



Free position locking flat cylinder double acting/single rod

UFCD Series

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



Specifications

Descriptions		UFCD-KL				
Bore size	mm	$\phi 25$ or equiv.	$\phi 32$ or equiv.	$\phi 40$ or equiv.	$\phi 50$ or equiv.	$\phi 63$ 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	$^{\circ}\text{C}$	-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	$\phi 25$ or equiv.	$\phi 32$ or equiv.	$\phi 40$ or equiv.	$\phi 50$ or equiv.	$\phi 63$ or equiv.	
Non-rotating accuracy *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

*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	$\phi 25, \phi 32$ $\phi 40, \phi 50$ $\phi 63$ 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 ($\phi 25/32/40/50$) 30 mm ($\phi 63$)

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 $37 \text{ g} \times \frac{20}{10} = 74 \text{ g}$
- Product weight $613 \text{ g} + 74 \text{ g} = 687 \text{ g}$

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

- 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

LCW
LCR
LCC
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

How to order

● With switch (built-in magnet for switch)

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

A Model No.

B Bore size

C Port thread

D Stroke length

E Lock direction

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

G Switch quantity

H Option

Code	Content				
A Model No.					
UFCD-KL	Double acting/cushioned/with switch				
B Bore size (mm)					
25	φ25				
32	φ32				
40	φ40				
50	φ50				
63	φ63				
C Port thread					
Blank	Rc thread				
NN	NPT thread (φ40 and over) (custom order product)				
GN	G thread (φ40 and over) (custom order product)				
D Stroke length (mm)					
Bore size	Stroke length *1	Custom stroke length			
φ25 to φ63	1 to 150	In 1 mm increments			
E Lock direction					
F	Forward locking				
B	Backward locking				
F Switch model No.					
Radial lead wire	Contact	Voltage		Display	Lead wire
		AC	DC		
M2V*	Proximity	●		1-color display	2-wire
M2WV*		●		2-color display	
M3V*		●		1-color display	3-wire
M3WV*		●		2-color display	
M3PV*		●		1-color display (custom)	
M0V*	Reed	●	●	1-color display	2-wire
M5V*		●	●	Without indicator lamp	
* Lead wire length					
Blank	1 m (standard)				
3	3 m (option)				
5	5 m (option)				
G Switch quantity					
R	1 on rod side				
H	1 on head side				
D	2				
T	3				
H 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

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

How to order switch

- Switch body + mounting bracket set

FCS - M2V



Switch model No.
(Item ⑤ on the previous page)

- Switch body only

SW - M2V



Switch model No.
(Item ⑤ on the previous page)

- Mounting bracket set

FCS - M



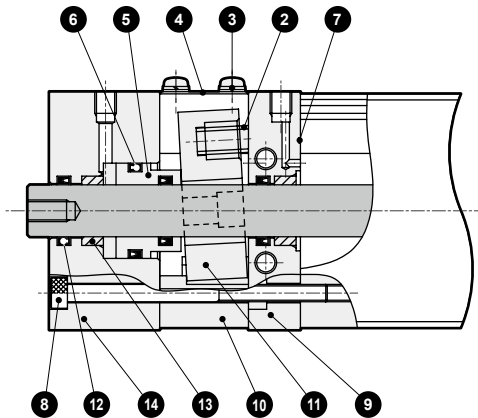
Mounting bracket

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
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HR
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Chuk
MecHnd/Chuk
ShkAbs
FJ
FK
SpdContr
Ending

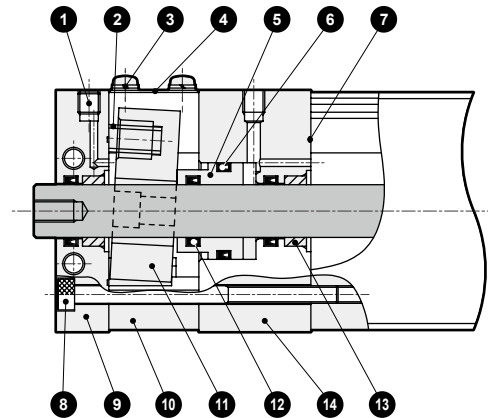
Internal structure and parts list (Refer to the internal structure of FCD-KL regarding the cylinder)

● UFCD-KL-25, 32

• Lock direction: F (forward locking)



• Lock direction: B (backward locking)



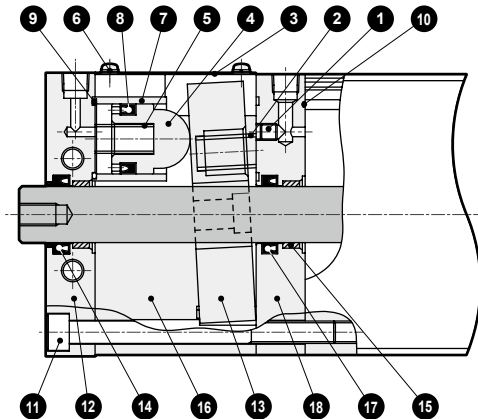
Cannot be disassembled

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

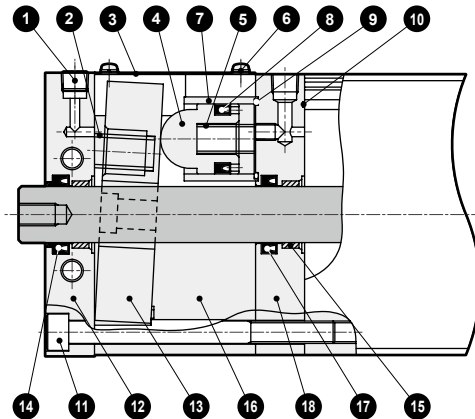
Note: Do not disassemble, as the holding force may be affected, which is dangerous.

● 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.

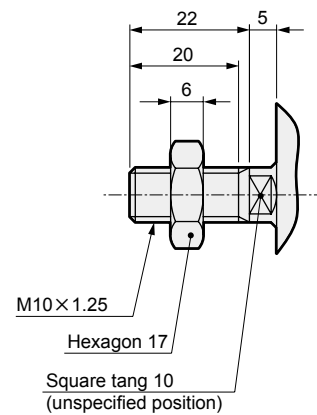
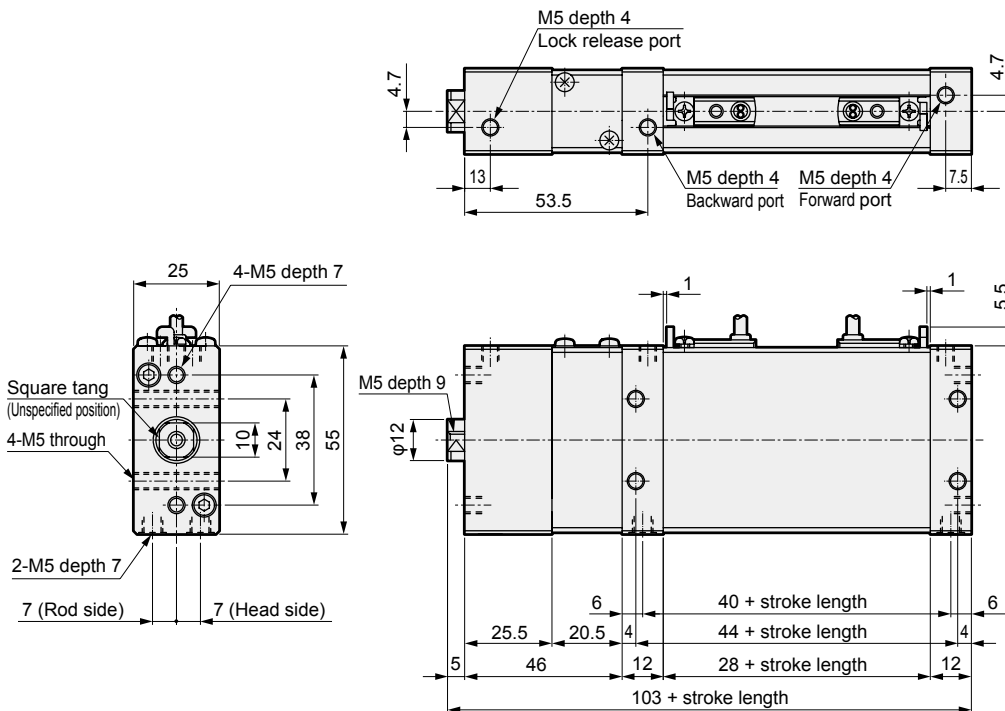
LCW
LCR
LCG
LCX
LCM
STM
STG
STS/STL
STR2
UCA2
ULK*
JSK/M2
JSG
JSC3/USC4
USSD
UFCD
USC
JSB3
LMB
LML
HCM
HCA
LBC
CAC4
UCAC2
CAC-N
UCAC-N
RCC2
RCS
PCC
SHC
MCP
GLC
MFC
BBS
RRC
GRC
RV3*
NHS
HR
LN
Hand
Chuk
MecHnd/Chuk
ShkAbs
FJ
FK
SpdContr
Ending

Dimensions (φ25)



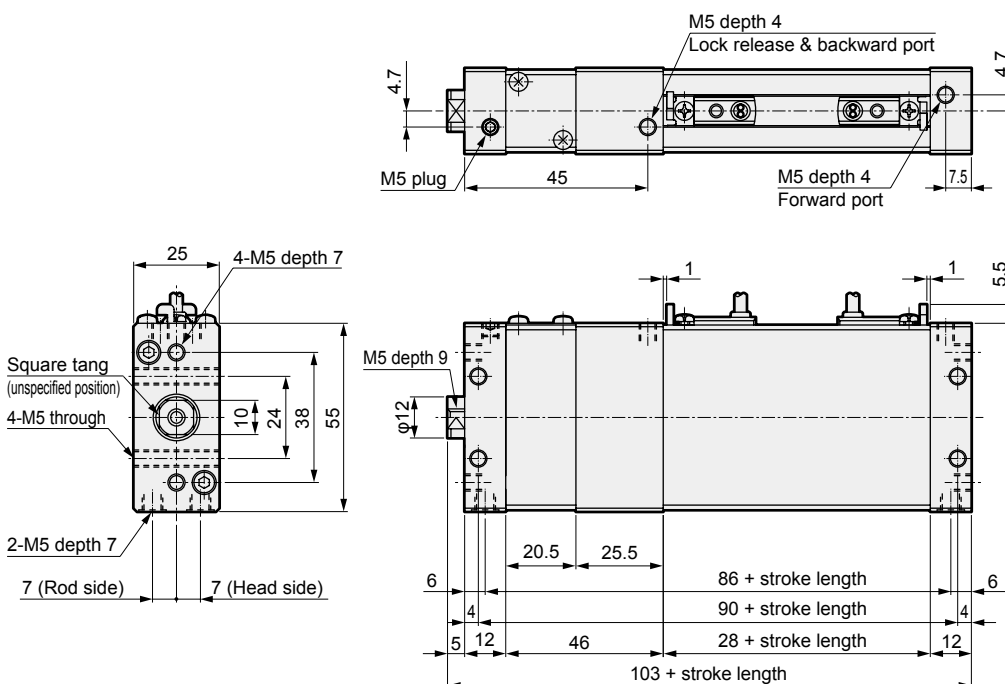
● UFCD-KL-25-F (forward locking)

● Rod end male thread (Option code: N)



*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)



*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.

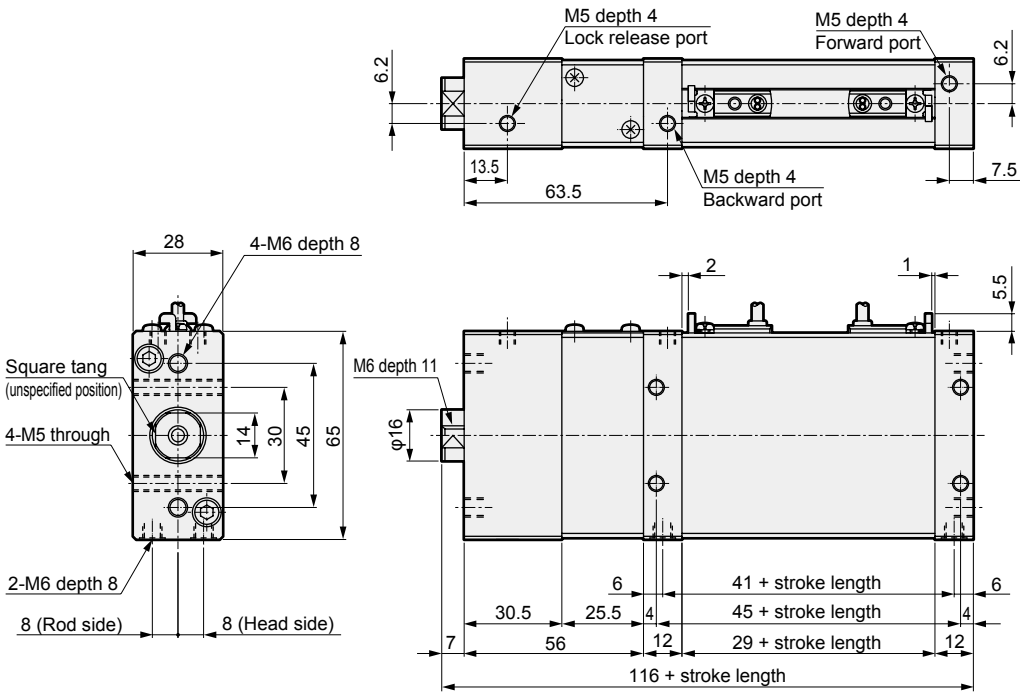
LCW
LCR
LCG
LCX
LCM
STM
STG
STS/STL
STR2
UCA2
ULK*
JSK/M2
JSG
JSC3/JSC4
USSD
UFCD
USC
JSB3
LMB
LML
HCM
HCA
LBC
CAC4
UCAC2
CAC-N
UCAC-N
RCC2
RCS
PCC
SHC
MCP
GLC
MFC
BBS
RRC
GRC
RV3*
NHS
HR
LN
Hand
Chuk
MecHnd/Chuk
ShkAbs
FJ
FK
SpdContr
Ending

Dimensions (φ32)



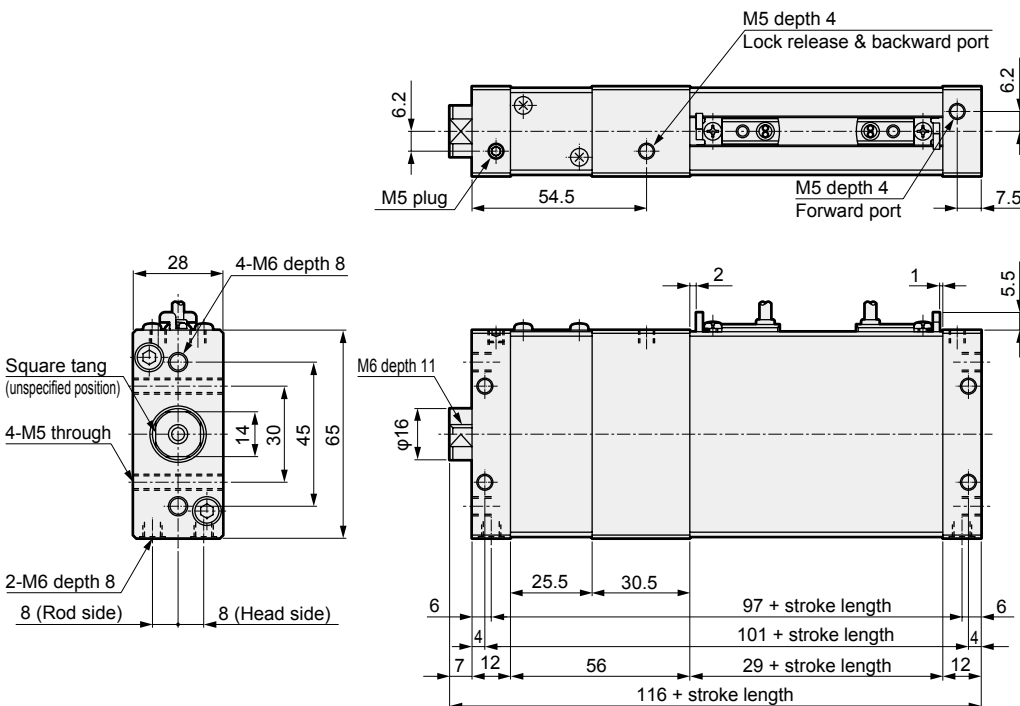
● UFCD-KL-32-F (forward locking)

● Rod end male thread
(Option code: N)



*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)



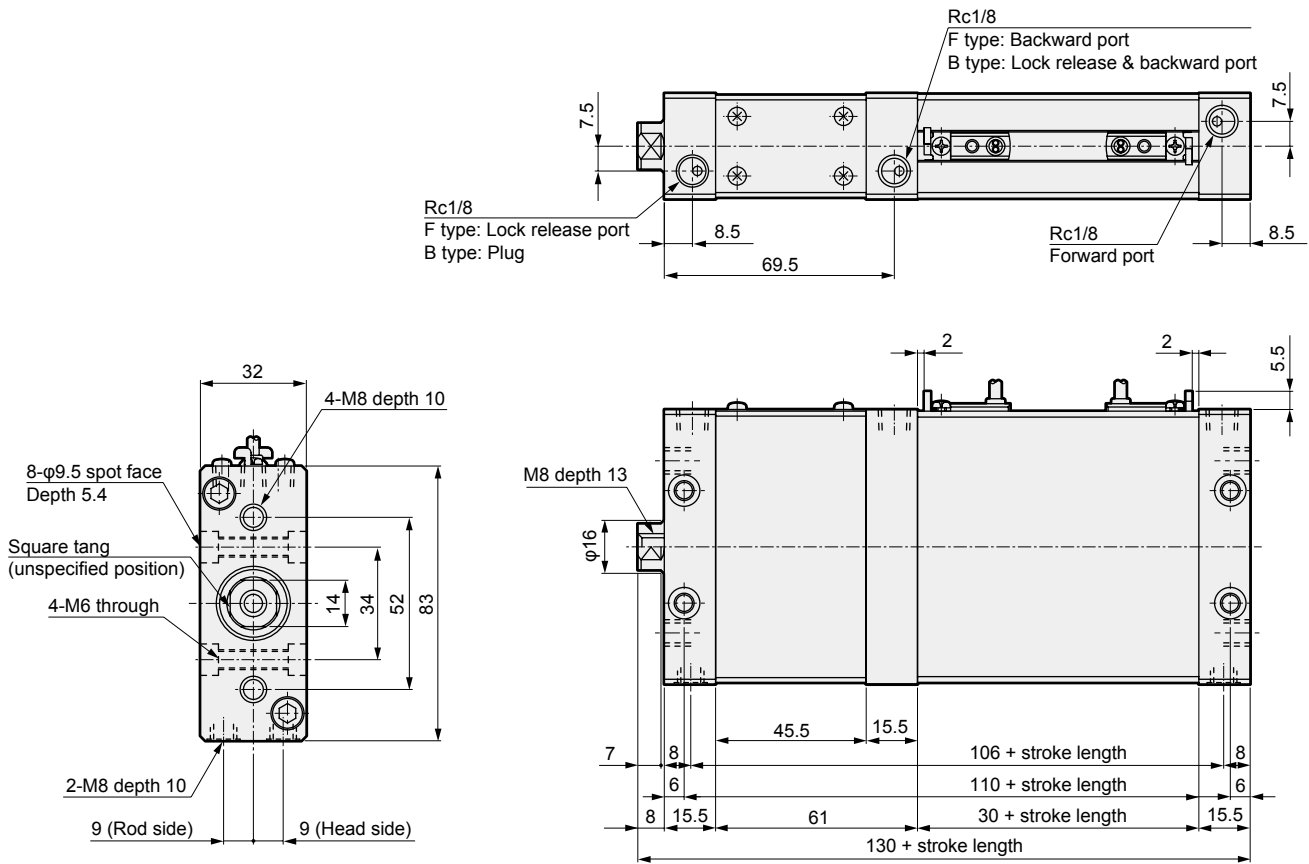
*1: For same-surface installation with 2 switches, the stroke length of 35 mm and over is required. For the stroke length of that value or less, set on both sides.

- 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

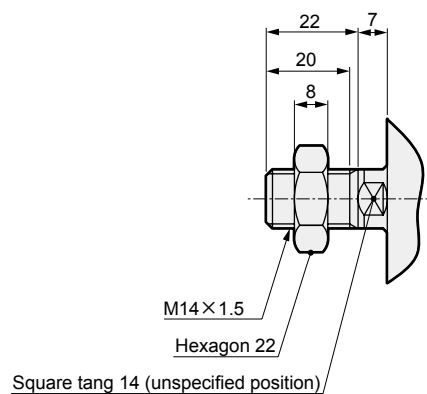
Dimensions (φ40)

● UFCD-KL-40-F/B (forward/backward 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



● Rod end male thread (Option code: N)

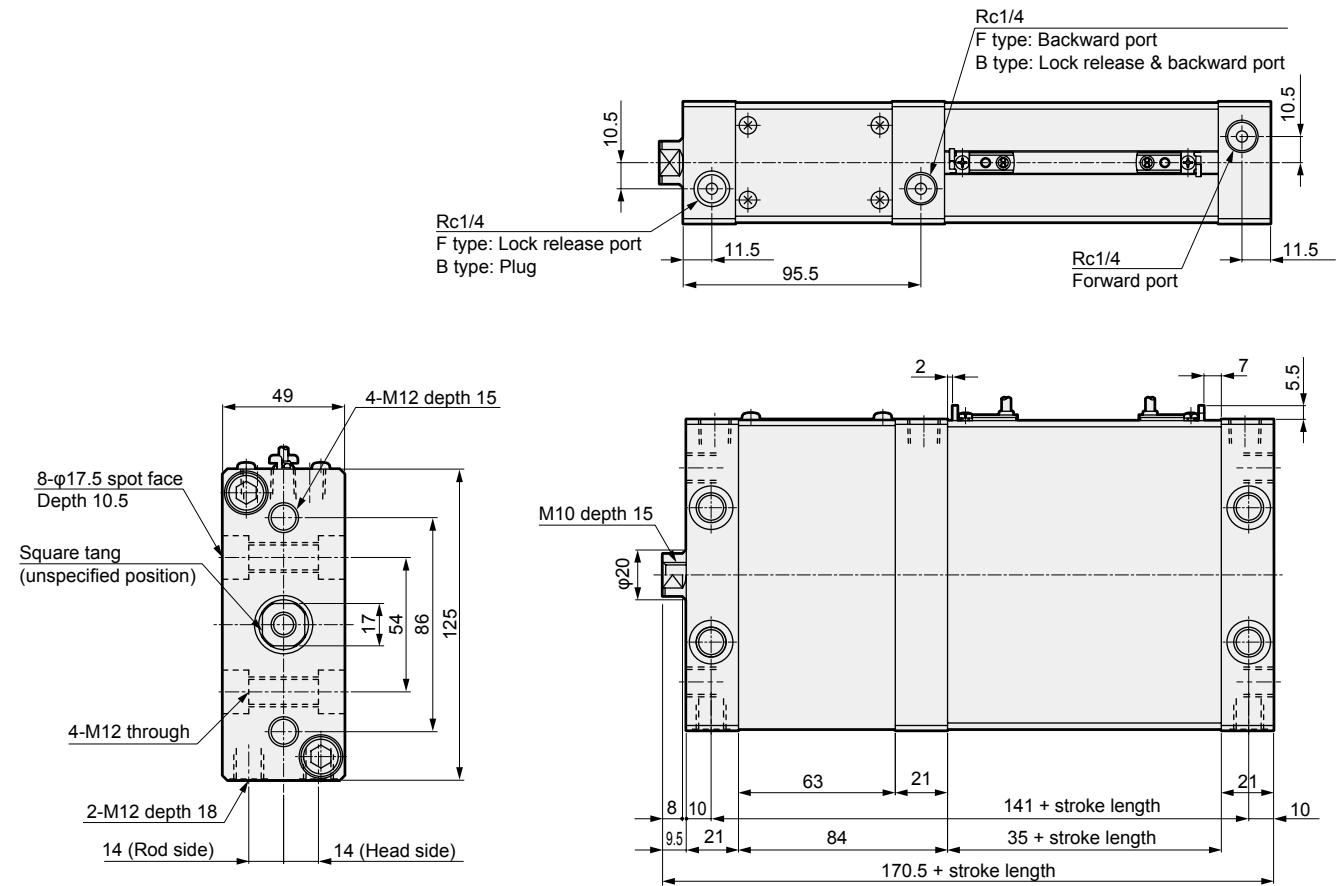


*1: For same-surface installation with 2 switches, the stroke length of 35 mm and over is required. For the stroke length of that value or less, set on both sides.

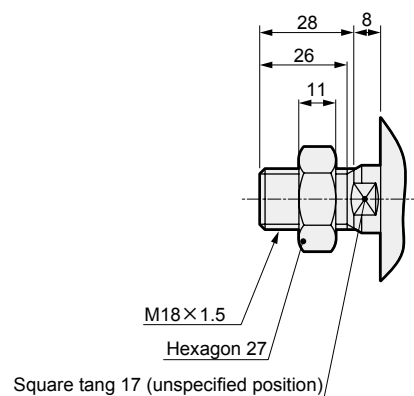
Dimensions (φ63)



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



● Rod end male thread (Option code: N)



*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