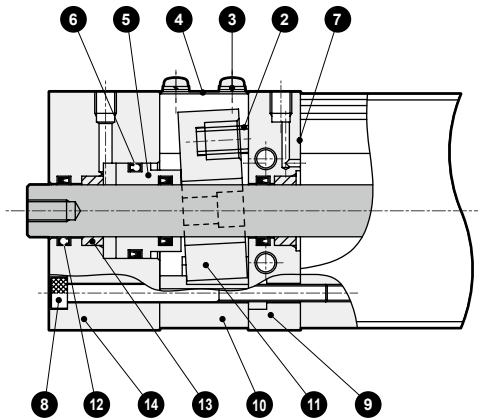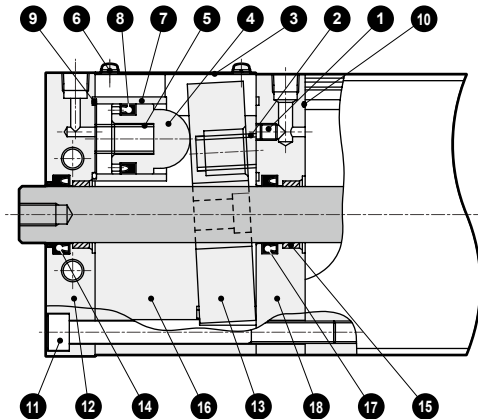
• Lock direction: B (backward locking)

Cannot be disassembled

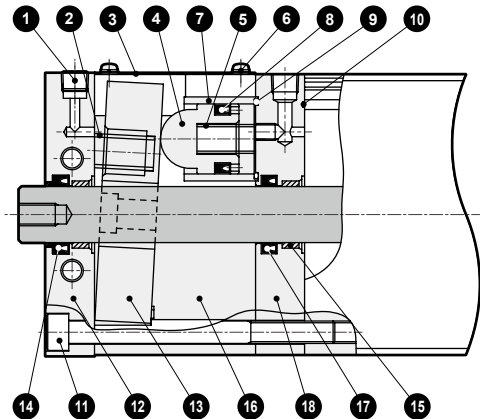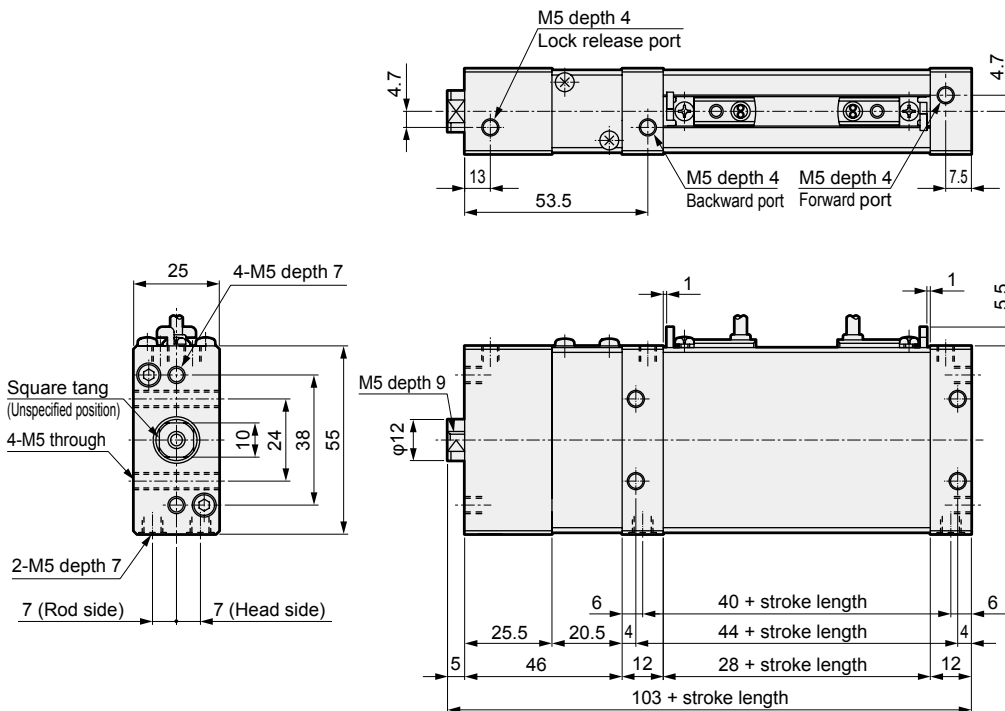| No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
1	Hexagon socket set screw	Steel	Black finish	8	Hexagon socket head cap screw	Steel	Black finish
2	Spring	Steel	Black finish	9	Rod cover	Aluminum alloy	Black alumite
3	Cross-recessed pan head machine screw	Steel	Chromate	10	Lock tube	Aluminum alloy	Alumite
4	Dust cover	Stainless steel		11	Lock plate	Special steel	Chromate
5	Release piston	Copper alloy casting		12	Rod packing	Nitrile rubber	
6	Piston packing	Nitrile rubber		13	Metal bush	Oil-less metal	
7	Gasket	Nitrile rubber		14	Lock body	Aluminum alloy	Black alumite

Note: Do not disassemble, as the holding force may be affected, which is dangerous.

● UFCD-KL-40 to 63

• Lock direction: F (forward locking)

• Lock direction: B (backward locking)

Cannot be disassembled

No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
1	F type: Hexagon socket set screw	Steel		10	Gasket	Nitrile rubber	
	B type: Hex socket head cap taper thread plug	Steel		11	Hexagon socket head cap screw	Steel	Black finish
2	Brake spring	Steel	Black finish	12	Rod cover	Aluminum alloy	Black alumite
3	Dust cover	Stainless steel		13	Lock plate	Special steel	Chromate
4	Piston	Copper alloy casting		14	Rod packing	Nitrile rubber	
5	Piston spring	Steel		15	Metal bush	Oil-less metal	
6	Cross-recessed pan head machine screw	Steel	Chromate	16	Lock tube	Aluminum alloy	Alumite
7	Release piston tube	Stainless steel		17	Rod packing	Nitrile rubber	
8	Piston packing	Nitrile rubber		18	Lock body	Aluminum alloy	Black alumite
9	O-ring	Nitrile rubber					

Note: Do not disassemble, as the holding force may be affected, which is dangerous.

CKD

Dimensions (φ25) [CAD]

● UFCD-KL-25-F (forward locking)

M5 depth 4
Lock release port

4.7

4.7

13

53.5

M5 depth 4
Backward port

M5 depth 4
Forward port

7.5

● Rod end male thread
(Option code: N)

22 · 5

20

6

M10×1.25

Hexagon 17

Square tang 10
(unspecified position)

25 · 4-M5 depth 7

Square tang
(Unspecified position)

4-M5 through

2-M5 depth 7

7 (Rod side) · 7 (Head side)

10 · 24 · 38 · 55

M5 depth 9

φ12

1 · 1

5.5

6 · 40 + stroke length · 6

25.5 · 20.5 · 4 · 44 + stroke length · 4

5 · 46 · 12 · 28 + stroke length · 12

103 + stroke length

*1: For same-surface installation with 2 switches, the stroke length of 35 mm and over is required. For the stroke length of that value or less, set on both sides.

● UFCD-KL-25-B (backward locking)

M5 depth 4
Lock release & backward port

4.7

4.7

M5 plug · 45

M5 depth 4
Forward port

7.5

25 · 4-M5 depth 7

Square tang
(unspecified position)

4-M5 through

2-M5 depth 7

7 (Rod side) · 7 (Head side)

10 · 24 · 38 · 55

M5 depth 9

φ12

1 · 1

5.5

20.5 · 25.5

6 · 86 + stroke length · 6

4 · 90 + stroke length · 4

5 · 12 · 46 · 28 + stroke length · 12

103 + stroke length

*1: For same-surface installation with 2 switches, the stroke length of 35 mm and over is required. For the stroke length of that value or less, set on both sides.

LCW
LCR
LCG
LCX
LCM
STM
STG
STS/STL
STR2
UCA2
ULK*
JSK/M2
JSG
JSC3/JSC4
USSD
UFCD
USC
JSB3
LMB
LML
HCM
HCA
LBC
CAC4
UCAC2
CAC-N
UCAC-N
RCC2
RCS
PCC
SHC
MCP
GLC
MFC
BBS
RRC
GRC
RV3*
NHS
HR
LN
Hand
Chuk
MecHnd/Chuk
ShkAbs
FJ
FK
SpdContr
Ending

UFCD Series

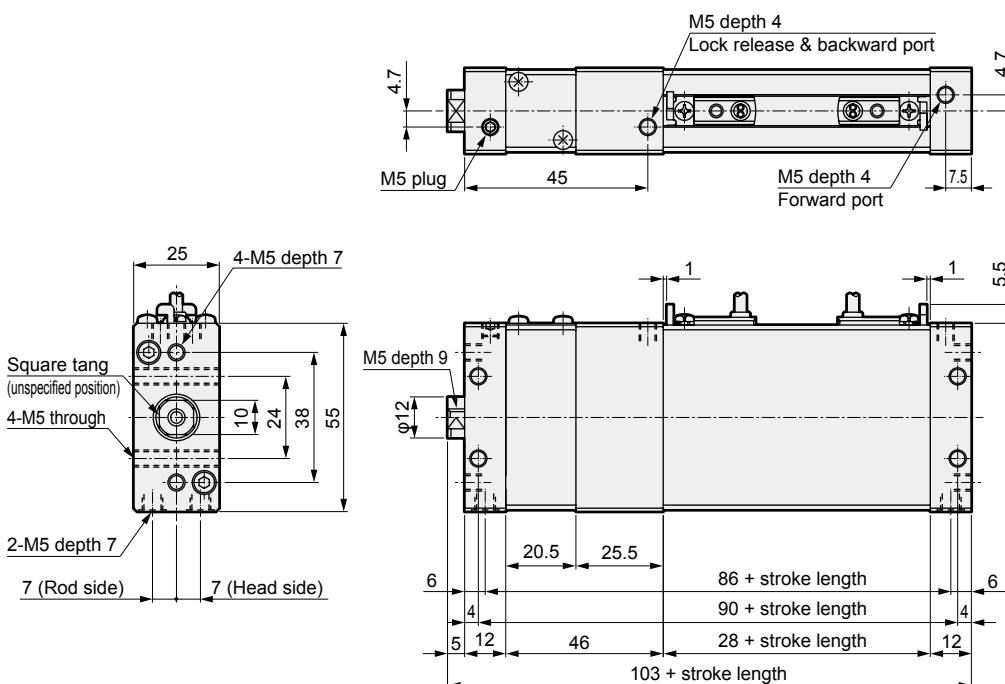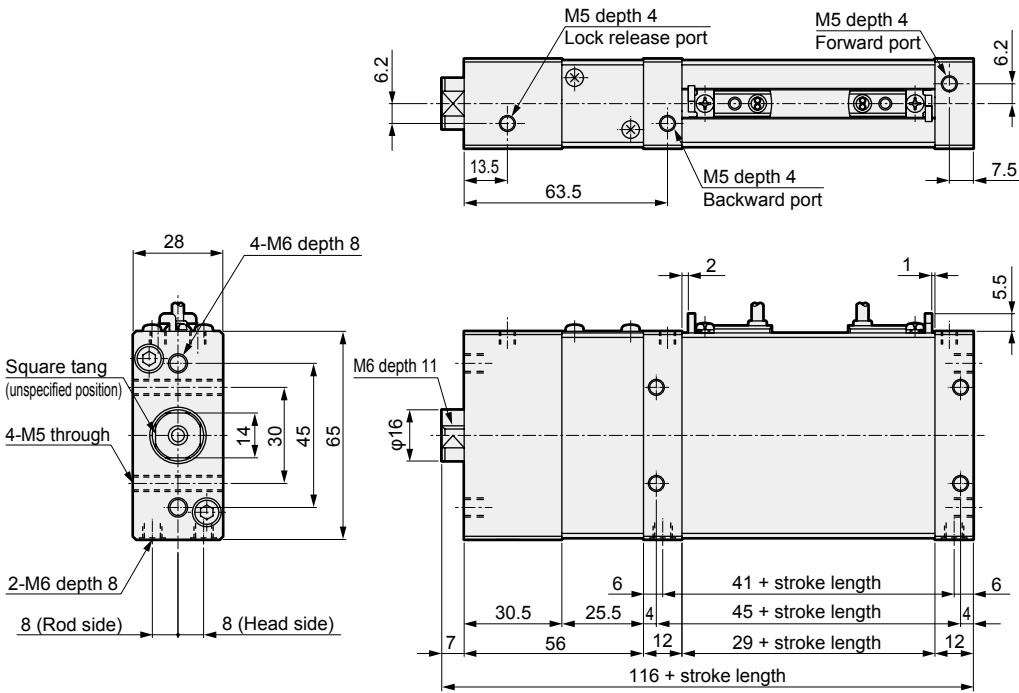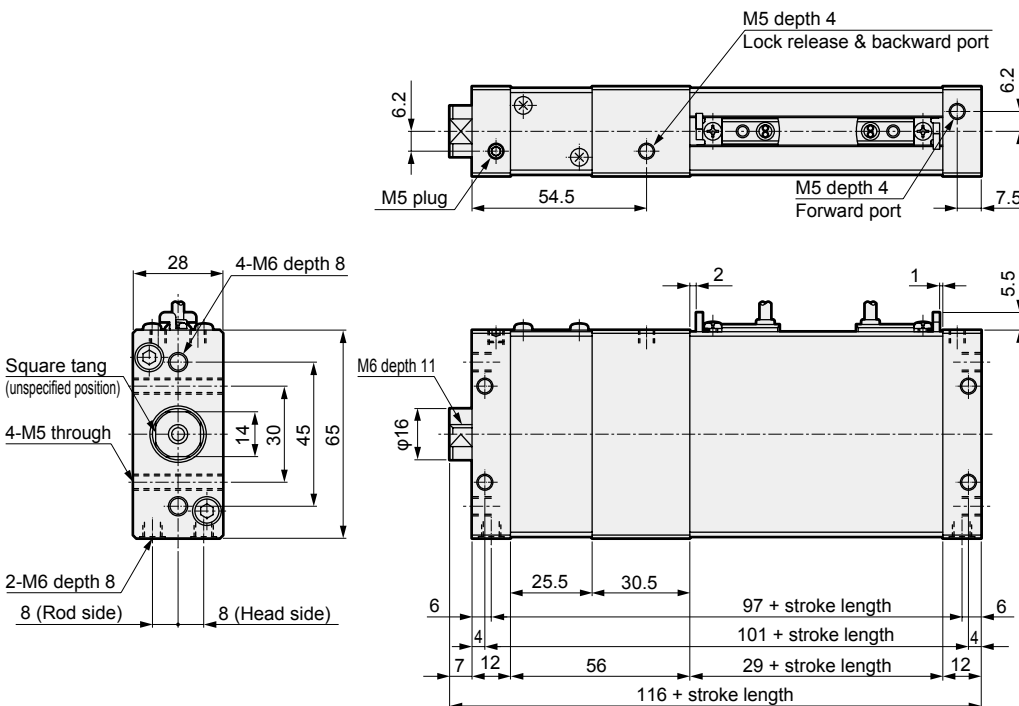## Dimensions (φ32)

● UFCD-KL-32-F (forward locking)

● Rod end male thread (Option code: N)

M5 depth 4
Lock release port

M5 depth 4
Forward port

6.2

6.2

13.5

63.5

M5 depth 4
Backward port

7.5

22   7
20
8

M14×1.5
Hexagon 22
Square tang 14 (unspecified position)

28   4-M6 depth 8

Square tang
(unspecified position)

4-M5 through

14
30
45
65

M6 depth 11

φ16

2-M6 depth 8

8 (Rod side)   8 (Head side)

2

1

5.5

6
41 + stroke length   6
30.5   25.5   45 + stroke length
4   29 + stroke length   4
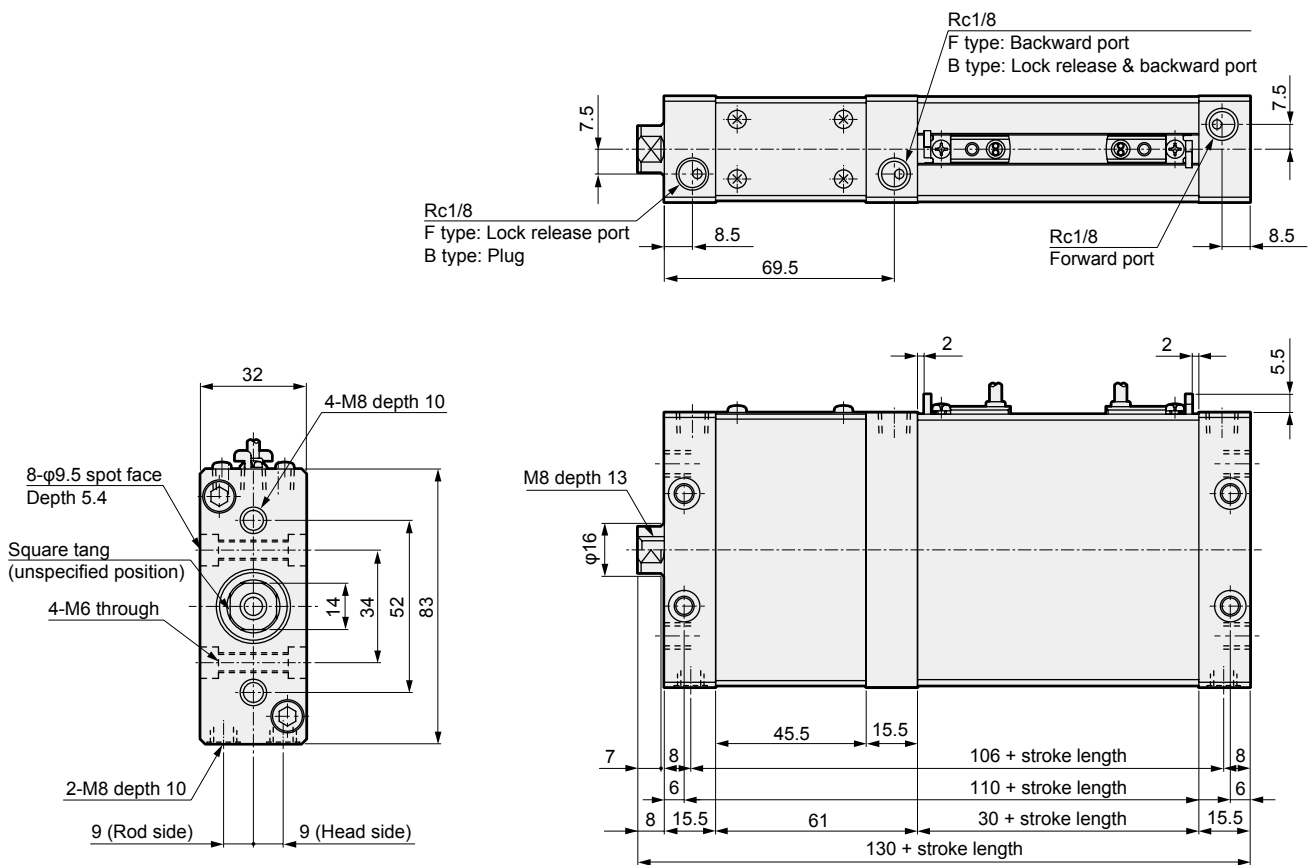7   56   12   12
116 + stroke length

*1: For same-surface installation with 2 switches, the stroke length of 35 mm and over is required. For the stroke length of that value or less, set on both sides.

● UFCD-KL-32-B (backward locking)

M5 depth 4
Lock release & backward port

6.2

6.2

M5 plug   54.5

M5 depth 4
Forward port

7.5

28   4-M6 depth 8

Square tang
(unspecified position)

4-M5 through

14
30
45
65

M6 depth 11

φ16

2-M6 depth 8

8 (Rod side)   8 (Head side)

2

1

5.5

6
25.5   30.5   97 + stroke length   6
101 + stroke length
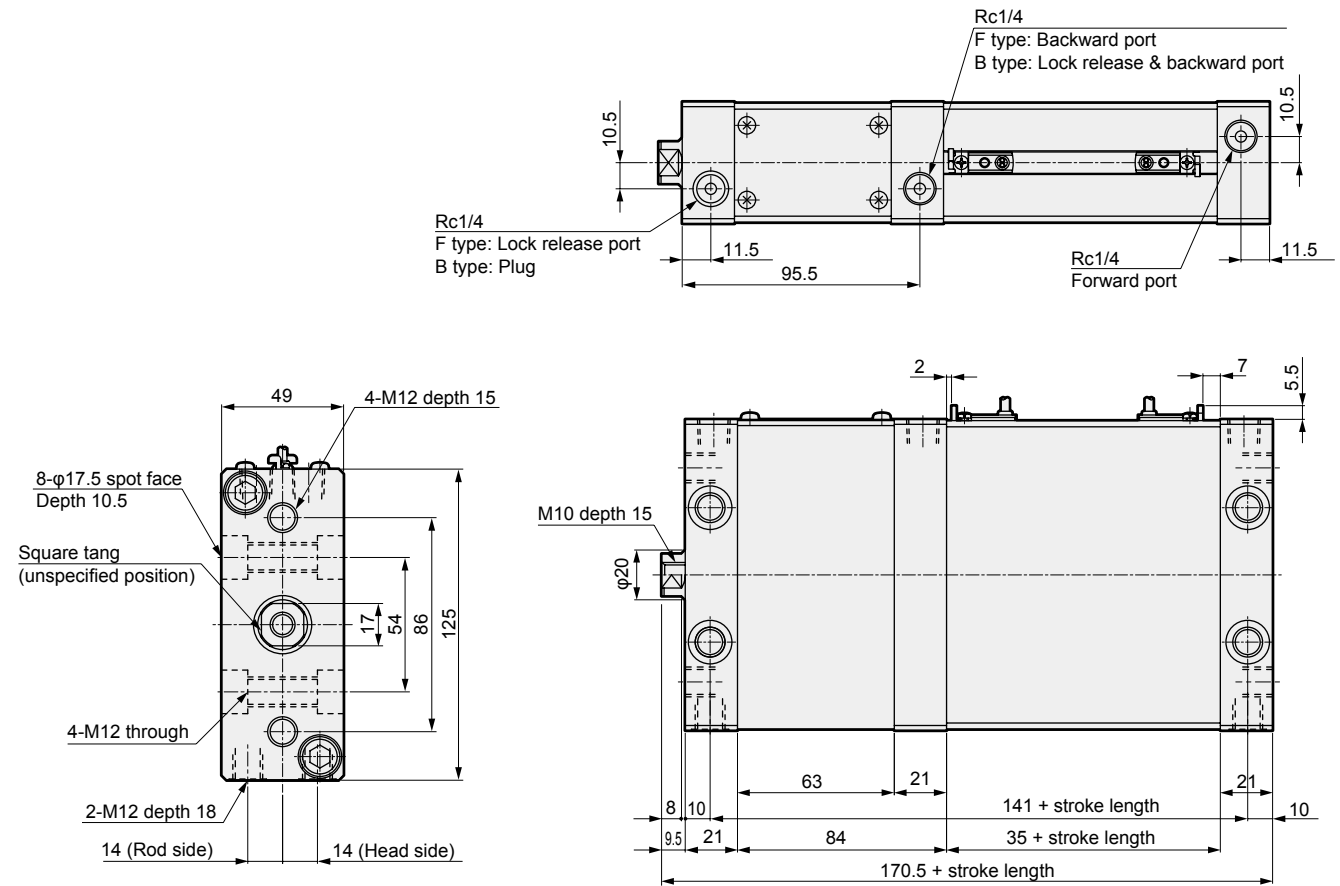7   12   56   29 + stroke length   12
116 + stroke length

*1: For same-surface installation with 2 switches, the stroke length of 35 mm and over is required. For the stroke length of that value or less, set on both sides.

Dimensions (φ40) CAD

● UFCD-KL-40-F/B (forward/backward locking)

Rc1/8
F type: Backward port
B type: Lock release & backward port

7.5

7.5

Rc1/8
F type: Lock release port
B type: Plug

8.5

69.5

Rc1/8
Forward port

8.5

32

4-M8 depth 10

8-φ9.5 spot face
Depth 5.4

Square tang
(unspecified position)

4-M6 through

14
34
52
83

2-M8 depth 10

9 (Rod side)

9 (Head side)

M8 depth 13

φ16

2

2

5.5

45.5

15.5

106 + stroke length

8

7

8

110 + stroke length

6

6

8

15.5

61

30 + stroke length

15.5

130 + stroke length

● Rod end male thread
(Option code: N)

22

7

20

8

M14×1.5

Hexagon 22

Square tang 14 (unspecified position)

*1: For same-surface installation with 2 switches, the stroke length of 35 mm and over is required. For the stroke length of that value or less, set on both sides.
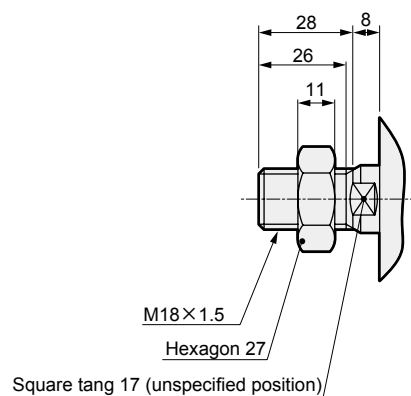
UFCD Series

Dimensions (φ50) [CAD]

● UFCD-KL-50-F/B (forward/backward locking)

Rc1/8
F type: Backward port
B type: Lock release & backward port

9

Rc1/8
F type: Lock release port
B type: Plug

10.5

85.5

Rc1/8
Forward port

9

10.5

39

4-M10 depth 12

8-φ11 spot face
Depth 6.5

Square tang
(unspecified position)

17
40
62
101

4-M8 through

2-M10 depth 12

10 (Rod side)

10 (Head side)

2

3

5.5

M8 depth 13

φ20

57.5

17.5

8.5

8
9.5

124 + stroke length

8.5
9.5

122 + stroke length

9.5   17.5

75

31 + stroke length

17.5

150.5 + stroke length

● Rod end male thread
(Option code: N)

28

8

26

11

M18×1.5

Hexagon 27

Square tang 17 (unspecified position)

*1: For same-surface installation with 2 switches, the stroke length of 35 mm and over is required. For the stroke length of that value or less, set on both sides.

CKD

UFCD Series
Dimensions

LCW
LCR
LCG
LCX
LCM
STM
STG
STS/STL
STR2
UCA2
ULK*
JSK/M2
JSG
JSC3/JSC4
USSD
UFCD
USC
JSB3
LMB
LML
HCM
HCA
LBC
CAC4
UCAC2
CAC-N
UCAC-N
RCC2
RCS
PCC
SHC
MCP
GLC
MFC
BBS
RRC
GRC
RV3*
NHS
HR
LN
Hand
Chuk
MecHnd/Chuk
ShkAbs
FJ
FK
SpdContr
Ending

Dimensions (φ63)

● UFCD-KL-63-F/B (forward/backward locking)

Rc1/4
F type: Backward port
B type: Lock release & backward port

Rc1/4
F type: Lock release port
B type: Plug

11.5
95.5

Rc1/4
Forward port

11.5

10.5
10.5

49
4-M12 depth 15

8-φ17.5 spot face
Depth 10.5

Square tang
(unspecified position)

4-M12 through

2-M12 depth 18

14 (Rod side)
14 (Head side)

17
54
86
125

M10 depth 15
φ20

2
7
5.5

63
21
141 + stroke length
21
10

8
10
9.5
21
84
35 + stroke length
170.5 + stroke length

● Rod end male thread
(Option code: N)

28
8
26
11

M18×1.5
Hexagon 27
Square tang 17 (unspecified position)

*1: For same-surface installation with 2 switches, the stroke length of 30mm and over is required. For the stroke length of that value or less, set on both sides.

LCW
LCR
LCG
LCX
LCM
STM
STG
STS/STL
STR2
UCA2
ULK*
JSK/M2
JSG
JSC3/JSC4
USSD
UFCD
USC
JSB3
LMB
LML
HCM
HCA
LBC
CAC4
UCAC2
CAC-N
UCAC-N
RCC2
RCS
PCC
SHC
MCP
GLC
MFC
BBS
RRC
GRC
RV3*
NHS
HR
LN
Hand
Chuk
MecHnd/Chuk
ShkAbs
FJ
FK
SpdContr
Ending

Pneumatic components

Safety Precautions

Be sure to read this section before use.
Refer to Intro Page 73 for general information of the cylinder, and to Intro Page 80 for general information of the cylinder switch.

Product-specific cautions: Free position locking flat cylinder   UFCD Series

Design/selection

⚠ WARNING

■ Cylinder with position locking mechanism (for holding cylinder stationary).
Emergency stops (while the cylinder is in operation) can significantly decrease the service life.

■ If back pressure is applied to the locking mechanism, the lock may be released. Use a discrete valve, or use an individual exhaust manifold.

■ Do not apply torque to the rod when locked because the holding force may decrease, creating a dangerous condition. Also, use this product in mechanisms in which the rod does not rotate.

■ To release the lock, when using underline forward locking, supply pressure to port B, and when using backward locking, supply pressure to port A. Check that load is not applied to the locking mechanism. When both ports A and B are exhausted and the piston is locked, if pressure is supplied to port A for forward locking or to port B for backward locking, the lock may not be released or, even if released, the piston rod may pop out, creating a hazard.

Forward locking
(Downward load)

Backward locking
(Upward load)
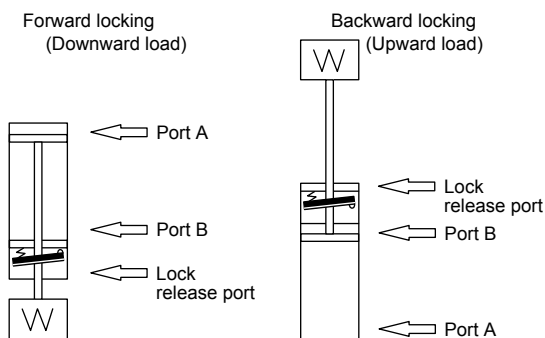
⚠ CAUTION

■ Basic circuit diagram
Arrange the air piping of this cylinder as shown in the figure below. Arranging the pipes differently from the figure below, such as piping the position locking part as a single unit, may cause problems such as delayed response.

1. Be sure to branch the piping of this cylinder after the valve into the position locking part (lock release port as main piping) and cylinder part (cylinder port as branch piping) as shown in the figure below.

2. Be sure to design the piping so that the lock is released before the cylinder starts operating. Failure to do so may prevent unlocking or cause the piston rod to jump out.

Forward locking
(Downward load)

Backward locking
(Upward load)
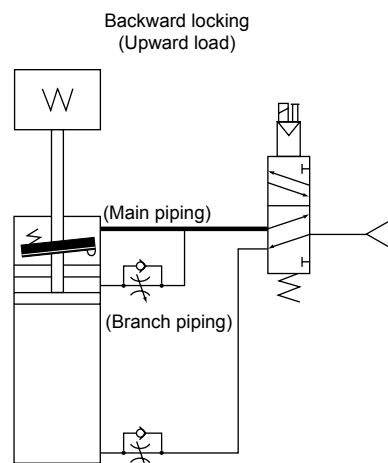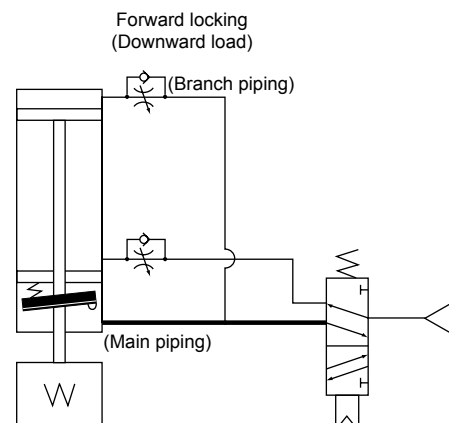
Using the emergency stop with the air piping as shown in the figure above will move the cylinder backward in a forward locking and forward in a backward locking, returning it to the original position. (When there is no residual pressure, the cylinder stops at that point.)

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Mounting, installation and adjustment

⚠ WARNING

■ Do not apply grease to the piston rod because the holding force may decrease, creating a dangerous condition.

⚠ CAUTION

■ Main piping in the basic circuit diagram on the previous page should be thicker and shorter than branch piping.

■ For male threads with load mounted on ends, fix the wrench hook at the end of the rod with a wrench and tighten.

X

OK

Fixing wrench
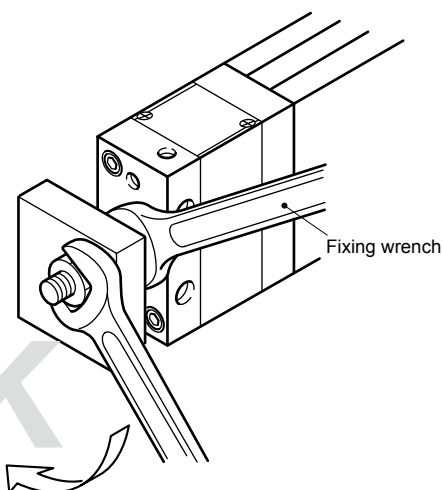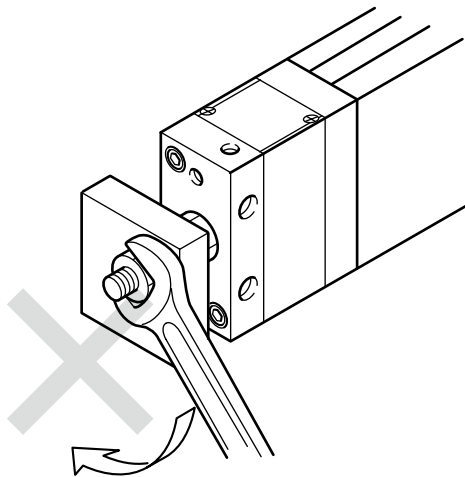
■ For female threads, fix the wrench hook at the end of the rod with a wrench using a standard tool (Allen wrench), and tighten.

■ Avoid using the product so as to apply rotation torque to the piston rod. When inevitable, use within the allowable torque range.

Descriptions Model No.	φ25	φ32	φ40	φ50	φ63
Allowable torque (N·m)	1	1.6	2.5	3.9	5.9

● Do not apply rotation torque with impact, or with instantaneous changes in torque load direction.

■ Be sure to provide a guide separately when using multiple synchronized cylinders.
Using only the cylinder may impair synchronicity and cause the rod to twist, leading to malfunctions.

UFCD Series

Use/maintenance

⚠ WARNING

■ Do not apply additional grease to the piston rod or wipe off the grease that is already applied.

■ Do not disassemble the unit, as doing so may be dangerous.

■ Always use the product with the dust cover on, except for when performing manual release, in order to prevent failure or malfunction.

■ If no air pressure is supplied in vertical mounting, etc., holding force may not be sufficient when the lock is manually released. This may cause the rod to move (drop) with the load's weight.
For safety, take the following measures before manually releasing the lock:

　● Move the load to the bottom end.
　● Provide a stopper to the load
　● Apply air pressure to the cylinder to balance the load.

⚠ CAUTION

■ When locking the first time after leaving the lock released for a long time, a delayed response may occur in the lock.
Do not leave the lock pressurized, and operate the lock at each cylinder operation.
(Use the basic circuit diagram shown on page 888)

■ Keeping the cylinder with pressure applied to the lock mechanism may cause the lock to release.
Do not use 3-position closed center and 3-position P/A/B connection solenoid valves.

■ Due to the structure, the piston rod drops by about 1 mm when the lock is applied.

■ How to unlock manually
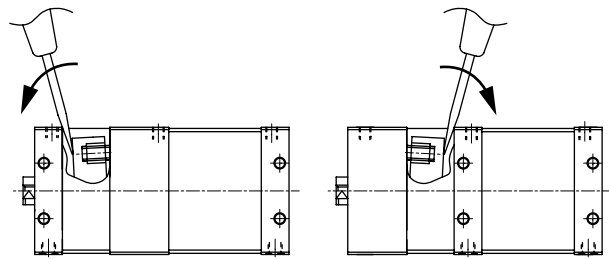
Forward locking (lock direction ←)　　Backward locking (lock direction →)

　● Remove the cover, insert a flathead screwdriver or the like and lightly push it down in the direction of arrow A to lift the lock plate, unlock and free the piston rod.

■ The cylinder body may be damaged or may malfunction if a unit with excessive inertia, etc., is actuated. Use within the allowable absorbed energy range.

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