UCAC2

Position locking clamp cylinder

ø50/ø63

Special

Overview

A position locking clamp cylinder has been developed with attention to equipment maintenance. The new swash plate mechanism locks the rod when the air supply is stopped to prevent the load from falling in the event of power failures or accidents. Moreover, the one-way lock allows the rod to be moved in the opposite direction to facilitate the emergency removal of workpieces, etc.

Features

Lockable at any point throughout full stroke

The locking position can be at any point throughout the full stroke, including the stroke end, as long as the piston rod remains still.

2 types of lock direction.

Either forward lock or backward lock can be selected.

Reverse direction is free due to the one-way lock.

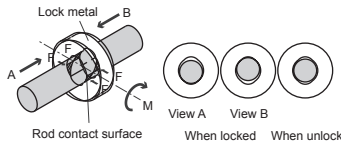
The rod moves in the free direction even when gripping the workpiece, allowing it to be removed.

Various detection switches can be mounted.

It can be equipped with cylinder switches for various applications, such as proximity and strong magnetic field proof switches.

Position locking structure.

The new swash plate lock mechanism enables position locking in free positions. Applying torque M to the lock metal generates axial force F. This force holds the rod.



Selectable switch mounting style

In addition to the conventional tie rod style, the band style that is capable of free rotation of switch (circumference direction)/free adjustment of movement has been added.

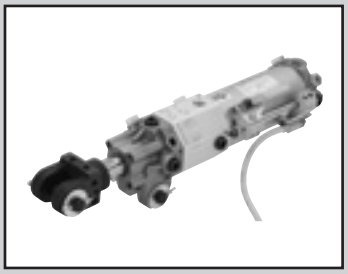
CONTENTS

The cylinder switches T2YH, T2YV, T3YH, and T3YV are scheduled for end of production at the end of December 2023.

Series variation

●: Standard, ◎: Option

Variation	Model No. JIS symbol	Bore size (mm)	Standard stroke (mm)					Min. stroke (mm)	Max. stroke (mm)	Options/accessories							Switch	Page
			50	75	100	125	150			Bellows (100°C) K	Limit switch mounting base with dog D	Limit switch mounting base without dog D1	Toggle bracket Q	Rod clevis Cast iron Y	Rod clevis Steel Y1	Rod eye Steel I		
Double acting/ single rod	UCAC2	ø50/ø63	●	●	●	●	●	50	150	◎	◎	◎	◎	◎	◎	◎	◎	1030

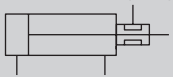


Position locking clamp cylinder

UCAC2 Series

● Bore size: ø50/ø63

JIS symbol ● Double acting/single rod



RoHS CAD

Specifications

Item		UCAC2	
Bore size mm		ø50	ø63
Actuation		Double acting	
Working fluid		Compressed air	
Max. working pressure MPa		1.0 (≈150 psi, 10 bar)	
Min. working pressure MPa		0.25 (≈36 psi, 2.5 bar)	
Proof pressure MPa		1.6 (≈230 psi, 16 bar)	
Ambient temperature °C		-10 (14°F) to 60 (140°F) (no freezing)	
Port size		Rc1/4	
Standard stroke mm		50, 75, 100, 125, 150	
Stroke tolerance		$^{+1.0}_{0}$	
Working piston speed mm/s		50 to 400	50 to 300
Cushion		Head side air cushioned	
Lubrication		Not available	
Mounting		Clevis bracket	
Position locking mechanism		Forward/backward locking	
Lock force N		1470	
Allowable absorbed energy J	Cushioned	6.54	11.63
	Without cushion	0.137	0.206

Note: Without any cushion, this product cannot absorb large energy generated by an external load. We recommend using an external shock absorber.

Stroke

Bore size (mm)	Standard stroke (mm)	Min. stroke (mm)	Max. stroke (mm)
ø50	50/75/100/125/150	50	150
ø63			

Products other than standard stroke are made-to-order products.

Switch specifications (T-switch)

● 1-color/2-color LED

Item	Proximity 2-wire	Proximity 2-wire			Proximity 3-wire				Reed 2-wire						
	T1H/T1V	T2H/T2V/ T2JH/T2JV	T2YH/ T2YV	T2WH/ T2WV	T3H/ T3V	T3PH/ T3PV	T3YH/ T3YV	T3WH/ T3WV	T0H/T0V		T5H/T5V		T8H/T8V		
Applications	For programmable controller, relay, compact solenoid valve	Dedicated for programmable controller			For programmable controller, relay				For programmable controller, relay		For programmable controller, relay, IC circuit (no indicator lamp), serial connection		For programmable controller, relay		
Output method	-				NPN output	PNP output	NPN output	NPN output	-						
Pwr. supp. V.	-				10 to 28 VDC				-						
Load voltage	85 to 265 VAC	10 to 30 VDC		24 VDC ±10%	30 VDC or less				12/24 VDC	110 VAC	5/12/24 VDC	110 VAC	12/24 VDC	110 VAC	220 VAC
Load current	5 to 100 mA	5 to 20 mA (*3)			100 mA or less		50 mA or less		5 to 50 mA	7 to 20 mA	50 mA or less	20 mA or less	5 to 50 mA	7 to 20 mA	7 to 10 mA
Indicator	LED (Lit when ON)	LED (Lit when ON)	Red/green 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)	Red/green LED (Lit when ON)	LED (Lit when ON)		No indicator lamp		LED (Lit when ON)		
Leakage current	≤ 1 mA at 100 VAC, ≤ 2 mA at 200 VAC	1 mA or less			10 μA or less				0 mA						
Weight g	1 m:33	1 m:18	1 m:33	1 m:18	1 m:18		1 m:33	1 m:18	1 m:18				1 m:33		
	3 m:87	3 m:49	3 m:87	3 m:49	3 m:49		3 m:87	3 m:49	3 m:49				3 m:87		
	5 m:142	5 m:80	5 m:142	5 m:80	5 m:80		5 m:142	5 m:80	5 m:80				5 m:142		

*1 : Refer to Ending Page 1 for detailed switch specifications and dimensions.
*2 : Switches other than the above models, such as switches with connectors, are also available. Refer to Ending Page 1.
*3 : The max. load current is 20 mA at 25°C. The current is lower than 20 mA if the operating ambient temperature around the switch is higher than 25°C. (5 to 10 mA at 60°C)

● For AC magnetic field

Item	Proximity 2-wire	
	T2YD, T2YDT	T2YDU (Made to order)
Applications	Dedicated for programmable controller	
Indicator	Red/green LED (Lit when ON)	
Load voltage	24 VDC ±10%	
Load current	5 to 20 mA	
Internal voltage drop	6V or less	
Leakage current	1.0 mA or less	
Output delay time *1 (ON Delay, OFF delay)	60 ms or less	
Lead wire length	1 m (oil resistant vinyl cabtyre cable ø 6, 0.5 mm^2 x 2-conductor) *2, *3	Flame-resistant cabtyre cable with cable connector, 0.5 mm^2, 2-conductor
Insulation resistance	100 MΩ and over with 500 VDC megger	
Withstand voltage	No failure after 1 minute of 1,000 VAC application.	
Shock resistance	980 m/s^2	
Ambient temperature	-10 to +60°C	
Degree of protection	JIS C0920 (water-tight), IEC standards IP67, oil resistance	
Weight g	1 m:61 3 m:166 5 m:272	

*1: Indicates the time from magnetic sensor detection of the piston magnet until switch output.
*2: 3 m and 5 m lead wires are available as options.
*3: Flame-resistant lead wires are available as options.
*4: Switch for AC magnetic field (T2YD, T2YDT) cannot be used in DC magnetic field.

Switch specifications (H-switch)

● Strong magnetic field

Item	Reed 2-wire		
	H0		H0Y (2-color LED)
Applications	For programmable controller, relay		Dedicated for programmable controller
Load voltage	12/24 VDC	110 VAC	24 VDC
Load current	5 to 50 mA	7 to 20 mA	5 to 20 mA (*1)
Internal voltage drop	5V or less		6V or less
Leakage current	10 µA or less		10 µA or less
Indicator	Green LED (Lit when ON)		Red/green LED (Lit when ON)
Lead wire (standard)	1 m (flame-resistant cabtyre cable 2-conductor 0.5 mm^2)		
Insulation resistance	100 MΩ and over with 500 VDC megger		
Withstand voltage	No failure after 1 minute of 1,000 VAC application.		
Shock resistance	294 m/s^2		
Ambient temperature	-10 to +60°C		
Degree of protection	IEC Standard IP67, JIS C9020 (water-tight), oil resistance		
Weight g	1 m:76 3 m:181 5 m:289		

*1: The above max. load current is 20 mA at 25°C. The current is lower than 20 mA if the operating ambient temperature around the switch is higher than 25°C. (5 to 10 mA at 60°C)

Cylinder weight

(Unit: kg)

Bore size (mm)		Product weight per 0 mm stroke	Additional weight per 100 mm stroke	Accessory weight					Switch weight	Mounting bracket weight			Weight of tie rod at 0 mm stroke	Additional weight of tie rod per S = 10 mm
				Axial foot	Rod clevis	Rod eye	Limit switch mounting base	Dog bracket		T type: Tie rod mount	T type: Band mounting	H type		
ø50	Forward locking: F	1.61	0.40	0.21	0.37	0.27	0.18	0.08	Refer to the weight in the switch specifications.	0.021	0.008	0.024	0.019	0.003
	Backward locking: B	1.56	0.39											
ø63	Forward locking: F	2.11	0.40								0.009			
	Backward locking: B	2.06	0.39											

(Example) Product weight of UCAC2-A-50B-50R-B-TOH-D

- ● Product weight at 0 mm stroke (backward locking: B) ..... 1.56 kg
- ● Additional weight per 50 mm stroke ..... 0.39 x $\frac{50}{100}$ = 0.195 kg
- ● Weight of tie rod at 0 mm stroke ..... 0.019 kg
- ● Additional weight of tie rod at 50 mm stroke ..... 0.003 x $\frac{50}{10}$ = 0.015 kg
- ● Weight of 2 TOH switches ..... 0.018x2 = 0.036 kg
- ● Weight of 2 mounting brackets ..... 0.021x2 = 0.042 kg
- ● Product weight ..... 1.56 + 0.195 + 0.019 + 0.015 + 0.036 + 0.042 = 1.867 kg

Theoretical thrust table

(Unit: N)

Bore size (mm)	Operating direction	Working pressure MPa								
		0.25	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø50	Push	4.91x10^2	5.89x10^2	7.85x10^2	9.82x10^2	1.18x10^3	1.37x10^3	1.57x10^3	1.77x10^3	1.96x10^3
	Pull	4.12x10^2	4.95x10^2	6.60x10^2	8.25x10^2	9.90x10^2	1.15x10^3	1.32x10^3	1.48x10^3	1.65x10^3
ø63	Push	7.79x10^2	9.35x10^2	1.25x10^3	1.56x10^3	1.87x10^3	2.18x10^3	2.49x10^3	2.81x10^3	3.12x10^3
	Pull	7.01x10^2	8.41x10^2	1.12x10^3	1.40x10^3	1.68x10^3	1.96x10^3	2.24x10^3	2.52x10^3	2.80x10^3

How to order

Without switch (built-in magnet for switch)

UCAC2-A-50NB-50N-B——————Y1

With switch (built-in magnet for switch)

UCAC2-A-50NB-50N-B-T2H-DB-Y1

With strong magnetic field proof (for H0, H0Y switches) switch (built-in magnet for switch)

UCAC2-L2-A-50NB-50N-B—H0-DB-Y1

Ⓐ Clevis width *1

Ⓑ Bore size

Ⓒ Port thread

Ⓓ Cushion

Ⓔ Stroke

Ⓕ Speed adjustment needle

Ⓖ Lock direction

Ⓗ Switch model No.

Ⓘ Switch quantity

Ⓙ Switch mounting position and mounting *3

Ⓚ Accessory *5 *6 *7

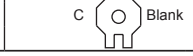
Code	Description
Ⓐ Clevis width (mm)	
A	16.5
B	19.5
AL	16.5 (Axial foot)
BL	19.5 (Axial foot)
Ⓑ Bore size (mm)	
50	ø50
63	ø63
Ⓒ Port thread	
Blank	Rc thread
N	NPT thread (made-to-order product)
G	G thread (made-to-order product)
Ⓓ Cushion	
Blank/H *2	Head side cushioned
B	Both sides cushioned
N	Without cushion
Ⓔ Stroke (mm)	
50, 75, 100, 125, 150	
Ⓕ Speed adjustment needle	
Blank	With both sides
R	With rod side
H	With head side
N	None
Ⓖ Lock direction/bypass tube position	
F	Forward lock (bypass tube position F, port position F1)
F1	Forward lock (bypass tube position F1, port position F2)
F2	Forward lock (bypass tube position F2, port position F1)
B	Backward locking

Ⓗ Switch model No.

Lead wire Straight	Lead wire L-shaped	Contact	Voltage AC	Voltage DC	Indicator	Lead wire
T0H*	**T0V***	Reed	●	●	1-color LED	2-wire
T5H*	**T5V***	Reed	●	●	No indicator lamp	2-wire
T8H*	**T8V***	Reed	●	●	1-color LED	2-wire
T1H*	**T1V***	Proximity	●		1-color LED	2-wire
T2H*	**T2V***	Proximity		●	1-color LED	2-wire
T3H*	**T3V***	Proximity		●	1-color LED	3-wire
T3PH*	**T3PV***	Proximity		●	1-color LED	3-wire
T2YH*	**T2YV***	Proximity		●	2-color LED	2-wire
T2WH*	**T2WV***	Proximity		●	2-color LED	2-wire
T3YH*	**T3YV***	Proximity		●	2-color LED	3-wire
T3WH*	**T3WV***	Proximity		●	2-color LED	3-wire
T2YD*	-	Proximity		●	2-color LED AC magnetic field	2-wire
T2YDT*	-	Proximity		●	2-color LED AC magnetic field	2-wire
T2YDU	-	Proximity		●	2-color LED for AC magn field, connector	2-wire
T2JH*	**T2JV***	Proximity		●	1-color LED off-delay	2-wire
H0*	-	Reed	●	●	1-color LED for strong magn field	2-wire
H0Y*	-	Reed		●	2-color LED for strong magn field	2-wire

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

Ⓘ Switch quantity	
R	1 on rod side
H	1 on head side
D	2
T	3

Ⓙ Switch mounting position and mounting		
Blank	Tie rod mounting	
B		
C		
Z *4	Band mounting	

*** Selectable only when the switch model No. is not specified Tie rod mounting position**	
Blank	Without tie rod
A	
B	
C	

Ⓚ Accessory		
Blank	Without accessory (rod eye)	
Y	Rod clevis Cast iron	
Y1	Rod clevis Steel	
I	Rod eye Steel	
K	Bellows	*8, *9
D	Limit switch mounting base	With dog
D1		Without dog
Q	Clamp bracket	

Precautions for model No. selection

*1 : A clevis pin, split pin, and plain washer are attached with A/B/AL/BL.
The clevis width and rod clevis width are the same.

*2 : If blank is selected for Ⓒ Port thread, the head side cushion comes with "Blank" for Ⓓ Cushion and "H" for all other options.

*3 : The switch cannot be attached on the same surface as the bypass tube mounting position.

4 : Cannot be selected with Ⓗ Switch model No. "HO", "HOY*".

*5 : A pin, split pin, and plain washer are attached with Y/Y1.

*6 : For Q, piston rod protruding length is different from the standard. This cannot be mounted on the standard.

*7 : When selecting "Q", only "A" can be selected for Ⓐ Clevis width.

*8 : Bellows max. ambient temperature 100°C, instantaneous max. temperature 200°C

*9 : Cannot be mounted if ⒶClevis width is AL or BL.

[Example of model No.]

UCAC2-A-50B-50R-B-T0H-DB-Y

Model: Position locking clamp cylinder double acting

Ⓐ Clevis width	:16.5 mm
Ⓑ Bore size	:ø50 mm
Ⓒ Port thread	:Rc thread
Ⓓ Cushion	:With both sides
Ⓔ Stroke	:50 mm
Ⓕ Speed adjustment needle	:With rod side
Ⓖ Lock direction/bypass tube position	:Backward locking
Ⓗ Switch model No.	:Reed T0H switch, Lead wire 1 m
Ⓘ Switch quantity	:2
Ⓙ Switch mounting position and mounting	:B
Ⓚ Accessory	:Rod clevis Cast iron

How to order switch * Pay attention to the direction when mounting the tie rod. Refer to page 1036.

[Switch mounting: Tie rod]

T type cylinder switch

A) Switch body + mounting bracket set (=B+C+D)

CAC4 - T0H3 - 50 - 50

- 50: Stroke (Item Ⓔ on page 1032)
- 50: Bore size (Item Ⓑ on page 1032)
- T0H3: Switch model No. (Item Ⓗ on page 1032)

B) Switch body only

SW - T0H3

- T0H3: Switch model No. (Item Ⓗ on page 1032)

C) Mounting bracket kit

CAC4 - T - 50

- 50: Bore size (Item Ⓑ on page 1032)

D) Mounting tie rod kit

UCAC2 - 50 - TIE - ROD - KIT - 50

- 50: Bore size (Item Ⓑ on page 1032)
- 50: Stroke (Item Ⓔ on page 1032)

Strong magnetic field proof cylinder switch

● H type cylinder switch

A) Switch body + mounting bracket set (=B+C+D)

CAC4-L2 - H03 - 50 - 50

- 50: Stroke (Item Ⓔ on page 1032)
- 50: Bore size (Item Ⓑ on page 1032)
- H03: Switch model No. (Item Ⓗ on page 1032)

B) Switch body only

SW - H03

- H03: Switch model No. (Item Ⓗ on page 1032)

C) Mounting bracket kit

CAC4-L2 - H - 50

- 50: Bore size (Item Ⓑ on page 1032)

D) Mounting tie rod kit

UCAC2 - 50 - TIE - ROD - KIT - 50

- 50: Bore size (Item Ⓑ on page 1032)
- 50: Stroke (Item Ⓔ on page 1032)

[Switch mounting: Band]

A) Switch body + mounting bracket set + band (=B+C)

CAC4 - T0H - 40 - Z

- 40: Bore size (Item Ⓑ on page 1032)
- T0H: Switch model No. (Item Ⓖ on page 1032)

B) Switch body only

SW - T0H

- T0H: Switch model No. (Item Ⓖ on page 1032)

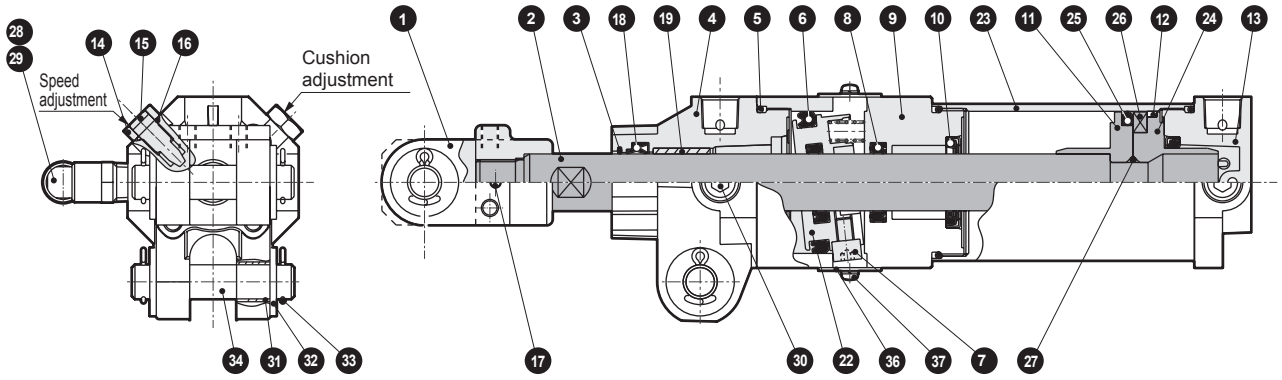
C) Mounting bracket set + band

CAC4 - Z - 40

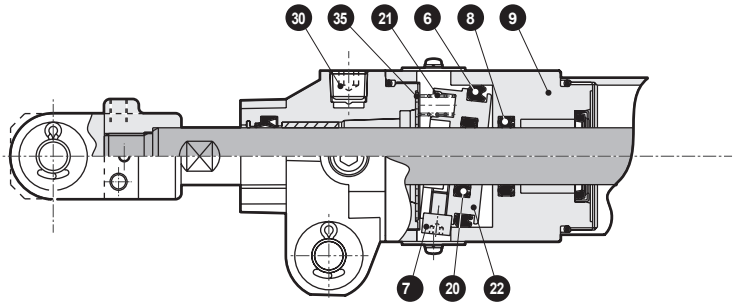
- 40: Bore size (Item Ⓑ on page 1032)

Internal structure and parts list

● With forward locking (UCAC2-F)



● With backward locking (UCAC2-B)



Cannot be disassembled

Note)Cushion packing ⑩ is attached to the rod side only when both sides are cushioned.

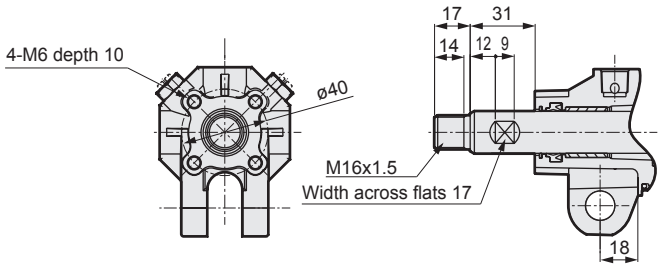
Parts list

Part No.	Part name	Material	Remarks	Part No.	Part name	Material	Remarks
1	Rod clevis	Y: Cast iron Y1: Steel	Y: Manganese phosphate Y1: Black finish	20	Lock rod packing	Nitrile rubber	
2	Piston rod	Steel	Industrial chrome plating	21	Lock spring	Steel	Black finish
3	Metal scraper	Copper alloy		22	Lock metal	Special steel	Chromate
4	Rod cover	Aluminum alloy die-casting	Chromate	23	Cylinder tube	Aluminum alloy	
5	Cylinder gasket	Nitrile rubber		24	Piston (R)	Aluminum alloy die-casting	
6	Lock piston packing	Nitrile rubber		25	Piston packing	Nitrile rubber	
7	Fulcrum nut	Steel	Chromate	26	Magnet	Plastic	
8	Rod packing	Nitrile rubber		27	Piston gasket	Nitrile rubber	
9	Intermediate cover	Aluminum alloy		28	Bypass tube		Not required with PULL side lock (B)
10	Cushion packing	Nitrile rubber, steel	Chromate	29	Push-in fitting		Not required with PULL side lock (B)
11	Piston (H)	Aluminum alloy die-casting		30	Flush plug with sealant	Steel	Black finish
12	Wear ring	Polyacetal resin		31	Bush for clevis	Tetrafluoroethylene resin, steel	
13	Head cover	Aluminum alloy die-casting		32	Flat washer	Steel	Chromate
14	Hexagon nut	Steel	Chromate	33	Split pin	Steel	Chromate
15	Needle	Copper alloy		34	Clevis pin	Steel	Black finish
16	Needle gasket	Nitrile rubber		35	Washer	Steel	Not required with PULL side lock (B) Zinc chromate
17	Spring pin	Steel	Black finish	36	Dust cover	Aluminum alloy	
18	Rod packing	Nitrile rubber		37	Small machine screw	Steel	Chromate
19	Bush	Copper alloy					

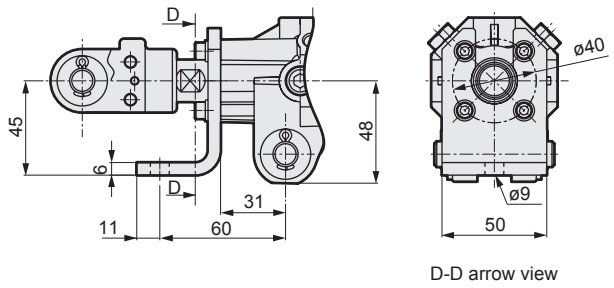
Note: Do not disassemble as it may lead to a decrease in holding force.

Dimensions

● Without rod eye

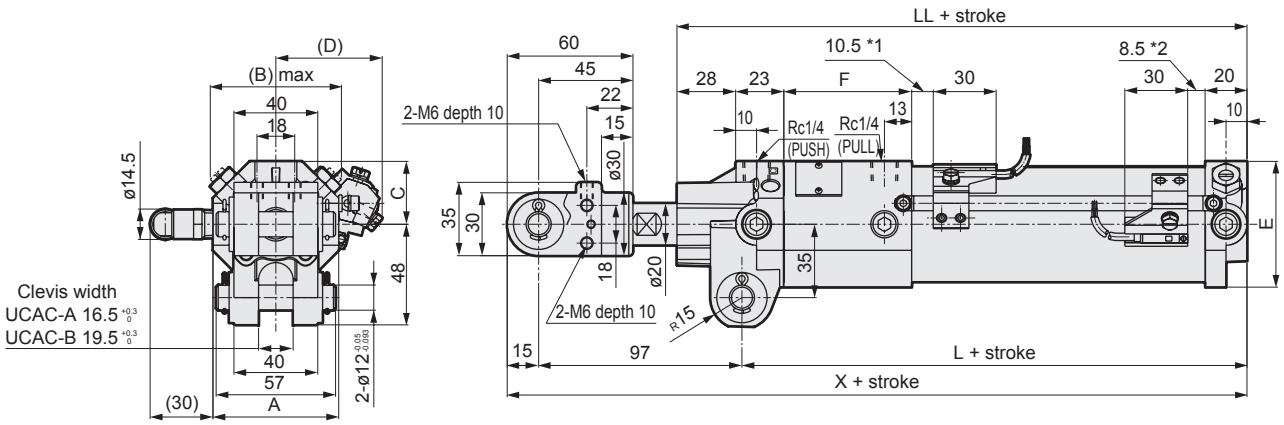


● Axial foot

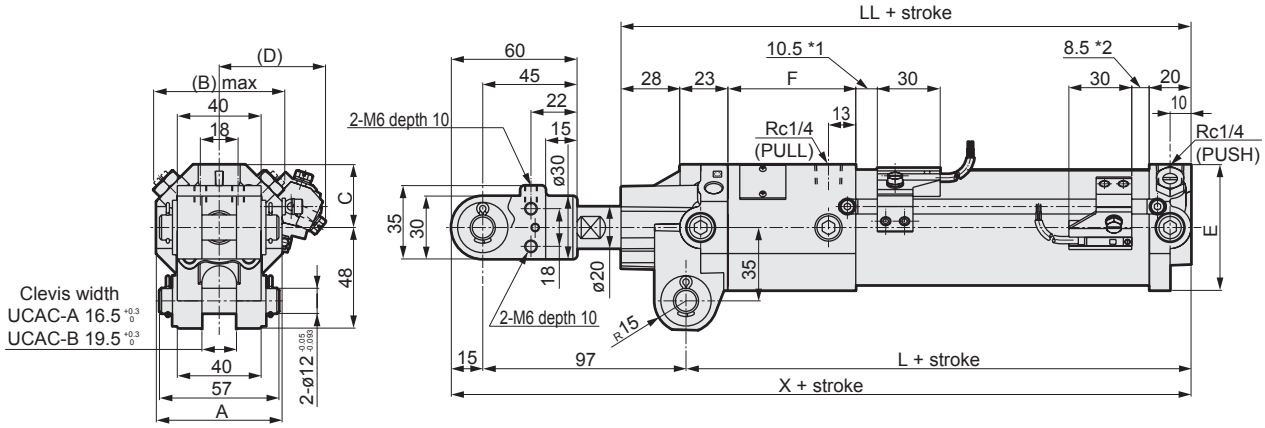


D-D arrow view

● With forward locking (UCAC2-F)



● With backward locking (UCAC2-B)

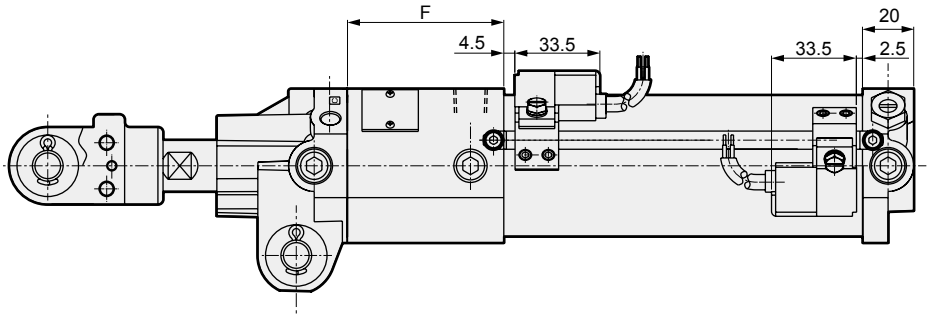


Code / Bore size (mm)	A	(B)	C	(D)	E	F	L	LL	X
ø50	60	63	30	50	60	61	141	172	253
ø63	70	66	35	56	70	63	143	174	255

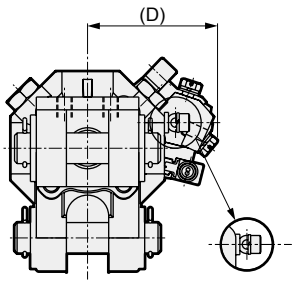
*1: 5.5 for switch T8H/V and 13.5 for switch T2/3W
*2: 3.5 for switch T8H/V and 11.5 for switch T2/3W

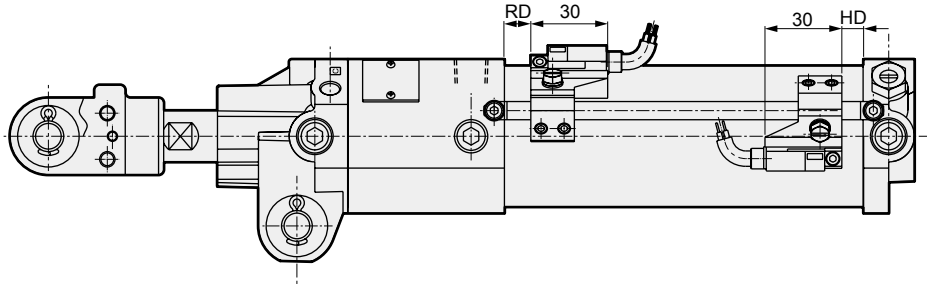
Dimensions (Switch mounting: Tie rod type)

● H type switch mounting position



● T2YD type switch mounting position

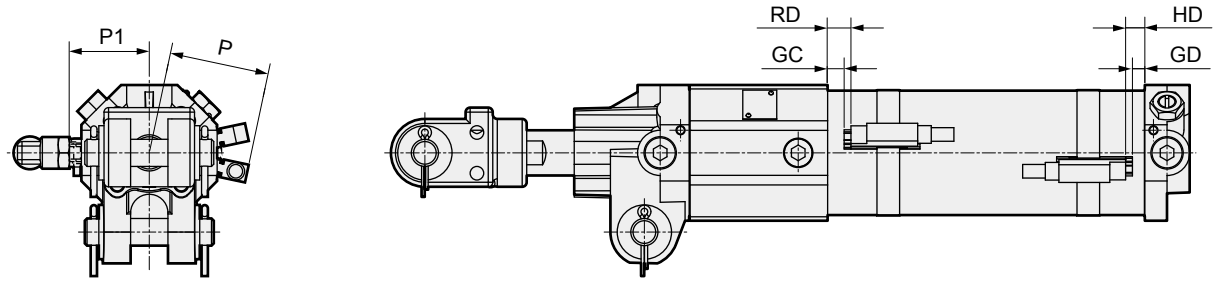




Code / Bore size (mm)	HD	RD	(D)	F
ø50	8.5	10.5	50	61
ø63	8.5	10.5	56	63

* Pay attention to the direction when mounting the tie rod.

Dimensions (switch mounting: band)



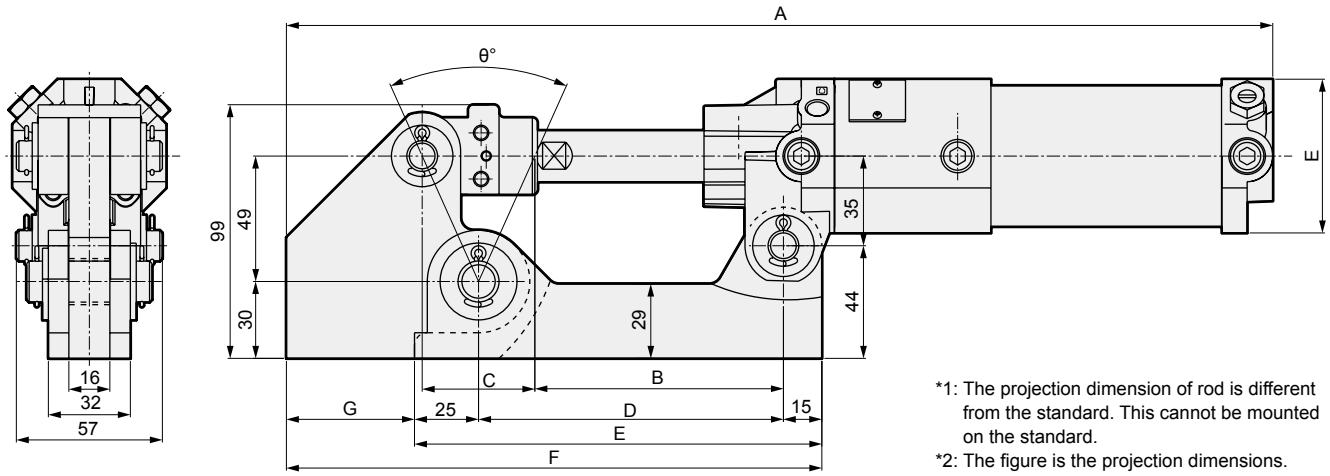
Code	T0,T5,T2,T3						T1,T2YD,T2YDT						T2Y,T3Y,T2J					
Bore size (mm)	GC	GD	RD	HD	P	P1	GC Note	GD Note	RD	HD	P	P1	GC Note	GD Note	RD	HD	P	P1
ø50	6.5	4.5	10.5	8.5	34.5	36	-	-	10.5	8.5	45.5	36	-	-	10.5	8.5	40	36
ø63	6.5	4.5	10.5	8.5	41	42.5	-	-	10.5	8.5	52	42.5	-	-	10.5	8.5	46.5	42.5

Code	T8						T2W,T3W					
Bore size (mm)	GC Note	GD Note	RD	HD	P	P1	GC	GD	RD	HD	P	P1
ø50	-	-	5.5	3.5	40	36	9.5	7.5	13.5	11.5	34.5	36
ø63	-	-	5.5	3.5	46.5	42.5	9.5	7.5	13.5	11.5	41	42.5

Note: Because the rail and the end face of the switch are on the same surface, the dimensions of GC and GD will be the same as those of RD and HD.

Dimensions

● Clamp bracket dimensions

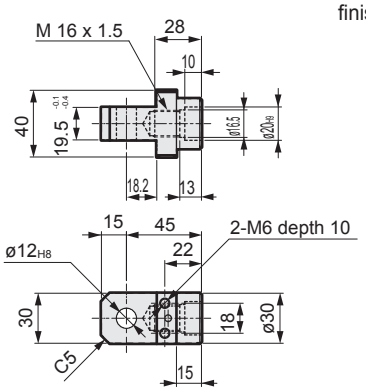


*1: The projection dimension of rod is different from the standard. This cannot be mounted on the standard.
*2: The figure is the projection dimensions. Dimension B represents the center position of the rod eye pin when the rod is retracted.
*3: Dimensions with bellows are the same.
*4: This product is mounted by welding.

Code / Model No.	Stroke length	A	B	C	D	E	F	G	θ°
UCAC2-A-50*-Q	50	387	97	44	119	159	209	50	48
UCAC2-A-75*-Q	75	435	107	70	142	182	232	50	71
UCAC2-A-100*-Q	100	478	115	90	160	200	250	50	85
UCAC2-A-125*-Q	125	531	128	120	188	228	278	50	101
UCAC2-A-150*-Q	150	576	128	140	198	238	298	60	110

Accessory dimensions

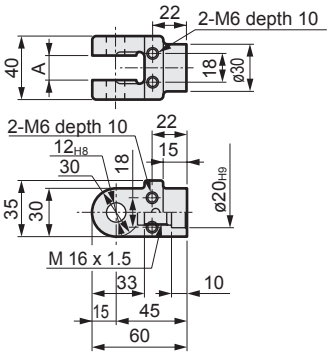
● Rod eye dimensions — Material:Steel Black finish



* Spring pin is attached.

Model No.	A	Applicable clamp	Weight (kg)
CAC4-IB	$19.5^{-0.1}_{-0.4}$	UCAC2-A, UCAC2-B	0.27

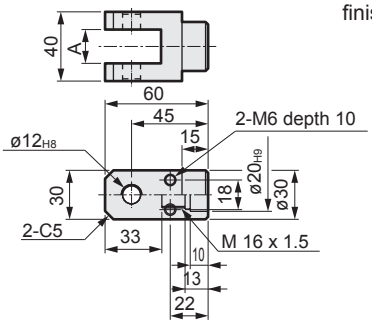
● Rod clevis Cast iron (Y) dimensions — Material: Manganese cast iron phosphate



* A pin, split pin, spring pin and a plain washer are attached.

Model No.	A	Applicable clamp	Weight (kg)
CAC4-YA	$16.5^{+0.3}_{0}$	UCAC2-A	0.37
CAC4-YB	$19.5^{+0.3}_{0}$	UCAC2-B	0.37

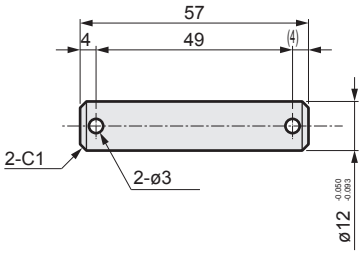
● Rod clevis Steel (Y1) dimensions For ø40 to ø63 — Material:Steel Black finish



* A pin, split pin, spring pin and a plain washer are attached.

Model No.	A	Applicable clamp	Weight (kg)
CAC4-Y1A	$16.5^{+0.3}_{0}$	UCAC2-A	0.37
CAC4-Y1B	$19.5^{+0.3}_{0}$	UCAC2-B	0.37

● clevis pin dimensions — Material:Steel Zinc chromate treatment

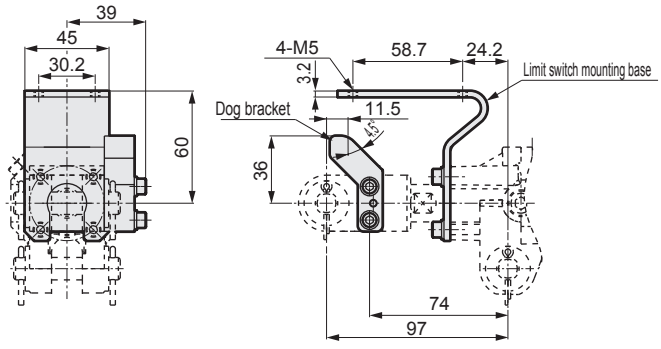


* A split pin and flat washer are attached.

Model No.	Applicable clamp	Weight (kg)
CAC4-P	UCAC2-A, UCAC2-B	0.05

● Limit switch mounting base dimensions — Material: Steel, black finish

● Dog bracket dimensions — Material: Steel, black finish



● Use WLH2 limit switch [OMRON] or equivalent.

Model No.	Part name	Applicable clamp	Weight (kg)
CAC4-L	Limit switch mounting base	UCAC2-A, UCAC2-B	0.18
CAC4-D	Dog bracket		0.08

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: Clamp cylinder with position locking UCAC2 Series

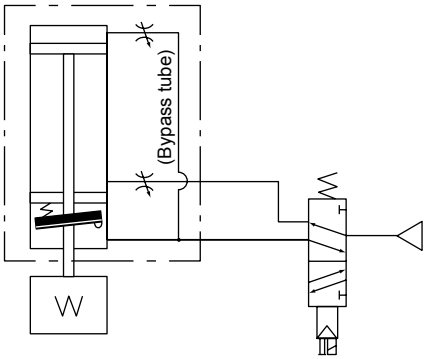
Design/selection

⚠ CAUTION

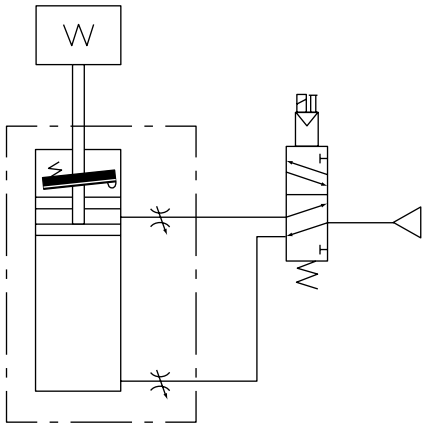
■ Basic circuit diagram

The built-in metering valve eliminates the need to install a speed controller for speed control. However, both the meter-in and meter-out states are metered, and both forward and backward speeds will change with only one needle adjusted. To control the forward and backward speeds individually, a speed controller must be installed.

● Forward locking F type



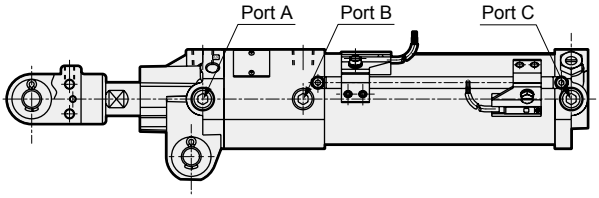
● Backward locking B type



Using the emergency stop 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.)

■ The piping port position of UCAC2 can be changed in the same way as the CAC4 Series. Be sure not to use the incorrect pressure port when doing so.

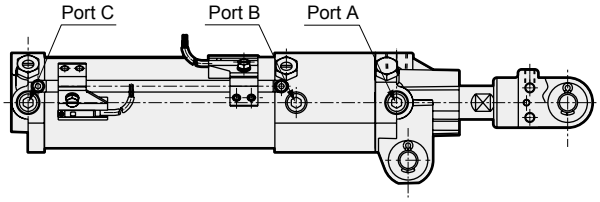
● When the port position is on the right side
(Lock direction F1 is on the right as standard)



Port / Lock direction	Port A	Port B	Port C
Forward locking F type *1	PUSH port	PULL port	Plug
Backward locking B type	Plug	PULL port	PUSH port

*1: As the F2 lock direction has a bypass tube, the port cannot be placed on the right side.

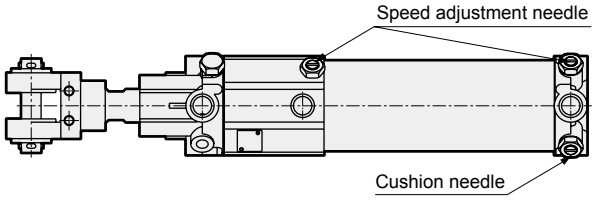
● When the port position is on the left side



Port / Lock direction	Port A	Port B	Port C
Forward locking F type *1	PUSH port	PULL port	Plug
Backward locking B type	Plug	PULL port	PUSH port

*1: As the F lock direction has a bypass tube, the port cannot be placed on the left side.

■ Do not mistake the speed adjustment needle for the cushion needle.



Mounting, installation and adjustment

⚠WARNING

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

⚠CAUTION

● Flush the connecting pipes carefully before mounting to prevent dust and cutting chips from entering the cylinder.

■ Protect the piston rod sliding surface from scratches and dents.
It will cause damage to the packing, etc., and may lead to air leakage.

Use/maintenance

⚠WARNING

■ For safety purposes, prevent the load from falling under its own weight during maintenance.

⚠CAUTION

■ The purpose of the cushion is to absorb the piston's kinetic energy with air compressibility, preventing the piston and cover from colliding at the stroke end.
Therefore, the cushion itself does not reduce the piston speed at the stroke end.
The following table shows the kinetic energy that can be absorbed by the cushion. If the kinetic energy exceeds these values, or if bounding caused by the air compressibility is to be avoided, consider using a separate shock absorber.

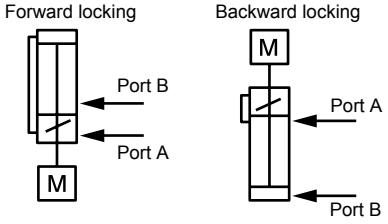
$$\text{Kinetic energy (J)} = \frac{1}{2} \times \text{load weight (kg)} \times [\text{speed (m/s)}]^2$$

Cushion characteristics table

Bore size (mm)	Effective cushion length (mm)	Allowable absorbed energy (J)	
		With cushion	Without cushion
ø50	13.5	6.54	0.14
ø63	13.5	11.63	0.21

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

■ Make sure to supply pressure to port B, and before unlocking, check that load is not applied to the lock mechanism.
If pressure is supplied to port A when both ports A and B are exhausted and the piston is locked, the lock may not be released or the piston rod may pop out even if the lock is released. This can be extremely hazardous.



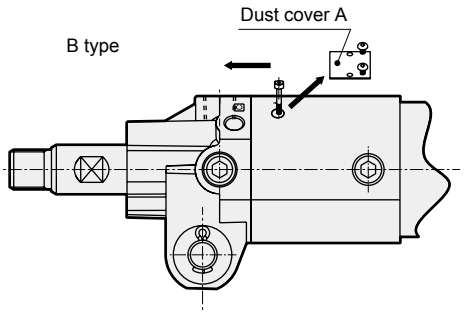
■ Keeping the cylinder with pressure applied to the lock mechanism may cause the lock to release.
Do not use 3-position closed center and 3-position P/A/B connection solenoid valves.

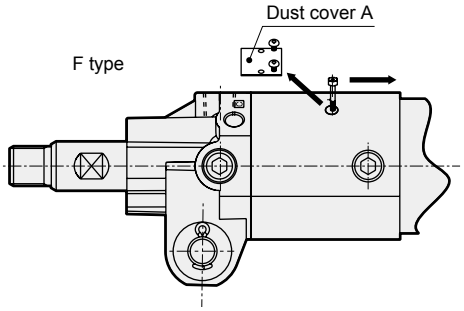
■ If back pressure is applied while locked, the lock may be released. Use a discrete solenoid valve, or an individual exhaust manifold.

■ Do not use with the by-pass tube disconnected, as lock response could be delayed.

■ Note that due to the structure, a 1 mm deviation may occur when stopped with the lock.

■ How to unlock manually
1. Remove the dust cover A.
2. Screw the hexagon socket bolt (length: 40 or more) fully into the screw hole M4 of the lock metal.
3. Push the hexagon socket bolt in the direction of the arrow to free the rod.



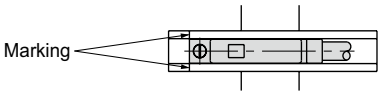


1. Common (With T type switch: band mounting)

⚠ CAUTION

■ When moving the switch position to the stroke length direction

- The 1-color display switch can be fine-tuned by ±3 mm from the default. If the adjusting range exceeds ±3 mm, or when fine-tuning the 2-color display switch, move the band position.
- Loosen the switch fixing screw, shift the switch along the rail, then tighten at the specified position.
  When using T2, T3, T0, or T5, use a flathead screwdriver (clockwork screwdriver, precision screwdriver, etc.) with a grip diameter of 5 to 6 mm, a 2.4 mm or smaller tip, and a thickness of 0.3 mm or less to tighten the screws with a tightening torque of 0.1 to 0.2 N·m.
  When using T*C, T2J, T2Y, or T3Y, tighten the screw with a tightening torque of 0.5 to 0.7 N·m.
- The switch bracket rail has a marking 4 mm from the rail end. Use as a guide to the mounting position when replacing the switch.
  Switch rail markings are set to the switch max. sensitivity position, which is the switch mounting position in the dimensions.
  The max. sensitivity position will change when the switch is changed or when the band is moved. Adjust the position accordingly in this case.



■ When moving the switch position to the circumferential direction

- Loosen the band fixing screw, shift the switch rail in the circumferential direction, then tighten at the specified position.
  The tightening torque of band fixing screw is 0.6 to 0.8 N·m.

■ Shifting the band position

- Loosen the band fixing screw, shift the switch rail and band along the cylinder tube, and tighten at the specified position.
  The tightening torque of band fixing screw is 0.6 to 0.8 N·m.