

USC

Selex Cylinder with Free Position Fall Prevention

ø40, ø50, ø63, ø80, ø100



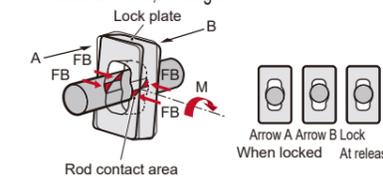
With Brake with Lock

Overview

This is a cylinder in the SCA2 series of general-type cylinders with medium bore (ø40 to ø100) equipped with a mechanism that enables fall prevention at any position of the stroke.

Features

High wear resistance circular slit method
Adopts a new fall prevention mechanism with excellent lifespan. By applying rotational force M to the lock plate, force F is generated in the axial direction, holding the rod.



Drop prevention is possible throughout the entire stroke

Drop prevention is possible at any position where the Piston Rod is stationary during the entire stroke, including the stroke end.

Eliminates workpiece damage

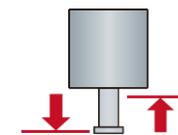
Prevents the cylinder from falling under its own weight due to troubles such as power outages. Eliminates damage to workpieces, etc.

Easy lock release

Loosening the nut and rotating the release lever can release the lock.

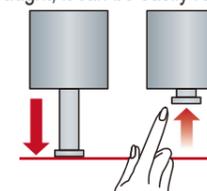
2 types of lock direction

You can choose either forward direction lock or reverse direction lock.



Free in the opposite direction of lock

In the opposite direction of the lock, the rod is free, so even if a workpiece is caught, it can be easily removed.



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Medium Bore Size Cylinder with Free Position Fall Prevention
 Double Acting, Single Rod Type
 Double Acting, Coil scraper type

USC, USC-G1 Series

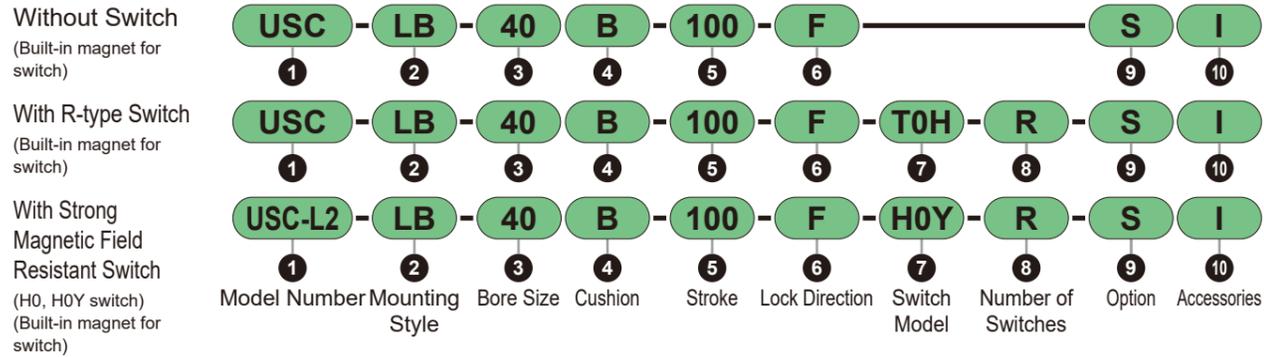
● Bore Size: ø40, ø50, ø63, ø80, ø100



USC, USC-G1 Series

Model No. Notation

Model No. Notation



1 Model Number

Code	Content
USC	Double Acting/Single Rod Type
USC-G1	Double Acting, With Coil Scraper
USC-L2	Double Acting, With Strong Magnetic Field Resistant Switch
USC-GIL2	Double Acting, Coil scraper type With Strong Magnetic Field Resistant Switch

2 Mounting Type

Mounting bracket is included for shipment.

Code	Content
00	Basic type
LB	Axial foot type
FA	Rod side flange type
FB	Head Side Flange Type
FC	Head side special flange type
CA	Single clevis type
CB	Double Clevis Type (Pin and Retaining Ring attached)
TC	Center trunnion type
TA	Rod side trunnion type
TB	Head side trunnion type

3 Bore Size (mm)

Code	Contents
40	ø40
50	ø50
63	ø63
80	ø80
100	ø100

4 Cushion

Code	Content
B	With Cushion on Both Sides
R	With rod side cushion
H	With head side cushion
N	Without cushion

5 Stroke (mm)

Bore Size	Stroke	Intermediate Stroke
ø40	1 to 600	Every 1 mm
ø50	1 to 600	
ø63	1 to 600	
ø80	1 to 700	
ø100	1 to 800	

*1: For minimum stroke with switch, please refer to P. 591.

6 Lock Direction

Code	Content
F	Forward Direction Lock
B	Reverse Direction Lock

7 Switch Model

For switch details, refer to P. 1457. Switches are pre-assembled on the product before shipment.

Indicator LED Special Function	Wiring (Output)	Load Voltage (V)		Load Current (mA)		Lead wire *1			
		AC	DC	AC	DC	Straight	L-shape		
Solid State	1-Color	2-wire	85 to 265	—	5 to 100	-	T1H□ T1V□		
		3-wire (NPN)	—	10 to 30	—	5 to 20 *2	T2H□ T2V□		
	2-color	3-wire (PNP)	—	30 or less	—	100 or less	-	T3PH□ T3PV□	
		2-wire	—	24 ± 10%	—	5 to 20	-	T2WH□ T2WV□	
		3-wire (NPN)	—	30 or less	—	50 or less	-	T3WH□ T3WV□	
		For 2-color AC Magnetic Field	—	24 ± 10%	—	5 to 20	-	T2YD□ -	
Contact	1-Color Off-Delay Type	2-wire	—	10 to 30	—	5 to 20 *2	T2JH□ T2JV□		
		1-Color Flexible Lead Wire Type	—	10 to 30	—	-	-		T2HR3 T2VR3
	Without Indicator Lamp	2-wire	110	12/24	7 to 20	5 to 50	-	T0H□ T0V□	
			110	5/12/24	20 or less	50 or less	-	T5H□ T5V□	
	For 1-color strong magnetic field	2-wire	110/220	12/24	7 to 20 / 7 to 10	5 to 50	-	T8H□ T8V□	
			110	12/24	7 to 20	5 to 50	-	H0□ -	
For 2-color strong magnetic field	2-wire	—	24 ± 10%	—	5 to 20	-	H0Y□ -		
		-	-	-	-	-	-		-

*1: Insert the code selected in the "Lead wire length" table into "□" of the switch model number.
 *2: The maximum load current value above, 20 mA, is at 25°C. If the switch operating Ambient Temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)
 *3: H0□ and H0Y□ switch lead wires are grommet.
 *4: Switches other than the above model No. are also available. (Custom Product) For details, refer to P. 1457.

8 Number of Switches

Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs
T	With 3 pcs

Note: When TA or TB is selected as the mounting type, the number of switches is limited to "H" (1 pc. on head side) for TA, and "R" (1 pc. on rod side) for TB.

9 Option

Code	Content	Max Ambient Temperature	Instantaneous Max Temperature
J	Bellows	100°C	200°C
L		250°C	400°C
M	Piston Rod Material (Stainless Steel)		
Blank	Cushion needle position R (Standard)		
S	Cushion needle position S		
T	Cushion needle position T		

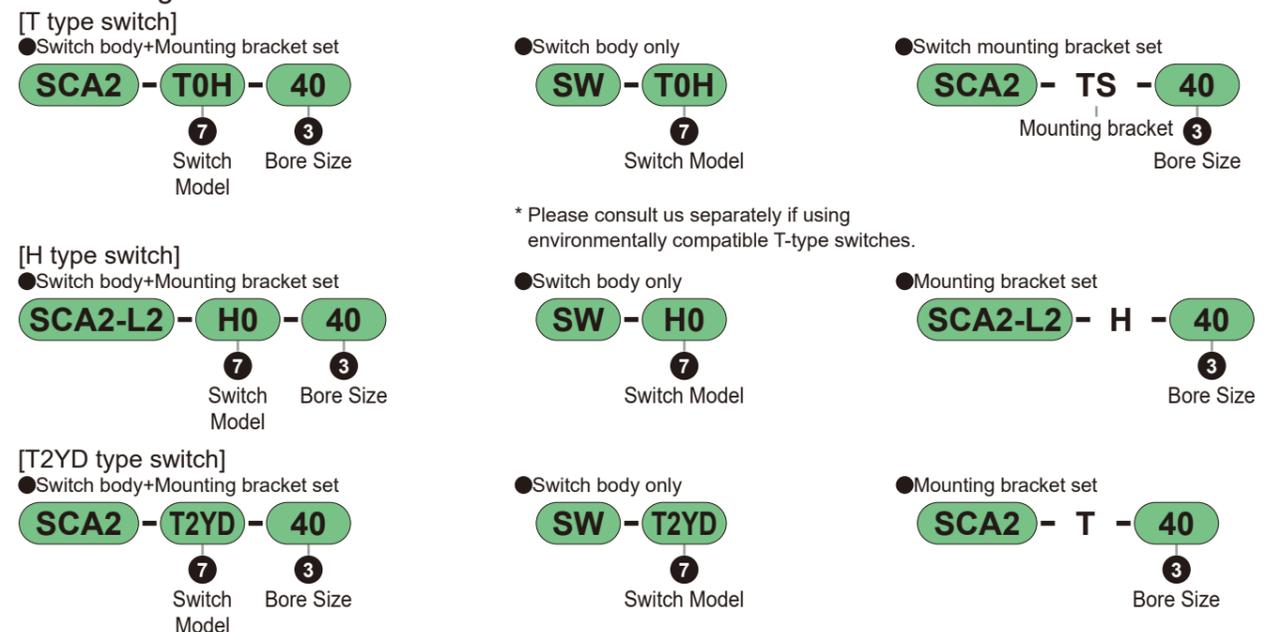
*1: Instantaneous maximum temperature is the temperature when sparks, cutting chips, etc., instantaneously hit the bellows.
 *2: When mounting type "TA" or "TB" is selected, the cushion needle position is fixed to "S" (no symbol) and cannot be selected.

10 Accessories

Code	Content
I	Single knuckle *1
Y	Double Knuckle (Pin and Retaining Ring included) *1
B1	Single bracket
B2	Double Yoke Bracket (Pin and Retaining Ring included)
B4	Trunnion Type 2nd Bracket (2 pieces/set)

*1: "I" and "Y" cannot be selected at the same time.

Switch Single Unit Model No. Notation



With Brake / With Lock

With Brake / With Lock

ULK

ULK

JSK2/ JSM2

JSK2/ JSM2

JSG

JSG

JSC3, JSC4

JSC3, JSC4

USSD

USSD

UFCD

UFCD

USC

USC

Cylinder Switch

Cylinder Switch

Ending

Ending

Specifications

Item	USC (Double Acting, Single Rod Type)/USC-G1 (Double Acting, With Coil Scraper)				
Operation type	Double Acting Type				
Operating Fluid	Compressed Air				
Max Operating Pressure MPa	1.0				
Min Operating Pressure MPa	0.1				
Cylinder Part	0.25 (36 psi)				
Lock Mechanism Part	1.6				
Proof Pressure MPa	-10 to 60 (No freezing)				
Ambient Temperature °C					
Bore Size mm	ø40	ø50	ø63	ø80	ø100
Port Size					
Cylinder Part	1/4	3/8	3/8	1/2	1/2
Lock Mechanism Part	1/8				
Rc					
Stroke Tolerance mm	^{+0.9} ₀ (to 300) ^{+1.4} ₀ (to 1000)				
Locking Force N	1005	1570	2493	4021	6283
Operating Piston Speed mm/s	50 to 1000 (Please use within the absorbed energy.)				
Cushion	Cushion available/not available selectable				
Effective Cushion Length mm	14.6	16.6	16.6	20.6	23.6
Lubrication	Not required (When lubricating, use turbine oil Class 1 ISO VG32)				
Allowable					
With Cushion	4.29	8.37	15.8	27.9	49.8
Absorbed Energy J	Large energy generated by external load cannot be absorbed.				
*1 Without cushion	It is recommended to use an external shock absorber together.				

*1: If the kinetic energy is high due to high load or fast piston speeds, consider the use of a separate shock absorber and use the product within the range where the kinetic energy can be absorbed.

Stroke

Bore Size (mm)	Standard Stroke (mm)	Max Stroke (mm)	Producible stroke (mm)	Min Stroke (mm)
ø40	25, 50, 75, 100, 150, 200	600	1600	1
ø50			2,000	
ø63	250, 300, 350, 400, 450	700	2500	
ø80				
ø100	500	800	*5	

*1: Intermediate strokes can be produced in 1 mm increments.

*2: For models with switch, the minimum stroke changes depending on the mounting method. Please refer to the table on the next page. If the stroke is 15 mm or less, two switches may turn ON simultaneously. In this case, adjust the switch mounting positions so that they are further apart from each other.

*3: The minimum stroke can be manufactured from 1 mm, but please consider the stroke tolerance.

*4: If the Max Stroke is exceeded, the product specifications may not be met depending on the conditions, so please refer to Intro 29.

*5: For with bellows with tube inner diameter ø63 to ø100, the manufacturable stroke is up to 2000 mm.

Minimum Stroke with Switch (T-type Switch)

● T0/T5

Number of Switches	Different Surface Mounting		Same Surface Mounting		Intermediate Trunnion Mounting		Rod Side Trunnion Mounting	Head Side Trunnion Mounting
	1	2	1	2	1	2	Position detection at the rod side stroke end is not possible.	Position detection at the head side stroke end is not possible.
Bore Size							1	1
ø40	20 (10)	20 (20)	20 (10)	60 (45)	110 (110)	110 (110)	50 (50)	50 (50)
ø50	15 (10)	20 (20)	15 (10)	20 (20)	135 (135)	135 (135)	60 (60)	60 (60)
ø63	15 (10)	20 (20)	15 (10)	20 (20)	110 (95)	110 (95)	50 (45)	50 (45)
ø80	15 (15)	25 (25)	15 (15)	25 (25)	115 (85)	115 (85)	55 (40)	55 (40)
ø100	15 (15)	25 (25)	15 (15)	25 (25)	125 (95)	125 (95)	60 (45)	60 (45)

*1: () indicates T□V (L-shaped lead wire type).

*2: If the stroke is 15 mm or less, two switches may turn ON simultaneously. In this case, adjust the switch mounting positions so that they are further apart from each other.

● T8

Number of Switches	Different Surface Mounting		Same Surface Mounting		Intermediate Trunnion Mounting		Rod Side Trunnion Mounting	Head Side Trunnion Mounting
	1	2	1	2	1	2	Position detection at the rod side stroke end is not possible.	Position detection at the head side stroke end is not possible.
Bore Size							1	1
ø40	15 (10)	20 (20)	15 (10)	50 (35)	95 (85)	95 (85)	45 (40)	45 (40)
ø50	10 (10)	20 (20)	10 (10)	20 (20)	115 (115)	115 (115)	50 (50)	50 (50)
ø63	10 (10)	20 (20)	10 (10)	20 (20)	95 (75)	95 (75)	45 (35)	45 (35)
ø80	15 (15)	25 (25)	15 (15)	25 (25)	100 (70)	100 (70)	50 (35)	50 (35)
ø100	15 (15)	25 (25)	15 (15)	25 (25)	110 (80)	110 (80)	55 (40)	55 (40)

*1: () indicates T□V (L-shaped lead wire type).

*2: If the stroke is 15 mm or less, two switches may turn ON simultaneously. In this case, adjust the switch mounting positions so that they are further apart from each other.

● T2/T3/T3P/T2□R3

Number of Switches	Different Surface Mounting		Same Surface Mounting		Intermediate Trunnion Mounting		Rod Side Trunnion Mounting	Head Side Trunnion Mounting
	1	2	1	2	1	2	Position detection at the rod side stroke end is not possible.	Position detection at the head side stroke end is not possible.
Bore Size							1	1
ø40	20 (10)	20 (15)	20 (10)	60 (45)	105 (75)	105 (75)	50 (35)	50 (35)
ø50	15 (10)	15 (15)	15 (10)	15 (15)	105 (75)	105 (75)	45 (30)	45 (30)
ø63	15 (10)	15 (15)	15 (10)	15 (15)	110 (80)	110 (80)	50 (35)	50 (35)
ø80	15 (10)	15 (15)	15 (10)	15 (15)	115 (85)	115 (85)	55 (40)	55 (40)
ø100	10 (10)	15 (15)	10 (10)	15 (15)	125 (95)	125 (95)	60 (45)	60 (45)

*1: () indicates T□V (L-shaped lead wire type).

*2: If the stroke is 15 mm or less, two switches may turn ON simultaneously. In this case, adjust the switch mounting positions so that they are further apart from each other.

● T1/T2YD

Number of Switches	Different Surface Mounting		Same Surface Mounting		Intermediate Trunnion Mounting		Rod Side Trunnion Mounting	Head Side Trunnion Mounting
	1	2	1	2	1	2	Position detection at the rod side stroke end is not possible.	Position detection at the head side stroke end is not possible.
Bore Size							1	1
ø40	20 (10)	20 (15)	20 (10)	60 (45)	105 (75)	105 (75)	50 (35)	50 (35)
ø50	15 (10)	15 (15)	15 (10)	15 (15)	100 (70)	100 (70)	45 (30)	45 (30)
ø63	15 (10)	15 (15)	15 (10)	15 (15)	105 (75)	105 (75)	50 (35)	50 (35)
ø80	15 (10)	15 (15)	15 (10)	15 (15)	110 (80)	110 (80)	55 (40)	55 (40)
ø100	10 (10)	15 (15)	10 (10)	15 (15)	120 (90)	120 (90)	60 (45)	60 (45)

*1: () indicates T□V (L-shaped lead wire type). However, T2YD does not have an L-shaped lead wire type (V).

*2: If the stroke is 15 mm or less, two switches may turn ON simultaneously. In this case, adjust the switch mounting positions so that they are further apart from each other.

● T2W/T3W

Number of Switches	Different Surface Mounting		Same Surface Mounting		Intermediate Trunnion Mounting		Rod Side Trunnion Mounting	Head Side Trunnion Mounting
	1	2	1	2	1	2	Position detection at the rod side stroke end is not possible.	Position detection at the head side stroke end is not possible.
Bore Size							1	1
ø40	20 (5)	20 (10)	20 (5)	65 (50)	110 (80)	110 (80)	50 (35)	50 (35)
ø50	20 (5)	20 (10)	20 (5)	20 (10)	110 (80)	110 (80)	50 (35)	50 (35)
ø63	20 (5)	20 (10)	20 (5)	20 (10)	115 (85)	115 (85)	55 (40)	55 (40)
ø80	15 (5)	15 (10)	15 (5)	15 (10)	120 (90)	120 (90)	55 (40)	55 (40)
ø100	10 (5)	10 (10)	10 (5)	10 (10)	130 (100)	130 (100)	60 (45)	60 (45)

*1: () indicates T□V (L-shaped lead wire type).

*2: If the stroke is 15 mm or less, two switches may turn ON simultaneously. In this case, adjust the switch mounting positions so that they are further apart from each other.

With Brake / With Lock

With Brake / With Lock

ULK

ULK

JSK2/ JSM2

JSK2/ JSM2

JSG

JSG

JSC3, JSC4

JSC3, JSC4

USSD

USSD

UFCD

UFCD

USC

USC

Cylinder Switch

Cylinder Switch

Ending

Ending

Cylinder Weight Table

(Unit: kg)

Bore Size	Product Weight when stroke (S) = 0 mm							Switch Weight	Mounting Bracket Weight		Added weight per S = 100 mm
	Basic Type (00)	Foot Type (LB)	Flange Type (FA, FB)	Special flange type (FC)	Single Clevis Type (CA)	Single clevis type (CB)	Trunnion Type (TA, TB, TC)		T Type	H type	
	ø40	1.40	1.58	1.83	1.49	1.75	1.75		1.78	0.024	
ø50	2.04	2.21	2.54	2.15	2.48	2.48	2.56	0.022	0.026	0.46	
ø63	2.83	3.2	3.89	3.01	3.38	3.43	3.68	0.020	0.024	0.50	
ø80	4.94	5.71	6.82	5.30	6.48	6.49	6.30	0.026	0.029	0.90	
ø100	8.03	8.95	10.72	8.58	10.18	10.14	10.55	0.024	0.028	1.12	

Refer to the Weight listed in the Switch Specifications on P. 1457.

MEMO

Theoretical Thrust Table

(Unit: N)

Bore Size (mm)	Operating Direction	Operating Pressure MPa										
		0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø40	Push	1.26×10 ²	1.88×10 ²	2.51×10 ²	3.77×10 ²	5.03×10 ²	6.28×10 ²	7.54×10 ²	8.80×10 ²	1.01×10 ³	1.13×10 ³	1.26×10 ³
	Pull	1.06×10 ²	1.58×10 ²	2.11×10 ²	3.17×10 ²	4.22×10 ²	5.28×10 ²	6.33×10 ²	7.39×10 ²	8.44×10 ²	9.50×10 ²	1.06×10 ³
ø50	Push	1.96×10 ²	2.95×10 ²	3.93×10 ²	5.89×10 ²	7.85×10 ²	9.82×10 ²	1.18×10 ³	1.37×10 ³	1.57×10 ³	1.77×10 ³	1.96×10 ³
	Pull	1.65×10 ²	2.47×10 ²	3.30×10 ²	4.95×10 ²	6.60×10 ²	8.25×10 ²	9.90×10 ²	1.15×10 ³	1.32×10 ³	1.48×10 ³	1.65×10 ³
ø63	Push	3.12×10 ²	4.68×10 ²	6.23×10 ²	9.35×10 ²	1.25×10 ³	1.56×10 ³	1.87×10 ³	2.18×10 ³	2.49×10 ³	2.81×10 ³	3.12×10 ³
	Pull	2.80×10 ²	4.20×10 ²	5.61×10 ²	8.41×10 ²	1.12×10 ³	1.40×10 ³	1.68×10 ³	1.96×10 ³	2.24×10 ³	2.52×10 ³	2.80×10 ³
ø80	Push	5.03×10 ²	7.54×10 ²	1.01×10 ³	1.51×10 ³	2.01×10 ³	2.51×10 ³	3.02×10 ³	3.52×10 ³	4.02×10 ³	4.52×10 ³	5.03×10 ³
	Pull	4.54×10 ²	6.80×10 ²	9.07×10 ²	1.36×10 ³	1.81×10 ³	2.27×10 ³	2.72×10 ³	3.17×10 ³	3.63×10 ³	4.08×10 ³	4.54×10 ³
ø100	Push	7.85×10 ²	1.18×10 ³	1.57×10 ³	2.36×10 ³	3.14×10 ³	3.93×10 ³	4.71×10 ³	5.50×10 ³	6.28×10 ³	7.07×10 ³	7.85×10 ³
	Pull	7.15×10 ²	1.07×10 ³	1.43×10 ³	2.14×10 ³	2.86×10 ³	3.57×10 ³	4.29×10 ³	5.00×10 ³	5.72×10 ³	6.43×10 ³	7.15×10 ³

Mounting Bracket Model No.

Bore Size (mm)	ø40	ø50	ø63	ø80	ø100
Mounting bracket					
Foot (LB)	S1-LB-40	S1-LB-50	S1-LB-63	S1-LB-80	S1-LB-100
Flange (FA)	USC-FA-40	USC-FA-50	USC-FA-63	USC-FA-80	USC-FA-100
Flange (FB)	S1-FA-40	S1-FA-50	S1-FA-63	S1-FA-80	S1-FA-100
Single Yoke Clevis (CA)	S1-CA-40	S1-CA-50	S1-CA-63	S1-CA-80	S1-CA-100
Double Yoke Clevis (CB)	S1-CB-40	S1-CB-50	S1-CB-63	S1-CB-80	S1-CB-100

Note: Foot type mounting bracket is 2 pcs/set.

MEMO

Cylinder Switch

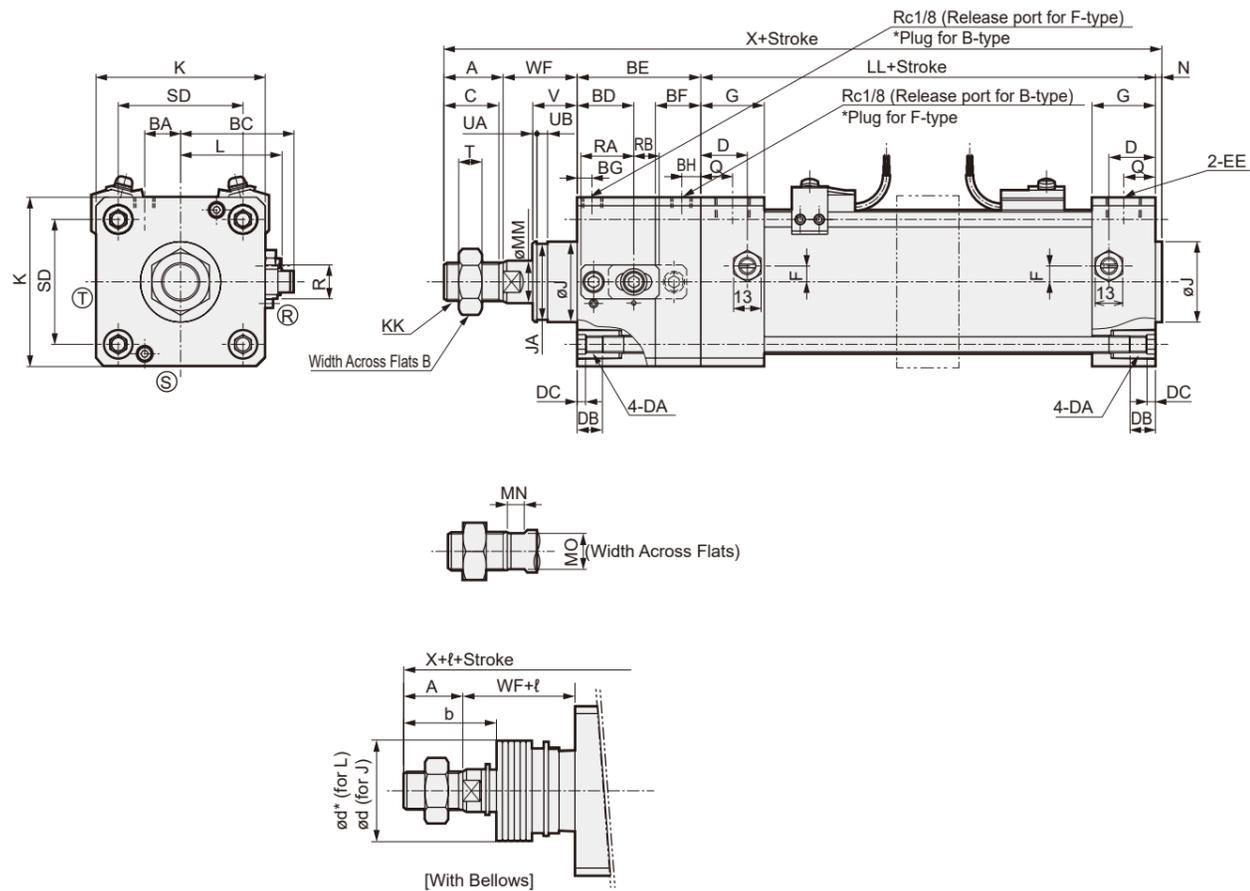
Ending

Cylinder Switch

Ending

Dimensional Drawings

● Basic type (00)



Code	Basic Type (00) Basic Dimensions																			
Bore Size	A	B	BA	BC	BD	BE	BF	BG	BH	C	D	DA	DB	DC	EE	F	G	J	K	L
ø40	22	22	7.5	39.5	22	47	18	7	7	20	18	M8	12	4	Rc1/4	7.5	26	31	57	38 to 39.5
ø50	28	27	10	43.5	25	54	20	7	8	26	20	M8	12	4	Rc3/8	0	28	38	66	41 to 43.5
ø63	28	27	17	53.5	26.8	58.5	21.5	7	9	26	22	M8	12	4	Rc3/8	0	30	38	80	47.5 to 50.0
ø80	36	32	21	62.5	33.3	71	25	8	10	34	26	M12	16	5	Rc1/2	0	34	43	98	56 to 59
ø100	45	41	25	72.5	38	81.5	28.5	8	10.5	43	28	M12	16	5	Rc1/2	0	36	51	118	66 to 69

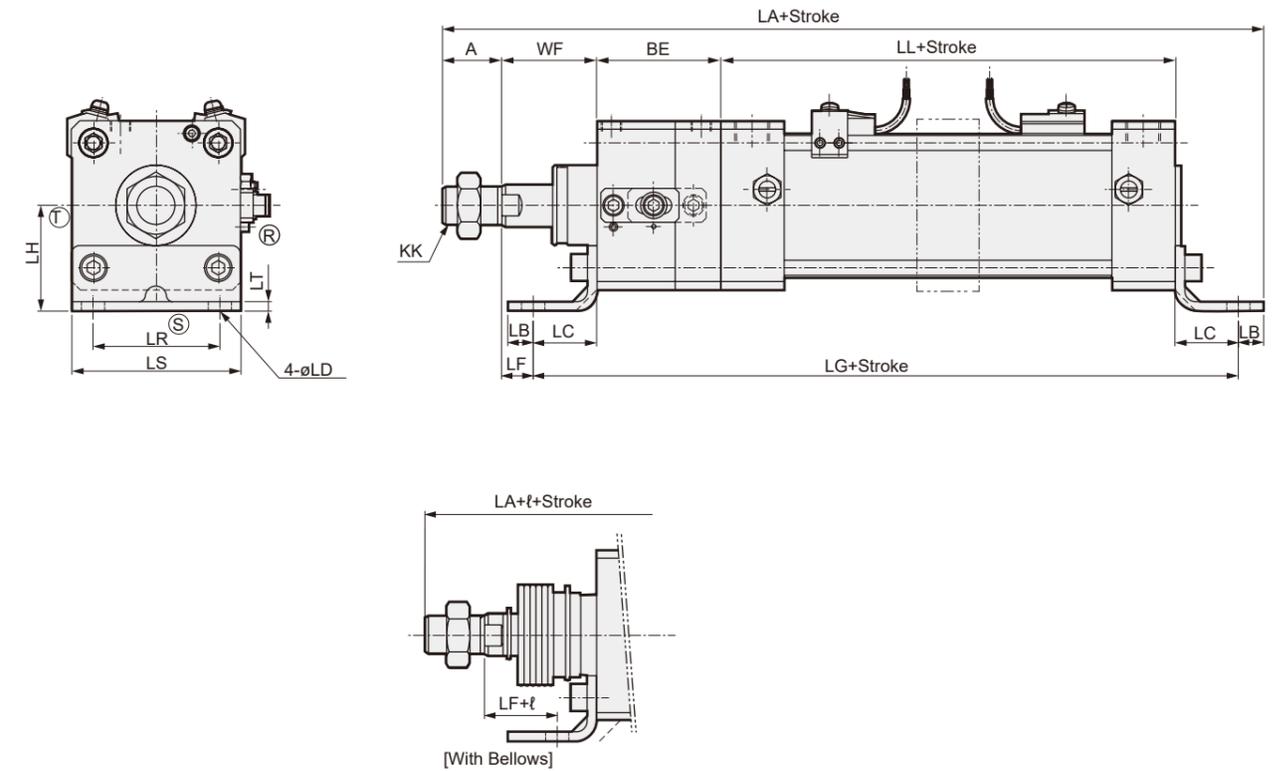
Code	KK	LL	MM	MN	MO	N	Q	SD	T	V	R	RA	RB	JA	UA	UB	WF	X
ø40	M14x1.5	93	16	8	14	2	13	40.5	8	18.5	16	18	10	29	2	5	33.5	197.5
ø50	M18x1.5	101	20	8	17	2.5	14	48	11	20.5	16	18	10	36	2	5	37	222.5
ø63	M18x1.5	105	20	8	17	3	15	59	11	21	16	25	12	36	2	5	35	229.5
ø80	M22x1.5	116	25	11	22	3.5	17	74	13	23.5	16	25	12	41	2	5	48	274.5
ø100	M26x1.5	128	30	13	27	4	18	90	16	32	16	25	12	49	3	6	53	311.5

Code	With Bellows										
Bore Size	b	d	d*	ℓ							When exceeding 500 ^{*1}
				50 or less	Over 50 to 100 or Less	Over 100 to 150 or Less	Over 150 to 200 or Less	Over 200 to 300 or Less	Over 300 to 400 or Less	Over 400 to 500 or Less	
ø40	41	40	40	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0)+8
ø50	47	47	48	22	36	49	63	90	119	146	(Stroke/3.6)+7.5
ø63	45	47	48	22	36	49	63	90	119	146	(Stroke/3.6)+7.5
ø80	58.5	53	55	14	26	38	49	72	96	119	(Stroke/4.3)+2.5
ø100	69.5	61	65	20	32	42	53	76	98	120	(Stroke/4.5)+9

*1: Round up decimal places.
 *2: Ⓡ Ⓢ Ⓣ indicates the position of the cushion needle.
 *3: For outer dimensions diagram of accessories, refer to P. 604.
 *4: An intermediate support head (two-dot chain line) is added depending on the stroke. Please refer to P. 608.
 *5: For dimensions of models with switches, see P. 609.

Dimensional Drawings

● Axial Foot Type (LB)



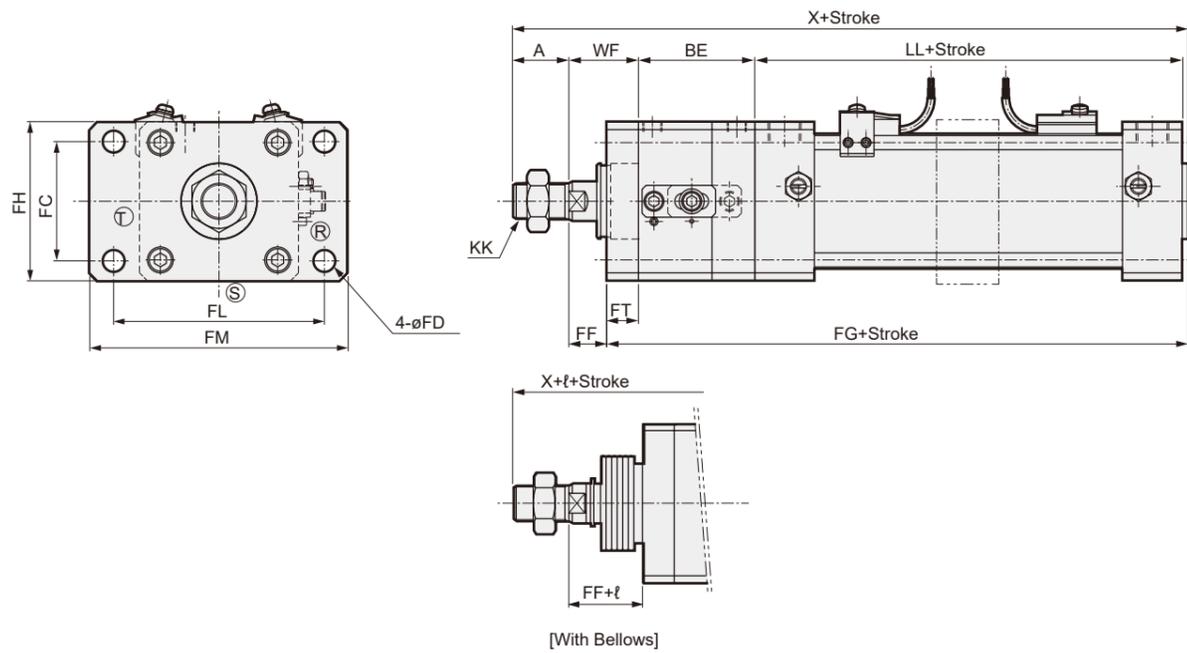
Code	Axial Foot Type (LB) Mounting Dimensions															
Bore Size	A	BE	KK	LL	WF	LA	LB	LC	LD	LF	LG	LH	LR	LS	LT	
ø40	22	47	M14x1.5	93	33.5	225	10	19.5	9	14	179	40	40	57	3.2	
ø50	28	54	M18x1.5	101	37	254	12	22	9	15	199	40	46	66	4.5	
ø63	28	58.5	M18x1.5	105	35	268.5	12	30	11	5	223.5	50	60	80	4.5	
ø80	36	71	M22x1.5	116	48	322	14	37	14	11	261	60	74	98	6	
ø100	45	81.5	M26x1.5	128	53	359.5	21	31	14	22	271.5	67	80	118	6	

Code	With Bellows										
Bore Size	b	d	d*	ℓ							When exceeding 500 ^{*1}
				50 or less	Over 50 to 100 or Less	Over 100 to 150 or Less	Over 150 to 200 or Less	Over 200 to 300 or Less	Over 300 to 400 or Less	Over 400 to 500 or Less	
ø40	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0)+8			
ø50	22	36	49	63	90	119	146	(Stroke/3.6)+7.5			
ø63	22	36	49	63	90	119	146	(Stroke/3.6)+7.5			
ø80	14	26	38	49	72	96	119	(Stroke/4.3)+2.5			
ø100	20	32	42	53	76	98	120	(Stroke/4.5)+9			

*1: Round up decimal places.
 *2: Ⓡ Ⓢ Ⓣ indicates the position of the cushion needle.
 *3: For outer dimensions diagram of accessories, refer to P. 604.
 *4: An intermediate support head (two-dot chain line) is added depending on the stroke. Please refer to P. 608.
 *5: For dimensions of models with switches, see P. 609.

Dimensional Drawings

● Rod Side Flange Type (FA)



Code	Rod Side Flange Type (FA) Mounting Dimensions													
Bore Size	A	BE	KK	LL	WF	X	FC	FD	FF	FG	FH	FL	FM	FT
ø40	22	47	M14x1.5	93	33.5	197.5	40	9	21.5	154	57	80	100	12
ø50	28	54	M18x1.5	101	37	222.5	47	9	25	169.5	65	85	108	12
ø63	28	58.5	M18x1.5	105	35	229.5	60	11	19	182.5	80	106	130	16
ø80	36	71	M22x1.5	116	48	274.5	74	14	29	209.5	98	125	153	19
ø100	45	81.5	M26x1.5	128	53	311.5	88	14	34	232.5	118	144	180	19

Code	With Bellows							
Bore Size	ℓ							When exceeding 500 ^{*1}
	50 or less	Over 50 to 100 or Less	Over 100 to 150 or Less	Over 150 to 200 or Less	Over 200 to 300 or Less	Over 300 to 400 or Less	Over 400 to 500 or Less	
ø40	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0)+8
ø50	22	36	49	63	90	119	146	(Stroke/3.6)+7.5
ø63	22	36	49	63	90	119	146	(Stroke/3.6)+7.5
ø80	14	26	38	49	72	96	119	(Stroke/4.3)+2.5
ø100	20	32	42	53	76	98	120	(Stroke/4.5)+9

*1: Round up decimal places.

*2: Ⓜ Ⓢ Ⓣ indicates the position of the cushion needle.

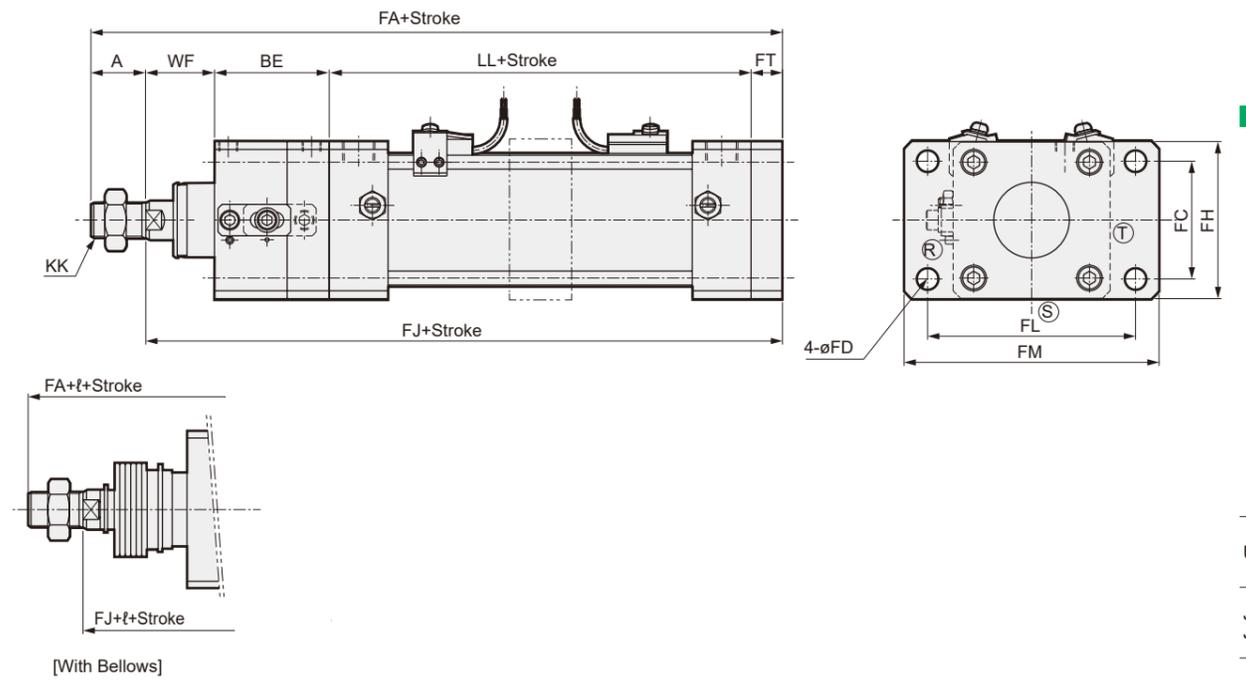
*3: For outer dimensions diagram of accessories, refer to P. 604.

*4: An intermediate support head (two-dot chain line) is added depending on the stroke. Please refer to P. 608.

*5: For dimensions of models with switches, see P. 609.

Dimensional Drawings

● Head Side Flange Type (FB)



Code	Head Side Flange Type (FB) Mounting Dimensions													
Bore Size	A	BE	KK	LL	WF	FA	FC	FD	FH	FJ	FL	FM	FT	
ø40	22	47	M14x1.5	93	33.5	207.5	40	9	57	185.5	80	100	12	
ø50	28	54	M18x1.5	101	37	232	47	9	65	204	85	108	12	
ø63	28	58.5	M18x1.5	105	35	242.5	60	11	80	214.5	106	130	16	
ø80	36	71	M22x1.5	116	48	290	74	14	98	254	125	153	19	
ø100	45	81.5	M26x1.5	128	53	326.5	88	14	118	281.5	144	180	19	

Code	With Bellows							
Bore Size	ℓ							When exceeding 500 ^{*1}
	50 or less	Over 50 to 100 or Less	Over 100 to 150 or Less	Over 150 to 200 or Less	Over 200 to 300 or Less	Over 300 to 400 or Less	Over 400 to 500 or Less	
ø40	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0)+8
ø50	22	36	49	63	90	119	146	(Stroke/3.6)+7.5
ø63	22	36	49	63	90	119	146	(Stroke/3.6)+7.5
ø80	14	26	38	49	72	96	119	(Stroke/4.3)+2.5
ø100	20	32	42	53	76	98	120	(Stroke/4.5)+9

*1: Round up decimal places.

*2: Ⓜ Ⓢ Ⓣ indicates the position of the cushion needle.

*3: For outer dimensions diagram of accessories, refer to P. 604.

*4: An intermediate support head (two-dot chain line) is added depending on the stroke. Please refer to P. 608.

*5: For dimensions of models with switches, see P. 609.

With Brake / With Lock

ULK

JSK2/ JSM2

JSG

JSC3, JSC4

USSD

UFCD

USC

With Brake / With Lock

ULK

JSK2/ JSM2

JSG

JSC3, JSC4

USSD

UFCD

USC

Cylinder Switch

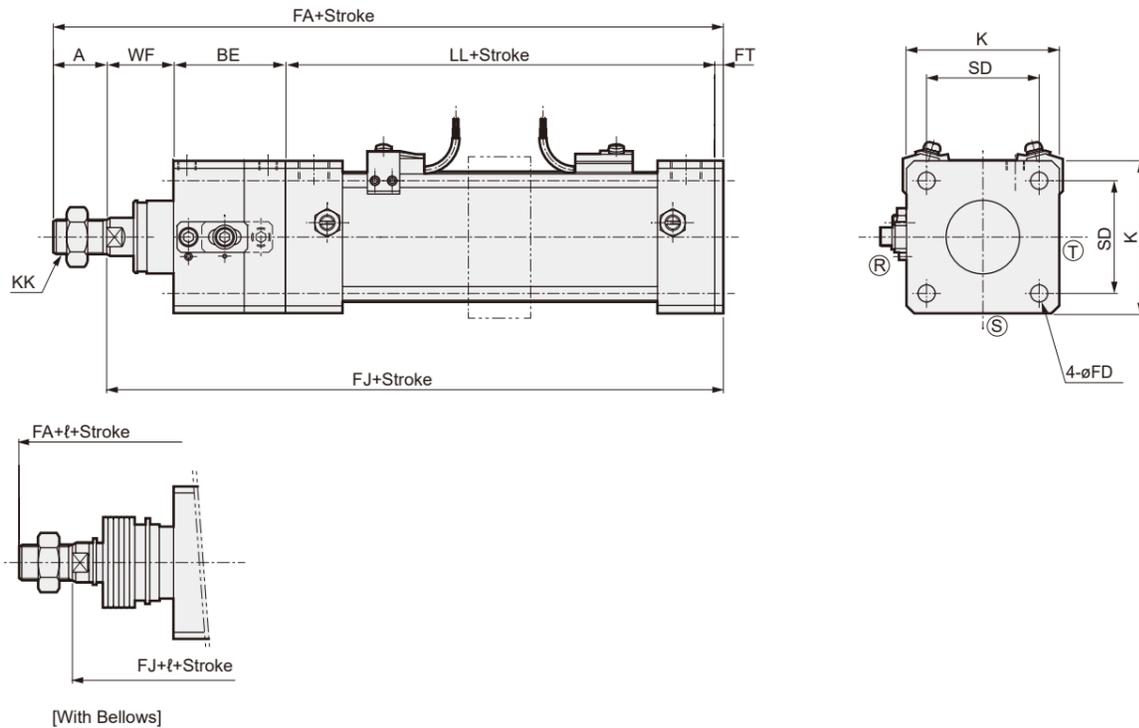
Ending

Cylinder Switch

Ending

Dimensional Drawings

● Head side special flange type (FC)



Code	Head side special flange type (FC) Mounting dimensions										
Bore Size	A	BE	KK	LL	WF	FA	FD	FJ	FT	K	SD
ø40	22	47	M14x1.5	93	33.5	200	9	178	4.5	57	40.5
ø50	28	54	M18x1.5	101	37	224.5	9	196.5	4.5	66	48
ø63	28	58.5	M18x1.5	105	35	231	11	203	4.5	80	59
ø80	36	71	M22x1.5	116	48	277	14	241	6	98	74
ø100	45	81.5	M26x1.5	128	53	313.5	14	268.5	6	118	90

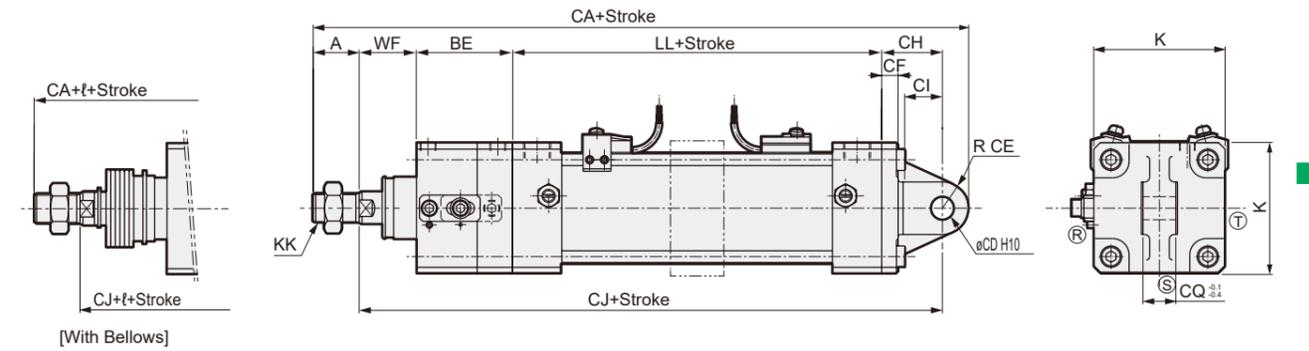
Code	With Bellows							
Bore Size	ℓ							
	50 or less	Over 50 100 or less	Over 100 150 or Less	Over 150 200 or Less	Over 200 300 or Less	Over 300 400 or Less	Over 400 500 or Less	When exceeding 500 ^{*1}
ø40	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0)+8
ø50	22	36	49	63	90	119	146	(Stroke/3.6)+7.5
ø63	22	36	49	63	90	119	146	(Stroke/3.6)+7.5
ø80	14	26	38	49	72	96	119	(Stroke/4.3)+2.5
ø100	20	32	42	53	76	98	120	(Stroke/4.5)+9

*1: Round up decimal places.
 *2: Ⓡ Ⓢ Ⓣ indicates the position of the cushion needle.
 *3: For outer dimensions diagram of accessories, refer to P. 604.
 *4: An intermediate support head (two-dot chain line) is added depending on the stroke. Please refer to P. 608.
 *5: For dimensions of models with switches, see P. 609.

Dimensional Drawings

Dimensional Drawings

● Single Clevis Type (CA)

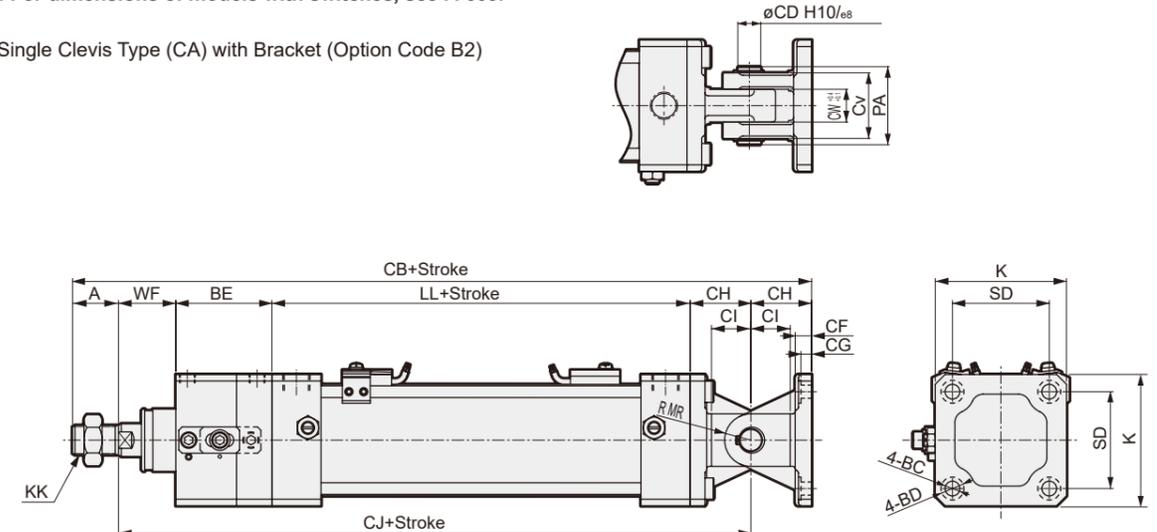


Code	Single Clevis Type (CA) Mounting Dimensions													
Bore Size	A	BE	KK	LL	WF	CA	CD	CE	CF	CH	CI	CJ	CQ	K
ø40	22	47	M14x1.5	93	33.5	239.5	12 ^{+0.070}	12	10	32	18	205.5	18	57
ø50	28	54	M18x1.5	101	37	264	12 ^{+0.070}	12	10	32	18	224	18	66
ø63	28	58.5	M18x1.5	105	35	279.5	14 ^{+0.070}	16	10	37	24	235.5	20	80
ø80	36	71	M22x1.5	116	48	343	20 ^{+0.084}	20	14	52	30	287	28	98
ø100	45	81.5	M26x1.5	128	53	379.5	20 ^{+0.084}	20	16	52	30	314.5	28	118

Code	With Bellows							
Bore Size	ℓ							
	50 or less	Over 50 100 or less	Over 100 150 or Less	Over 150 200 or Less	Over 200 300 or Less	Over 300 400 or Less	Over 400 500 or Less	When exceeding 500 ^{*1}
ø40	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0)+8
ø50	22	36	49	63	90	119	146	(Stroke/3.6)+7.5
ø63	22	36	49	63	90	119	146	(Stroke/3.6)+7.5
ø80	14	26	38	49	72	96	119	(Stroke/4.3)+2.5
ø100	20	32	42	53	76	98	120	(Stroke/4.5)+9

*1: Round up decimal places.
 *2: Ⓡ Ⓢ Ⓣ indicates the position of the cushion needle.
 *3: For outer dimensions diagram of accessories, refer to P. 604.
 *4: An intermediate support head (two-dot chain line) is added depending on the stroke. Please refer to P. 608.
 *5: For dimensions of models with switches, see P. 609.

● Single Clevis Type (CA) with Bracket (Option Code B2)

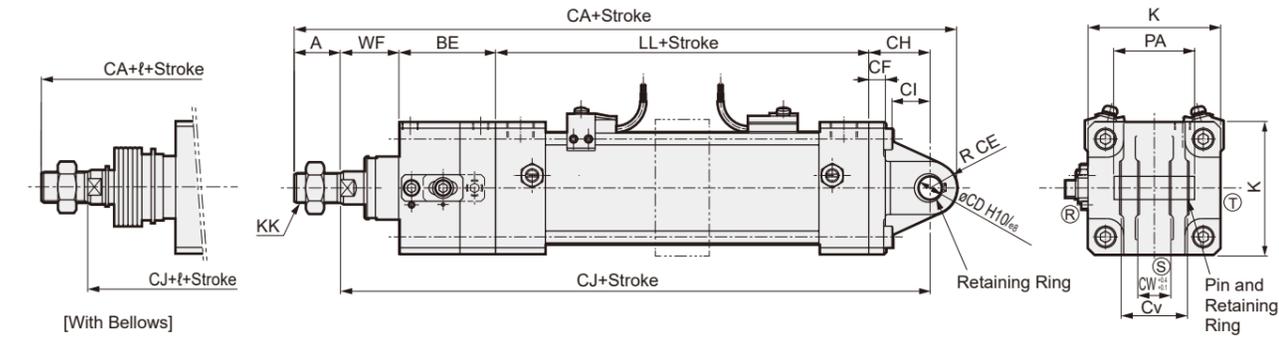


Code	Single Clevis Type (CA) With Bracket (Option Code B2) Mounting Dimensions																			
Bore Size	A	BE	KK	LL	WF	CB	CD	CF	CG	CH	CI	CJ	Cv	CW	BC	BD	K	MR	PA	SD
ø40	22	47	M14x1.5	93	33.5	259.5	12	10	6.5	32	18	205.5	36	18	9	14	57	12	43.5	40.5
ø50	28	54	M18x1.5	101	37	284	12	10	6.5	32	18	224	36	18	9	14	66	12	43.5	48
ø63	28	58.5	M18x1.5	105	35	300.5	14	10	6.5	37	24	235.5	40	20	9	14	80	16	47.5	59
ø80	36	71	M22x1.5	116	48	375	20	14	10.5	52	30	287	56	28	14	20	98	20	64	74
ø100	45	81.5	M26x1.5	128	53	411.5	20	16	10.5	52	30	314.5	56	28	14	20	118	20	64	90

*1: For outer dimensions diagram of accessories, refer to P. 604.
 *2: An intermediate support head (two-dot chain line) is added depending on the stroke. Please refer to P. 608.
 *3: For dimensions of models with switches, see P. 609.

Dimensional Drawings

● Double clevis type (CB)



Code	Double Clevis Type (CB) Mounting Dimensions															
Bore Size	A	BE	KK	LL	WF	CA	CD	CE	CF	CH	CI	CJ	Cv	CW	K	PA
ø40	22	47	M14x1.5	93	33.5	239.5	12 ^{-0.070} ₀	12	10	32	18	205.5	36	18	57	43.5
ø50	28	54	M18x1.5	101	37	264	12 ^{-0.070} ₀	12	10	32	18	224	36	18	66	43.5
ø63	28	58.5	M18x1.5	105	35	279.5	14 ^{-0.070} ₀	16	10	37	24	235.5	40	20	80	47.5
ø80	36	71	M22x1.5	116	48	343	20 ^{-0.084} ₀	20	14	52	30	287	56	28	98	64
ø100	45	81.5	M26x1.5	128	53	379.5	20 ^{-0.084} ₀	20	16	52	30	314.5	56	28	118	64

Code	With Bellows							
Bore Size	ℓ							
	50 or less	Over 50 100 or less	Over 100 150 or Less	Over 150 200 or Less	Over 200 300 or Less	Over 300 400 or Less	Over 400 500 or Less	When exceeding 500 ^{*1}
ø40	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0)+8
ø50	22	36	49	63	90	119	146	(Stroke/3.6)+7.5
ø63	22	36	49	63	90	119	146	(Stroke/3.6)+7.5
ø80	14	26	38	49	72	96	119	(Stroke/4.3)+2.5
ø100	20	32	42	53	76	98	120	(Stroke/4.5)+9

*1: Round up decimal places.

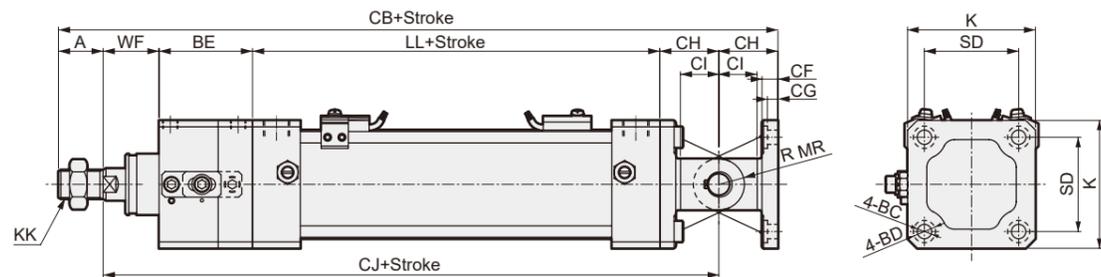
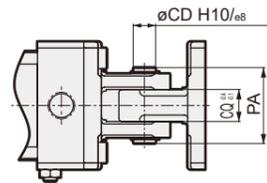
*2: (R) (S) (T) indicates the position of the cushion needle.

*3: For outer dimensions diagram of accessories, refer to P. 604.

*4: An intermediate support head (two-dot chain line) is added depending on the stroke. Please refer to P. 608.

*5: For dimensions of models with switches, see P. 609.

● Double clevis type (CB) with bracket (Option Code B1)



Code	Double Clevis Type (CB) With Bracket (Option Code B1) Mounting Dimensions																		
Bore Size	A	BE	KK	LL	WF	CB	CD	CF	CG	CH	CI	CJ	CQ	BC	BD	K	MR	PA	SD
ø40	22	47	M14x1.5	93	33.5	259.5	12	10	6.5	32	18	205.5	18	9	14	57	12	43.5	40.5
ø50	28	54	M18x1.5	101	37	284	12	10	6.5	32	18	224	18	9	14	66	12	43.5	48
ø63	28	58.5	M18x1.5	105	35	300.5	14	10	6.5	37	24	235.5	20	9	14	80	16	47.5	59
ø80	36	71	M22x1.5	116	48	375	20	14	10.5	52	30	287	28	14	20	98	20	64	74
ø100	45	81.5	M26x1.5	128	53	411.5	20	16	10.5	52	30	314.5	28	14	20	118	20	64	90

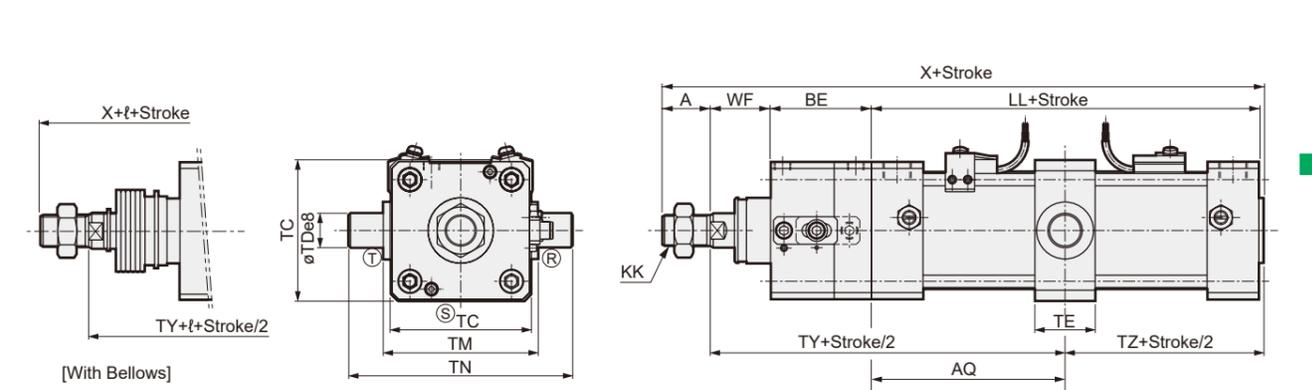
*1: For outer dimensions diagram of accessories, refer to P. 604.

*2: An intermediate support head (two-dot chain line) is added depending on the stroke. Please refer to P. 608.

*3: For dimensions of models with switches, see P. 609.

Dimensional Drawings

● Intermediate trunnion type (TC)



Code	Intermediate Trunnion Type (TC) Mounting Dimensions													
Bore Size	A	BE	KK	LL	WF	X	AQ	TC	TD	TE	TM	TN	TY	TZ
ø40	22	47	M14x1.5	93	33.5	197.5	46.5 + $\frac{\text{Stroke}}{2}$	57	16 ^{-0.032} _{-0.059}	30	63	95	127	48.5
ø50	28	54	M18x1.5	101	37	222.5	50.5 + $\frac{\text{Stroke}}{2}$	67	18 ^{-0.032} _{-0.059}	30	80	116	141.5	53
ø63	28	58.5	M18x1.5	105	35	229.5	52.5 + $\frac{\text{Stroke}}{2}$	82	20 ^{-0.04} _{-0.073}	35	90	130	146	55.5
ø80	36	71	M22x1.5	116	48	274.5	58 + $\frac{\text{Stroke}}{2}$	100	25 ^{-0.04} _{-0.073}	40	115	165	177	61.5
ø100	45	81.5	M26x1.5	128	53	311.5	64 + $\frac{\text{Stroke}}{2}$	121	35 ^{-0.05} _{-0.089}	50	135	205	198.5	68

Code	With Bellows							
Bore Size	ℓ							
	50 or less	Over 50 100 or less	Over 100 150 or Less	Over 150 200 or Less	Over 200 300 or Less	Over 300 400 or Less	Over 400 500 or Less	When exceeding 500 ^{*1}
ø40	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0)+8
ø50	22	36	49	63	90	119	146	(Stroke/3.6)+7.5
ø63	22	36	49	63	90	119	146	(Stroke/3.6)+7.5
ø80	14	26	38	49	72	96	119	(Stroke/4.3)+2.5
ø100	20	32	42	53	76	98	120	(Stroke/4.5)+9

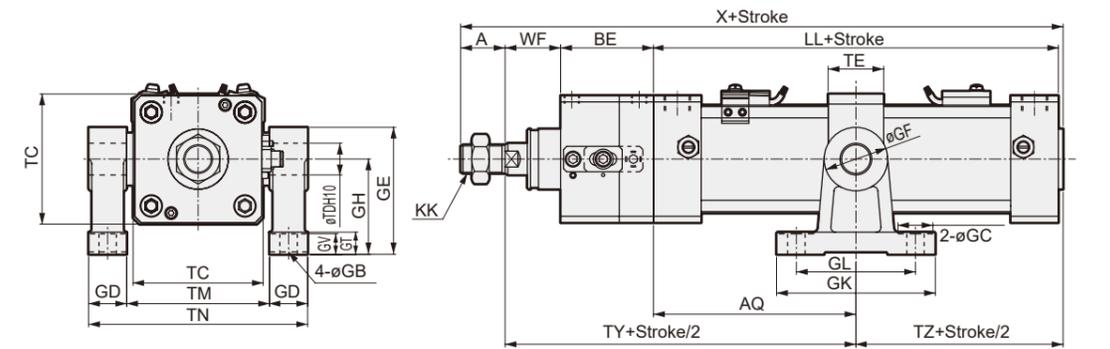
*1: Round up decimal places.

*2: (R) (S) (T) indicates the position of the cushion needle.

*3: For outer dimensions diagram of accessories, refer to P. 604.

*4: For dimensions of models with switches, see P. 609.

● Intermediate trunnion type (TC) with bracket (Option Code B4)



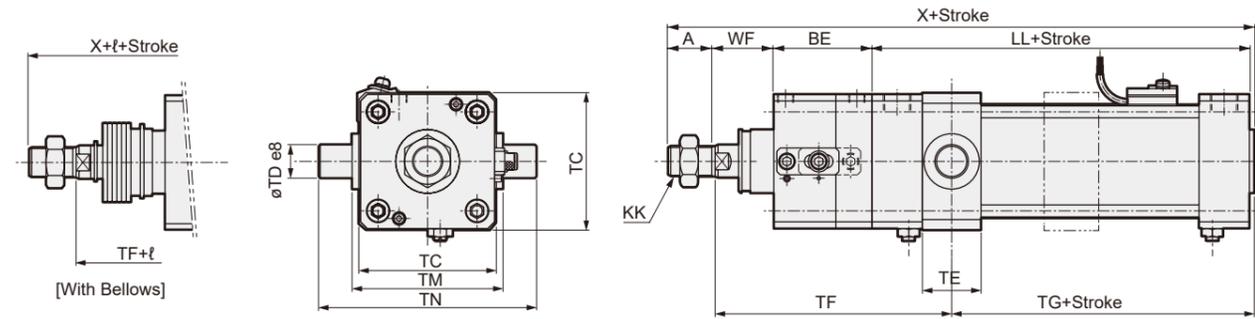
Code	Intermediate Trunnion Type (TC) with Bracket (Option Code B4) Mounting Dimensions																							
Bore Size	A	BE	KK	LL	WF	X	AQ	TC	TD	TE	TY	TZ	TM	TN	GB	GC	GD	GE	GF	GH	GK	GL	GT	GV
ø40	22	47	M14x1.5	93	33.5	197.5	46.5+Stroke/2	57	16	30	127	48.5	63	95	9	17	19	61	32	45	80	60	12	11
ø50	28	54	M18x1.5	101	37	222.5	50.5+Stroke/2	67	18	30	141.5	53	80	116	9	17	19	63	36	45	85	65	12	11
ø63	28	58.5	M18x1.5	105	35	229.5	52.5+Stroke/2	82	20	35	146	55.5	90	130	11	22	24	80	40	60	100	75	14	13
ø80	36	71	M22x1.5	116	48	274.5	58+Stroke/2	100	25	40	177	61.5	115	165	14	24	26	85	50	60	115	85	14	13
ø100	45	81.5	M26x1.5	128	53	311.5	64+Stroke/2	121	35	50	198.5	68	135	205	14	24	35	107	64	75	130	100	17	16

*1: For outer dimensions diagram of accessories, refer to P. 604.

*2: For dimensions of models with switches, see P. 609.

Dimensional Drawings

●Rod side trunnion type (TA)

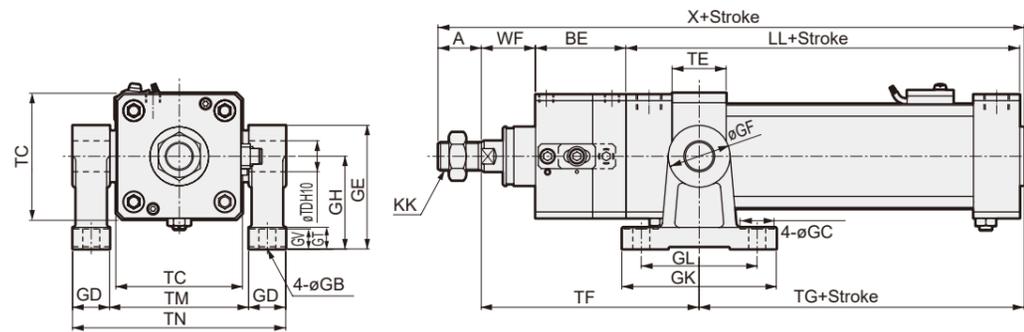


Code	Rod Type Trunnion Type (TA) Mounting Dimensions												
Bore Size	A	BE	KK	LL	WF	X	TC	TD	TE	TF	TG	TM	TN
ø40	22	47	M14x1.5	93	33.5	197.5	57	16 ^{-0.032/-0.059}	30	121.5	54	63	95
ø50	28	54	M18x1.5	101	37	222.5	67	18 ^{-0.032/-0.059}	30	134	60.5	80	116
ø63	28	58.5	M18x1.5	105	35	229.5	82	20 ^{-0.040/-0.073}	35	141	60.5	90	130
ø80	36	71	M22x1.5	116	48	274.5	100	25 ^{-0.040/-0.073}	40	173	65.5	115	165
ø100	45	81.5	M26x1.5	128	53	311.5	121	35 ^{-0.050/-0.089}	50	195.5	71	135	205

Code	With Bellows								
Bore Size	ℓ								
	50 or less	Over 50 100 or Less	Over 100 150 or Less	Over 150 200 or Less	Over 200 300 or Less	Over 300 400 or Less	Over 400 500 or Less	When exceeding 500 ^{*1}	
ø40	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0)+8	
ø50	22	36	49	63	90	119	146	(Stroke/3.6)+7.5	
ø63	22	36	49	63	90	119	146	(Stroke/3.6)+7.5	
ø80	14	26	38	49	72	96	119	(Stroke/4.3)+2.5	
ø100	20	32	42	53	76	98	120	(Stroke/4.5)+9	

- *1: Round up decimal places.
- *2: The position of the cushion needle cannot be changed.
- *3: For outer dimensions diagram of accessories, refer to P. 604.
- *4: An intermediate support head (two-dot chain line) is added depending on the stroke. Please refer to P. 608.
- *5: For dimensions of models with switches, see P. 609.

●Rod side trunnion type (TA) with bracket (Option Code B4)

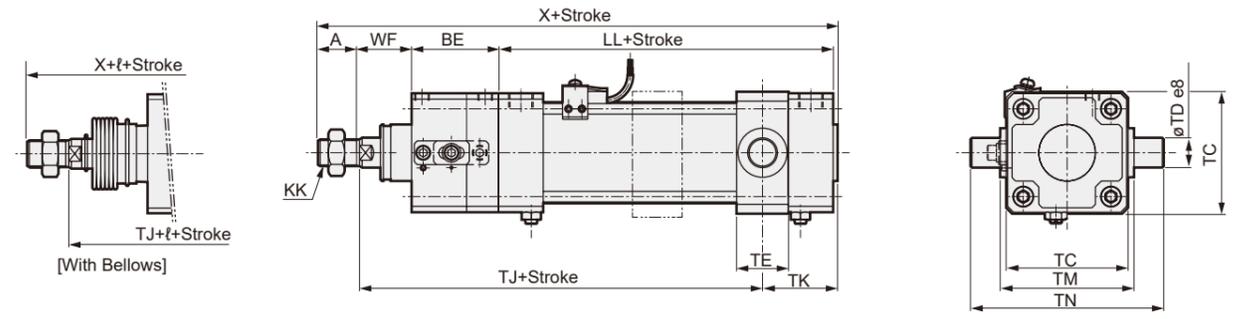


Code	Rod Side Trunnion Type (TA) with Bracket (Option Code B4) Mounting Dimensions																						
Bore Size	A	BE	KK	LL	WF	X	TC	TD	TE	TF	TG	TM	TN	GB	GC	GD	GE	GF	GH	GK	GL	GT	GV
ø40	22	47	M14x1.5	93	33.5	197.5	57	16	30	121.5	54	63	95	9	17	19	61	32	45	80	60	12	11
ø50	28	54	M18x1.5	101	37	222.5	67	18	30	134	60.5	80	116	9	17	19	63	36	45	85	65	12	11
ø63	28	58.5	M18x1.5	105	35	229.5	82	20	35	141	60.5	90	130	11	22	24	80	40	60	100	75	14	13
ø80	36	71	M22x1.5	116	48	274.5	100	25	40	173	65.5	115	165	14	24	26	85	50	60	115	85	14	13
ø100	45	81.5	M26x1.5	128	53	311.5	121	35	50	195.5	71	135	205	14	24	35	107	64	75	130	100	17	16

- *1: For outer dimensions diagram of accessories, refer to P. 604.
- *2: An intermediate support head (two-dot chain line) is added depending on the stroke. Please refer to P. 608.
- *3: For dimensions of models with switches, see P. 609.

Dimensional Drawings

●Head Side Trunnion Type (TB)

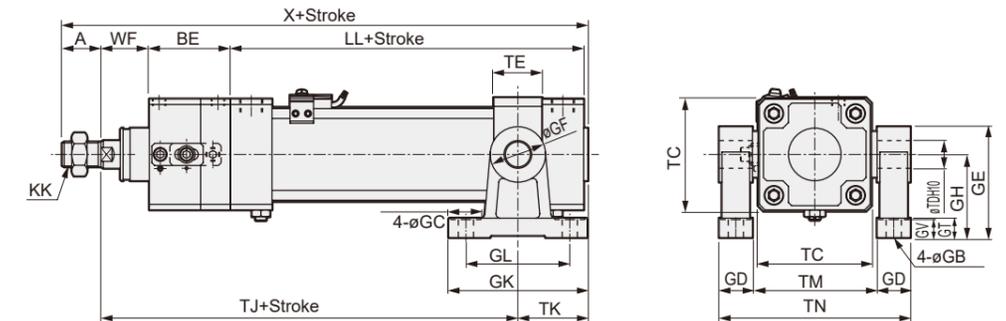


Code	Head Side Trunnion Type (TB) Mounting Dimensions												
Bore Size	A	BE	KK	LL	WF	X	TC	TD	TE	TJ	TK	TM	TN
ø40	22	47	M14x1.5	93	33.5	197.5	57	16 ^{-0.032/-0.059}	30	132	43.5	63	95
ø50	28	54	M18x1.5	101	37	222.5	67	18 ^{-0.032/-0.059}	30	148.5	46	80	116
ø63	28	58.5	M18x1.5	105	35	229.5	82	20 ^{-0.040/-0.073}	35	150.5	51	90	130
ø80	36	71	M22x1.5	116	48	274.5	100	25 ^{-0.040/-0.073}	40	180.5	58	115	165
ø100	45	81.5	M26x1.5	128	53	311.5	121	35 ^{-0.050/-0.089}	50	201	65.5	135	205

Code	With Bellows								
Bore Size	ℓ								
	50 or less	Over 50 100 or Less	Over 100 150 or Less	Over 150 200 or Less	Over 200 300 or Less	Over 300 400 or Less	Over 400 500 or Less	When exceeding 500 ^{*1}	
ø40	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke/3.0)+8	
ø50	22	36	49	63	90	119	146	(Stroke/3.6)+7.5	
ø63	22	36	49	63	90	119	146	(Stroke/3.6)+7.5	
ø80	14	26	38	49	72	96	119	(Stroke/4.3)+2.5	
ø100	20	32	42	53	76	98	120	(Stroke/4.5)+9	

- *1: Round up decimal places.
- *2: The position of the cushion needle cannot be changed.
- *3: For outer dimensions diagram of accessories, refer to P. 604.
- *4: An intermediate support head (two-dot chain line) is added depending on the stroke. Please refer to P. 608.
- *5: For dimensions of models with switches, see P. 609.

●Head side trunnion type (TB) with bracket (Option Code B4)



Code	Head Side Trunnion Type (TB) with Bracket (Option Code B4) Mounting Dimensions																						
Bore Size	A	BE	KK	LL	WF	X	TC	TD	TE	TJ	TK	TM	TN	GB	GC	GD	GE	GF	GH	GK	GL	GT	GV
ø40	22	47	M14x1.5	93	33.5	197.5	57	16	30	132	43.5	63	95	9	17	19	61	32	45	80	60	12	11
ø50	28	54	M18x1.5	101	37	222.5	67	18	30	148.5	46	80	116	9	17	19	63	36	45	85	65	12	11
ø63	28	58.5	M18x1.5	105	35	229.5	82	20	35	150.5	51	90	130	11	22	24	80	40	60	100	75	14	13
ø80	36	71	M22x1.5	116	48	274.5	100	25	40	180.5	58	115	165	14	24	26	85	50	60	115	85	14	13
ø100	45	81.5	M26x1.5	128	53	311.5	121	35	50	201	65.5	135	205	14	24	35	107	64	75	130	100	17	16

- *1: For outer dimensions diagram of accessories, refer to P. 604.
- *2: An intermediate support head (two-dot chain line) is added depending on the stroke. Please refer to P. 608.
- *3: For dimensions of models with switches, see P. 609.

With Brake / With Lock

ULK□

JSK2/
JSM2

JSG

JSC3,
JSC4

USSD

UFCD

USC

Cylinder
Switch

Ending

With Brake / With Lock

ULK□

JSK2/
JSM2

JSG

JSC3,
JSC4

USSD

UFCD

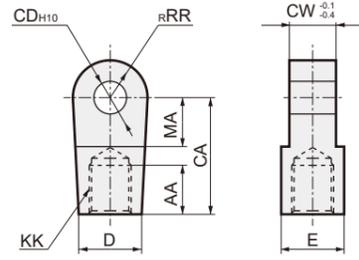
USC

Cylinder
Switch

Ending

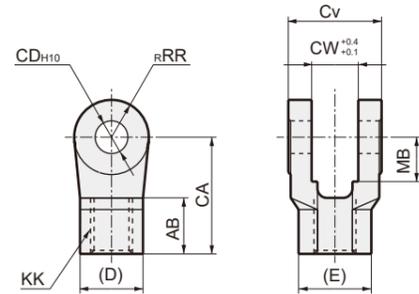
Accessories (Knuckle/Bracket/Pin) External Dimensions Diagram

● Single Knuckle (I) Material: Cast Iron, Painting



Model No.	Applicable Tube Inner Diameter (mm)	AA	CA	CD	CW	D	E	KK	MA	RR	Weight (kg)
S1-I-40	40	20	50	12	18	27	27	M14×1.5	21	16	0.26
S1-I-50	50	21	50	12	18	27	27	M18×1.5	21	16	0.24
S1-I-63	63	21	50	14	20	27	27	M18×1.5	21	16	0.25
S1-I-80	80	30	70	20	28	46	41	M22×1.5	30	25	0.88
S1-I-100	100	30	70	20	28	46	41	M26×1.5	30	25	0.84

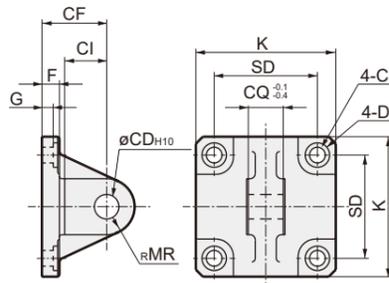
● Double Knuckle (Y) Material: Cast Iron, Painting



Model No.	Applicable Tube Inner Diameter (mm)	AB	CA	CD	Cv	CW	D	E	KK	MB	RR	Weight (kg)
S1-Y-40	40	24	50	12	36	18	27	31.2	M14×1.5	19	16	0.25
S1-Y-50	50	24	50	12	36	18	27	31.2	M18×1.5	19	16	0.24
S1-Y-63	63	24	50	14	40	20	27	31.2	M18×1.5	19	16	0.26
S1-Y-80	80	35	70	20	56	28	41	47.3	M22×1.5	30	25	0.90
S1-Y-100	100	35	70	20	56	28	41	47.3	M26×1.5	30	25	0.85

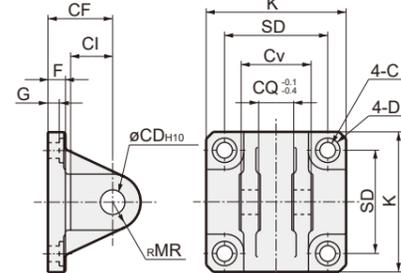
*1: MB dimension represents CW dimension effective length.
*2: Pins and Retaining Rings are included.

● Single Bracket (B1) Material: Cast Iron, Painted



Model No.	Applicable Tube Inner Diameter (mm)	C	CD	CF	CI	CQ	D	F	G	K	MR	SD	Weight (kg)
S1-B1-40	40	9	12	32	18	18	14	10	6.5	57	12	40.5	0.32
S1-B1-50	50	9	12	32	18	18	14	10	6.5	66	12	48	0.38
S1-B1-63	63	9	14	37	24	20	14	10	6.5	80	16	59	0.57
S1-B1-80	80	14	20	52	30	28	20	14	10.5	98	20	74	1.27
S1-B1-100	100	14	20	52	30	28	20	16	10.5	118	20	90	1.64

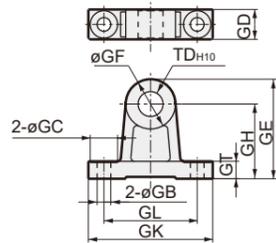
● Double Bracket (B2) Material: Cast Iron, Painted



Model No.	Applicable Tube Inner Diameter (mm)	C	CD	CF	CI	Cv	CQ	D	F	G	K	MR	SD	Weight (kg)
S1-B2-40	40	9	12	32	18	36	18	14	10	6.5	57	12	40.5	0.36
S1-B2-50	50	9	12	32	18	36	18	14	10	6.5	66	12	48	0.41
S1-B2-63	63	9	14	37	24	40	20	14	10	6.5	80	16	59	0.62
S1-B2-80	80	14	20	52	30	56	28	20	14	10.5	98	20	74	1.48
S1-B2-100	100	14	20	52	30	56	28	20	16	10.5	118	20	90	1.82

*1: Pins and Retaining Rings are included.

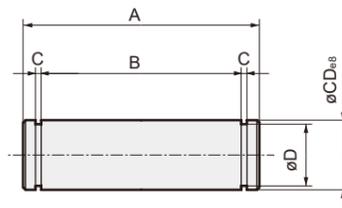
● Trunnion type 2nd bracket (B4) Material: Cast Iron, Painting



Model No.	GB	GC	GD	GE	GF	GH	GK	GL	GT	TD	Weight (kg)
S1-B4-40	9	17	19	61	32	45	80	60	12	16	0.25
S1-B4-50	9	17	19	63	36	45	85	65	12	18	0.28
S1-B4-63	11	22	24	80	40	60	100	75	14	20	0.52
S1-B4-80	14	24	26	85	50	60	115	85	14	25	0.70
S1-B4-100	14	24	35	107	64	75	130	100	17	35	1.48

Note: The trunnion No. 2 bracket is provided as 2 pcs./set.

● Pin (P) Material: Steel, Zinc Chromate



Model No.	Applicable Tube Inner Diameter (mm)	A	B	C	D	CD	Weight (kg)	Retaining Ring Used
S1-P-40	40, 50	43.5	36.3	1.15	11.5	12	0.04	C-type Retaining Ring for shaft 12
S1-P-63	63	47.5	40.2	1.15	13.4	14	0.06	C-type Retaining Ring for shaft 14
S1-P-80	80, 100	64	56.2	1.35	19	20	0.16	C-type Retaining Ring for shaft 20

With Brake / With Lock

ULK□

JSK2/ JSM2

JSG

JSC3, JSC4

USSD

UFCD

USC

Cylinder Switch

Ending

With Brake / With Lock

ULK□

JSK2/ JSM2

JSG

JSC3, JSC4

USSD

UFCD

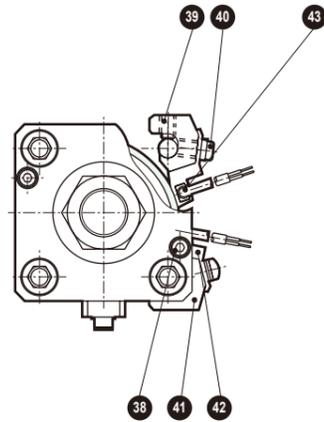
USC

Cylinder Switch

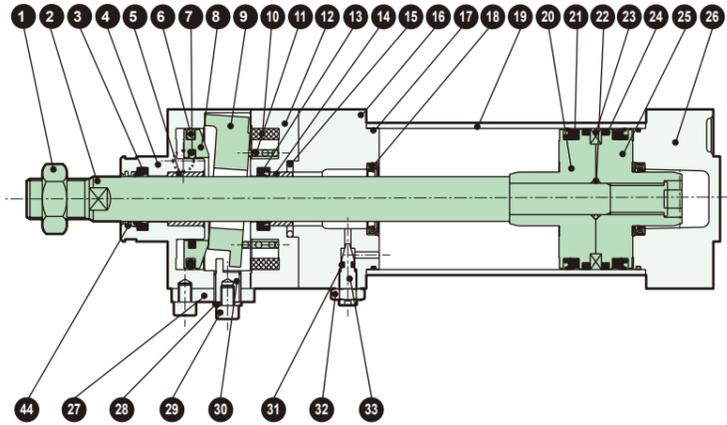
Ending

Internal Structure / Materials

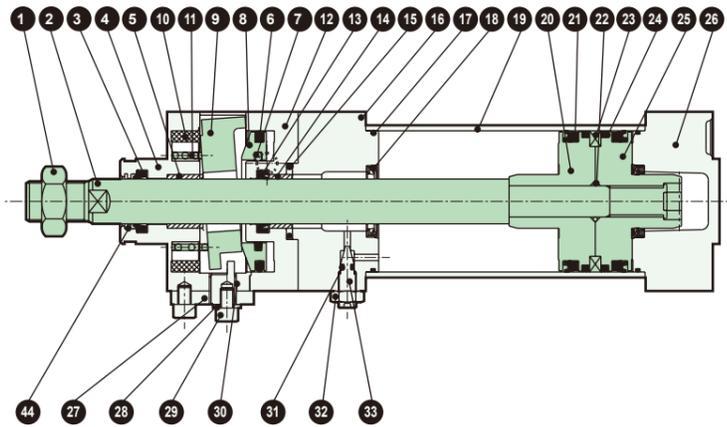
[Common for F, B]



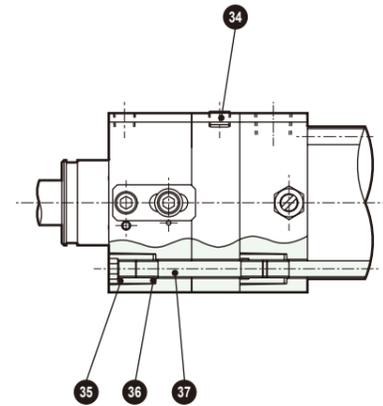
[F: Forward Locking type]



[B: Backward Locking type]



[Common for F, B]



Do Not Disassemble

Material

Part No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	Rod Nut	Steel	Zinc Chromate	23	Magnet	Plastic	
2	Piston Rod	Steel	Industrial Hard Chrome Plating	24	Wear ring	Polyacetal	
3	Scraper	Nitrile Rubber		25	Piston H	Aluminum Alloy	
4	Brake Body A	Aluminum Alloy	Black alumite	26	Head Cover	Aluminum Alloy	Painting
5	Bushing	Oil impregnated Bearing Alloy		27	Release lever	Steel	
6	Release Piston Packing A	Nitrile Rubber		28	Plain Washer	Steel	
7	Release Piston Packing B	Nitrile Rubber		29	Hexagon Socket Head Cap Screw	Steel	
8	Release Piston	Steel	Zinc Chromate	30	Release Cam	Steel	
9	Lock plate	Special Steel		31	Needle gasket	Nitrile Rubber	
10	Cushion Rubber	Urethane Rubber		32	Needle nut	Copper Alloy	
11	Spring	Piano Wire	Black Oxide	33	Cushion needle	Copper Alloy	
12	Brake Body B	Aluminum Alloy	Black alumite	34	Blanking Plug	Steel	
13	Rod Packing	Nitrile Rubber		35	Round nut	Steel	Zinc Chromate
14	Bush	Oil impregnated Bearing Alloy		36	Belleville washer	Steel	Black Oxide
15	Gasket	Nitrile Rubber		37	Tie rod	Steel	Zinc Chromate
16	Rod Cover	Aluminum Alloy	Painted	38	Hexagon Socket Head Cap Screw	Steel	
17	Cylinder gasket	Nitrile Rubber		39	Hexagon Socket Set Screw	Steel	Black Oxide
18	Cushion Packing	Urethane Rubber, Steel		40	Cross-Recessed Pan Head Screw	Steel	Zinc Chromate
19	Cylinder Tube	Aluminum Alloy	Hard Anodized	41	Switch mounting base	Aluminum Alloy	
20	Piston R	Aluminum Alloy		42	Switch holder	Aluminum Alloy	
21	Piston Packing	Nitrile Rubber		43	Cylinder Switch		
22	Piston gasket	Nitrile Rubber		44	Coil Scraper	Phosphor bronze	With Coil Scraper (G1) only

Consumable Parts List (Standard Type)

Bore Size (mm)	Kit Number	Replacement Part Number
ø40	USC-40K	
ø50	USC-50K	3 13 15 17
ø63	USC-63K	
ø80	USC-80K	18 21 24 32
ø100	USC-100K	

Note: When replacing consumable parts, it is necessary to remove the lock mechanism part, but do not disassemble the lock mechanism part as the spring may pop out or performance may not be maintained.

With Brake / With Lock

ULK□

JSK2/
JSM2

JSG

JSC3,
JSC4

USSD

UFCD

USC

With Brake / With Lock

ULK□

JSK2/
JSM2

JSG

JSC3,
JSC4

USSD

UFCD

USC

Cylinder
Switch

Ending

Cylinder
Switch

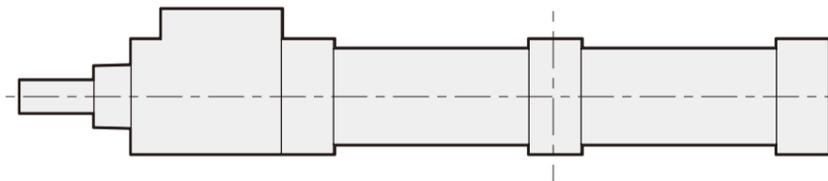
Ending

About Center Holding Head Details

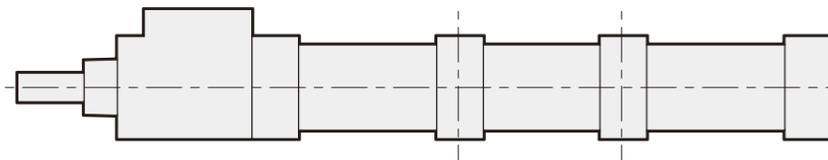
An intermediate support head is added to the center of the cylinder depending on the stroke. The quantity of intermediate support heads varies depending on the tube diameter and stroke as shown in the table below.

Quantity of intermediate support heads by stroke

Tube Diameter (mm)	Stroke mm	Intermediate support head quantity
ø40	1200 to 1600	1
	1200 to 1800	1
ø50	1801 to 2000	2
	1200 to 1800	1
ø63	1801 to 2500	2
	1500 to 2000	1
ø80	2001 to 2500	2
	1500 to 2000	1
ø100	2001 to 2500	2
	1500 to 2000	1

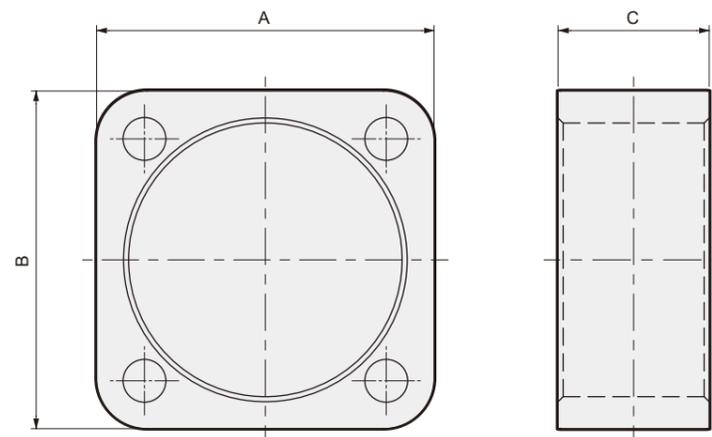


One non-sag block: Assembled in the center between the covers



Two non-sag blocks: Three plates from the cover

Also, the dimensions of the intermediate support head are as shown in the figure below, so please consider the dimensions of the intermediate support head when installing the cylinder.

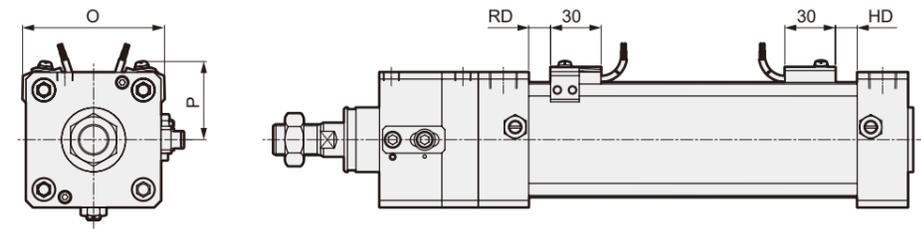


Intermediate Support Head Dimension Table

Tube Diameter (mm)	Intermediate support head dimensions		
	A	B	C
ø40	56	57	30
ø50	66	67	30
ø63	81	82	35
ø80	99	100	40
ø100	120	121	50

USC Series External Dimensions Diagram with Switch

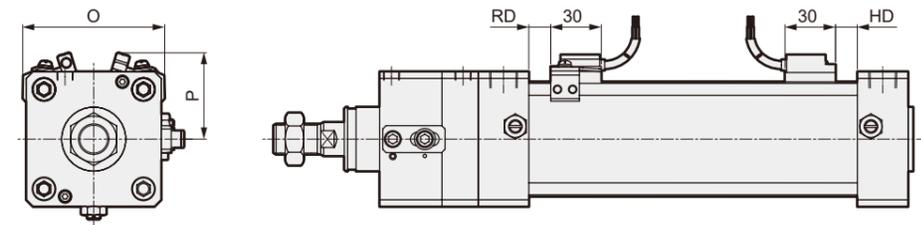
- T0, T5, T2, T3, T3P, T2□R3, T2W, T3W, T2WL T8, T2J
- USC, USC-G1



Code	USC, USC-G1										
	Bore Size (mm)	O	P	T0, T5, T2, T3, T3P, T2□R3		T2W, T3W, T2WL		T8		T2J	
				RD	HD	RD	HD	RD	HD	RD	HD
ø40	66	41.5	11	11	13	13	5	5	10	10	
ø50	73	43	13	13	15	15	7	7	12	12	
ø63	85	47	13	13	15	15	7	7	12	12	
ø80	105	57	14.5	14.5	16.5	16.5	8.5	8.5	13.5	13.5	
ø100	121	63	18.5	18.5	20.5	20.5	12.5	12.5	17.5	17.5	

Note: For switch mountability, refer to the model number display method for each variation.

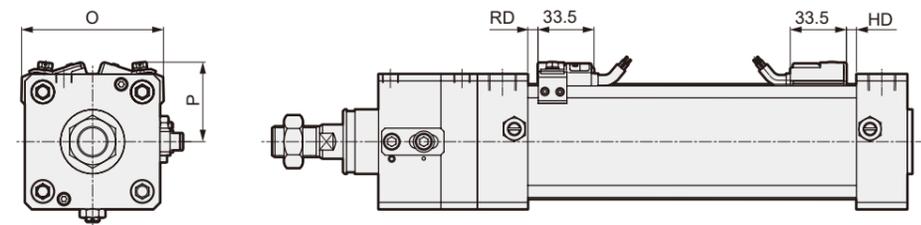
- T1, T2YD, T2YDT
- USC, USC-G1



Code	USC, USC-G1			
	Bore Size (mm)	O	P	T1, T2YD, T2YDT
				RD
ø40	66	40	10	10
ø50	73	44.5	12	12
ø63	85	50	12	12
ø80	105	60	13.5	13.5
ø100	121	68	17.5	17.5

Note: For switch mountability, refer to the model number display method for each variation.

- H0, H0Y
- USC-L2, USC-G1L2



Code	USC-L2, USC-G1L2			
	Bore Size (mm)	O	P	RD
				HD
ø40	66	42	4	4
ø50	73	44	6	6
ø63	84	47	6	6
ø80	104	58	7.5	7.5
ø100	120	64	11.5	11.5

Note: For switch mountability, refer to the model number display method for each variation.

With Brake / With Lock

ULK□

JSK2/
JSM2

JSG

JSC3,
JSC4

USSD

UFCD

USC

With Brake / With Lock

ULK□

JSK2/
JSM2

JSG

JSC3,
JSC4

USSD

UFCD

USC

Cylinder
Switch

Ending

Cylinder
Switch

Ending



To Use This Product Safely

Be sure to read this before use. For general cylinder information, see Intro 41, and for cylinder switches, see P. 1512.

Individual Precautions: Free position locking large Bore Size cylinder USC Series

Design / Selection

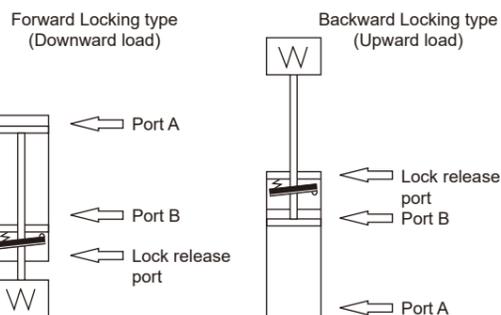
Warning

■ This cylinder is equipped with a fall prevention (holding of cylinder stationary state) mechanism. If used for emergency stop or urgent stop (stopping from cylinder operating state), the service life will be significantly reduced.

■ If back pressure is applied during locking, the lock may disengage. Therefore, use a standalone valve or an individual exhaust type manifold.

■ Since the locking force will decrease and it is dangerous, do not apply rotational force (torque) to the rod during lock operation. Also, use with a mechanism that prevents rod rotation.

■ When releasing the lock, always supply pressure to port B for forward direction lock type and port A for reverse direction lock type, ensuring no load is on the lock mechanism before releasing the lock. If pressure is supplied to port A for Forward Locking type or port B for Backward Locking type while both ports A and B are exhausted and the piston is locked, the lock may not release, or even if released, the Piston rod may extend suddenly, which is very dangerous.



■ Do not use multiple synchronized cylinders with position locking. If a synchronization error occurs, excessive moment load or load concentration may occur on the cylinder that locked first, potentially causing lock release failure, reduced lifespan, or damage.

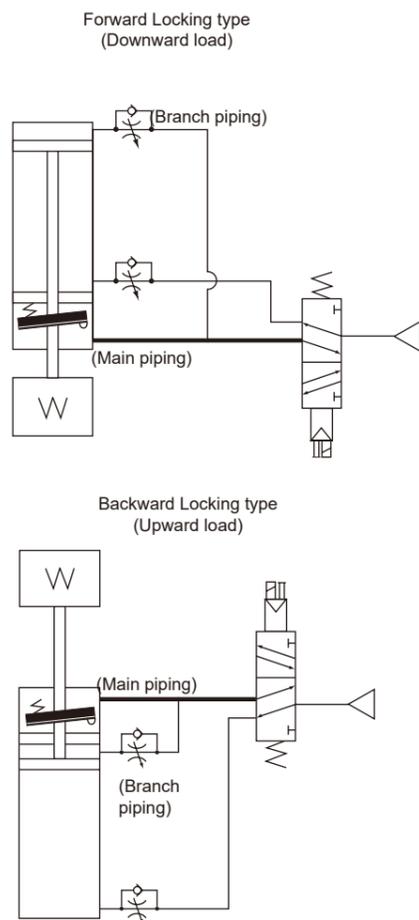
■ Since the locking force will decrease and it is dangerous, do not apply rotational force (torque) to the rod during lock operation. Also, use with a mechanism that prevents rod rotation.

CAUTION

Basic Circuit Diagram

The air piping for this cylinder should be as shown in the diagram below. If piping differently from the diagram below, such as piping to the fall prevention part as a single unit, it may cause a malfunctions such as response delays.

1. Be sure to branch the piping after the valve as shown below, and pipe to the fall prevention unit (lock release port as main piping) and cylinder unit (cylinder port as branch piping).
2. If cylinder operation is faster than lock release, the lock may not release or the Piston rod may extend suddenly, so design the piping so that lock release is faster than cylinder operation.



If emergency stop or urgent stop is performed with the air piping shown above, the Forward Locking type will continue to retract and the Backward Locking type will continue to extend, returning to the origin position. (It will stop at that position when residual pressure is gone.)

■ The main piping in the basic circuit diagram on the previous P. should be thicker and shorter than the branch piping.

■ After using in the unlocked state for a long time, if you try to lock it, a response delay in locking may occur. Do not leave the lock part pressurized; operate the lock part with each cylinder operation. (Please use the basic circuit diagram on P. 610)

■ If the cylinder is held with pressure applied to the lock mechanism, the lock may be released. Do not use 3-position closed center and 3-position P.A.B connection solenoid valves.

■ Due to the structure, a drop of about 1 mm (Piston Rod movement) occurs during locking.

■ Operating units with excessive inertia may cause damage to the Cylinder Body or malfunction, so be sure to use within the allowable absorbed energy range.

During Use

Warning

■ Since the locking force will decrease and it is dangerous, do not apply grease to the Piston Rod during use.

■ The necessary amount of grease is applied to the Piston Rod, so avoid applying more grease and do not wipe off the grease.

■ Since it is dangerous, never disassemble the lock part.

■ As it may cause a malfunctions, always use with the dust cover included, except during manual release operation.

■ During equipment maintenance, for safety, please take separate measures to prevent the load from falling under its own weight.

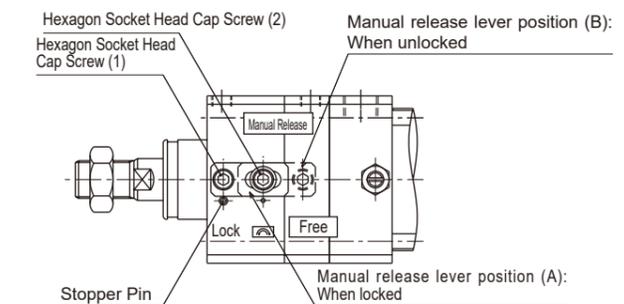
CAUTION

■ When used in vertical mounting, etc., if there is no air pressure, the locking force will be lost during manual release operation, and the rod may move (descend) due to the load's own weight, etc., so please be careful. In that case, for safety, perform the following preparations before manual release.

- Move the load to the lower end.
- Provide a stopper for the load
- Apply air pressure to the cylinder to balance the load.

■ During normal operation, use with the manual release lever in the lock position.

Manual Release Method



Lock Release

- ① Loosen Hexagon Socket Head Cap Screw (1) by 3 to 4 turns.
- ② Loosen Hexagon Socket Head Cap Screw (2) by 1 to 2 turns.
- ③ Rotate the release lever 180° in the direction of the arrow from manual release lever position (A) to (B).
- The Piston Rod becomes free.

Lock Operation

- ① Rotate the release lever 180° in the direction of the arrow from manual release lever position (B) to (A).
- ② Tighten Hexagon Socket Head Cap Screw (1) at the position where the release lever hits the stopper pin.
- ③ Tighten Hexagon Socket Head Cap Screw (2).
- ④ The Piston Rod becomes locked.

Note: When manually releasing, be sure to rotate the release lever in the direction of the arrow. Removal of the release lever is strictly prohibited. Hexagon Socket Head Cap Screw (2) can be rotated by loosening it only 1 to 2 turns. Be careful as loosening it too much will cause the release lever to come off. Tighten the Hexagon Socket Head Cap Screws with a torque of 8 to 11 N·m.

For precautions during mounting, installation, adjustment, use, and maintenance, refer to "During Use" in this catalog and the CKD Components Product website (<https://www.ckd.co.jp/kiki/en/>) -> "Model No." -> [Instruction Manual](#).

With Brake / With Lock

ULK□

JSK2/ JSM2

JSG

JSC3, JSC4

USSD

UFCD

USC

With Brake / With Lock

ULK□

JSK2/ JSM2

JSG

JSC3, JSC4

USSD

UFCD

USC

Cylinder Switch

Ending

Cylinder Switch

Ending