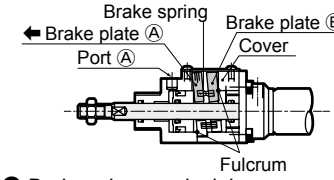
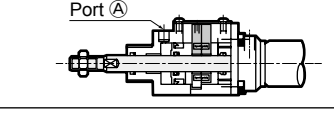
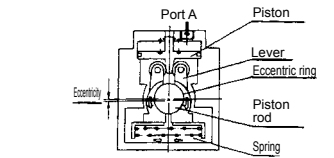
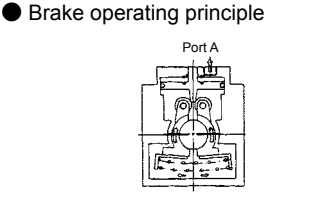
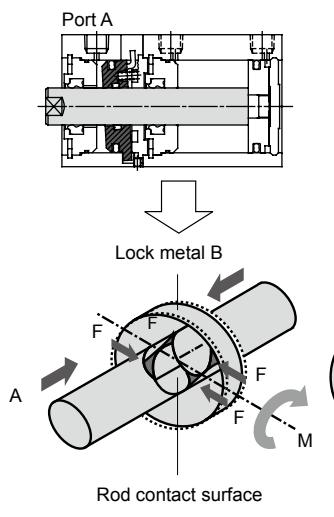
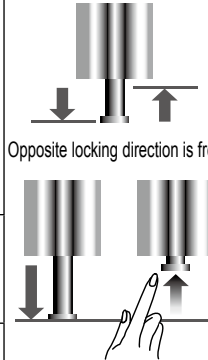


Product MAP with brake function

1) Cylinder with position locking and brake

Model	Function	Structure/Operational principle	Driving cylinder	Features	
<ul style="list-style-type: none"> ULK* JSK/M2 JSG JSC3/JSC4 USSD UFCD USC JSB3 LMB LML 		<p style="text-align: center;">Swash plate</p> <p>● Brake operating principle</p>  <p>When air is discharged from port A, the brake plates A and B tilt to the arrow direction from the fulcrum. This boosts the brake force by generating cylinder thrust, enabling retention of the piston rod.</p> <p>● Brake release principle</p>  <p>When air is supplied from port A, the brake plates A and B are pushed by the release piston. The brake plates A and B become perpendicular to the piston rod, and the piston rod becomes free to move.</p>	<p>SCP*2 φ16</p> <p>CMK2 φ20 to φ40</p>	<p>Cylinder with brake. It can be stopped or held stationary during operation.</p> <p>JSG saves more space in the brake area when compared to the conventional JSC3 Series. The ULK also saves more space by reducing the brake height compared to the conventional JSK2 Series.</p>	
	With brake (Stop when operating)	<p style="text-align: center;">Rod clamping</p> <p>● Brake release principle</p>  <p>Air supplied from port A pushes the piston under it and opens the lever. The eccentric rings directly connected to the lever rotate and release the piston rod.</p> <p>● Brake operating principle</p>  <p>If air is discharged from port A, the eccentric rings rotate with the spring force, generating an eccentric load to brake the piston rod.</p>	<p>CMK2 φ20 to φ40</p> <p>CMA2 φ20 to φ40</p> <p>SCG φ40 to φ100</p> <p>SCA2 φ40 to φ100</p> <p>SCS2 φ125 to φ180</p>	<p>[Applications]</p> <p>(1) When multipoint positioning is required</p> <p>(2) When position locking is required</p> <p>(3) When emergency stop is required</p> <p>(4) When locking a workpiece</p>	
	Free position locking (Retain stationary state)	<p style="text-align: center;">Round slit method</p>  <p>New long life position locking mechanism is used. Applying torque M to the lock metal generates axial force F. This force holds the rod.</p>	<p>SSD φ25 to φ100</p> <p>FCD φ25 to φ63</p> <p>SCA2 φ40 to φ100</p>	<p>Cylinder with position locking mechanism (for holding cylinder stationary).</p> <p>2 lock direction</p>  <p>Opposite locking direction is free</p> <p>[Application]</p> <p>When position locking is required</p>	

2) Braking unit

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

USC

Free position locking large bore size cylinder

With brake/position locking

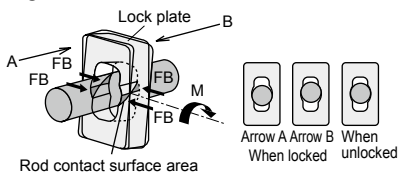
Overview

Cylinder equipped with position locking mechanism capable of stopping at any position of the stroke length for standard SCA2 Series medium bore size cylinders ($\phi 40$ to $\phi 100$).

Features

High abrasion-resistant round slit method

New long life position locking mechanism is used. Applying torque M to the lock plate generates axial force F .



Lockable at any point throughout full stroke length

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

No more workpiece damage

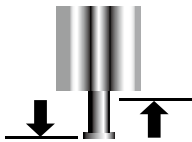
Prevents the cylinder from falling due to its own weight during power blackouts, etc. This resolves the workpiece damage issue.

Easy lock release

Loosening nut and turning release lever results in unlocking.

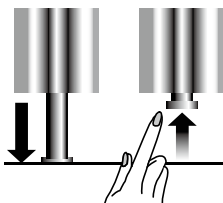
2 types of lock direction

Either forward lock or backward lock can be selected.



Lock reverse direction is free

Piston rod moves freely in reverse lock direction, and is therefore easy to remove even with workpiece clamped.



$\phi 40/\phi 50/\phi 63/\phi 80/\phi 100$



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● Double acting/single rod (USC)	894
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USC common accessory dimensions	913
▲ Safety precautions	914

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

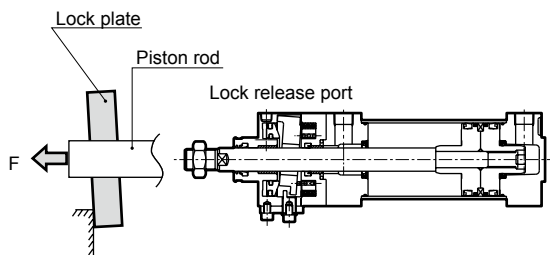
Series variation

Free position locking large bore size cylinder USC Series

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

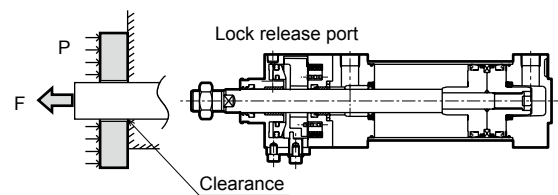
Variation	Model No. JIS symbol	Bore size (mm)	Standard stroke length (mm)												Min. stroke length (mm)	Max. stroke length (mm)	Available stroke length (mm)	Custom stroke length (per mm)	Mounting	
			25	50	75	100	150	200	250	300	350	400	450	500					Basic	Axial foot
			00	LB																
Double acting	USC	φ40	●	●	●	●	●	●	●	●	●	●	●	●	1	600	1600	1	●	●
		φ50	●	●	●	●	●	●	●	●	●	●	●	2000			●		●	
		φ63	●	●	●	●	●	●	●	●	●	●	●	2500			●		●	
		φ80	●	●	●	●	●	●	●	●	●	●	●	700			2500		●	●
		φ100	●	●	●	●	●	●	●	●	●	●	●	800			2500		●	●
Double acting with coil scraper	USC-G1	φ40	●	●	●	●	●	●	●	●	●	●	●	1	600	1600	1	●	●	
		φ50	●	●	●	●	●	●	●	●	●	●	●			2000		●	●	
		φ63	●	●	●	●	●	●	●	●	●	●	●			2500		●	●	
		φ80	●	●	●	●	●	●	●	●	●	●	●			700		2500	●	●
		φ100	●	●	●	●	●	●	●	●	●	●	●			800		2500	●	●

Operational explanation



Lock operation

When exhausting air from lock release port, the lock plate tilts due to spring force, and the piston rod is held.



Unlocked

Air supply from the lock release port brings the lock plate to vertical. This creates a clearance between the lock plate and the piston rod, allowing the rod to move freely.

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
MechHnd/Chuk
ShkAbs
FJ
FK
SpdContr
Ending



Free position locking large bore size cylinder double acting/single rod
double acting/coil scraper

USC/USC-G1 Series

● Bore size: φ40/φ50/φ63/φ80/φ100



Specifications

Descriptions	USC (double acting/single rod)/USC-G1 (double acting with coil scraper)				
Actuation	Double acting				
Working fluid	Compressed air				
Max. working pressure MPa	1.0 (≈150 psi, 10 bar)				
Min. working pressure MPa	0.1 (≈15 psi, 1 bar)				
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)				
Bore size mm	φ40	φ50	φ63	φ80	φ100
Port size					
Cylinder	1/4	3/8	3/8	1/2	1/2
Rc	1/8				
Locking mechanism					
Stroke tolerance mm	^{+0.9} ₀ (to 300) ^{+1.4} ₀ (to 1000)				
Lock force N	1005	1570	2493	4021	6283
Working piston speed mm/s	50 to 1000 (Operate within the absorbed energy.)				
Cushion	With or without cushion can be selected				
Effective cushion length mm	14.6	16.6	16.6	20.6	23.6
Lubrication	Not required (use turbine oil class 1 ISO VG32 if necessary for lubrication)				
Allowable					
Cushioned	4.29	8.37	15.8	27.9	49.8
absorbed energy J	Cannot absorb high energy generated by external load.				
*1	Without cushion We recommend using an external shock absorber.				

*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 length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Available stroke length (mm)	Min. stroke length (mm)
φ40	25/50/75/100/150/200	600	1600	1
φ50			2000	
φ63	500	700	2500	
φ80				
φ100	800	*5	*3	

*1 : The custom stroke length is available in 1 mm increments.

*2 : For types with switch, minimum stroke length varies depending on the mounting method. Refer to the table on the following page.
When the stroke length is 15 mm or less, the two switches could turn ON at the same time.
In this case, adjust switch mounting positions to be as far apart as possible.

*3 : A min. stroke length of 1 mm can be manufactured. Take into account the stroke tolerance when placing an order.

*4 : If max. stroke length is exceeded, product specifications may not be satisfied depending on the conditions. Refer to Ending Page 69.

*5 : The max. stroke length available for φ63 to φ100 bore size models with bellows is 2000 mm.

Min. stroke with switch (T type switch)

● T0/T5

Switch quantity	Different surface mounting				Same surface mounting				Center trunnion mounting				Rod side trunnion mounting	Head side trunnion mounting
													No position detection at rod side stroke end.	No position detection at head side stroke end.
Bore size	1	2	3	4	1	2	3	4	1	2	3	4	1	1
φ40	20(10)	20(20)	40(40)	60(60)	20(10)	60(45)	105(75)	150(102)	110(110)	110(110)	175(145)	175(145)	50(50)	50(50)
φ50	15(10)	20(20)	40(40)	60(60)	15(10)	20(20)	65(50)	65(60)	135(135)	135(135)	135(135)	135(135)	60(60)	60(60)
φ63	15(10)	20(20)	40(40)	60(60)	15(10)	20(20)	70(55)	70(60)	110(95)	110(95)	110(100)	110(100)	50(45)	50(45)
φ80	15(15)	25(25)	45(45)	65(65)	15(15)	25(25)	70(55)	70(65)	115(85)	115(85)	115(105)	115(105)	55(40)	55(40)
φ100	15(15)	25(25)	45(45)	70(70)	15(15)	25(25)	70(55)	70(70)	125(95)	125(95)	125(115)	125(115)	60(45)	60(45)

*1: The values in () are of T*V (radial lead wire).

*2: When the stroke length is 15 mm or less, the two switches could turn ON at the same time. In this case, adjust switch mounting positions to be as far apart as possible.

● T8

Switch quantity	Different surface mounting				Same surface mounting				Center trunnion mounting				Rod side trunnion mounting	Head side trunnion mounting
													No position detection at rod side stroke end.	No position detection at head side stroke end.
Bore size	1	2	3	4	1	2	3	4	1	2	3	4	1	1
φ40	15(10)	20(20)	40(40)	60(60)	15(10)	50(35)	95(65)	140(95)	95(85)	95(85)	155(125)	155(125)	45(40)	45(40)
φ50	10(10)	20(20)	40(40)	60(60)	10(10)	20(20)	70(55)	70(60)	115(115)	115(115)	135(135)	135(135)	50(50)	50(50)
φ63	10(10)	20(20)	40(40)	60(60)	10(10)	20(20)	70(55)	70(60)	95(75)	95(75)	110(110)	110(110)	45(35)	45(35)
φ80	15(15)	25(25)	45(45)	65(65)	15(15)	25(25)	70(55)	70(65)	100(70)	100(70)	115(115)	115(115)	50(35)	50(35)
φ100	15(15)	25(25)	45(45)	65(65)	15(15)	25(25)	70(55)	70(65)	110(80)	110(80)	125(125)	125(125)	55(40)	55(40)

*1: The values in () are of T*V (radial lead wire).

*2: When the stroke length is 15 mm or less, the two switches could turn ON at the same time. In this case, adjust switch mounting positions to be as far apart as possible.

● T2/T3

Switch quantity	Different surface mounting				Same surface mounting				Center trunnion mounting				Rod side trunnion mounting	Head side trunnion mounting
													No position detection at rod side stroke end.	No position detection at head side stroke end.
Bore size	1	2	3	4	1	2	3	4	1	2	3	4	1	1
φ40	20(10)	20(15)	25(25)	40(40)	20(10)	60(45)	105(75)	150(105)	105(75)	105(75)	165(135)	165(135)	50(35)	50(35)
φ50	15(10)	15(15)	25(25)	40(40)	15(10)	15(15)	60(45)	60(45)	105(75)	105(75)	105(75)	105(75)	45(30)	45(30)
φ63	15(10)	15(15)	25(25)	40(40)	15(10)	15(15)	60(45)	60(45)	110(80)	110(80)	110(85)	110(85)	50(35)	50(35)
φ80	15(10)	15(15)	30(30)	45(45)	15(10)	15(15)	60(45)	60(45)	115(85)	115(85)	115(90)	115(90)	55(40)	55(40)
φ100	10(10)	15(15)	30(30)	45(45)	10(10)	15(15)	60(45)	60(45)	125(95)	125(95)	125(100)	125(100)	60(45)	60(45)

*1: The values in () are of T*V (radial lead wire).

*2: When the stroke length is 15 mm or less, the two switches could turn ON at the same time. In this case, adjust switch mounting positions to be as far apart as possible.

● Min. stroke length with T1/T2Y/T3Y/T2YD switches

Switch quantity	Different surface mounting				Same surface mounting				Center trunnion mounting				Rod side trunnion mounting	Head side trunnion mounting
													No position detection at rod side stroke end.	No position detection at head side stroke end.
Bore size	1	2	3	4	1	2	3	4	1	2	3	4	1	1
φ40	20(10)	20(15)	25(25)	40(40)	20(10)	60(45)	105(75)	150(105)	105(75)	105(75)	165(135)	165(135)	50(35)	50(35)
φ50	15(10)	15(15)	25(25)	40(40)	15(10)	15(15)	60(45)	60(45)	100(70)	100(70)	100(75)	100(75)	45(30)	45(30)
φ63	15(10)	15(15)	25(25)	40(40)	15(10)	15(15)	60(45)	60(45)	105(75)	105(75)	105(85)	105(85)	50(35)	50(35)
φ80	15(10)	15(15)	30(30)	45(45)	15(10)	15(15)	60(45)	60(45)	110(80)	110(80)	110(90)	110(90)	55(40)	55(40)
φ100	10(10)	15(15)	30(30)	45(45)	10(10)	15(15)	60(45)	60(45)	120(90)	120(90)	120(100)	120(100)	60(45)	60(45)

*1: The values in () are of T*V (radial lead wire). T2YD does not have a radial lead wire (V).

*2: When the stroke length is 15 mm or less, the two switches could turn ON at the same time. In this case, adjust switch mounting positions to be as far apart as possible.

● Min. stroke length with T2W/T3W switches

Switch quantity	Different surface mounting				Same surface mounting				Center trunnion mounting				Rod side trunnion mounting	Head side trunnion mounting
													No position detection at rod side stroke end.	No position detection at head side stroke end.
Bore size	1	2	3	4	1	2	3	4	1	2	3	4	1	1
φ40	20(5)	20(10)	20(15)	25(25)	20(5)	65(50)	110(80)	155(110)	110(80)	110(80)	170(140)	170(140)	50(35)	50(35)
φ50	20(5)	20(10)	20(15)	20(20)	20(5)	20(10)	65(40)	65(40)	110(80)	110(80)	110(60)	110(60)	50(35)	50(35)
φ63	20(5)	20(10)	20(15)	25(25)	20(5)	20(10)	65(40)	65(40)	115(85)	115(85)	115(65)	115(65)	55(40)	55(40)
φ80	15(5)	15(10)	15(15)	25(25)	15(5)	15(10)	60(40)	60(40)	120(90)	120(90)	120(70)	120(70)	55(40)	55(40)
φ100	10(5)	10(10)	20(20)	25(25)	10(5)	10(10)	60(40)	60(40)	130(100)	130(100)	130(85)	130(85)	60(45)	60(45)

*1: The values in () are of T*V (radial lead wire).

*2: When the stroke length is 15 mm or less, the two switches could turn ON at the same time. In this case, adjust switch mounting positions to be as far apart as possible.

- 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

Switch specifications (T type switch)

● 1-color/2-color display/for AC magnetic field proof

Descriptions	Proximity 2-wire		Proximity 2-wire				Proximity 3-wire			Reed 2-wire				Proximity 2-wire		
	T1H/ T1V	T2H/T2V/ T2JH/ T2JV	T2YH/ T2YV	T2WH/ T2WV	T3H/ T3V	T3PH/T3PV (custom)	T3YH/ T3YV	T3WH/ T3WV	T0H/T0V	T5H/T5V	T8H/T8V		T2YD			
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	For programmable controller		
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	100/110 VAC	5/12/24 VDC	100/110 VAC	12/24 VDC	110 VAC	220 VAC	24 VDC ±10%	
Load current	5 to 100 mA	5 to 20 mA (*1)			100 mA or less		50 mA or less		5 to 50 mA	7 to 20 mA	≤50 mA	≤20 mA	5 to 50 mA	7 to 20 mA	7 to 10 mA	5 to 20 mA
Indicator lamp	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)		Without indicator lamp		LED (Lit when ON)		Red/green 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				1 mA or less				
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:18		1 m:33		1 m:61	
	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:49		3 m:87		3 m:166	
	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:80		5 m:142		5 m:272	

*1 : Refer to Ending Page 1 for other switch specifications.

*2 : 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)

*3 : Switch for AC magnetic field (T2YD) cannot be used in DC magnetic field.

*4 : The T0/T5 switch can also be used with 220 VAC. Contact CKD about working conditions.

*5 : Dimensions depend on switch model No. Refer to Ending Page 18 for details.

Switch specifications (H type switch)

Descriptions	Strong magnetic field proof, reed 2-wire	
	H0	H0Y (2-color display)
Applications	Relay, programmable controller	Dedicated for programmable controller
Load voltage/ current	12/24 VDC, 110 VAC 5 to 50 mA, 7 to 20 mA	24 VDC, 5 to 50 mA (*2)
Indicator lamp	Green LED Lit when ON	Red/green LED Lit when ON
Leakage current	10 µA or less	
Max. shock resistance	294 m/s ²	
Weight g	1 m:76	3 m:181 5 m:289

*1 : Refer to Ending Page 1 for other switch specifications.

*2 : Max. load current is applied 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 table

(Unit: kg)

Bore size	Product weight when stroke length (S) = 0 mm							Switch weight	Mounting bracket weight		Additional weight per S = 100 mm
	Basic (00)	Foot (LB)	Flange (FA/FB)	Special flange (FC)	Eye bracket (CA)	Eye bracket (CB)	Trunnion (TA,TB,TC)		T type	H type	
									Refer to the weight in the switch specifications.		
φ40	1.40	1.58	1.83	1.49	1.75	1.75	1.78	0.024	0.028	0.39	
φ50	2.04	2.21	2.54	2.15	2.48	2.48	2.56	0.022	0.026	0.46	
φ63	2.83	3.2	3.89	3.01	3.38	3.43	3.68	0.020	0.024	0.50	
φ80	4.94	5.71	6.82	5.30	6.48	6.49	6.30	0.026	0.029	0.90	
φ100	8.03	8.95	10.72	8.58	10.18	10.14	10.55	0.024	0.028	1.12	

Theoretical thrust table

(Unit: N)

Bore size (mm)	Operating direction	Working pressure MPa										
		0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
φ40	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
φ50	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
φ63	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
φ80	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
φ100	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

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

How to order

● Without switch (built-in magnet for switch)

USC — **LB** - **40** **B** - **100** - **F** — **S** **I**

● R type with switch (built-in magnet for switch)

USC — **LB** - **40** **B** - **100** - **F** - **T0H** - **R** - **S** **I**

● Strong magnetic field resistant switch (HO/HOY) (built-in magnet for switch)

USC-L2 - **LB** - **40** **B** - **100** - **F** - **H0Y** - **R** - **S** **I**

A Model No. **B** Mounting

C Bore size

D Cushion

E Stroke length
*1

F Lock direction

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

H Switch quantity
*3

I Option
*4

J Accessory
*5

⚠ Precautions for model No. selection

*1 : The max. stroke length available for φ63 to φ100 bore size models with bellows is 2000 mm.

*2 : Refer to page 895 for the min. stroke length with switch.

*3 : When selecting TA or TB as mounting, the switch quantity is limited to "H" (1 on head side) for TA, and "R" (1 on rod side) for TB.

*4 : The instantaneous max. temperature is the temperature when sparks, cutting chips, etc., instantaneously contact the bellows.

*5 : "I" and "Y" cannot be selected together.

[Example of model No.]

USC-LB-40B-100-F-T0H-R-SI

Model: Free position locking large bore size cylinder

- A** Model No. : Double acting/single rod
- B** Mounting : Axial foot
- C** Bore size : φ40 mm
- D** Cushion : Both sides cushioned
- E** Stroke length : 100 mm
- F** Lock direction : Forward locking
- G** Switch model No. : Reed T0H switch, lead wire 1 m
- H** Switch quantity : 1 on rod side
- I** Option : Cushion needle position S
- J** Accessory : Rod eye

Code	Content
A Model No.	
USC	Double acting/single rod
USC-G1	Double acting with coil scraper

B Mounting	
00	Basic
LB	Axial foot
FA	Rod side flange
FB	Head side flange
FC	Head side special flange
CA	Eye bracket
CB	Clevis bracket (pin and snap ring attached)
TC	Intermediate trunnion
TA	Rod side trunnion
TB	Head side trunnion

C Bore size (mm)	
40	φ40
50	φ50
63	φ63
80	φ80
100	φ100

D Cushion	
B	Both sides cushioned
R	Rod side cushioned
H	Head side cushioned
N	Without cushion

E Stroke length (mm)			
Bore size	Stroke *2	Available stroke	Custom stroke
φ40	1 to 600	1600	In 1 mm increments
φ50	1 to 600	2000	
φ63	1 to 600	2500	
φ80	1 to 700	2500	
φ100	1 to 800	2500	

F Lock direction	
F	Forward locking
B	Backward locking

G Switch model No.	
Refer to the switch model numbers on the following page.	
* Lead wire length	
Blank	1 m (standard)
3	3 m (option)
5	5 m (option)

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

I Option			
		Max. ambient temp.	Instantaneous max. temp.
J	Bellows	100°C	200°C
L	Bellows	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		
P6	Copper and PTFE free (custom order product)		

J Accessory	
I	Rod eye
Y	Rod clevis (pin and snap ring attached)
B1	Eye bracket
B2	Clevis bracket (pin and snap ring attached)
B4	Trunnion No. 2 bracket

[G] Switch model No.

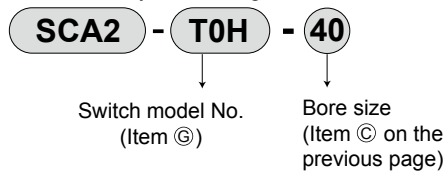
T type switch model No.						
Axial lead wire	Radial lead wire	Contact	Voltage		Display	Lead wire
			AC	DC		
T0H*	T0V*	Reed	●	●	1-color display	2-wire
T5H*	T5V*		●	●	Without indicator lamp	
T8H*	T8V*		●	●	1-color display	
T1H*	T1V*	Proximity	●		1-color display	2-wire
T2H*	T2V*			●		
T3H*	T3V*			●	2-color display	3-wire
T2WH*	T2WV*			●		
T2YH*	T2YV*			●	2-color display	2-wire
T3WH*	T3WV*			●		
T3YH*	T3YV*			●	2-color display	3-wire
T3PH*	T3PV*			●		
T2YD*	-			●	2-color display	2-wire
T2YDT*	-			●	AC magnetic field	
T2JH*	T2JV*		●	1-color display off-delay	2-wire	

H type switch model No.					
Grommet	Contact	Voltage		Display	Lead wire
		AC	DC		
HO*	Reed	●	●	Strong magn field 1-color display	2-wire
HOY*			●	Strong magn field, 2-color display	

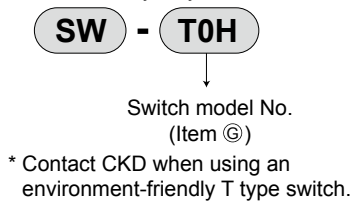
How to order switch

[T type switch]

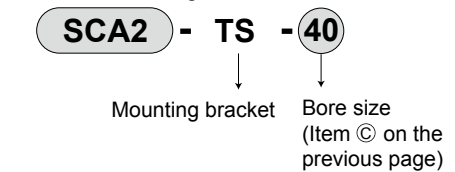
● Switch body + mounting bracket set



● Switch body only

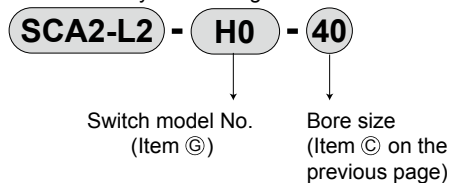


● Switch mounting bracket set

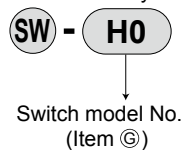


[H type switch]

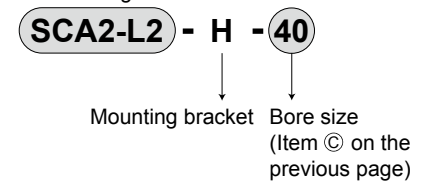
● Switch body + mounting bracket set



● Switch body only

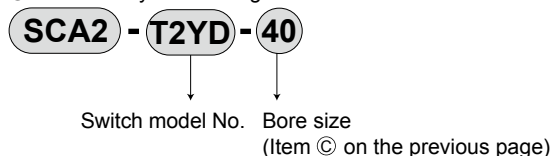


● Mounting bracket set

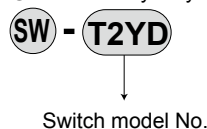


[T2YD type switch]

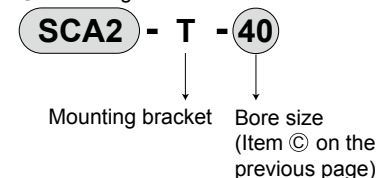
● Switch body + mounting bracket set



● Switch body only



● Mounting bracket set



Mounting bracket model No.

Bore size (mm)	φ40	φ50	φ63	φ80	φ100
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
Eye bracket (CA)	S1-CA-40	S1-CA-50	S1-CA-63	S1-CA-80	S1-CA-100
Clevis bracket (CB)	S1-CB-40	S1-CB-50	S1-CB-63	S1-CB-80	S1-CB-100

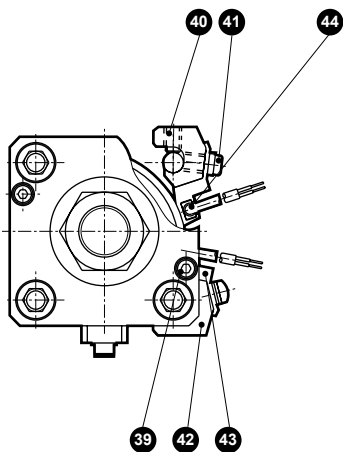
Note: The foot mounting bracket is provided as 2 pc./set.

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

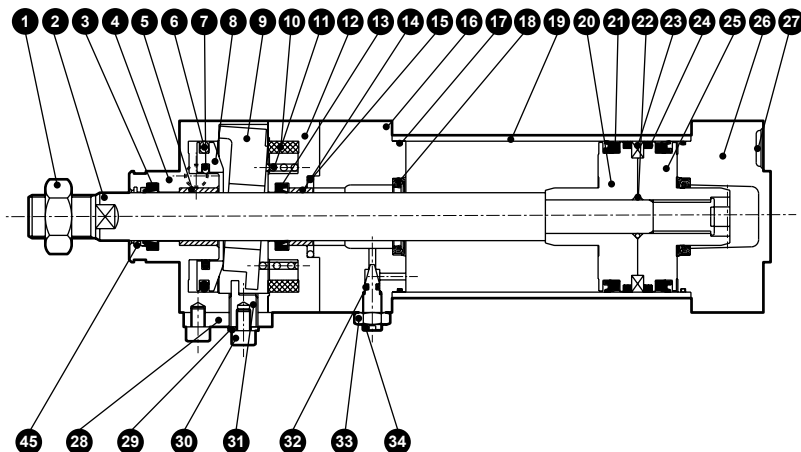
Internal structure and parts list

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

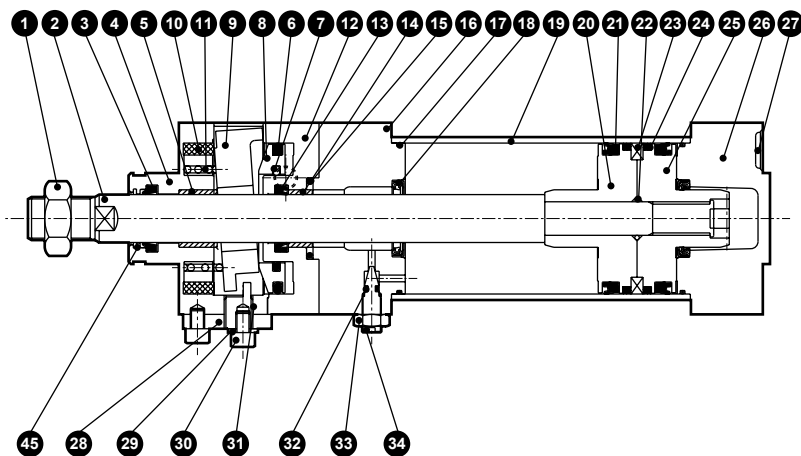
[Common for F, B]



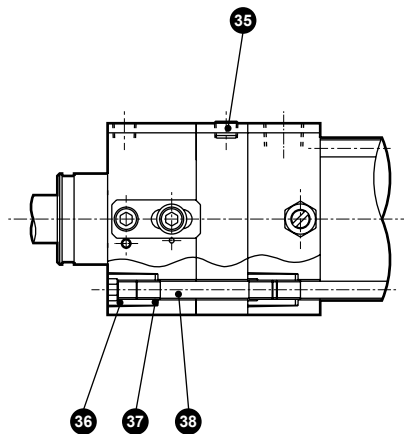
[F: Forward locking]



[B: Backward locking]



[Common for F, B]



Parts list

No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
1	Rod nut	Steel	Zinc chromate	24	Wear ring	Polyacetal	
2	Piston rod	Steel	Industrial chrome plating	25	Piston H	Aluminum alloy die-casting	
3	Dust wiper	Nitrile rubber		26	Head cover	Aluminum alloy die-casting	Paint
4	Brake body A	Aluminum alloy	Black alumite	27	Masking plate	Aluminum	Paint
5	Bush	Oil impregnated bearing alloy		28	Release lever	Steel	
6	Release piston packing A	Nitrile rubber		29	Plain washer	Steel	
7	Release piston packing B	Nitrile rubber		30	Hexagon socket head cap screw	Steel	
8	Release piston	Steel	Zinc chromate	31	Release cam	Steel	
9	Lock plate	Special steel		32	Needle gasket	Nitrile rubber	
10	Cushion rubber	Urethane rubber		33	Needle nut	Copper alloy	
11	Spring	Steel	Black finish	34	Cushion needle	Copper alloy	
12	Brake body B	Aluminum alloy	Black alumite	35	Blanking plug	Steel	
13	Rod packing	Nitrile rubber		36	Round nut	Steel	Zinc chromate
14	Bush	Oil impregnated bearing alloy		37	Conical spring washer	Steel	Black finish
15	Gasket	Nitrile rubber		38	Tie rod	Steel	Zinc chromate
16	Rod cover	Aluminum alloy die-casting	Paint	39	Hexagon socket head cap screw	Steel	
17	Cylinder gasket	Nitrile rubber		40	Hexagon socket set screw	Steel	Black finish
18	Cushion packing	Urethane rubber, steel		41	Cross-recessed pan head machine screw	Steel	Zinc chromate
19	Cylinder tube	Aluminum alloy	Hard alumite	42	Switch mounting base	Aluminum alloy	
20	Piston R	Aluminum alloy die-casting		43	Switch holder	Aluminum alloy	
21	Piston packing	Nitrile rubber		44	Cylinder switch		
22	Piston gasket	Nitrile rubber		45	Coil scraper	Phosphor bronze	With coil scraper only
23	Magnet	Plastic					

Repair parts list (standard)

Bore size (mm)	Kit No.	Repair parts No.
φ40	USC-40K	
φ50	USC-50K	3 13 15 17
φ63	USC-63K	
φ80	USC-80K	18 21 24 32
φ100	USC-100K	

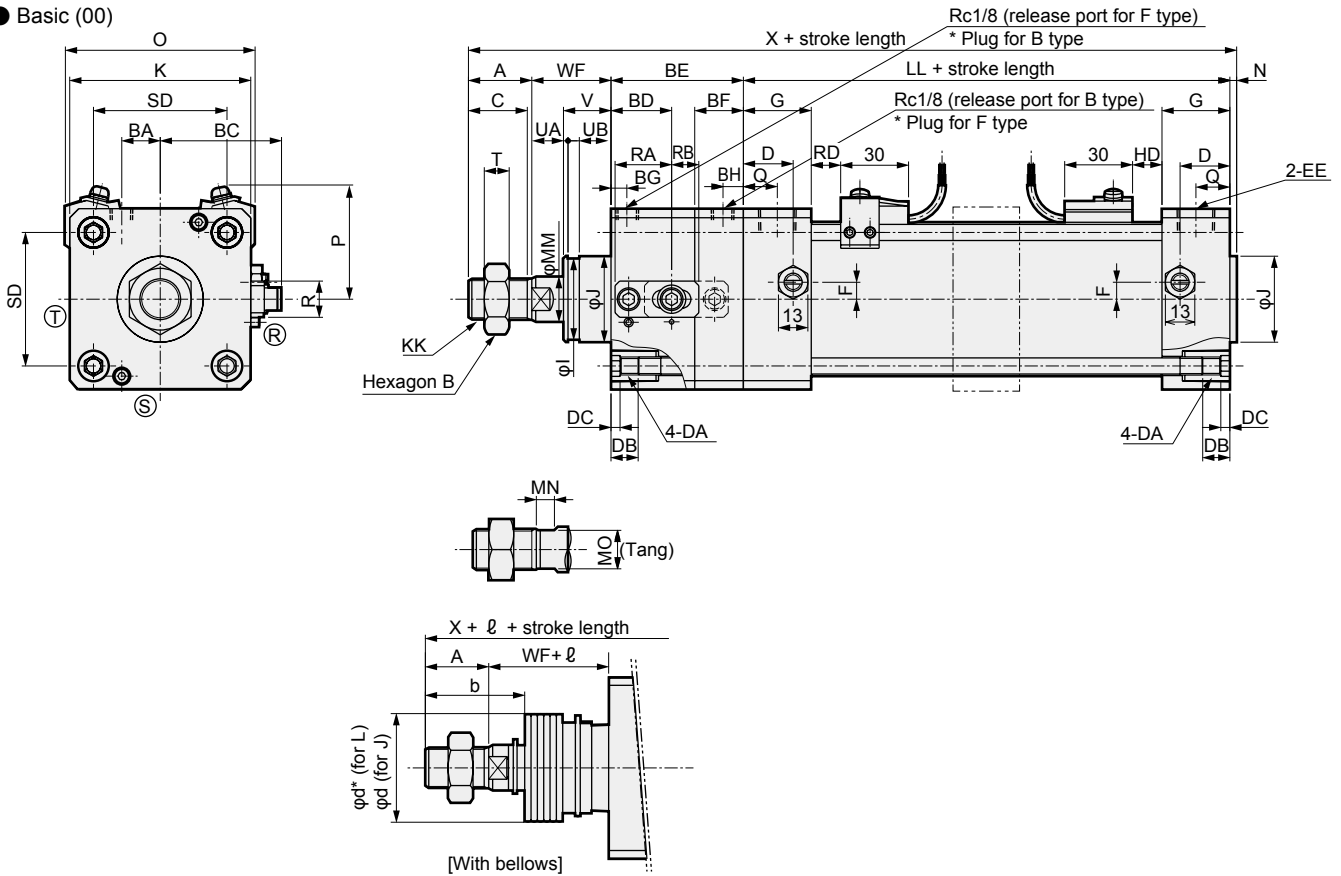
Note: When you detach the lock mechanism part to replace repair parts, do not disassemble the lock mechanism part since a spring may pop out or the expected performance may become unreliable.

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



● Basic (00)



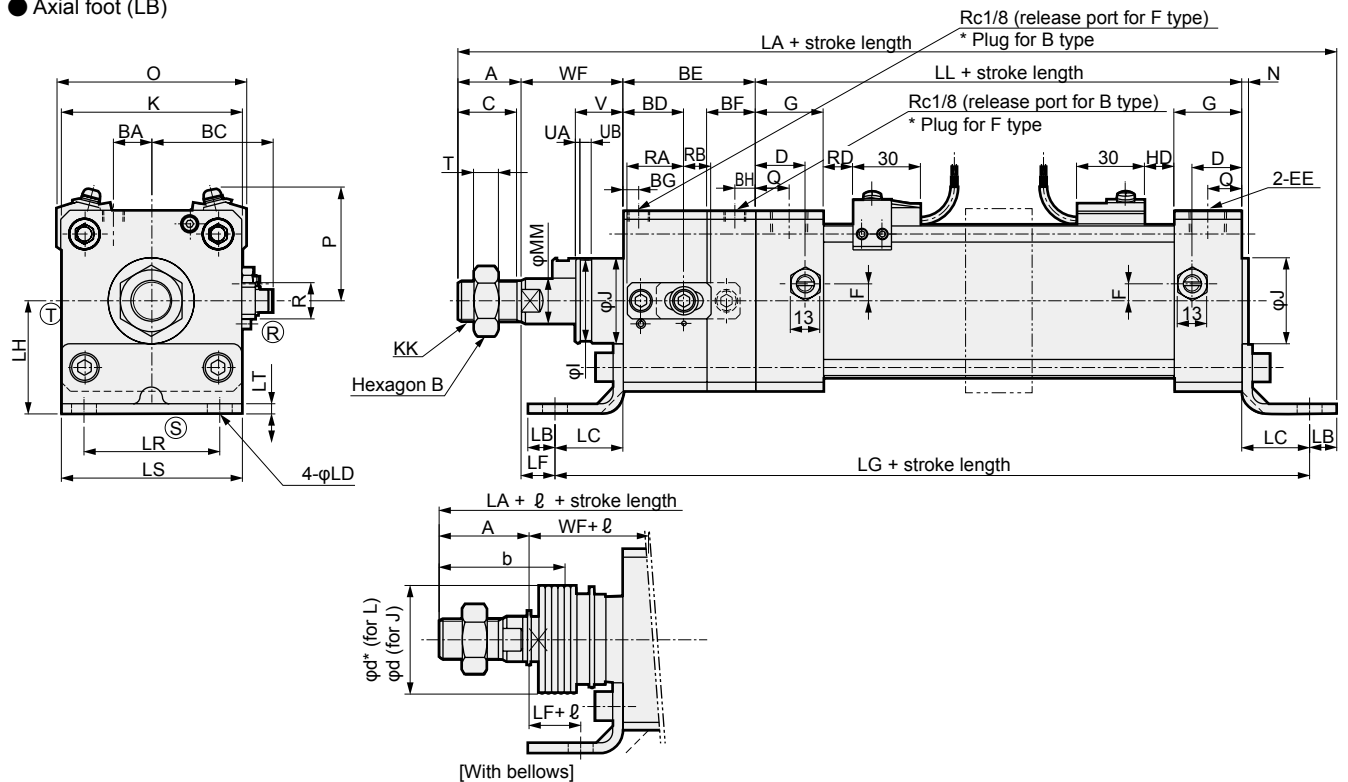
Code	A	B	C	BA	BC	BD	BE	BF	BG	BH	D	DA	DB	DC	EE	F	G	J	K	KK
Code	With bellows																			
Bore size	b	d	d*	ℓ																
				50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 300	Over 300 to 400	Over 400 to 500	Over 500 *1									
φ40	41	40	40	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke length/3.0) + 8									
φ50	47	47	48	22	36	49	63	90	119	146	(Stroke length/3.6) + 7.5									
φ63	45	47	48	22	36	49	63	90	119	146	(Stroke length/3.6) + 7.5									
φ80	58.5	53	55	14	26	38	49	72	96	119	(Stroke length/4.3) + 2.5									
φ100	69.5	61	65	20	32	42	53	76	98	120	(Stroke length/4.5) + 9									
Code	With switch																			
Bore size (mm)	O	T0,T5,T2,T3			T1,T2Y,T3Y,T2J T2YD/T			T8			T2W,T3W			H0*						
		P	RD	HD	P	RD	HD	P	RD	HD	P	RD	HD	P	RD	HD				
φ40	66	41.5	11	11	41.5	10	10	41.5	5	5	40	13	13	42	4	4				
φ50	73	43	13	13	43	12	12	43	7	7	44.5	15	15	44	6	6				
φ63	85	47	13	13	47	12	12	47	7	7	50	15	15	47	6	6				
φ80	105	57	14.5	14.5	57	13.5	13.5	57	8.5	8.5	60	16.5	16.5	58	7.5	7.5				
φ100	121	63	18.5	18.5	63	17.5	17.5	63	12.5	12.5	68	20.5	20.5	64	11.5	11.5				

*1 : Round up below decimal point.
 *2 : (R), (S) and (T) indicate the cushion needle position.
 *3 : For the dimensions of the accessories, refer to page 913.
 *4 : Non-sag block (2-dashed line) will be added depending on the stroke length. Refer to page 912.
 RD: Rod side max. sensitivity position
 HD: Head side max. sensitivity position

Dimensions



● Axial foot (LB)



Code	Axial foot (LB) basic dimensions																				
Bore size	A	B	C	BA	BC	BD	BE	BF	BG	BH	D	EE	F	G	J	K	KK	LL	MM	N	
φ40	22	22	20	7.5	39.5	22	47	18	7	7	18	Rc1/4	7.5	26	31	57	M14×1.5	93	16	2	
φ50	28	27	26	10	43.5	25	54	20	7	8	20	Rc3/8	0	28	38	66	M18×1.5	101	20	2.5	
φ63	28	27	26	17	53.5	26.8	58.5	21.5	7	9	22	Rc3/8	0	30	38	80	M18×1.5	105	20	3	
φ80	36	32	34	21	62.5	33.3	71	25	8	10	26	Rc1/2	0	34	43	98	M22×1.5	116	25	3.5	
φ100	45	41	43	25	72.5	38	81.5	28.5	8	10.5	28	Rc1/2	0	36	51	118	M26×1.5	128	30	4	
Code	Mounting dimensions																				
Bore size	Q	T	V	R	RA	RB	I	UA	UB	WF	X	LA	LB	LC	LD	LF	LG	LH	LR	LS	LT
φ40	13	8	18.5	16	18	10	29	2	5	33.5	197.5	225	10	19.5	9	14	179	40	40	57	3.2
φ50	14	11	20.5	16	18	10	36	2	5	37	222.5	254	12	22	9	15	199	40	46	66	4.5
φ63	15	11	21	16	25	12	36	2	5	35	229.5	268.5	12	30	11	5	223.5	50	60	80	4.5
φ80	17	13	23.5	16	25	12	41	2	5	48	274.5	322	14	37	14	11	261	60	74	98	6
φ100	18	16	32	16	25	12	49	3	6	53	311.5	359.5	21	31	14	22	271.5	67	80	118	6
Code	With bellows																				
Bore size	b	d	d*	ℓ							Over 500 ^{*1}										
				50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 300	Over 300 to 400	Over 400 to 500											
φ40	41	40	40	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke length/3.0) + 8										
φ50	47	47	48	22	36	49	63	90	119	146	(Stroke length/3.6) + 7.5										
φ63	45	47	48	22	36	49	63	90	119	146	(Stroke length/3.6) + 7.5										
φ80	58.5	53	55	14	26	38	49	72	96	119	(Stroke length/4.3) + 2.5										
φ100	69.5	61	65	20	32	42	53	76	98	120	(Stroke length/4.5) + 9										
Code	With switch																				
Bore size (mm)	O	T0, T5, T2, T3			T1, T2Y, T3Y, T2J, T2YD/T			T8			T2W, T3W			H0*							
		P	RD	HD	P	RD	HD	P	RD	HD	P	RD	HD	P	RD	HD					
φ40	66	41.5	11	11	41.5	10	10	41.5	5	5	40	13	13	42	4	4					
φ50	73	43	13	13	43	12	12	43	7	7	44.5	15	15	44	6	6					
φ63	85	47	13	13	47	12	12	47	7	7	50	15	15	47	6	6					
φ80	105	57	14.5	14.5	57	13.5	13.5	57	8.5	8.5	60	16.5	16.5	58	7.5	7.5					
φ100	121	63	18.5	18.5	63	17.5	17.5	63	12.5	12.5	68	20.5	20.5	64	11.5	11.5					

*1 : Round up below decimal point.

*2 : Ⓡ, Ⓢ and Ⓣ indicate the cushion needle position.

*3 : For the dimensions of the accessories, refer to page 913.

*4 : Non-sag block (2-dashed line) will be added depending on the stroke length. Refer to page 912.

RD: Rod side max. sensitivity position

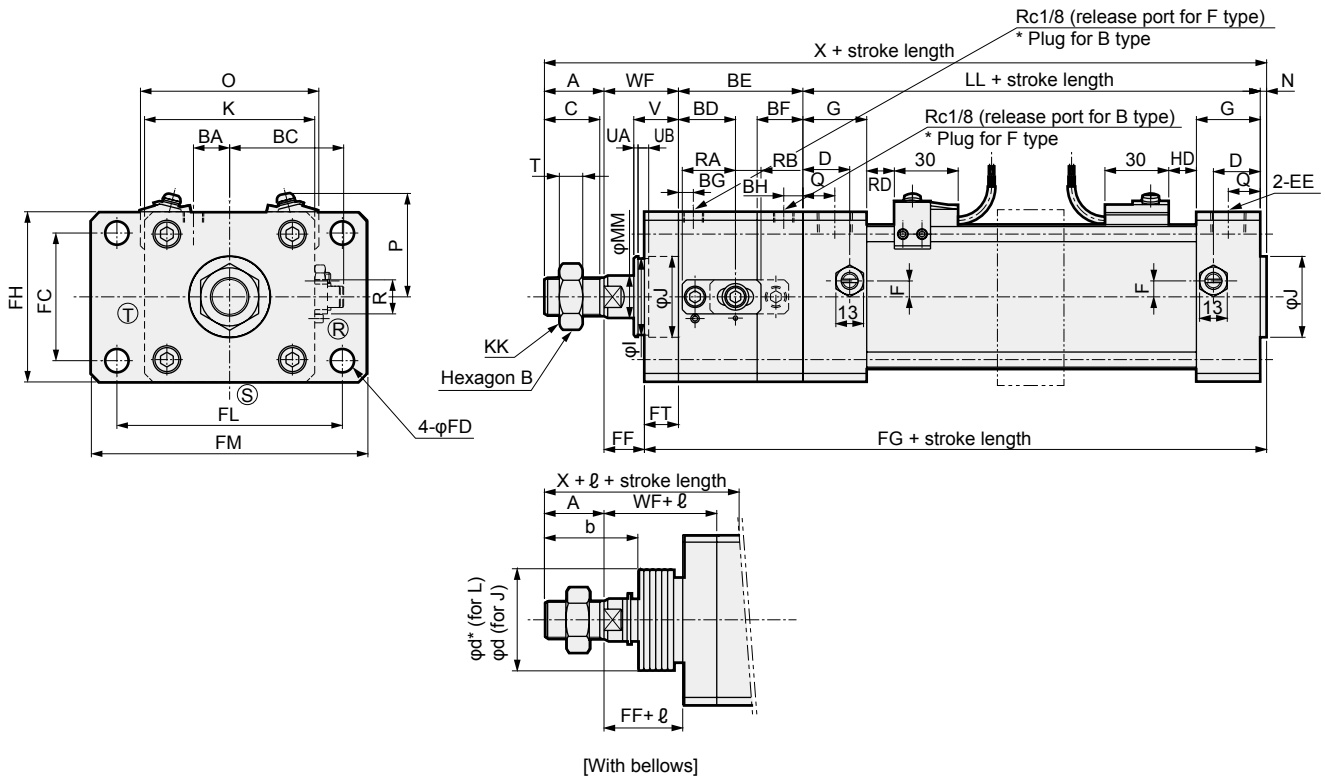
HD: Head side max. sensitivity position

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



● Rod side flange (FA)



Code	Rod side flange (FA) basic dimensions																			
Bore size	A	B	C	BA	BC	BD	BE	BF	BG	BH	D	EE	F	G	J	K	KK	LL	MM	N
φ40	22	22	20	7.5	39.5	22	47	18	7	7	18	Rc1/4	7.5	26	31	57	M14×1.5	93	16	2
φ50	28	27	26	10	43.5	25	54	20	7	8	20	Rc3/8	0	28	38	66	M18×1.5	101	20	2.5
φ63	28	27	26	17	53.5	26.8	58.5	21.5	7	9	22	Rc3/8	0	30	38	80	M18×1.5	105	20	3
φ80	36	32	34	21	62.5	33.3	71	25	8	10	26	Rc1/2	0	34	43	98	M22×1.5	116	25	3.5
φ100	45	41	43	25	72.5	38	81.5	28.5	8	10.5	28	Rc1/2	0	36	51	118	M26×1.5	128	30	4

Code	Mounting dimensions																		
Bore size	Q	T	V	R	RA	RB	I	UA	UB	WF	X	FC	FD	FF	FG	FH	FL	FM	FT
φ40	13	8	18.5	16	18	10	29	2	5	33.5	197.5	40	9	21.5	154	57	80	100	12
φ50	14	11	20.5	16	18	10	36	2	5	37	222.5	47	9	25	169.5	65	85	108	12
φ63	15	11	21	16	25	12	36	2	5	35	229.5	60	11	19	182.5	80	106	130	16
φ80	17	13	23.5	16	25	12	41	2	5	48	274.5	74	14	29	209.5	98	125	153	19
φ100	18	16	32	16	25	12	49	3	6	53	311.5	88	14	34	232.5	118	144	180	19

Code	With bellows										
Bore size	b	d	d*	ℓ							Over 500 ^{*1}
				50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 300	Over 300 to 400	Over 400 to 500	
φ40	41	40	40	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke length/3.0) + 8
φ50	47	47	48	22	36	49	63	90	119	146	(Stroke length/3.6) + 7.5
φ63	45	47	48	22	36	49	63	90	119	146	(Stroke length/3.6) + 7.5
φ80	58.5	53	55	14	26	38	49	72	96	119	(Stroke length/4.3) + 2.5
φ100	69.5	61	65	20	32	42	53	76	98	120	(Stroke length/4.5) + 9

Code	With switch															
Bore size (mm)	O	T0,T5,T2,T3			T1,T2Y,T3Y,T2J T2YD/T			T8			T2W,T3W			H0*		
		P	RD	HD	P	RD	HD	P	RD	HD	P	RD	HD	P	RD	HD
φ40	66	41.5	11	11	41.5	10	10	41.5	5	5	40	13	13	42	4	4
φ50	73	43	13	13	43	12	12	43	7	7	44.5	15	15	44	6	6
φ63	85	47	13	13	47	12	12	47	7	7	50	15	15	47	6	6
φ80	105	57	14.5	14.5	57	13.5	13.5	57	8.5	8.5	60	16.5	16.5	58	7.5	7.5
φ100	121	63	18.5	18.5	63	17.5	17.5	63	12.5	12.5	68	20.5	20.5	64	11.5	11.5

*1 : Round up below decimal point.

*2 : Ⓜ, Ⓢ and ⊕ indicate the cushion needle position.

*3 : For the dimensions of the accessories, refer to page 913.

*4 : Non-sag block (2-dashed line) will be added depending on the stroke length. Refer to page 912.

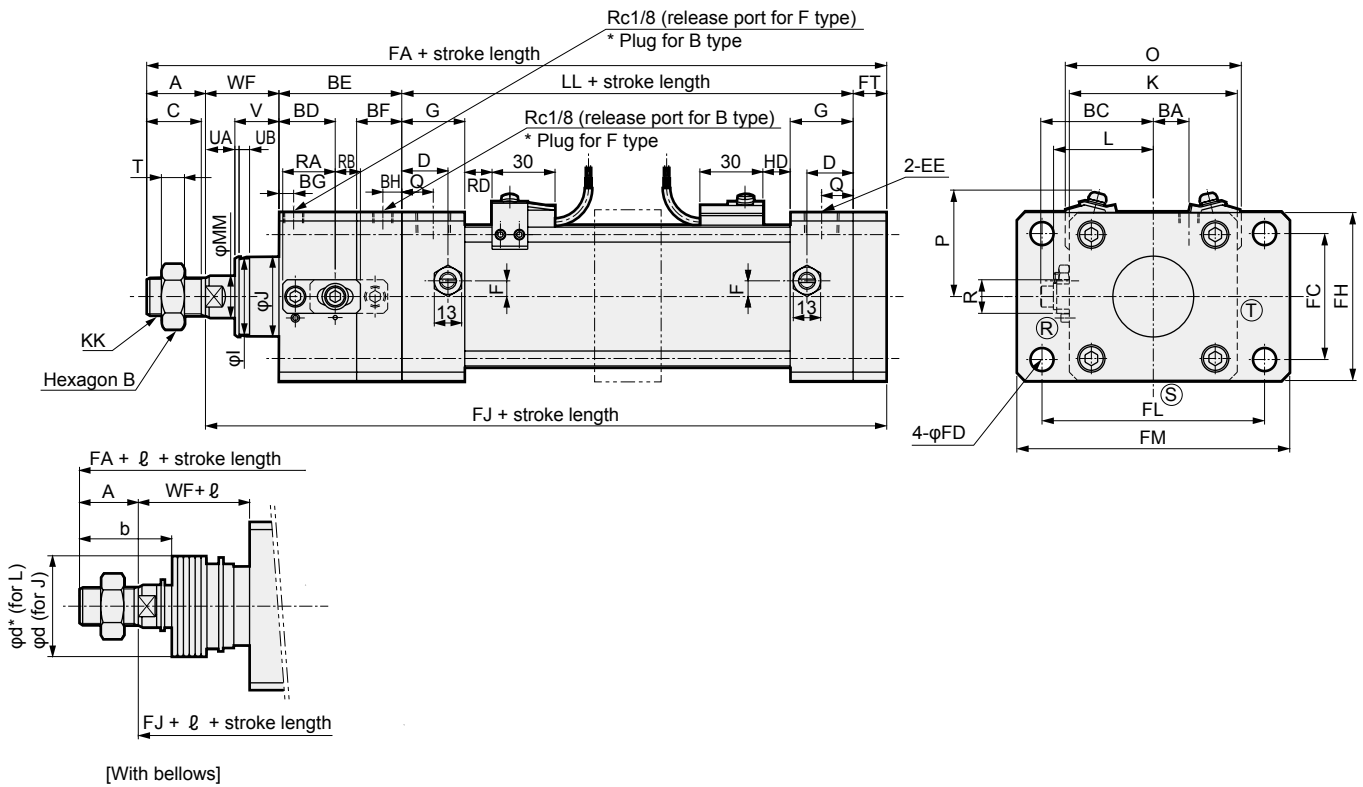
RD: Rod side max. sensitivity position

HD: Head side max. sensitivity position

Dimensions



● Head side flange (FB)



Code	Head side flange (FB) basic dimensions																		
Bore size	A	B	C	BA	BC	BD	BE	BF	BG	BH	D	EE	F	G	J	K	KK	LL	MM
φ40	22	22	20	7.5	39.5	22	47	18	7	7	18	Rc1/4	7.5	26	31	57	M14×1.5	93	16
φ50	28	27	26	10	43.5	25	54	20	7	8	20	Rc3/8	0	28	38	66	M18×1.5	101	20
φ63	28	27	26	17	53.5	26.8	58.5	21.5	7	9	22	Rc3/8	0	30	38	80	M18×1.5	105	20
φ80	36	32	34	21	62.5	33.3	71	25	8	10	26	Rc1/2	0	34	43	98	M22×1.5	116	25
φ100	45	41	43	25	72.5	38	81.5	28.5	8	10.5	28	Rc1/2	0	36	51	118	M26×1.5	128	30

Code	Mounting dimensions																			
Bore size	Q	T	V	R	RA	RB	I	UA	UB	WF	X	L	FA	FC	FD	FH	FJ	FL	FM	FT
φ40	13	8	18.5	16	18	10	29	2	5	33.5	197.5	38 to 39.5	207.5	40	9	57	185.5	80	100	12
φ50	14	11	20.5	16	18	10	36	2	5	37	222.5	41 to 43.5	232	47	9	65	204	85	108	12
φ63	15	11	21	16	25	12	36	2	5	35	229.5	47.5 to 50	242.5	60	11	80	214.5	106	130	16
φ80	17	13	23.5	16	25	12	41	2	5	48	274.5	56 to 59	290	74	14	98	254	125	153	19
φ100	18	16	32	16	25	12	49	3	6	53	311.5	66 to 69	326.5	88	14	118	281.5	144	180	19

Code	With bellows										
Bore size	b	d	d*	ℓ							Over 500 ^{*1}
				50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 300	Over 300 to 400	Over 400 to 500	
φ40	41	40	40	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke length/3.0) + 8
φ50	47	47	48	22	36	49	63	90	119	146	(Stroke length/3.6) + 7.5
φ63	45	47	48	22	36	49	63	90	119	146	(Stroke length/3.6) + 7.5
φ80	58.5	53	55	14	26	38	49	72	96	119	(Stroke length/4.3) + 2.5
φ100	69.5	61	65	20	32	42	53	76	98	120	(Stroke length/4.5) + 9

Code	With switch															
Bore size (mm)	O	T0, T5, T2, T3			T1, T2Y, T3Y, T2J, T2YD/T			T8			T2W, T3W			H0*		
		P	RD	HD	P	RD	HD	P	RD	HD	P	RD	HD	P	RD	HD
φ40	66	41.5	11	11	41.5	10	10	41.5	5	5	40	13	13	42	4	4
φ50	73	43	13	13	43	12	12	43	7	7	44.5	15	15	44	6	6
φ63	85	47	13	13	47	12	12	47	7	7	50	15	15	47	6	6
φ80	105	57	14.5	14.5	57	13.5	13.5	57	8.5	8.5	60	16.5	16.5	58	7.5	7.5
φ100	121	63	18.5	18.5	63	17.5	17.5	63	12.5	12.5	68	20.5	20.5	64	11.5	11.5

*1 : Round up below decimal point.

*2 : (R), (S) and (T) indicate the cushion needle position.

*3 : For the dimensions of the accessories, refer to page 913.

*4 : Non-sag block (2-dashed line) will be added depending on the stroke length. Refer to page 912.

RD: Rod side max. sensitivity position

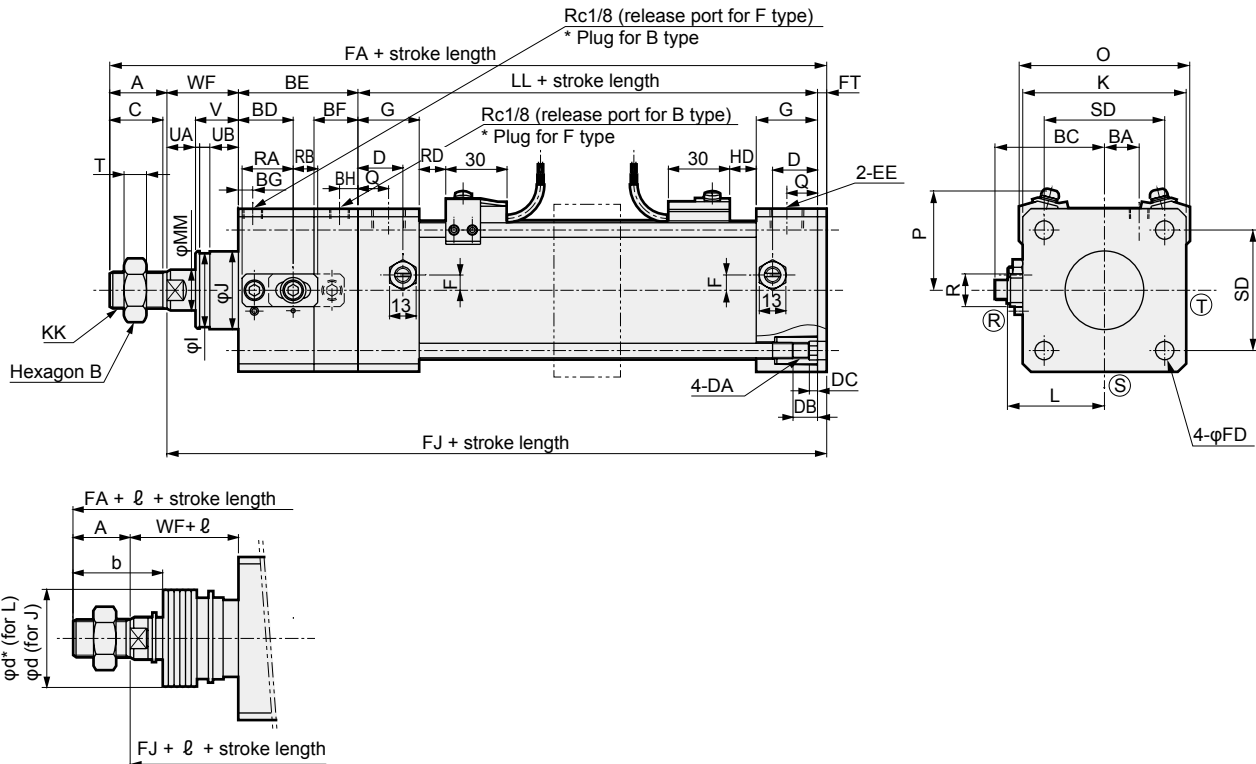
HD: Head side max. sensitivity position

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



● Head side special flange (FC)



[With bellows]

Code	Head side special flange (FC) basic dimensions																				
Bore size	A	B	C	BA	BC	BD	BE	BF	BG	BH	D	DA	DB	DC	EE	F	G	J	K	KK	
φ40	22	22	20	7.5	39.5	22	47	18	7	7	18	M8	12	4	Rc1/4	7.5	26	31	57	M14×1.5	
φ50	28	27	26	10	43.5	25	54	20	7	8	20	M8	12	4	Rc3/8	0	28	38	66	M18×1.5	
φ63	28	27	26	17	53.5	26.8	58.5	21.5	7	9	22	M8	12	4	Rc3/8	0	30	38	80	M18×1.5	
Hand	φ80	36	32	34	21	62.5	33.3	71	25	8	10	26	M12	16	5	Rc1/2	0	34	43	98	M22×1.5
Chuk	φ100	45	41	43	25	72.5	38	81.5	28.5	8	10.5	28	M12	16	5	Rc1/2	0	36	51	118	M26×1.5

Code	Mounting dimensions																		
Bore size	LL	MM	Q	SD	T	V	R	RA	RB	I	UA	UB	WF	X	L	FA	FD	FJ	FT
φ40	93	16	13	40.5	8	18.5	16	18	10	29	2	5	33.5	197.5	38 to 39.5	200	9	178	4.5
φ50	101	20	14	48	11	20.5	16	18	10	36	2	5	37	222.5	41 to 43.5	224.5	9	196.5	4.5
φ63	105	20	15	59	11	21	16	25	12	36	2	5	35	229.5	47.5 to 50	231	11	203	4.5
φ80	116	25	17	74	13	23.5	16	25	12	41	2	5	48	274.5	56 to 59	277	14	241	6
φ100	128	30	18	90	16	32	16	25	12	49	3	6	53	311.5	66 to 69	313.5	14	268.5	6

Code	With bellows										
Bore size	b	d	d*	ℓ							Over 500 ^{*1}
				50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 300	Over 300 to 400	Over 400 to 500	
φ40	41	40	40	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke length/3.0) + 8
φ50	47	47	48	22	36	49	63	90	119	146	(Stroke length/3.6) + 7.5
φ63	45	47	48	22	36	49	63	90	119	146	(Stroke length/3.6) + 7.5
φ80	58.5	53	55	14	26	38	49	72	96	119	(Stroke length/4.3) + 2.5
φ100	69.5	61	65	20	32	42	53	76	98	120	(Stroke length/4.5) + 9

Code	With switch															
Bore size (mm)	O	T0,T5,T2,T3			T1,T2Y,T3Y,T2J T2YD/T			T8			T2W,T3W			H0*		
		P	RD	HD	P	RD	HD	P	RD	HD	P	RD	HD	P	RD	HD
φ40	66	41.5	11	11	41.5	10	10	41.5	5	5	40	13	13	42	4	4
φ50	73	43	13	13	43	12	12	43	7	7	44.5	15	15	44	6	6
φ63	85	47	13	13	47	12	12	47	7	7	50	15	15	47	6	6
φ80	105	57	14.5	14.5	57	13.5	13.5	57	8.5	8.5	60	16.5	16.5	58	7.5	7.5
φ100	121	63	18.5	18.5	63	17.5	17.5	63	12.5	12.5	68	20.5	20.5	64	11.5	11.5

*1 : Round up below decimal point.

*2 : (R), (S) and (T) indicate the cushion needle position.

*3 : For the dimensions of the accessories, refer to page 913.

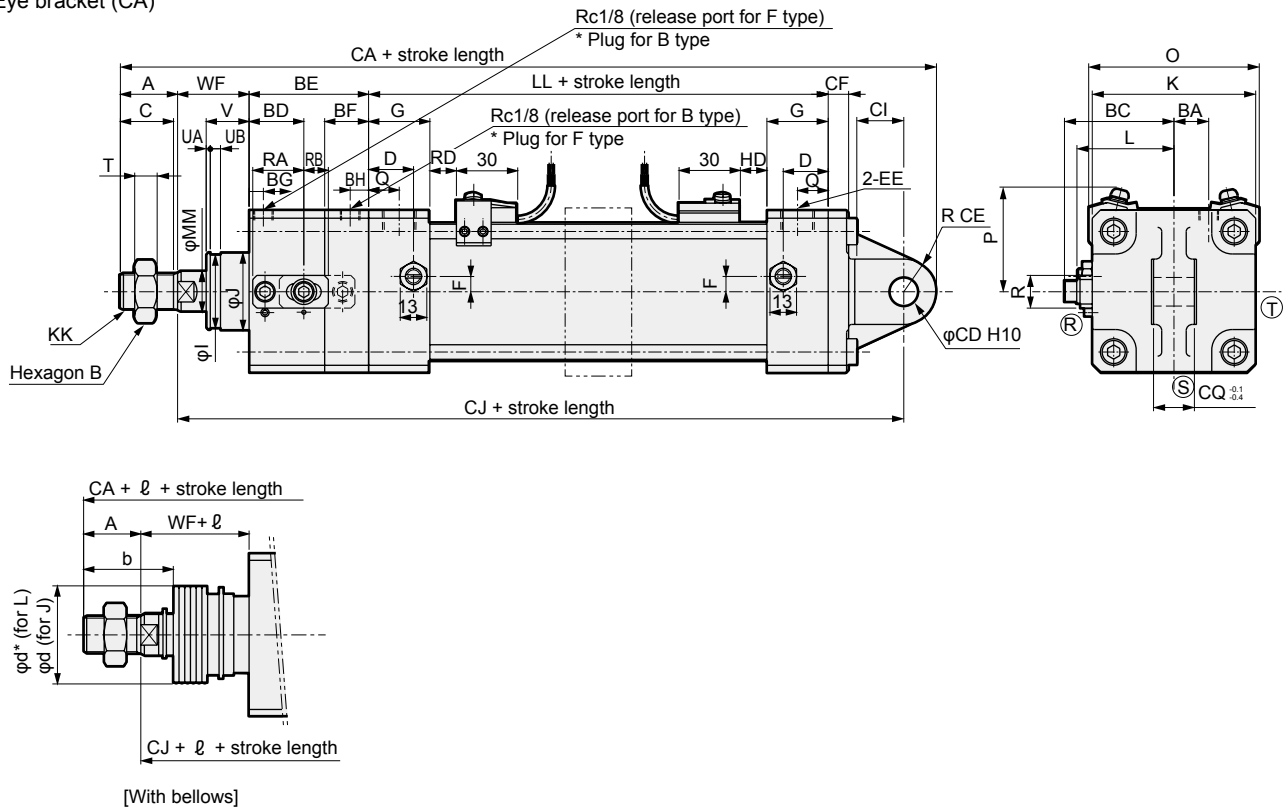
*4 : Non-sag block (2-dashed line) will be added depending on the stroke length. Refer to page 912.

RD: Rod side max. sensitivity position

HD: Head side max. sensitivity position

Dimensions

● Eye bracket (CA)



Code		Eye bracket (CA) basic dimensions																		
Bore size		A	B	C	BA	BC	BD	BE	BF	BG	BH	D	EE	F	G	J	K	KK	LL	MM
φ40		22	22	20	7.5	39.5	22	47	18	7	7	18	Rc1/4	7.5	26	31	57	M14×1.5	93	16
φ50		28	27	26	10	43.5	25	54	20	7	8	20	Rc3/8	0	28	38	66	M18×1.5	101	20
φ63		28	27	26	17	53.5	26.8	58.5	21.5	7	9	22	Rc3/8	0	30	38	80	M18×1.5	105	20
φ80		36	32	34	21	62.5	33.3	71	25	8	10	26	Rc1/2	0	34	43	98	M22×1.5	116	25
φ100		45	41	43	25	72.5	38	81.5	28.5	8	10.5	28	Rc1/2	0	36	51	118	M26×1.5	128	30
Code		Mounting dimensions																		
Bore size		Q	T	V	R	RA	RB	I	UA	UB	WF	L	CA	CD	CE	CF	CI	CJ	CQ	
φ40		13	8	18.5	16	18	10	29	2	5	33.5	38 to 39.5	239.5	12 ^{+0.070/0}	12	10	18	205.5	18	
φ50		14	11	20.5	16	18	10	36	2	5	37	41 to 43.5	264	12 ^{+0.070/0}	12	10	18	224	18	
φ63		15	11	21	16	25	12	36	2	5	35	47.5 to 50	279.5	14 ^{+0.070/0}	16	10	24	235.5	20	
φ80		17	13	23.5	16	25	12	41	2	5	48	56 to 59	343	20 ^{+0.084/0}	20	14	30	287	28	
φ100		18	16	32	16	25	12	49	3	6	53	66 to 69	379.5	20 ^{+0.084/0}	20	16	30	314.5	28	

Code		With bellows										
Bore size		b	d	d*	l						Over 500 ^{*1}	
					50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 300	Over 300 to 400	Over 400 to 500	
φ40		41	40	40	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke length/3.0) + 8
φ50		47	47	48	22	36	49	63	90	119	146	(Stroke length/3.6) + 7.5
φ63		45	47	48	22	36	49	63	90	119	146	(Stroke length/3.6) + 7.5
φ80		58.5	53	55	14	26	38	49	72	96	119	(Stroke length/4.3) + 2.5
φ100		69.5	61	65	20	32	42	53	76	98	120	(Stroke length/4.5) + 9

Code		With switch															
Bore size (mm)		O	T0,T5,T2,T3			T1,T2Y,T3Y,T2J T2YD/T			T8			T2W,T3W			H0*		
			P	RD	HD	P	RD	HD	P	RD	HD	P	RD	HD	P	RD	HD
φ40		66	41.5	11	11	41.5	10	10	41.5	5	5	40	13	13	42	4	4
φ50		73	43	13	13	43	12	12	43	7	7	44.5	15	15	44	6	6
φ63		85	47	13	13	47	12	12	47	7	7	50	15	15	47	6	6
φ80		105	57	14.5	14.5	57	13.5	13.5	57	8.5	8.5	60	16.5	16.5	58	7.5	7.5
φ100		121	63	18.5	18.5	63	17.5	17.5	63	12.5	12.5	68	20.5	20.5	64	11.5	11.5

*1 : Round up below decimal point.

*2 : ®, Ⓢ and ⊕ indicate the cushion needle position.

*3 : For the dimensions of the accessories, refer to page 913.

*4 : Non-sag block (2-dashed line) will be added depending on the stroke length. Refer to page 912.

RD: Rod side max. sensitivity position

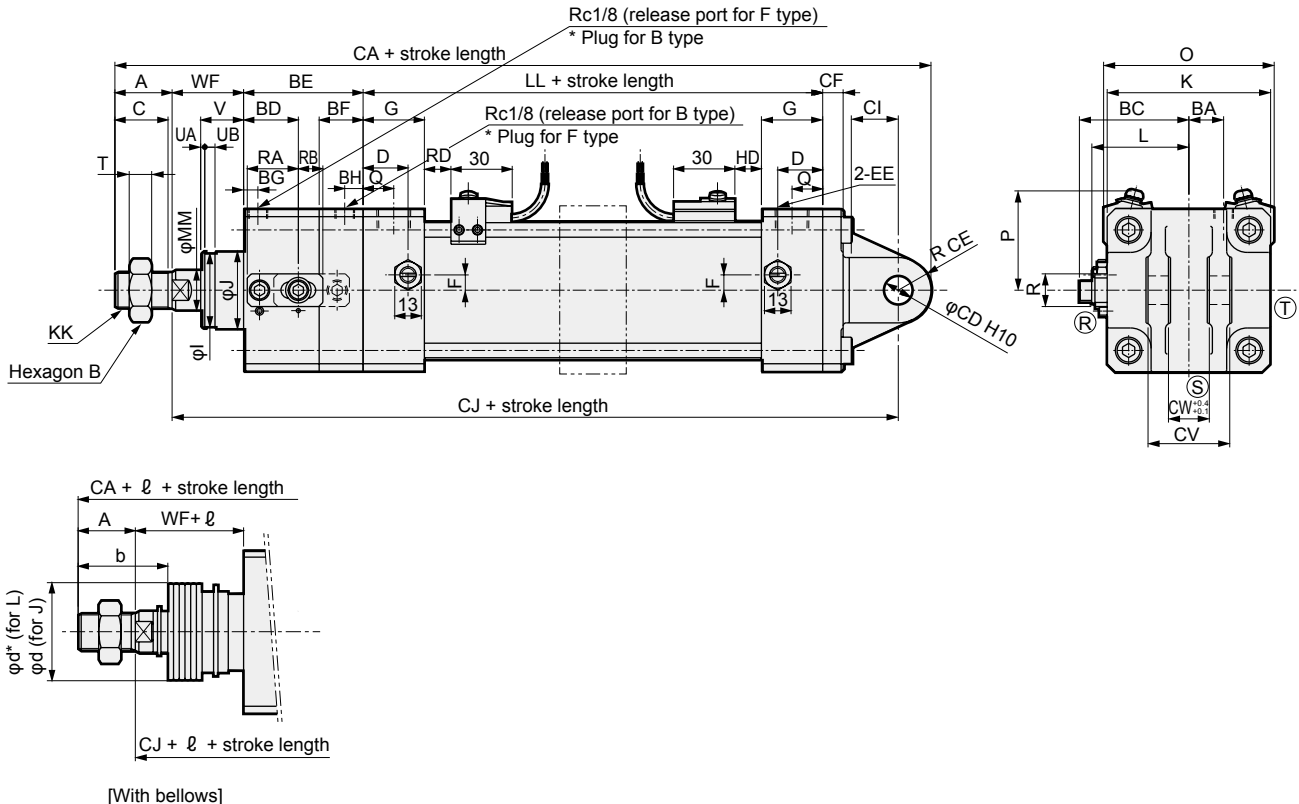
HD: Head side max. sensitivity position

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



● Clevis bracket (CB)



[With bellows]

Code	Clevis bracket (CB) basic dimensions																		
Bore size	A	B	C	BA	BC	BD	BE	BF	BG	BH	D	EE	F	G	J	K	KK	LL	MM
$\phi 40$	22	22	20	7.5	39.5	22	47	18	7	7	18	Rc1/4	7.5	26	31	57	M14×1.5	93	16
$\phi 50$	28	27	26	10	43.5	25	54	20	7	8	20	Rc3/8	0	28	38	66	M18×1.5	101	20
$\phi 63$	28	27	26	17	53.5	26.8	58.5	21.5	7	9	22	Rc3/8	0	30	38	80	M18×1.5	105	20
$\phi 80$	36	32	34	21	62.5	33.3	71	25	8	10	26	Rc1/2	0	34	43	98	M22×1.5	116	25
$\phi 100$	45	41	43	25	72.5	38	81.5	28.5	8	10.5	28	Rc1/2	0	36	51	118	M26×1.5	128	30

Code	Mounting dimensions																		
Bore size	Q	T	V	R	RA	RB	I	UA	UB	WF	L	CA	CD	CE	CF	CI	CJ	CV	CW
$\phi 40$	13	8	18.5	16	18	10	29	2	5	33.5	38 to 39.5	239.5	12 ^{+0.070} ₀	12	10	18	205.5	36	18
$\phi 50$	14	11	20.5	16	18	10	36	2	5	37	41 to 43.5	264	12 ^{+0.070} ₀	12	10	18	224	36	18
$\phi 63$	15	11	21	16	25	12	36	2	5	35	47.5 to 50	279.5	14 ^{+0.070} ₀	16	10	24	235.5	40	20
$\phi 80$	17	13	23.5	16	25	12	41	2	5	48	56 to 59	343	20 ^{+0.084} ₀	20	14	30	287	56	28
$\phi 100$	18	16	32	16	25	12	49	3	6	53	66 to 69	379.5	20 ^{+0.084} ₀	20	16	30	314.5	56	28

Code	With bellows										
Bore size	b	d	d*	ℓ						Over 500 ^{*1}	
				50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 300	Over 300 to 400		Over 400 to 500
$\phi 40$	41	40	40	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke length/3.0) + 8
$\phi 50$	47	47	48	22	36	49	63	90	119	146	(Stroke length/3.6) + 7.5
$\phi 63$	45	47	48	22	36	49	63	90	119	146	(Stroke length/3.6) + 7.5
$\phi 80$	58.5	53	55	14	26	38	49	72	96	119	(Stroke length/4.3) + 2.5
$\phi 100$	69.5	61	65	20	32	42	53	76	98	120	(Stroke length/4.5) + 9

Code	With switch															
Bore size (mm)	O	T0, T5, T2, T3			T1, T2Y, T3Y, T2J, T2YD/T			T8			T2W, T3W			H0*		
		P	RD	HD	P	RD	HD	P	RD	HD	P	RD	HD	P	RD	HD
$\phi 40$	66	41.5	11	11	41.5	10	10	41.5	5	5	40	13	13	42	4	4
$\phi 50$	73	43	13	13	43	12	12	43	7	7	44.5	15	15	44	6	6
$\phi 63$	85	47	13	13	47	12	12	47	7	7	50	15	15	47	6	6
$\phi 80$	105	57	14.5	14.5	57	13.5	13.5	57	8.5	8.5	60	16.5	16.5	58	7.5	7.5
$\phi 100$	121	63	18.5	18.5	63	17.5	17.5	63	12.5	12.5	68	20.5	20.5	64	11.5	11.5

*1 : Round up below decimal point.

*2 : (R), (S) and (T) indicate the cushion needle position.

*3 : For the dimensions of the accessories, refer to page 913.

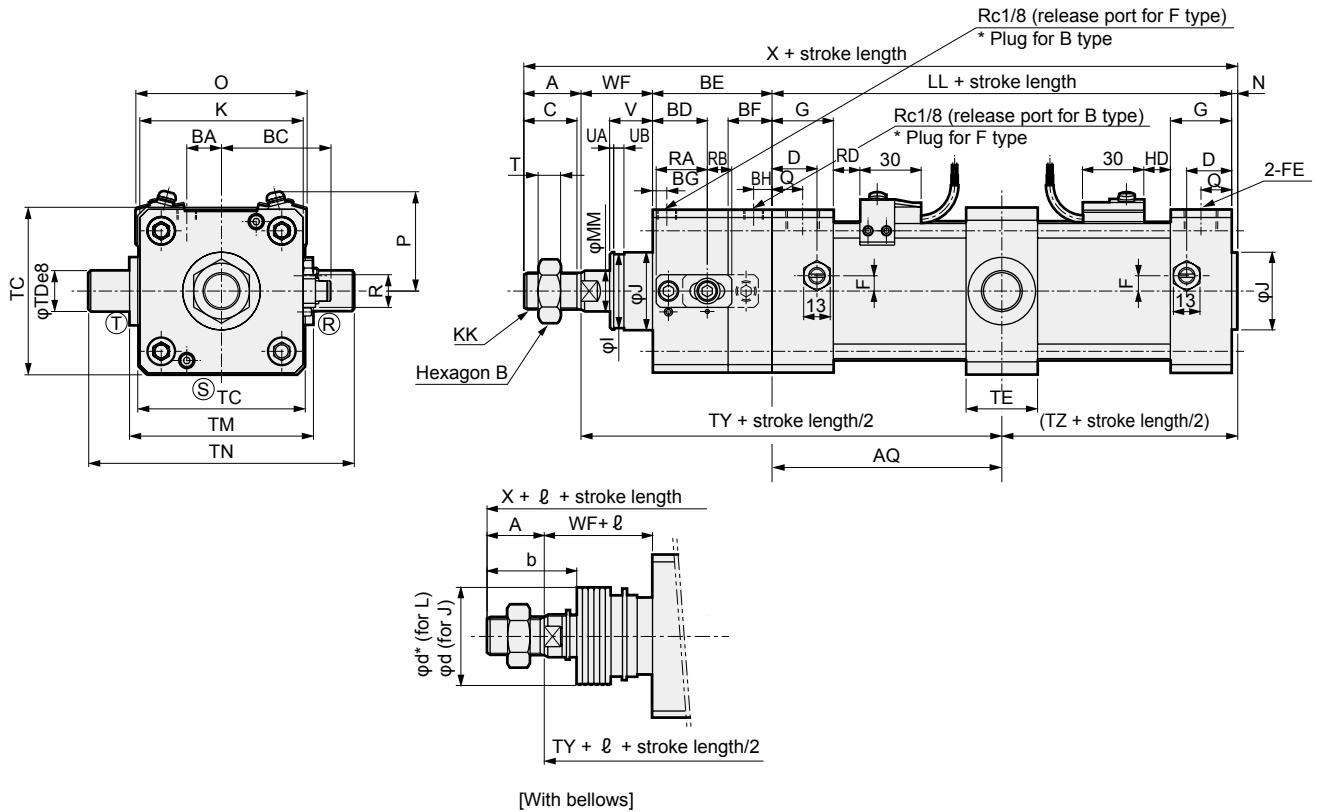
*4 : Non-sag block (2-dashed line) will be added depending on the stroke length. Refer to page 912.

RD: Rod side max. sensitivity position

HD: Head side max. sensitivity position

Dimensions

● Intermediate trunnion (TC)



Code		Intermediate trunnion (TC) basic dimensions																			
Bore size		A	B	C	BA	BC	BD	BE	BF	BG	BH	D	EE	F	G	J	K	KK	LL	MM	N
φ40		22	22	20	7.5	39.5	22	47	18	7	7	18	Rc1/4	7.5	26	31	57	M14×1.5	93	16	2
φ50		28	27	26	10	43.5	25	54	20	7	8	20	Rc3/8	0	28	38	66	M18×1.5	101	20	2.5
φ63		28	27	26	17	53.5	26.8	58.5	21.5	7	9	22	Rc3/8	0	30	38	80	M18×1.5	105	20	3
φ80		36	32	34	21	62.5	33.3	71	25	8	10	26	Rc1/2	0	34	43	98	M22×1.5	116	25	3.5
φ100		45	41	43	25	72.5	38	81.5	28.5	8	10.5	28	Rc1/2	0	36	51	118	M26×1.5	128	30	4
Code		Mounting dimensions																			
Bore size		Q	T	V	R	RA	RB	I	UA	UB	WF	X	AQ	TC	TD	TE	TM	TN	TY	TZ	
φ40		13	8	18.5	16	18	10	29	2	5	33.5	197.5	46.5+ Stroke length 2	57	16 -0.032 -0.059	30	63	95	127	48.5	
φ50		14	11	20.5	16	18	10	36	2	5	37	222.5	50.5+ Stroke length 2	67	18 -0.032 -0.059	30	80	116	141.5	53	
φ63		15	11	21	16	25	12	36	2	5	35	229.5	52.5+ Stroke length 2	82	20 -0.040 -0.073	35	90	130	146	55.5	
φ80		17	13	23.5	16	25	12	41	2	5	48	274.5	58+ Stroke length 2	100	25 -0.040 -0.073	40	115	165	177	61.5	
φ100		18	16	32	16	25	12	49	3	6	53	311.5	64+ Stroke length 2	121	35 -0.050 -0.089	50	135	205	198.5	68	

Code		With bellows										
Bore size		b	d	d*	ℓ						Over 500 ^{*1}	
					50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 300	Over 300 to 400	Over 400 to 500	
φ40		41	40	40	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke length/3.0) + 8
φ50		47	47	48	22	36	49	63	90	119	146	(Stroke length/3.6) + 7.5
φ63		45	47	48	22	36	49	63	90	119	146	(Stroke length/3.6) + 7.5
φ80		58.5	53	55	14	26	38	49	72	96	119	(Stroke length/4.3) + 2.5
φ100		69.5	61	65	20	32	42	53	76	98	120	(Stroke length/4.5) + 9

Code		With switch															
Bore size (mm)		O	T0, T5, T2, T3			T1, T2Y, T3Y, T2J T2YD/T			T8			T2W, T3W			H0*		
			P	RD	HD	P	RD	HD	P	RD	HD	P	RD	HD	P	RD	HD
φ40		66	41.5	11	11	41.5	10	10	41.5	5	5	40	13	13	42	4	4
φ50		73	43	13	13	43	12	12	43	7	7	44.5	15	15	44	6	6
φ63		85	47	13	13	47	12	12	47	7	7	50	15	15	47	6	6
φ80		105	57	14.5	14.5	57	13.5	13.5	57	8.5	8.5	60	16.5	16.5	58	7.5	7.5
φ100		121	63	18.5	18.5	63	17.5	17.5	63	12.5	12.5	68	20.5	20.5	64	11.5	11.5

*1 : Round up below decimal point.

*2 : ®, © and ⊕ indicate the cushion needle position.

*3 : For the dimensions of the accessories, refer to page 913.

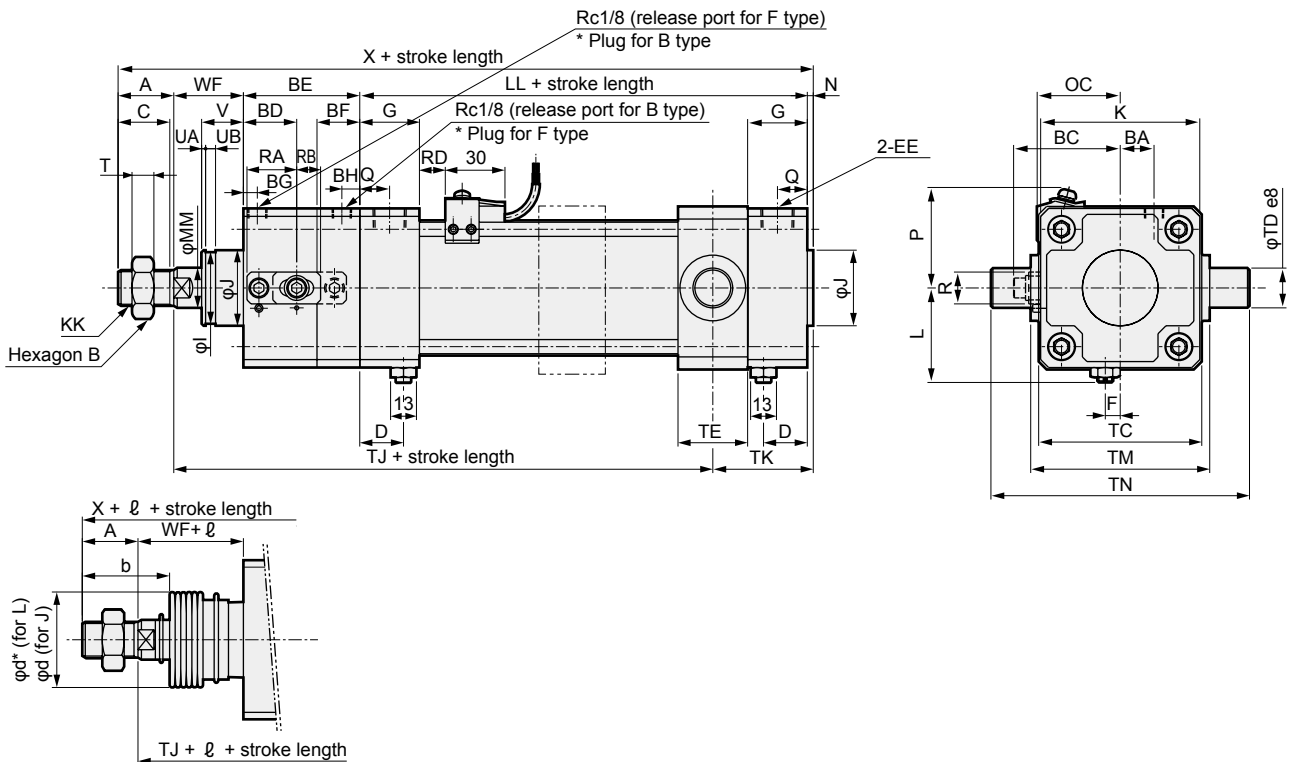
RD: Rod side max. sensitivity position

HD: Head side max. sensitivity position

- 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

● Head side trunnion (TB)



[With bellows]

Code		Head side trunnion (TB) basic dimensions																			
Bore size		A	B	C	BA	BC	BD	BE	BF	BG	BH	D	EE	F	G	J	K	KK	LL	MM	N
φ40		22	22	20	7.5	39.5	22	47	18	7	7	18	Rc1/4	7.5	26	31	57	M14×1.5	93	16	2
φ50		28	27	26	10	43.5	25	54	20	7	8	20	Rc3/8	0	28	38	66	M18×1.5	101	20	2.5
φ63		28	27	26	17	53.5	26.8	58.5	21.5	7	9	22	Rc3/8	0	30	38	80	M18×1.5	105	20	3
φ80		36	32	34	21	62.5	33.3	71	25	8	10	26	Rc1/2	0	34	43	98	M22×1.5	116	25	3.5
φ100		45	41	43	25	72.5	38	81.5	28.5	8	10.5	28	Rc1/2	0	36	51	118	M26×1.5	128	30	4

Code		Mounting dimensions																		
Bore size		Q	T	V	R	RA	RB	I	UA	UB	WF	X	L	TC	TD	TE	TJ	TK	TM	TN
φ40		13	8	18.5	16	18	10	29	2	5	33.5	197.5	38 to 39.5	57	16 ^{-0.032 -0.059}	30	132	43.5	63	95
φ50		14	11	20.5	16	18	10	36	2	5	37	222.5	41 to 43.5	67	18 ^{-0.032 -0.059}	30	148.5	46	80	116
φ63		15	11	21	16	25	12	36	2	5	35	229.5	47.5 to 50	82	20 ^{-0.040 -0.073}	35	150.5	51	90	130
φ80		17	13	23.5	16	25	12	41	2	5	48	274.5	56 to 59	100	25 ^{-0.040 -0.073}	40	180.5	58	115	165
φ100		18	16	32	16	25	12	49	3	6	53	311.5	66 to 69	121	35 ^{-0.050 -0.089}	50	201	65.5	135	205

Code		With bellows										
Bore size		b	d	d*	ℓ							Over 500 ^{*1}
					50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 300	Over 300 to 400	Over 400 to 500	
φ40		41	40	40	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke length/3.0) + 8
φ50		47	47	48	22	36	49	63	90	119	146	(Stroke length/3.6) + 7.5
φ63		45	47	48	22	36	49	63	90	119	146	(Stroke length/3.6) + 7.5
φ80		58.5	53	55	14	26	38	49	72	96	119	(Stroke length/4.3) + 2.5
φ100		69.5	61	65	20	32	42	53	76	98	120	(Stroke length/4.5) + 9

Code		With switch										
Bore size (mm)		O	T0,T5 T2,T3		T1,T2Y,T3Y T2J,T2YD/T		T8		T2W,T3W		H0*	
		P	RD	P	RD	P	RD	P	RD	P	RD	
φ40		66	41.5	11	41.5	10	41.5	5	40	13	42	4
φ50		73	43	13	43	12	43	7	44.5	15	44	6
φ63		85	47	13	47	12	47	7	50	15	47	6
φ80		105	57	14.5	57	13.5	57	8.5	60	16.5	58	7.5
φ100		121	63	18.5	63	17.5	63	12.5	68	20.5	64	11.5

*1 : Round up below decimal point.

*2 : (R), (S) and (T) indicate the cushion needle position.

*3 : For the dimensions of the accessories, refer to page 913.

*4 : Non-sag block (2-dashed line) will be added depending on the stroke length. Refer to page 912.

RD: Rod side max. sensitivity position

HD: Head side max. sensitivity position

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

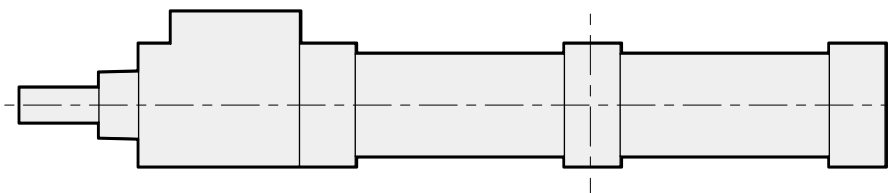
About non-sag block

Depending on its stroke length, a non-sag block will be added to the middle part of the cylinder.

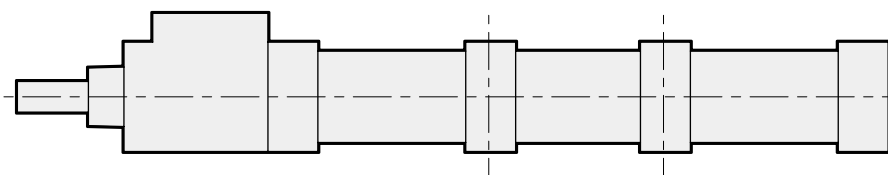
The number of non-sag blocks to be added differs depending on the bore size and the stroke length as shown in the table below.

Number of non-sag blocks depending on stroke length

Tube size (mm)	Stroke length (mm)	Number of non-sag blocks
φ40	1200 to 1600	1
	1200 to 1800	1
φ50	1801 to 2000	2
	1200 to 1800	1
φ63	1801 to 2500	2
	1500 to 2000	1
φ80	2001 to 2500	2
	1500 to 2000	1
φ100	2001 to 2500	2

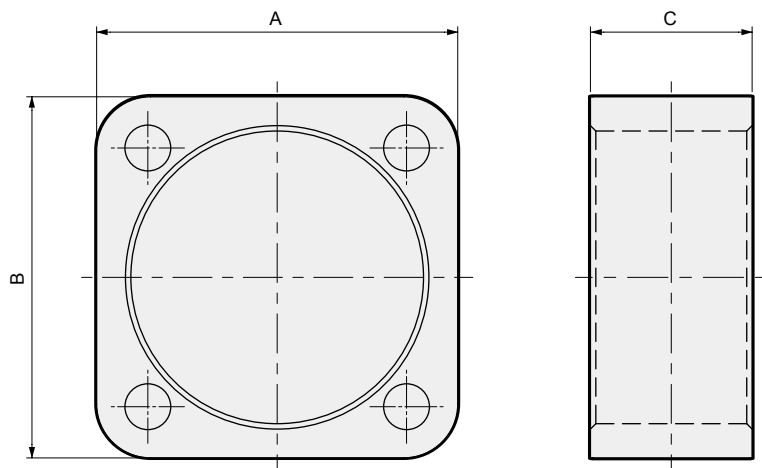


One non-sag block: To be added to the middle point between the covers.



Two non-sag blocks: mount the 2 blocks so that the length of the 2 covers will be divided into 3 equal parts.

The dimensions of non-sag blocks are as shown in the figure below. When attaching the cylinder, take into account the dimensions of the non-sag blocks.

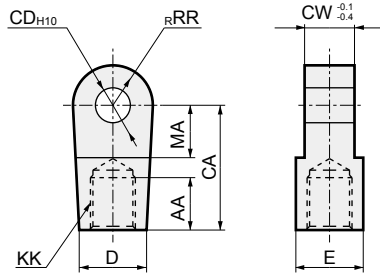


Non-sag block dimensions table

Tube size (mm)	Non-sag block dimensions		
	A	B	C
φ40	56	57	30
φ50	66	67	30
φ63	81	82	35
φ80	99	100	40
φ100	120	121	50

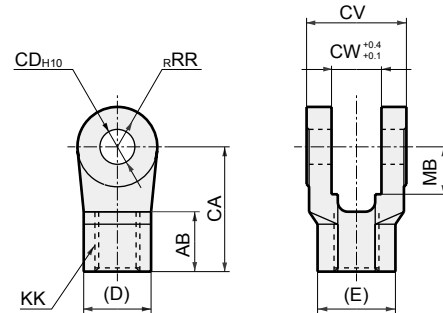
Accessory dimensions (rod eye/clevis bracket/pin)

● Rod eye (I)  Material: Cast iron
Painting




Model No.	Bore size (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

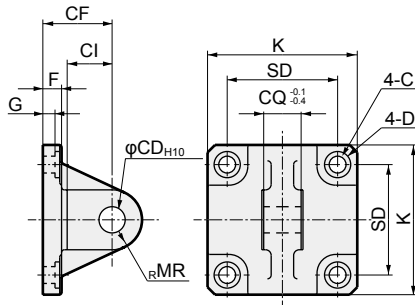
● Rod clevis (Y)  Material: Cast iron
Painting



Model No.	Bore size (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

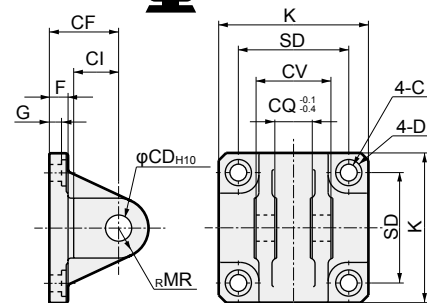
*1: The MB dimension is the effective length of the CW dimension.
*2: A pin and a snap ring are attached.

● Eye bracket (B1)  Material: Cast iron
Painting



Model No.	Bore size (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

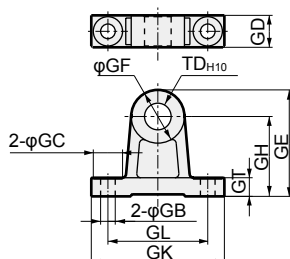
● Clevis bracket (B2)  Material: Cast iron
Painting



Model No.	Bore size (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: A pin and a snap ring are attached.

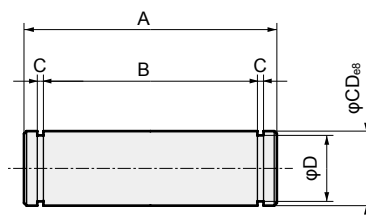
● Trunnion No. 2 bracket Material: Cast iron
Painting



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 treatment



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

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



Pneumatic components

Safety Precautions

Be sure to read this section before use.

Refer to Intro Page 73 for general information of the cylinder, and to Intro Page 80 for general information of the cylinder switch.

Product-specific cautions: Free position locking large bore size cylinder USC Series

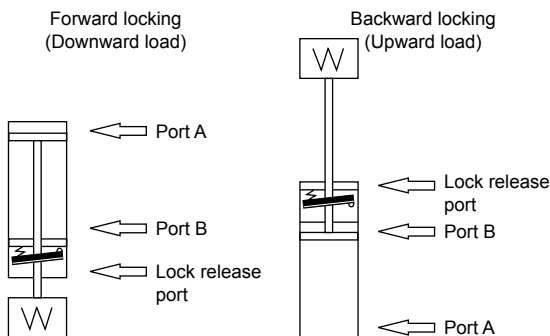
Design/selection

WARNING

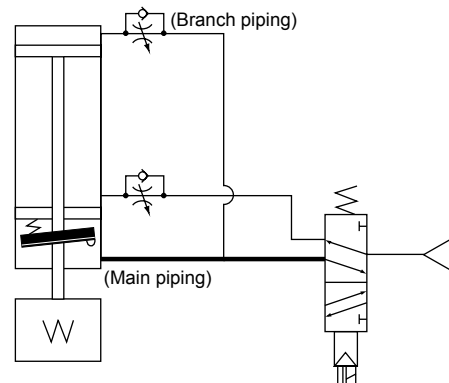
- Cylinder with position locking mechanism (for holding cylinder stationary).
Emergency stops (while the cylinder is in operation) can significantly decrease the service life.
- If back pressure is applied to the locking mechanism, the lock may be released. Use a discrete valve, or use an individual exhaust manifold.
- Do not apply torque to the rod when 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.
- To release the lock, when using forward locking, supply pressure to port B, and when using backward locking, supply pressure to port A. Check that load is not applied to the locking mechanism. When both ports A and B are exhausted and the piston is locked, if pressure is supplied to port A for forward locking or to port B for backward locking, the lock may not be released or, even if released, the piston rod may pop out, creating a hazard.

CAUTION

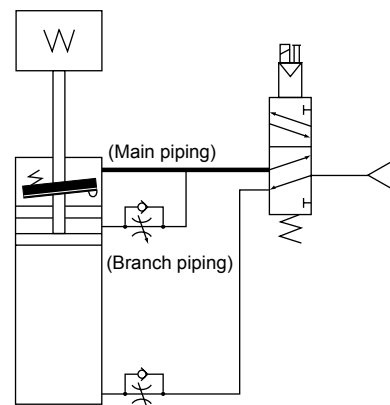
- Basic circuit diagram
Arrange the air piping of this cylinder as shown in the figure below. Arranging the pipes differently from the figure below, such as piping the position locking part as a single unit, may cause problems such as delayed response.
1. Be sure to branch the piping of this cylinder after the valve into the position locking part (lock release port as main piping) and cylinder part (cylinder port as branch piping) as shown in the figure below.
 2. Be sure to design the piping so that the lock is released before the cylinder starts operating. Failure to do so may prevent unlocking or cause the piston rod to jump out.



Forward locking (Downward load)



Backward locking (Upward load)



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

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
MechHnd/Chuk
ShkAbs
FJ
FK
SpdContr
Ending

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

Mounting, installation and adjustment

⚠ WARNING

- 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.
- Do not apply grease to the piston rod during operation because the locking force may decrease, creating a dangerous condition.

⚠ CAUTION

- Main piping in the basic circuit diagram on the previous page should be thicker and shorter than branch piping.
- Be sure to provide a guide separately when using multiple synchronized cylinders. Using only the cylinder may impair synchronicity and cause the rod to twist, leading to malfunctions.

Use/maintenance

⚠ WARNING

- Do not apply additional grease to the piston rod or wipe off the grease that is already applied.
- Do not disassemble the lock, as doing so may be dangerous.
- Always use the product with the dust cover on, except for when performing manual release, in order to prevent failure or malfunction.
- For safety purposes, prevent the load from falling under its own weight during maintenance.

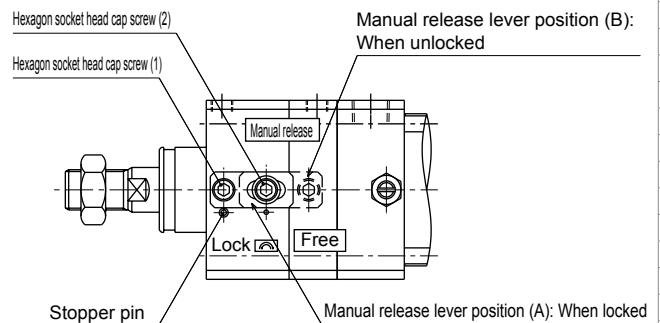
⚠ CAUTION

- When locking the first time after leaving the lock released for a long time, a delayed response may occur in the lock. Do not leave the lock pressurized, and operate the lock at each cylinder operation. (Use the basic circuit diagram shown on page 914)
- Keeping the cylinder with pressure applied to the lock mechanism may cause the lock to release. Do not use 3-position closed center and 3-position P.A.B connection solenoid valves.
- Due to the structure, the piston rod drops by about 1 mm when the lock is applied.
- If no air pressure is supplied in vertical mounting, etc., locking force may not be sufficient when the lock is manually released. This may cause the rod to move (drop) with the load's weight. For safety, take the following measures before manually releasing the lock:

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

- Be sure to set the manual release bolt to the locking position in normal use.

■ How to unlock manually



● Unlocking

- 1) Loosen the hexagon socket head cap screw (1) 3 or 4 turns.
- 2) Loosen the hexagon socket head cap screw (2) 1 or 2 turns.
- 3) Rotate the release lever by 180° from the manual release lever position (A) to (B) in the direction of the arrow.
- 4) The piston rod is freed.

● Locking

- 1) Rotate the release lever by 180° from the manual release lever position (B) to (A) in the direction of the arrow.
- 2) Tighten the hexagon socket head cap screw (1) where the release lever comes in contact with the stopper pin.
- 3) Tighten the hexagon socket head cap screw (2).
- 4) The piston rod is locked.

Note: Be sure to rotate the release lever in the direction of the arrow when manually unlocking. The release lever must not be removed. The release lever can be turned by loosening the hexagon socket head cap screw (2) by 1 or 2 turns. Excessive loosening may cause the release lever to come off. Tighten the hexagon socket head cap screw at 8 to 11 N·m.

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

