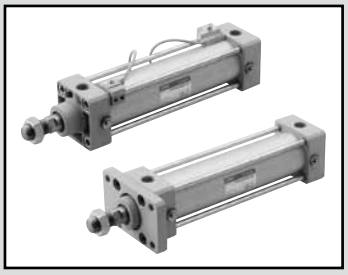
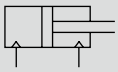


Medium bore size cylinder
Double acting/single rod/with switch

SCA2 Series

● Bore size: φ40/φ50/φ63/φ80/φ100

JIS symbol



RoHS CAD

Specifications

Descriptions		SCA2/SCA2-L2				
Bore size mm		φ40	φ50	φ63	φ80	φ100
Actuation		Double acting				
Working fluid		Compressed air				
Max. working pressure MPa		1.0 (≈150 psi, 10 bar)				
Min. working pressure MPa		0.05 (≈7.3 psi, 0.5 bar)				
Proof pressure MPa		1.6 (≈230 psi, 16 bar)				
Ambient temperature °C		-10 (14°F) to 60 (140°F) (no freezing)				
Port size		Rc1/4	Rc3/8		Rc1/2	
Stroke tolerance mm		$^{+0.9}_{0}$ (to 360), $^{+1.4}_{0}$ (to 800)				
Working piston speed mm/s		50 to 1000 (Operate within the allowable absorbed energy.)				
Cushion		Air cushion				
Effective air 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 absorbed energy J	Cushioned	4.29	8.37	15.8	27.9	49.8
	Without cushion	0.067	0.079	0.079	0.201	0.301
		Without any cushion, this product cannot absorb large energy generated by an external load. We recommend using an external shock absorber.				

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/ 150/200/250/ 300/350/400/ 450/500	600	1600	1
φ50			2000	
φ63			2500	
φ80		700		
φ100		800	*3	

*1 : The custom stroke length is available in 1 mm increments.
*2 : If max. stroke length is exceeded, product specifications may not be satisfied depending on the conditions. Refer to Ending Page 69.
*3 : The max. stroke length available for φ63 to φ100 bore size models with bellows is 2000 mm.

Min. stroke length with switch

● T0/T5 min. stroke with switches

	Different surface mounting				Same surface mounting				Center trunnion mounting				Rod side trunnion mounting No position detection at rod side stroke end.	Head side trunnion mounting No position detection at head side stroke end.
Switch quantity	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(105)	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 min. stroke with switch

	Different surface mounting				Same surface mounting				Center trunnion mounting				Rod side trunnion mounting No position detection at rod side stroke end.	Head side trunnion mounting No position detection at head side stroke end.
Switch quantity	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.

Min. stroke length with switch

● T2/T3 min. stroke with switches

	Different surface mounting				Same surface mounting				Center trunnion mounting				Rod side trunnion mounting No position detection at rod side stroke end.	Head side trunnion mounting No position detection at head side stroke end.
Switch quantity	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.

● T1/T2Y/T3Y/T2YD min. stroke with switches

	Different surface mounting				Same surface mounting				Center trunnion mounting				Rod side trunnion mounting No position detection at rod side stroke end.	Head side trunnion mounting No position detection at head side stroke end.
Switch quantity	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.

● T2W/T3W min. stroke with switches

	Different surface mounting				Same surface mounting				Center trunnion mounting				Rod side trunnion mounting No position detection at rod side stroke end.	Head side trunnion mounting No position detection at head side stroke end.
Switch quantity	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.

Switch specifications (T 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	Programming controller relay, compact solenoid valve	Dedicated for programmable controller			For programmable controller, relay				For programmable controller, relay		For programmable controller, relay (no lamp), serial		For programmable controller, relay			Dedicated 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	110 VAC	5/12/24 VDC	110 VAC	12/24 VDC	110 VAC	220 VAC	24 VDC ±10%
Load current	5 to 100 mA	5 to 20 mA (*3)			100 mA or less		50 mA or less		5 to 50 mA	7 to 20 mA	50 mA or less	20 mA or less	5 to 50 mA	7 to 20 mA	7 to 10 mA	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 3 m:87 5 m:142	1 m:18 3 m:49 5 m:80	1 m:33 3 m:87 5 m:142	1 m:18 3 m:49 5 m:80	1 m:18 3 m:49 5 m:80		1 m:33 3 m:87 5 m:142	1 m:18 3 m:49 5 m:80	1 m:18 3 m:49 5 m:80				1 m:33 3 m:87 5 m:142			1 m:61 3 m:166 5 m:272

*1 : The T0/T5 switch can also be used with 220 VAC. Contact CKD about working conditions.
*2 : Refer to Ending Page 1 for other switch specifications.
*3 : The above max. load current is 20 mA at 25°C. The current will be lower than 20 mA when operating ambient temperature around the switch is higher than 25°C. (5 to 10 mA at 60°C)
*4 : Switch for AC magnetic field (T2YD) cannot be used in DC magnetic field.
*5 : Dimensions depend on switch model No. Refer to Ending Page 18 for details.

Switch specifications (H 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 5 to 50 mA	110 VAC 7 to 20 mA	24 VDC 5 to 20 mA
Indicator lamp	Green LED lit when ON		Red/green LED - Lit when ON
Leakage current	10 μA or less		
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 of 20 mA 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

(Unit: kg)

Bore size (mm)	Product weight when stroke length (S) = 0 mm							Switch weight	Mounting bracket weight		Added weight/ S = 100 mm
	Basic (00)	Foot (LB)	Flange (FA, FB)	Special flange (FC)	Eye bracket (CA)	Clevis bracket (CB)	Trunnion (TA, TB, TC)		T type	H type	
φ40	0.83	1.00	1.24	0.92	1.15	1.19	1.21	Refer to the weight in the switch specifications.	0.024	0.028	0.39
φ50	1.20	1.45	1.69	1.31	1.58	1.61	1.74		0.022	0.026	0.46
φ63	1.60	1.97	2.69	1.78	2.17	2.22	2.45		0.020	0.024	0.50
φ80	2.60	3.34	4.46	2.96	3.87	4.08	3.94		0.026	0.029	0.90
φ100	4.20	5.11	6.94	4.75	5.84	6.02	6.77		0.024	0.028	1.12

(Example) Product weight of SCA2-LB-50B-200-TOH-D

- Product weight for 0 mm stroke length ····· 1.45 kg
- Additional weight for 200 mm stroke length ···· $0.46 \times \frac{200}{100} = 0.92$ kg
- Weight of 2 TOH switches ····· 0.018 x 2 = 0.036 kg
- Weight of 2 mounting brackets ····· 0.022 x 2 = 0.044 kg
- Product weight ····· 1.45 + 0.92 + 0.036 + 0.044 = 2.450 kg

Oil-prohibited specifications

(Ending Page 134)

● Grease splash prevented

SCA2-.....- **P12**

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

How to order

Without switch (built-in magnet for switch)

SCA2 — LB - 40 ○ B - 100 — S I

With switch (built-in magnet for switch)

SCA2 — LB - 40 ○ B - 100 — T0H - R - S I

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

SCA2-L2 - LB - 40 ○ B - 100 - H0Y - R - S I

Ⓐ Mounting *1

Ⓑ Bore size

Ⓒ Port thread

Ⓓ Cushion

Ⓔ Stroke length *2 *3

Ⓕ Switch model No. *4

Ⓖ Switch quantity *6

Ⓗ Option *7

Ⓘ Accessory *8

Code	Content
Ⓐ 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
TF	Intermediate supporting hole trunnion (φ40 is not available)
TD	Rod side hole trunnion (φ40 is not available)
TE	Head side hole trunnion (φ40 is not available)

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

Ⓒ Port thread	
Blank	Rc thread
N	NPT thread (custom order product)
G	G thread (custom order product)

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

Ⓔ Stroke length (mm)

Bore size	Stroke *4	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**	

Ⓕ Switch model No.

Refer to the switch model No. table on the following page.

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

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

Ⓗ 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		

Ⓘ Accessory	
I	Rod eye
Y	Rod clevis (pin and snap ring attached)
B1	Eye bracket
B2	Clevis bracket (pin and snap ring attached)
B3	Eye bracket
B4	Trunnion No. 2 bracket (2 pcs./set)

⚠ Precautions for model No. selection

*1 : Mounting bracket will be shipped with the product. (Trunnion are assembled at shipment.)
*2 : If the stroke exceeds the max. stroke length, refer to Ending Page 69.
*3 : The max. stroke length available for φ63 to φ100 bore size models with bellows is 2000 mm.
*4 : Switches are shipped with the product.
*5 : Refer to page 434 for the min. stroke length with switch.
*6 : When selecting TA or TB as mounting, the number of switches is limited to "H" (1 on head side) for TA, and "R" (1 on rod side) for TB.
*7 : The max. available stroke length is 2000 mm for models with bellows. (φ63 to φ100) The instantaneous max. temperature is the temperature when sparks and cutting chips, etc., instantaneously contact the bellows.
*8 : "I" and "Y" cannot be selected together.
*9 : Refer to Ending Page 85 for custom specifications of rod end form.
*10 : Refer to page 432 for combinations of variations/options.

[Example of model No.]

SCA2-LB-40B-100-T0H-R-SI

Model: Medium bore size cylinder, double acting/single rod

Ⓐ Mounting : Axial foot
Ⓑ Bore size : φ40 mm
Ⓒ Port thread : Rc thread
Ⓓ Cushion : Both sides cushioned
Ⓔ Stroke length :100 mm
Ⓕ Switch model No. : Reed T0H switch, lead wire length 1 m
Ⓖ Switch quantity : 1 on rod side
Ⓗ Option : Cushion needle position S
Ⓘ Accessory : Rod eye

[F] Switch model No.

Lead wire Straight	Lead wire L-shaped	Contact	Voltage AC	Voltage DC	Display	Lead wire
T switch model No.						
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*			●		3-wire
T2WH*	T2WV*			●	2-color display	2-wire
T2YH*	T2YV*			●		
T3WH*	T3WV*			●		3-wire
T3YH*	T3YV*			●		
T3PH*	T3PV*			●	1-color display (custom order)	3-wire
T2YD*	-			●	2-color display AC magnetic field	2-wire
T2YDT*	-			●		
T2JH*	T2JV*			●	1-color display off-delay	2-wire
H switch model No.						
HO*	-	Reed	●	●	Strong magnetic field proof	2-wire
HOY*	-			●	Strong magnetic field, 2-color display	

How to order switch

[T switch]

● Switch body + mounting bracket set

SCA2 - T0H - 40

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

● Switch body only

SW - T0H

Switch model No. (Item Ⓕ)

* Contact CKD when using an environment-friendly T switch.

● Switch mounting bracket set

SCA2 - TS - 40

Mounting bracket
Bore size (Item Ⓑ on the previous page)

[H switch]

● Switch body + mounting bracket set

SCA2-L2 - H0 - 40

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

● Switch body only

SW - H0

Switch model No. (Item Ⓕ)

● Mounting bracket set

SCA2-L2 - H - 40

Bore size (Item Ⓑ on the previous page)

[T2YD switch]

● Switch body + mounting bracket set

SCA2 - T2YD - 40

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

● Switch body only

SW - T2YD

Switch model No. (Item Ⓕ)

● Mounting bracket set

SCA2 - T - 40

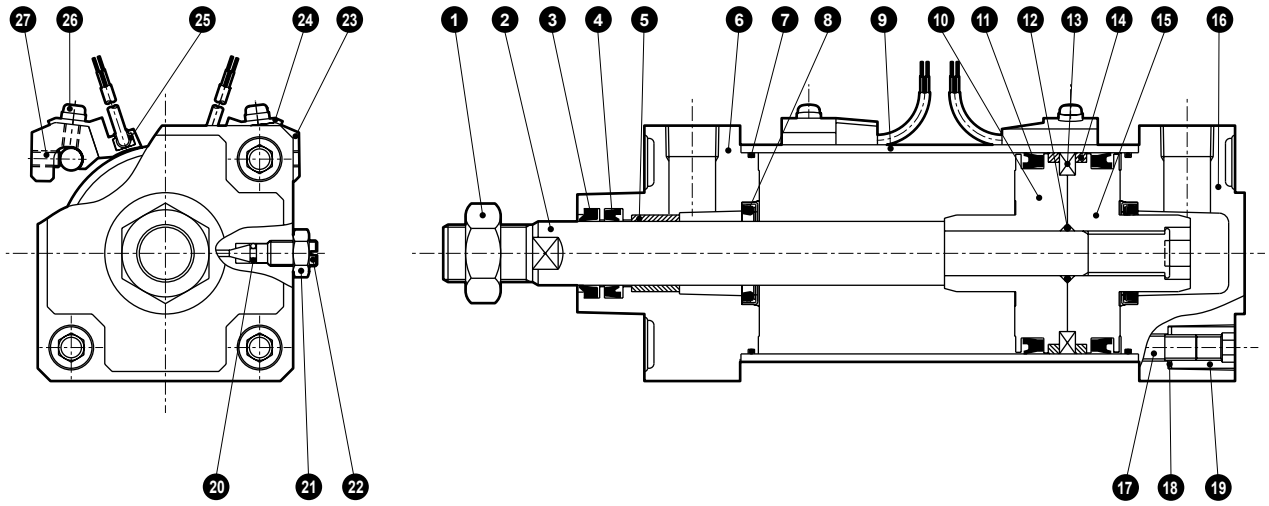
Bore size (Item Ⓑ on the previous page)

How to order mounting bracket

Bore size (mm) / Mounting bracket	φ40	φ50	φ63	φ80	φ100
Foot (LB) *2	S1-LB-40	S1-LB-50	S1-LB-63	S1-LB-80	S1-LB-100
Flange (FA/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

*1 : For material of the mounting bracket, refer to page 440.
*2 : The foot mounting bracket is provided as 2 pcs./set.
*3 : All mounting brackets are supplied with mounting bolts.

Internal structure and parts list



No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
1	Rod nut	Steel	Zinc chromate	15	Piston H	Aluminum alloy die-casting	
2	Piston rod	Steel	Industrial chrome plating	16	Head cover	Aluminum alloy die-casting	Paint
3	Dust wiper	Nitrile rubber		17	Tie rod	Steel	Zinc chromate
4	Rod packing	Nitrile rubber		18	Conical spring washer	Steel	Black finish
5	Bush	Oil impregnated bearing alloy	*1	19	Round nut	Steel	Zinc chromate
6	Rod cover	Aluminum alloy die-casting	Paint	20	Needle gasket	Nitrile rubber	
7	Cylinder gasket	Nitrile rubber		21	Needle nut	Copper alloy	Nickel plating *2
8	Cushion packing	Nitrile rubber, steel		22	Cushion needle	Copper alloy	Nickel plating *2
9	Cylinder tube	Aluminum alloy	Hard alumite treatment	With switch			
10	Piston R	Aluminum alloy die-casting		23	Switch mounting base	Aluminum alloy	
11	Piston packing	Nitrile rubber		24	Switch holder	Aluminum alloy	
12	Piston gasket	Nitrile rubber		25	Cylinder switch		
13	Magnet	Plastic		26	Philips pan head machine screw/captive washer	Steel	Zinc chromate
14	Wear ring	Polyacetal resin		27	Hexagon socket set screw	Alloy steel	Black finish

*1: Oil-impregnated cast iron bearing for copper and PTFE free. *2: Steel + galvanizing for copper and PTFE free.

Repair parts list

Bore size (mm)	Kit No.	Repair parts No.
φ40	SCA2-40K	③ ④ ⑦ ⑧ ⑪ ⑭ ⑳
φ50	SCA2-50K	
φ63	SCA2-63K	
φ80	SCA2-80K	
φ100	SCA2-100K	

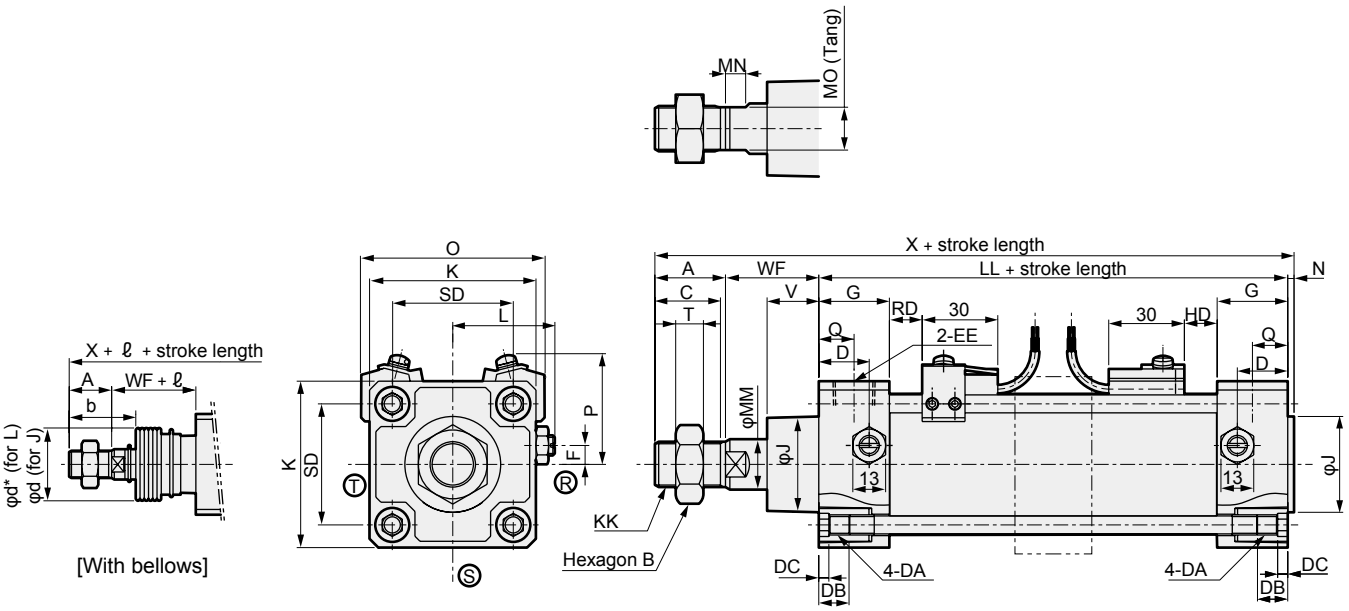
Note: Specify the kit No. when placing an order.

Material of mounting bracket

Mounting	Material	Remarks
LB	Steel	Paint
FA/FB/FC	Steel	Paint
CA/CB	Cast iron	Paint
TC/TA/TB	Cast iron	Paint

Dimensions CAD

● Basic (00)



RD: Rod side max. sensitivity position
HD: Head side max. sensitivity position

Code	Basic (00) basic dimensions																	
Bore size (mm)	A	B	C	D	DA	DB	DC	EE	F	G	J	K	KK	L	LL	MM	MN	MO
φ40	22	22	20	18	M8	12	4	Rc1/4	7.5	26	31	57	M14 × 1.5	38 to 39.5	93	16	8	14
φ50	28	27	26	20	M8	12	4	Rc3/8	0	28	38	66	M18 × 1.5	41 to 43.5	101	20	8	17
φ63	28	27	26	22	M8	12	4	Rc3/8	0	30	38	80	M18 × 1.5	47.5 to 50.0	105	20	8	17
φ80	36	32	34	26	M12	16	5	Rc1/2	0	34	43	98	M22 × 1.5	56 to 59	116	25	11	22
φ100	45	41	43	28	M12	16	5	Rc1/2	0	36	51	118	M26 × 1.5	66 to 69	128	30	13	27

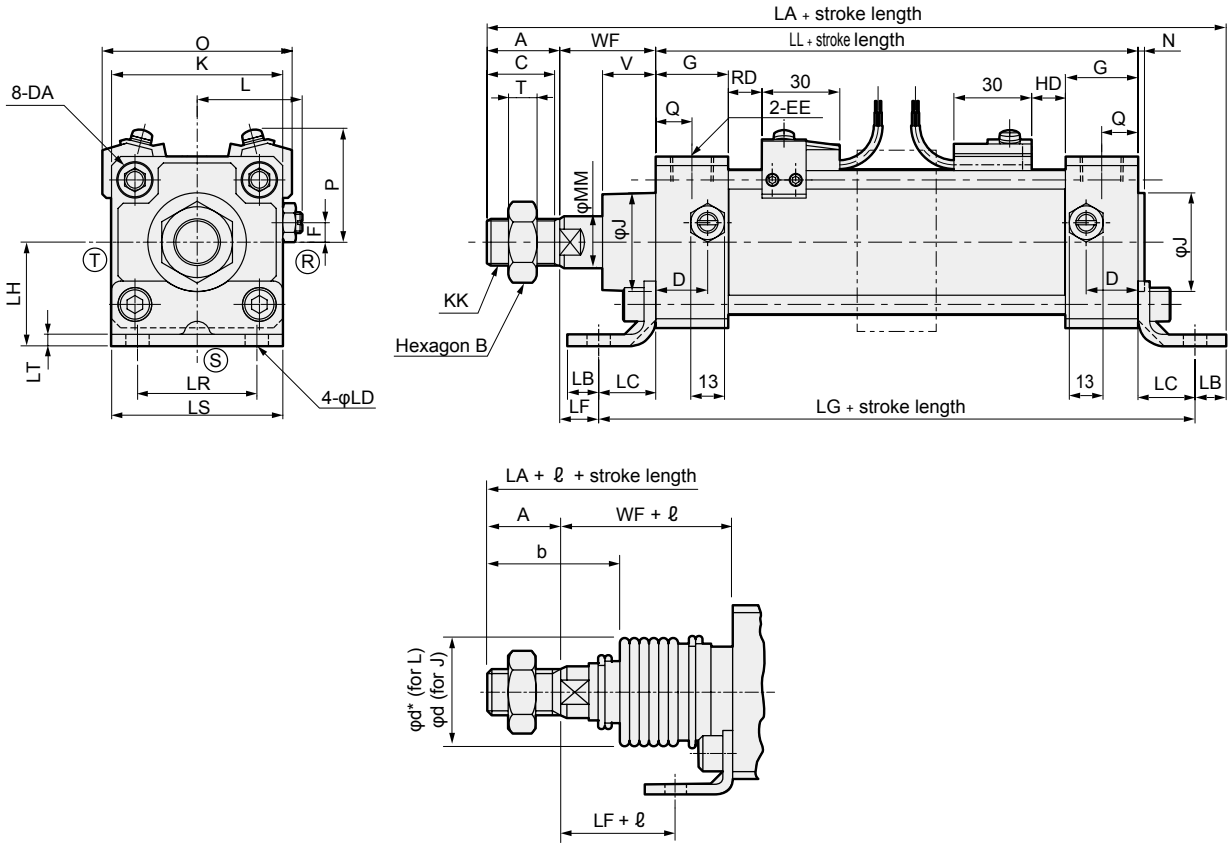
Code								With bellows								
Bore size (mm)	N	Q	SD	T	V	WF	X	b	d	d*	ℓ 50 or less	ℓ Over 50 to 100	ℓ Over 100 to 150 or less	ℓ Over 150 to 200 or less	ℓ Over 200 to 300	ℓ Over 300 to 400
φ40	2	13	40.5	8	18.5	33.5	150.5	41	40	40	25.5	41.5	58.5	75.5	108.5	141.5
φ50	2.5	14	48	11	20.5	37	168.5	47	47	48	22	36	49	63	90	119
φ63	3	15	59	11	21	35	171	45	47	48	22	36	49	63	90	119
φ80	3.5	17	74	13	23.5	48	203.5	58.5	53	55	14	26	38	49	72	96
φ100	4	18	90	16	32	53	230	69.5	61	65	20	32	42	53	76	98

Code			With switch									
Bore size (mm)	Over 400 to 500	*1 Over 500	O	P	T0, T5 T2, T3 RD	T0, T5 T2, T3 HD	T1, T2Y T3Y, T2J RD	T1, T2Y T3Y, T2J HD	T8 RD	T8 HD	T2W, T3W RD	T2W, T3W HD
φ40	174.5	(Stroke length/3.0) + 8	66	41.5	11	11	10	10	5	5	13	13
φ50	146	(Stroke length/3.6) + 7.5	73	43	13	13	12	12	7	7	15	15
φ63	146	(Stroke length/3.6) + 7.5	85	47	13	13	12	12	7	7	15	15
φ80	119	(Stroke length/4.3) + 2.5	105	57	14.5	14.5	13.5	13.5	8.5	8.5	16.5	16.5
φ100	120	(Stroke length/4.5) + 9	121	63	18.5	18.5	17.5	17.5	12.5	12.5	20.5	20.5

*1 : For the ℓ dimension, round up below the decimal point.
*2 : Ⓡ, Ⓢ and Ⓣ indicate the cushion needle position.
*3 : Refer to page 599 for dimensions of projection of T2YD and HO switches.
*4 : For the dimensions of the accessories, refer to pages 454 and 455.
*5 : Non-sag block (2-dashed line) will be added depending on the stroke length. Refer to page 598 for details on dimensions.

Dimensions CAD

● Axial foot (LB)



[With bellows]

Code	Axial foot (LB) basic dimensions																		
Bore size (mm)	A	B	C	D	DA	EE	F	G	J	K	KK	L	LL	MM	N	Q	T	V	WF
φ40	22	22	20	18	M8	Rc1/4	7.5	26	31	57	M14 × 1.5	38 to 39.5	93	16	2	13	8	18.5	33.5
φ50	28	27	26	20	M8	Rc3/8	0	28	38	66	M18 × 1.5	41 to 43.5	101	20	2.5	14	11	20.5	37
φ63	28	27	26	22	M8	Rc3/8	0	30	38	80	M18 × 1.5	47.5 to 50.0	105	20	3	15	11	21	35
φ80	36	32	34	26	M12	Rc1/2	0	34	43	98	M22 × 1.5	56 to 59	116	25	3.5	17	13	23.5	48
φ100	45	41	43	28	M12	Rc1/2	0	36	51	118	M26 × 1.5	66 to 69	128	30	4	18	16	32	53

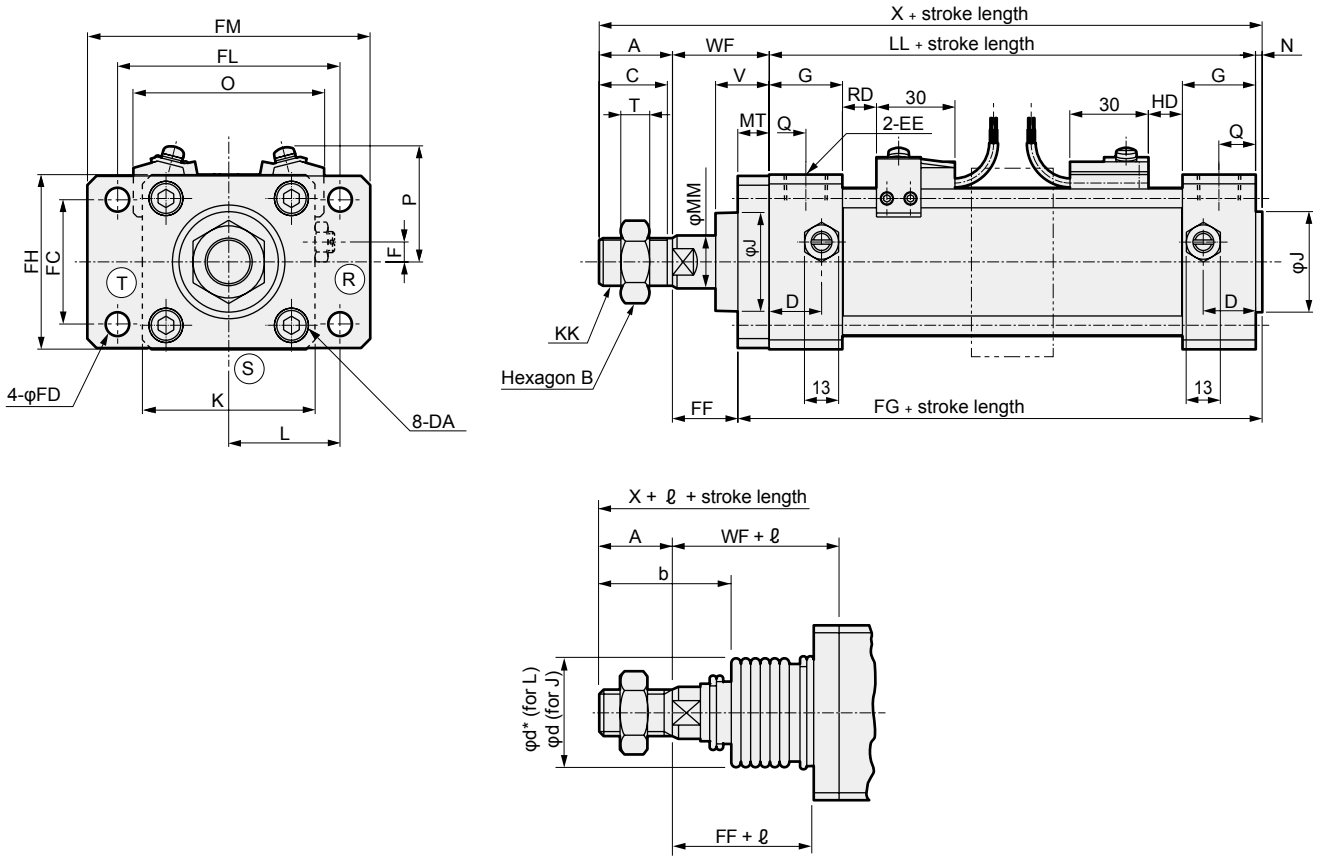
Code	Mounting dimensions										With bellows							
Bore size (mm)	LA	LB	LC	LD	LF	LG	LH	LR	LS	LT	b	d	d*	ℓ 50 or less	ℓ Over 50 to 100	ℓ Over 100 to 150	ℓ Over 150 to 200	ℓ Over 200 to 300
φ40	178	10	19.5	9	14	132	40	40	57	3.2	41	40	40	25.5	41.5	58.5	75.5	108.5
φ50	200	12	22	9	15	145	40	46	66	4.5	47	47	48	22	36	49	63	90
φ63	210	12	30	11	5	165	50	60	80	4.5	45	47	48	22	36	49	63	90
φ80	251	14	37	14	11	190	60	74	98	6.0	58.5	53	55	14	26	38	49	72
φ100	278	21	31	14	22	190	67	80	118	6.0	69.5	61	65	20	32	42	53	76

Code				With switch									
Bore size (mm)	Over 300 to 400	Over 400 to 500	*1 Over 500	O	P	T0, T5 T2, T3 RD	T0, T5 T2, T3 HD	T1, T2Y T3Y, T2J RD	T1, T2Y T3Y, T2J HD	T8 RD	T8 HD	T2W, T3W RD	T2W, T3W HD
φ40	141.5	174.5	(Stroke length/3.0) + 8	66	41.5	11	11	10	10	5	5	13	13
φ50	119	146	(Stroke length/3.6) + 7.5	73	43	13	13	12	12	7	7	15	15
φ63	119	146	(Stroke length/3.6) + 7.5	85	47	13	13	12	12	7	7	15	15
φ80	96	119	(Stroke length/4.3) + 2.5	105	57	14.5	14.5	13.5	13.5	8.5	8.5	16.5	16.5
φ100	98	120	(Stroke length/4.5) + 9	121	63	18.5	18.5	17.5	17.5	12.5	12.5	20.5	20.5

*1 : For the ℓ dimension, round up below the decimal point.
*2 : Ⓡ, Ⓢ and Ⓣ indicate the cushion needle position.
*3 : Refer to page 599 for dimensions of projection of T2YD and HO switches.
*4 : For the dimensions of the accessories, refer to pages 454 and 455.
*5 : Non-sag block (2-dashed line) will be added depending on the stroke length. Refer to page 598 for details on dimensions.

Dimensions

● Rod side flange (FA)



[With bellows]

Code	Rod side flange (FA) basic dimensions																			
Bore size (mm)	A	B	C	D	DA	EE	F	G	J	K	KK	L	LL	MM	N	Q	T	V	WF	X
φ40	22	22	20	18	M8	Rc1/4	7.5	26	31	57	M14 × 1.5	38 to 39.5	93	16	2	13	8	18.5	33.5	150.5
φ50	28	27	26	20	M8	Rc3/8	0	28	38	66	M18 × 1.5	41 to 43.5	101	20	2.5	14	11	20.5	37	168.5
φ63	28	27	26	22	M8	Rc3/8	0	30	38	80	M18 × 1.5	47.5 to 50.0	105	20	3	15	11	21	35	171
φ80	36	32	34	26	M12	Rc1/2	0	34	43	98	M22 × 1.5	56 to 59	116	25	3.5	17	13	23.5	48	203.5
φ100	45	41	43	28	M12	Rc1/2	0	36	51	118	M26 × 1.5	66 to 69	128	30	4	18	16	32	53	230

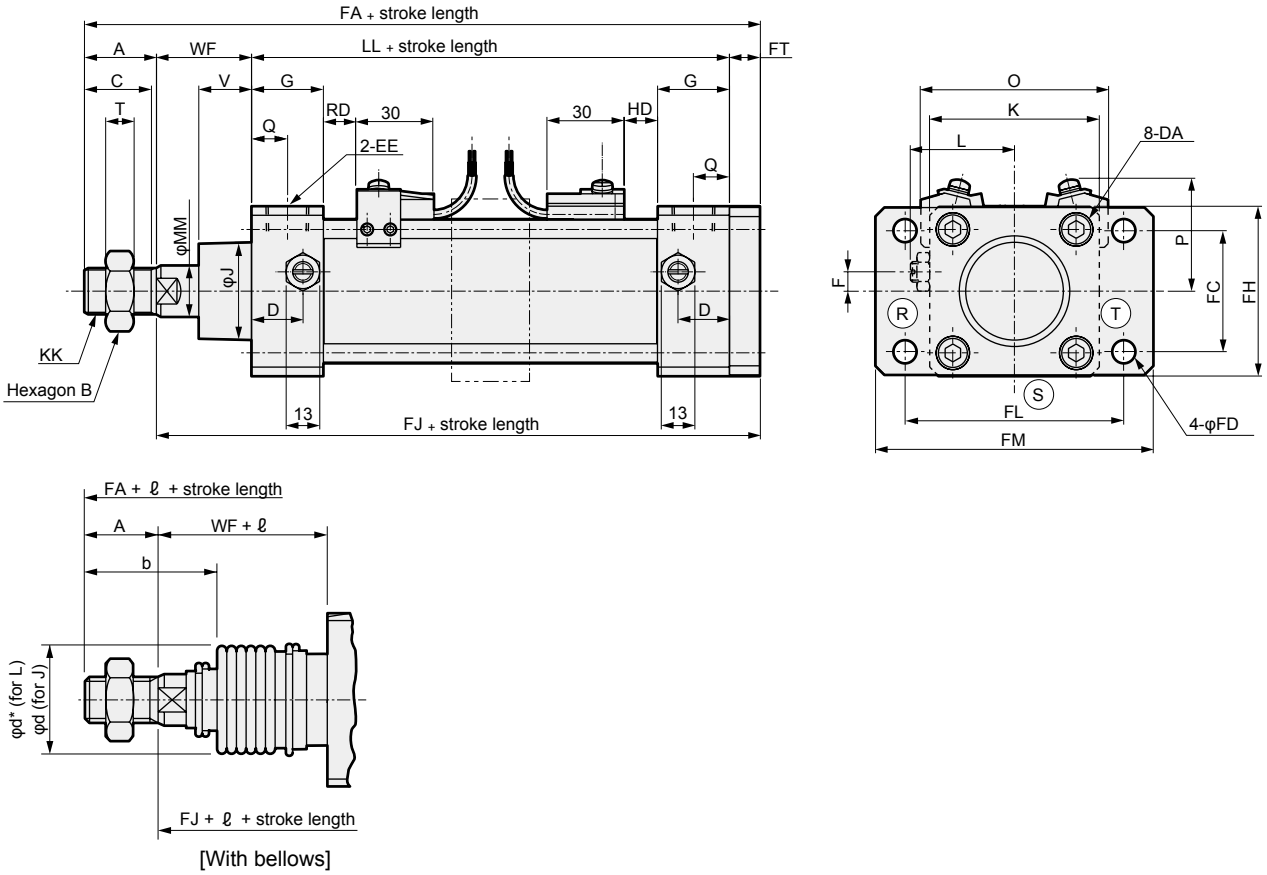
Code	Mounting dimensions								With bellows									
												ℓ						
Bore size (mm)	FC	FD	FF	FG	MT	FH	FL	FM	b	d	d*	50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 300	Over 300 to 400	Over 400 to 500
φ40	40	9	21.5	107	12	57	80	100	41	40	40	25.5	41.5	58.5	75.5	108.5	141.5	174.5
φ50	47	9	25	115.5	12	65	85	108	47	47	48	22	36	49	63	90	119	146
φ63	60	11	19	124	16	80	106	130	45	47	48	22	36	49	63	90	119	146
φ80	74	14	29	138.5	19	98	125	153	58.5	53	55	14	26	38	49	72	96	119
φ100	88	14	34	151	19	118	144	180	69.5	61	65	20	32	42	53	76	98	120

Code		With switch									
				T0, T5 T2, T3		T1, T2Y T3Y, T2J		T8		T2W, T3W	
Bore size (mm)	*1 Over 500	O	P	RD	HD	RD	HD	RD	HD	RD	HD
φ40	(Stroke length/3.0) + 8	66	41.5	11	11	10	10	5	5	13	13
φ50	(Stroke length/3.6) + 7.5	73	43	13	13	12	12	7	7	15	15
φ63	(Stroke length/3.6) + 7.5	85	47	13	13	12	12	7	7	15	15
φ80	(Stroke length/4.3) + 2.5	105	57	14.5	14.5	13.5	13.5	8.5	8.5	16.5	16.5
φ100	(Stroke length/4.5) + 9	121	63	18.5	18.5	17.5	17.5	12.5	12.5	20.5	20.5

*1 : For the ℓ dimension, round up below the decimal point.
*2 : Ⓡ, Ⓢ and Ⓣ indicate the cushion needle position.
*3 : Refer to page 599 for dimensions of projection of T2YD and HO switches.
*4 : For the dimensions of the accessories, refer to pages 454 and 455.
*5 : Non-sag block (2-dashed line) will be added depending on the stroke length. Refer to page 598 for details on dimensions.

Dimensions CAD

● Head side flange (FB)



[With bellows]

Code	Head side flange (FB) basic dimensions																	
Bore size (mm)	A	B	C	D	DA	EE	F	G	J	K	KK	L	LL	MM	Q	T	V	WF
φ40	22	22	20	18	M8	Rc1/4	7.5	26	31	57	M14 × 1.5	38 to 39.5	93	16	13	8	18.5	33.5
φ50	28	27	26	20	M8	Rc3/8	0	28	38	66	M18 × 1.5	41 to 43.5	101	20	14	11	20.5	37
φ63	28	27	26	22	M8	Rc3/8	0	30	38	80	M18 × 1.5	47.5 to 50.0	105	20	15	11	21	35
φ80	36	32	34	26	M12	Rc1/2	0	34	43	98	M22 × 1.5	56 to 59	116	25	17	13	23.5	48
φ100	45	41	43	28	M12	Rc1/2	0	36	51	118	M26 × 1.5	66 to 69	128	30	18	16	32	53

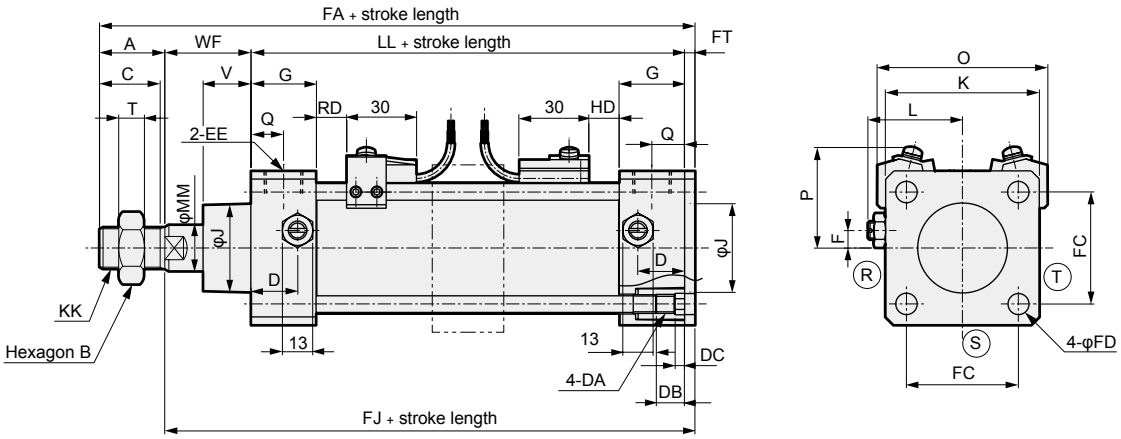
Code	Mounting dimensions								With bellows							
												ℓ				
Bore size (mm)	FA	FC	FD	FH	FJ	FL	FM	FT	b	d	d*	50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 300	Over 300 to 400
φ40	160.5	40	9	57	138.5	80	100	12	41	40	40	25.5	41.5	58.5	75.5	108.5	141.5
φ50	178	47	9	65	150	85	108	12	47	47	48	22	36	49	63	90	119
φ63	184	60	11	80	156	106	130	16	45	47	48	22	36	49	63	90	119
φ80	219	74	14	98	183	125	153	19	58.5	53	55	14	26	38	49	72	96
φ100	245	88	14	118	200	144	180	19	69.5	61	65	20	32	42	53	76	98

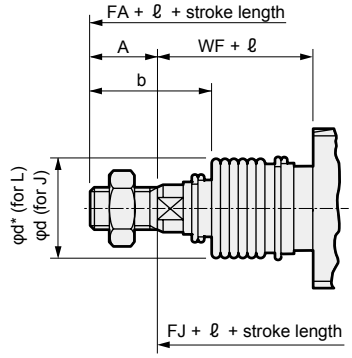
Code			With switch									
					T0, T5 T2, T3		T1, T2Y T3Y, T2J		T8		T2W, T3W	
Bore size (mm)	Over 400 to 500	*1 Over 500	O	P	RD	HD	RD	HD	RD	HD	RD	HD
φ40	174.5	(Stroke length/3.0) + 8	66	41.5	11	11	10	10	5	5	13	13
φ50	146	(Stroke length/3.6) + 7.5	73	43	13	13	12	12	7	7	15	15
φ63	146	(Stroke length/3.6) + 7.5	85	47	13	13	12	12	7	7	15	15
φ80	119	(Stroke length/4.3) + 2.5	105	57	14.5	14.5	13.5	13.5	8.5	8.5	16.5	16.5
φ100	120	(Stroke length/4.5) + 9	121	63	18.5	18.5	17.5	17.5	12.5	12.5	20.5	20.5

*1 : For the ℓ dimension, round up below the decimal point.
*2 : Ⓡ, Ⓢ and Ⓣ indicate the cushion needle position.
*3 : Refer to page 599 for dimensions of projection of T2YD and HO switches.
*4 : For the dimensions of the accessories, refer to pages 454 and 455.
*5 : Non-sag block (2-dashed line) will be added depending on the stroke length. Refer to page 598 for details on dimensions.

Dimensions

● Head side special flange (FC)





[With bellows]

Code	Head side flange (FC) basic dimensions																	
Bore size (mm)	A	B	C	D	DA	DB	DC	EE	F	G	J	K	KK	L	LL	MM	Q	T
φ40	22	22	20	18	M8	12	4	Rc1/4	7.5	26	31	57	M14 × 1.5	38 to 39.5	93	16	13	8
φ50	28	27	26	20	M8	12	4	Rc3/8	0	28	38	66	M18 × 1.5	41 to 43.5	101	20	14	11
φ63	28	27	26	22	M8	12	4	Rc3/8	0	30	38	80	M18 × 1.5	47.5 to 50.0	105	20	15	11
φ80	36	32	34	26	M12	16	5	Rc1/2	0	34	43	98	M22 × 1.5	56 to 59	116	25	17	13
φ100	45	41	43	28	M12	16	5	Rc1/2	0	36	51	118	M26 × 1.5	66 to 69	128	30	18	16

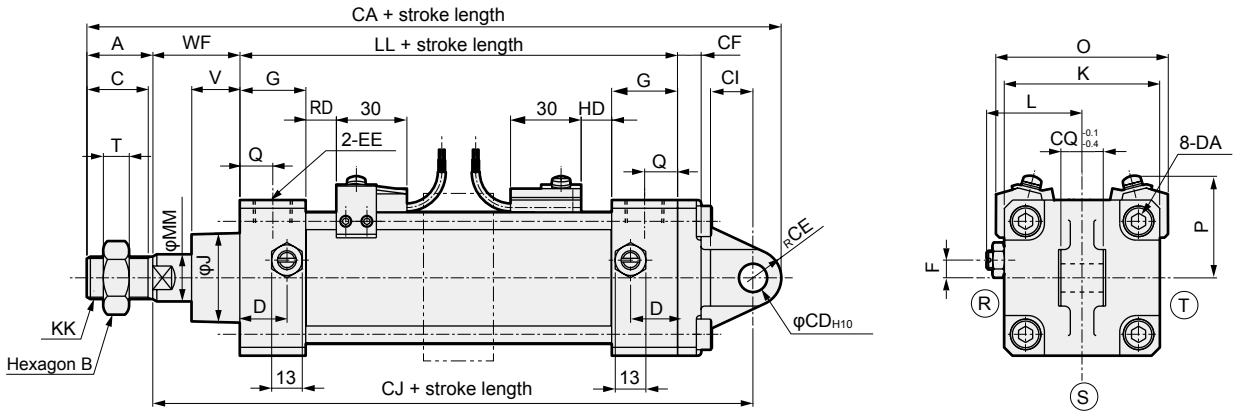
Code			Mounting method					With bellows									
											ℓ						
Bore size (mm)	V	WF	FA	FC	FD	FJ	FT	b	d	d*	50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 300	Over 300 to 400	Over 400 to 500
φ40	18.5	33.5	153	40.5	9	131	4.5	41	40	40	25.5	41.5	58.5	75.5	108.5	141.5	174.5
φ50	20.5	37	170.5	48	9	142.5	4.5	47	47	48	22	36	49	63	90	119	146
φ63	21	35	172.5	59	9	144.5	4.5	45	47	48	22	36	49	63	90	119	146
φ80	23.5	48	206	74	14	170	6	58.5	53	55	14	26	38	49	72	96	119
φ100	32	53	232	90	14	187	6	69.5	61	65	20	32	42	53	76	98	120

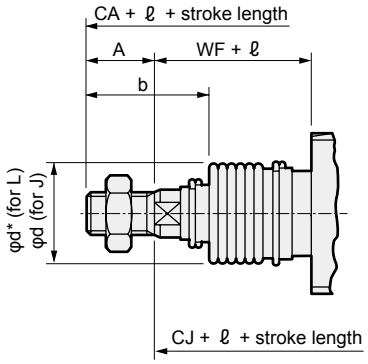
Code		With switch									
Bore size (mm)	*1 Over 500	O	P	T0, T5 T2, T3		T1, T2Y T3Y, T2J		T8		T2W, T3W	
				RD	HD	RD	HD	RD	HD	RD	HD
φ40	(Stroke length/3.0) + 8	66	41.5	11	11	10	10	5	5	13	13
φ50	(Stroke length/3.6) + 7.5	73	43	13	13	12	12	7	7	15	15
φ63	(Stroke length/3.6) + 7.5	85	47	13	13	12	12	7	7	15	15
φ80	(Stroke length/4.3) + 2.5	105	57	14.5	14.5	13.5	13.5	8.5	8.5	16.5	16.5
φ100	(Stroke length/4.5) + 9	121	63	18.5	18.5	17.5	17.5	12.5	12.5	20.5	20.5

*1 : For the ℓ dimension, round up below the decimal point.
*2 : Ⓡ, Ⓢ and Ⓣ indicate the cushion needle position.
*3 : Refer to page 599 for dimensions of projection of T2YD and HO switches.
*4 : For the dimensions of the accessories, refer to pages 454 and 455.
*5 : Non-sag block (2-dashed line) will be added depending on the stroke length. Refer to page 598 for details on dimensions.

Dimensions CAD

● Eye bracket (CA)





[With bellows]

Code	Eye bracket (CA) basic dimensions																	
Bore size (mm)	A	B	C	D	DA	EE	F	G	J	K	KK	L	LL	MM	Q	T	V	WF
φ40	22	22	20	18	M8	Rc1/4	7.5	26	31	57	M14 × 1.5	38 to 39.5	93	16	13	8	18.5	33.5
φ50	28	27	26	20	M8	Rc3/8	0	28	38	66	M18 × 1.5	41 to 43.5	101	20	14	11	20.5	37
φ63	28	27	26	22	M8	Rc3/8	0	30	38	80	M18 × 1.5	47.5 to 50.0	105	20	15	11	21	35
φ80	36	32	34	26	M12	Rc1/2	0	34	43	98	M22 × 1.5	56 to 59	116	25	17	13	23.5	48
φ100	45	41	43	28	M12	Rc1/2	0	36	51	118	M26 × 1.5	66 to 69	128	30	18	16	32	53

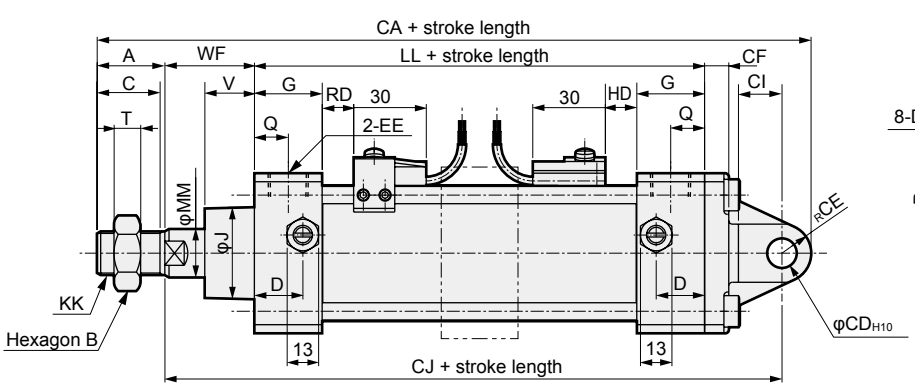
Code	Mounting dimensions							With bellows									
											ℓ						
Bore size (mm)	CA	CD	CE	CF	CI	CJ	CQ	b	d	d*	50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 300	Over 300 to 400	Over 400 to 500
φ40	192.5	12	12	10	18	158.5	18	41	40	40	25.5	41.5	58.5	75.5	108.5	141.5	174.5
φ50	210	12	12	10	18	170	18	47	47	48	22	36	49	63	90	119	146
φ63	221	14	16	10	24	177	20	45	47	48	22	36	49	63	90	119	146
φ80	272	20	20	14	30	216	28	58.5	53	55	14	26	38	49	72	96	119
φ100	298	20	20	16	30	233	28	69.5	61	65	20	32	42	53	76	98	120

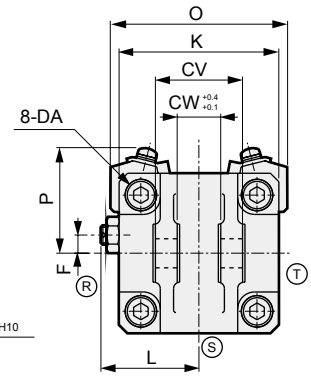
Code		With switch									
				T0, T5 T2, T3		T1, T2Y T3Y, T2J		T8		T2W, T3W	
Bore size (mm)	*1 Over 500	O	P	RD	HD	RD	HD	RD	HD	RD	HD
φ40	(Stroke length/3.0) + 8	66	41.5	11	11	10	10	5	5	13	13
φ50	(Stroke length/3.6) + 7.5	73	43	13	13	12	12	7	7	15	15
φ63	(Stroke length/3.6) + 7.5	85	47	13	13	12	12	7	7	15	15
φ80	(Stroke length/4.3) + 2.5	105	57	14.5	14.5	13.5	13.5	8.5	8.5	16.5	16.5
φ100	(Stroke length/4.5) + 9	121	63	18.5	18.5	17.5	17.5	12.5	12.5	20.5	20.5

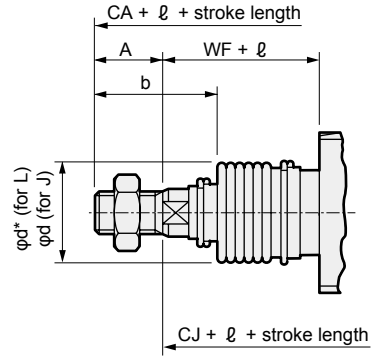
*1 : For the ℓ dimension, round up below the decimal point.
*2 : Ⓡ, Ⓢ and Ⓣ indicate the cushion needle position.
*3 : Refer to page 599 for dimensions of projection of T2YD and HO switches.
*4 : For the dimensions of the accessories, refer to pages 454 and 455.
*5 : Non-sag block (2-dashed line) will be added depending on the stroke length. Refer to page 598 for details on dimensions.

Dimensions

● Clevis bracket (CB)







[With bellows]

Code	Clevis bracket (CB) basic dimensions																	
Bore size (mm)	A	B	C	D	DA	EE	F	G	J	K	KK	L	LL	MM	Q	T	V	WF
φ40	22	22	20	18	M8	Rc1/4	7.5	26	31	57	M14 × 1.5	38 to 39.5	93	16	13	8	18.5	33.5
φ50	28	27	26	20	M8	Rc3/8	0	28	38	66	M18 × 1.5	41 to 43.5	101	20	14	11	20.5	37
φ63	28	27	26	22	M8	Rc3/8	0	30	38	80	M18 × 1.5	47.5 to 50.0	105	20	15	11	21	35
φ80	36	32	34	26	M12	Rc1/2	0	34	43	98	M22 × 1.5	56 to 59	116	25	17	13	23.5	48
φ100	45	41	43	28	M12	Rc1/2	0	36	51	118	M26 × 1.5	66 to 69	128	30	18	16	32	53

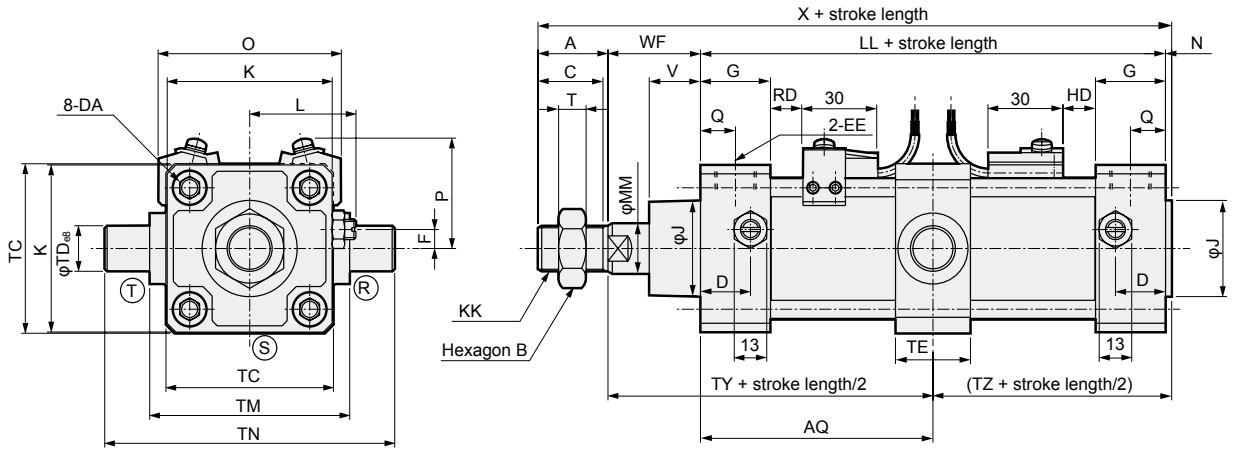
Code	Mounting dimensions								With bellows								
												ℓ					
Bore size (mm)	CA	CD	CE	CF	CI	CJ	CV	CW	b	d	d*	50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 300	Over 300 to 400	Over 400 to 500
φ40	192.5	12	12	10	18	158.5	36	18	41	40	40	25.5	41.5	58.5	75.5	108.5	141.5	174.5
φ50	210	12	12	10	18	170	36	18	47	47	48	22	36	49	63	90	119	146
φ63	221	14	16	10	24	177	40	20	45	47	48	22	36	49	63	90	119	146
φ80	272	20	20	14	30	216	56	28	58.5	53	55	14	26	38	49	72	96	119
φ100	298	20	20	16	30	233	56	28	69.5	61	65	20	32	42	53	76	98	120

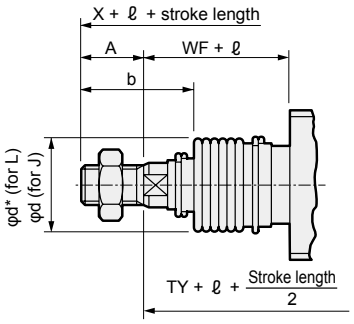
Code		With switch									
				T0, T5 T2, T3		T1, T2Y T3Y, T2J		T8		T2W, T3W	
Bore size (mm)	*1 Over 500	O	P	RD	HD	RD	HD	RD	HD	RD	HD
φ40	(Stroke length/3.0) + 8	66	41.5	11	11	10	10	5	5	13	13
φ50	(Stroke length/3.6) + 7.5	73	43	13	13	12	12	7	7	15	15
φ63	(Stroke length/3.6) + 7.5	85	47	13	13	12	12	7	7	15	15
φ80	(Stroke length/4.3) + 2.5	105	57	14.5	14.5	13.5	13.5	8.5	8.5	16.5	16.5
φ100	(Stroke length/4.5) + 9	121	63	18.5	18.5	17.5	17.5	12.5	12.5	20.5	20.5

*1 : For the ℓ dimension, round up below the decimal point.
*2 : Ⓡ, Ⓢ and Ⓣ indicate the cushion needle position.
*3 : A pin is attached.
*4 : Refer to page 599 for dimensions of projection of T2YD and HO switches.
*5 : For the dimensions of the accessories, refer to pages 454 and 455.
*6 : Non-sag block (2-dashed line) will be added depending on the stroke length. Refer to page 598 for details on dimensions.

Dimensions CAD

● Intermediate trunnion (TC)





[With bellows]

Code	Intermediate trunnion (TC) basic dimensions																	
Bore size (mm)	A	B	C	D	DA	EE	F	G	J	K	KK	L	LL	MM	N	Q	T	V
φ40	22	22	20	18	M8	Rc1/4	7.5	26	31	57	M14 × 1.5	38 to 39.5	93	16	2	13	8	18.5
φ50	28	27	26	20	M8	Rc3/8	0	28	38	66	M18 × 1.5	41 to 43.5	101	20	2.5	14	11	20.5
φ63	28	27	26	22	M8	Rc3/8	0	30	38	80	M18 × 1.5	47.5 to 50.0	105	20	3	15	11	21
φ80	36	32	34	26	M12	Rc1/2	0	34	43	98	M22 × 1.5	56 to 59	116	25	3.5	17	13	23.5
φ100	45	41	43	28	M12	Rc1/2	0	36	51	118	M26 × 1.5	66 to 69	128	30	4	18	16	32

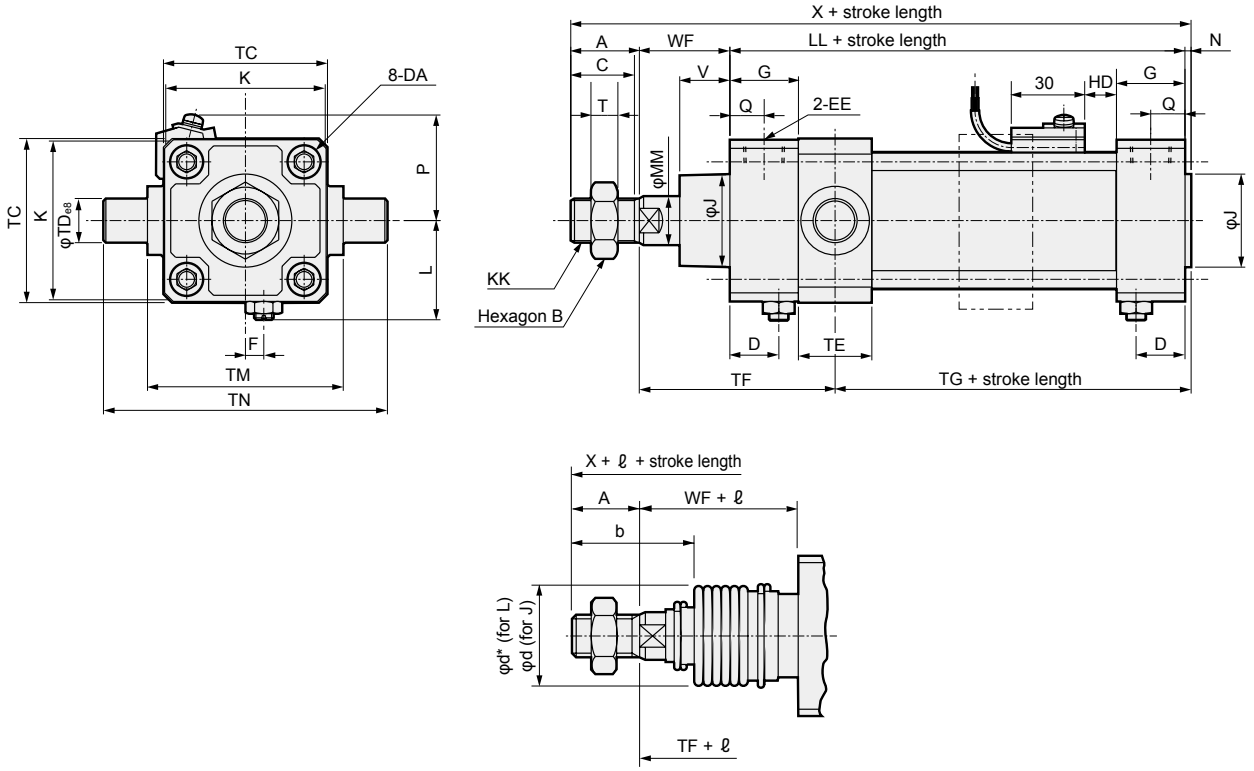
Code			Mounting dimensions								With bellows						
Bore size (mm)	WF	X	AQ	TC	TD	TE	TM	TN	TY	TZ	b	d	d*	ℓ 50 or less	ℓ Over 50 to 100	ℓ Over 100 to 150	ℓ Over 150 to 200
φ40	33.5	150.5	46.5 + Stroke length/2	57	16	30	63	95	80	48.5	41	40	40	25.5	41.5	58.5	75.5
φ50	37	168.5	50.5 + Stroke length/2	67	18	30	80	116	87.5	53	47	47	48	22	36	49	63
φ63	35	171	52.5 + Stroke length/2	82	20	35	90	130	87.5	55.5	45	47	48	22	36	49	63
φ80	48	203.5	58 + Stroke length/2	100	25	40	115	165	106	61.5	58.5	53	55	14	26	38	49
φ100	53	230	64 + Stroke length/2	121	35	50	135	205	117	68	69.5	61	65	20	32	42	53

Code					With switch									
Bore size (mm)	Over 200 to 300	Over 300 to 400	Over 400 to 500	*1 Over 500	O	P	T0, T5 T2, T3 RD	T0, T5 T2, T3 HD	T1, T2Y T3Y, T2J RD	T1, T2Y T3Y, T2J HD	T8 RD	T8 HD	T2W, T3W RD	T2W, T3W HD
φ40	108.5	141.5	174.5	(Stroke length/3.0) + 8	66	41.5	11	11	10	10	5	5	13	13
φ50	90	119	146	(Stroke length/3.6) + 7.5	73	43	13	13	12	12	7	7	15	15
φ63	90	119	146	(Stroke length/3.6) + 7.5	85	47	13	13	12	12	7	7	15	15
φ80	72	96	119	(Stroke length/4.3) + 2.5	105	57	14.5	14.5	13.5	13.5	8.5	8.5	16.5	16.5
φ100	76	98	120	(Stroke length/4.5) + 9	121	63	18.5	18.5	17.5	17.5	12.5	12.5	20.5	20.5

*1 : For the ℓ dimension, round up below the decimal point.
*2 : Ⓡ, Ⓢ and Ⓣ indicate the cushion needle position.
*3 : Refer to page 599 for dimensions of projection of T2YD and HO switches.
*4 : For the dimensions of the accessories, refer to pages 454 and 455.

Dimensions CAD

● Rod side trunnion (TA)



[With bellows]

Code	Rod side trunnion (TA) basic dimensions																	
Bore size (mm)	A	B	C	D	DA	EE	F	G	J	K	KK	L	LL	MM	N	Q	T	V
φ40	22	22	20	18	M8	Rc1/4	7.5	26	31	57	M14 × 1.5	38 to 39.5	93	16	2	13	8	18.5
φ50	28	27	26	20	M8	Rc3/8	0	28	38	66	M18 × 1.5	41 to 43.5	101	20	2.5	14	11	20.5
φ63	28	27	26	22	M8	Rc3/8	0	30	38	80	M18 × 1.5	47.5 to 50.0	105	20	3	15	11	21
φ80	36	32	34	26	M12	Rc1/2	0	34	43	98	M22 × 1.5	56 to 59	116	25	3.5	17	13	23.5
φ100	45	41	43	28	M12	Rc1/2	0	36	51	118	M26 × 1.5	66 to 69	128	30	4	18	16	32

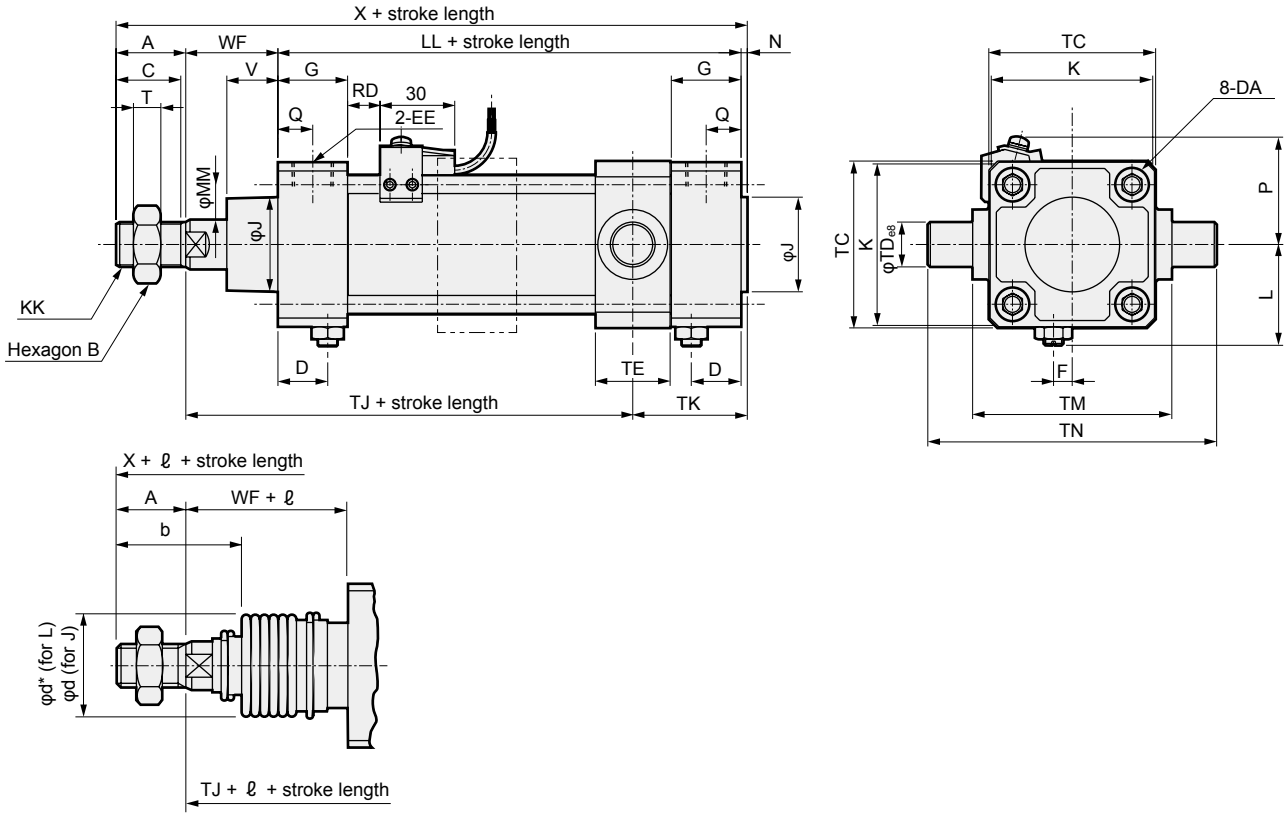
Code			Mounting dimensions							With bellows							
													ℓ				
Bore size (mm)	WF	X	TC	TD	TE	TF	TG	TM	TN	b	d	d*	50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 300
φ40	33.5	150.5	57	16	30	74.5	54	63	95	41	40	40	25.5	41.5	58.5	75.5	108.5
φ50	37	168.5	67	18	30	80	60.5	80	116	47	47	48	22	36	49	63	90
φ63	35	171	82	20	35	82.5	60.5	90	130	45	47	48	22	36	49	63	90
φ80	48	203.5	100	25	40	102	65.5	115	165	58.5	53	55	14	26	38	49	72
φ100	53	230	121	35	50	114	71	135	205	69.5	61	65	20	32	42	53	76

Code				With switch					
Bore size (mm)	Over 300 to 400	Over 400 to 500	*1 Over 500	O	P	T0, T5 T2, T3 HD	T1, T2Y T3Y, T2J HD	T8 HD	T2W, T3W HD
φ40	141.5	174.5	(Stroke length/3.0) + 8	66	41.5	11	10	5	13
φ50	119	146	(Stroke length/3.6) + 7.5	73	43	13	12	7	15
φ63	119	146	(Stroke length/3.6) + 7.5	85	47	13	12	7	15
φ80	96	119	(Stroke length/4.3) + 2.5	105	57	14.5	13.5	8.5	16.5
φ100	98	120	(Stroke length/4.5) + 9	121	63	18.5	17.5	12.5	20.5

*1 : Position cannot be detected at rod side stroke end.
*2 : For the ℓ dimension, round up below the decimal point.
*3 : The position of the cushion needle cannot be changed.
*4 : Refer to page 599 for dimensions of projection of T2YD and HO switches.
*5 : For the dimensions of the accessories, refer to pages 454 and 455.
*6 : Non-sag block (2-dashed line) will be added depending on the stroke length. Refer to page 598 for details on dimensions.

Dimensions

● Head side trunnion (TB)



[With bellows]

Code	Head side trunnion (TB) basic dimensions																	
Bore size (mm)	A	B	C	D	DA	EE	F	G	J	K	KK	L	LL	MM	N	Q	T	V
φ40	22	22	20	18	M8	Rc1/4	7.5	26	31	57	M14 × 1.5	38 to 39.5	93	16	2	13	8	18.5
φ50	28	27	26	20	M8	Rc3/8	0	28	38	66	M18 × 1.5	41 to 43.5	101	20	2.5	14	11	20.5
φ63	28	27	26	22	M8	Rc3/8	0	30	38	80	M18 × 1.5	47.5 to 50.0	105	20	3	15	11	21
φ80	36	32	34	26	M12	Rc1/2	0	34	43	98	M22 × 1.5	56 to 59	116	25	3.5	17	13	23.5
φ100	45	41	43	28	M12	Rc1/2	0	36	51	118	M26 × 1.5	66 to 69	128	30	4	18	16	32

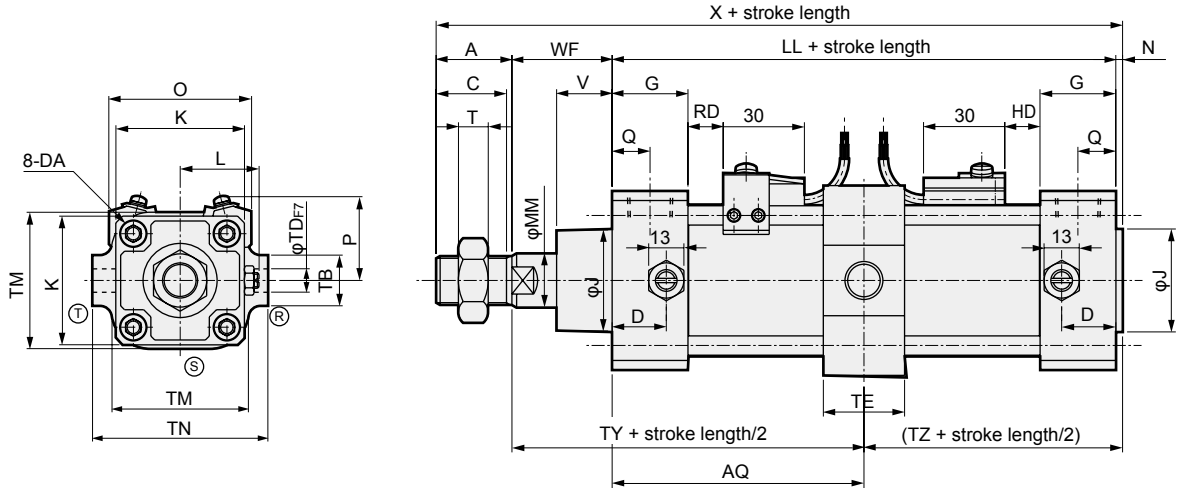
Code			Mounting dimensions							With bellows							
													ℓ				
Bore size (mm)	WF	X	TC	TD	TE	TJ	TM	TN	TK	b	d	d*	50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 300
φ40	33.5	150.5	57	16	30	85	63	95	43.5	41	40	40	25.5	41.5	58.5	75.5	108.5
φ50	37	168.5	67	18	30	94.5	80	116	46	47	47	48	22	36	49	63	90
φ63	35	171	82	20	35	92	90	130	51	45	47	48	22	36	49	63	90
φ80	48	203.5	100	25	40	109.5	115	165	58	58.5	53	55	14	26	38	49	72
φ100	53	230	121	35	50	119.5	135	205	65.5	69.5	61	65	20	32	42	53	76

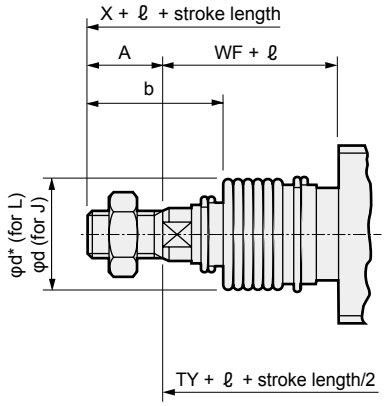
Code				With switch					
						T0, T5 T2, T3	T1, T2Y T3Y, T2J	T8	T2W, T3W
Bore size (mm)	Over 300 to 400	Over 400 to 500	*1 Over 500	O	P	RD	RD	RD	RD
φ40	141.5	174.5	(Stroke length/3.0) + 8	66	41.5	11	10	5	13
φ50	119	146	(Stroke length/3.6) + 7.5	73	43	13	12	7	15
φ63	119	146	(Stroke length/3.6) + 7.5	85	47	13	12	7	15
φ80	96	119	(Stroke length/4.3) + 2.5	105	57	14.5	13.5	8.5	16.5
φ100	98	120	(Stroke length/4.5) + 9	121	63	18.5	17.5	12.5	20.5

*1 : Position cannot be detected at head side stroke end.
*2 : For the ℓ dimension, round up below the decimal point.
*3 : The position of the cushion needle cannot be changed.
*4 : Refer to page 599 for dimensions of projection of T2YD and HO switches.
*5 : For the dimensions of the accessories, refer to pages 454 and 455.
*6 : Non-sag block (2-dashed line) will be added depending on the stroke length. Refer to page 598 for details on dimensions.

Dimensions

● Intermediate supporting hole trunnion (TF)





[With bellows]

Code	Intermediate trunnion (TF) basic dimensions																	
Bore size (mm)	A	B	C	D	DA	EE	G	J	K	KK	L	LL	MM	N	Q	T	V	WF	X
φ50	28	27	26	20	M8	Rc3/8	28	38	66	M18 × 1.5	41 to 43.5	101	20	2.5	14	11	20.5	37	168.5
φ63	28	27	26	22	M8	Rc3/8	30	38	80	M18 × 1.5	47.5 to 50.0	105	20	3	15	11	21	35	171
φ80	36	32	34	26	M12	Rc1/2	34	43	98	M22 × 1.5	56 to 59	116	25	3.5	17	13	23.5	48	203.5
φ100	45	41	43	28	M12	Rc1/2	36	51	118	M26 × 1.5	66 to 69	128	30	4	18	16	32	53	230

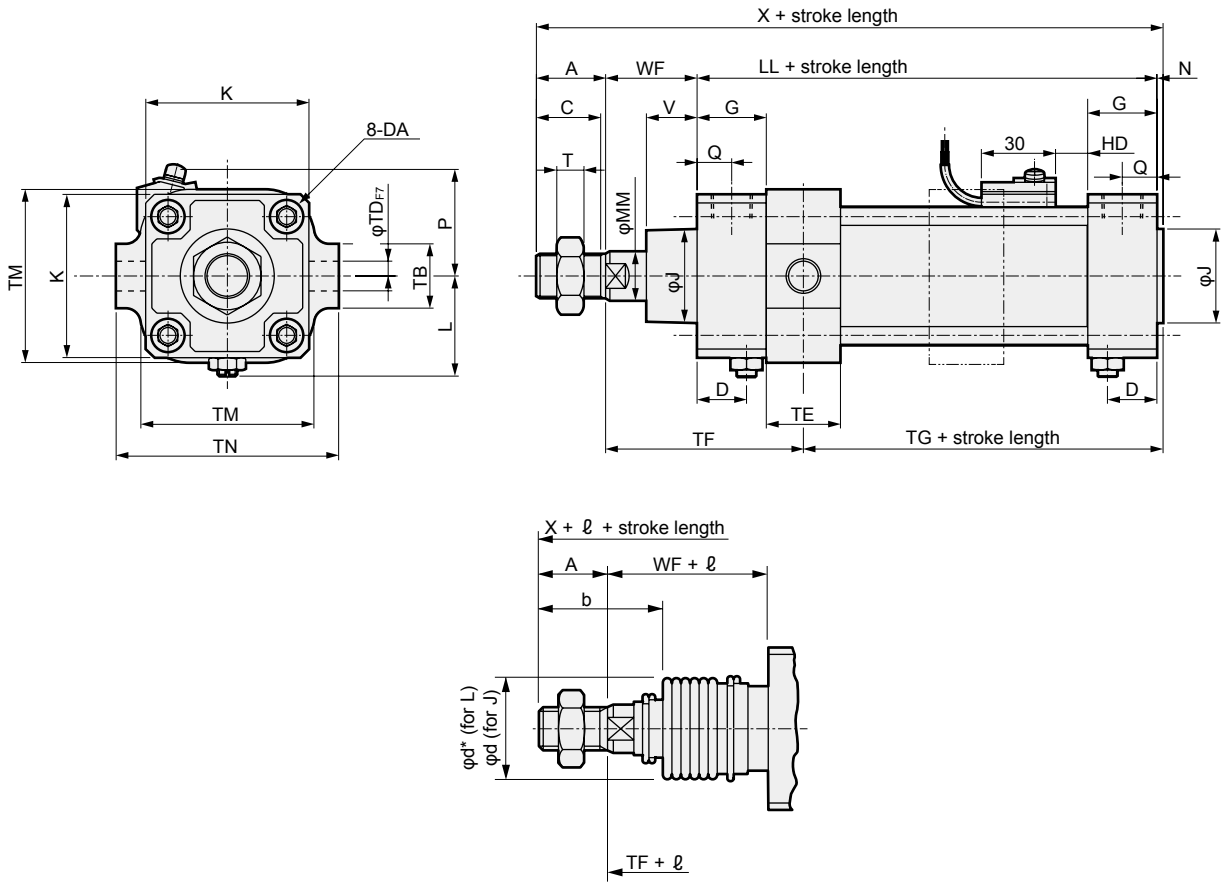
Code	Mounting dimensions								With bellows								
Bore size (mm)	AQ	TB	TD	TE	TM	TN	TY	TZ	b	d	d*	ℓ 50 or less	ℓ Over 50 to 100	ℓ Over 100 to 150	ℓ Over 150 to 200	ℓ Over 200 to 300	ℓ Over 300 to 400
φ50	$50.5+\frac{\text{Stroke length}}{2}$	26	12	30	70	90	87.5	53	47	47	48	22	36	49	63	90	119
φ63	$52.5+\frac{\text{Stroke length}}{2}$	30	14	35	86	104	87.5	55.5	45	47	48	22	36	49	63	90	119
φ80	$58+\frac{\text{Stroke length}}{2}$	35	20	40	105	134	106	61.5	58.5	53	55	14	26	38	49	72	96
φ100	$64+\frac{\text{Stroke length}}{2}$	40	20	40	127	150	117	68	69.5	61	65	20	32	42	53	76	98

Code			With switch									
Bore size (mm)	Over 400 to 500	*1 Over 500	O	P	T0, T5 T2, T3 RD	T0, T5 T2, T3 HD	T1, T2Y, T3Y, T2J RD	T1, T2Y, T3Y, T2J HD	T8 RD	T8 HD	T2W, T3W RD	T2W, T3W HD
φ50	146	(Stroke length/3.6) + 7.5	73	43	13	13	12	12	7	7	15	15
φ63	146	(Stroke length/3.6) + 7.5	85	47	13	13	12	12	7	7	15	15
φ80	119	(Stroke length/4.3) + 2.5	105	57	14.5	14.5	13.5	13.5	8.5	8.5	16.5	16.5
φ100	120	(Stroke length/4.5) + 9	121	63	18.5	18.5	17.5	17.5	12.5	12.5	20.5	20.5

*1 : For the ℓ dimension, round up below the decimal point.
*2 : Ⓡ, Ⓢ and Ⓣ indicate the cushion needle position.
*3 : Refer to page 599 for dimensions of projection of T2YD and HO switches.
*4 : For the dimensions of the accessories, refer to pages 454 and 455.

Dimensions

● Rod side hole trunnion (TD)



[With bellows]

Code	Rod side trunnion (TD) basic dimensions																
Bore size (mm)	A	B	C	D	DA	EE	G	J	K	KK	L	LL	MM	N	Q	T	V
φ50	28	27	26	20	M8	Rc3/8	28	38	66	M18 × 1.5	41 to 43.5	101	20	2.5	14	11	20.5
φ63	28	27	26	22	M8	Rc3/8	30	38	80	M18 × 1.5	47.5 to 50.0	105	20	3	15	11	21
φ80	36	32	34	26	M12	Rc1/2	34	43	98	M22 × 1.5	56 to 59	116	25	3.5	17	13	23.5
φ100	45	41	43	28	M12	Rc1/2	36	51	118	M26 × 1.5	66 to 69	128	30	4	18	16	32

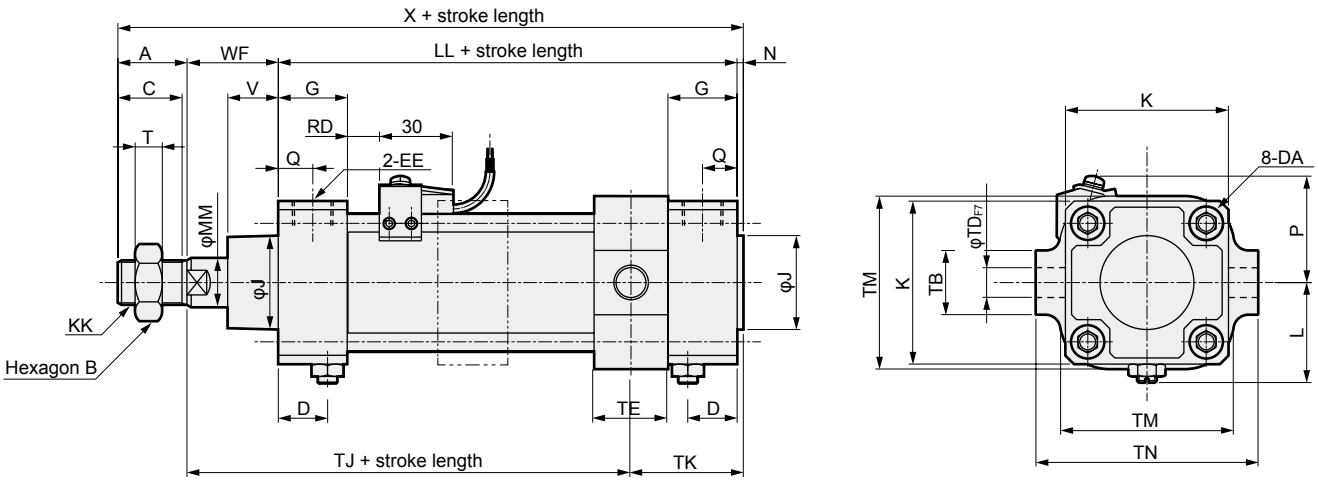
Code			Mounting dimensions							With bellows							
Bore size (mm)	WF	X	TB	TD	TE	TF	TG	TM	TN	b	d	d*	ℓ 50 or less	ℓ Over 50 to 100	ℓ Over 100 to 150	ℓ Over 150 to 200	ℓ Over 200 to 300
φ50	37	168.5	26	12	30	80	60.5	70	90	47	47	48	22	36	49	63	90
φ63	35	171	30	14	35	82.5	60.5	86	104	45	47	48	22	36	49	63	90
φ80	48	203.5	35	20	40	102	65.5	105	134	58.5	53	55	14	26	38	49	72
φ100	53	230	40	20	40	109	76	127	150	69.5	61	65	20	32	42	53	76

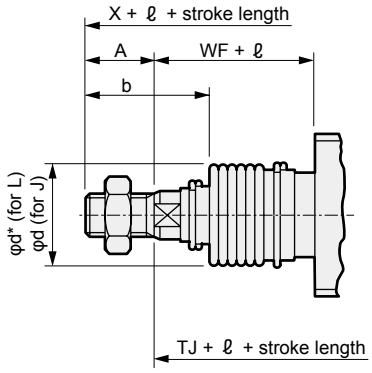
Code				With switch					
Bore size (mm)	Over 300 to 400	Over 400 to 500	*2 Over 500	O	P	T0, T5 T2, T3 HD	T1, T2Y, T3Y, T2J T2YF/M, T3YFM HD	T8 HD	T2W, T3W HD
φ50	119	146	(Stroke length/3.6) + 7.5	73	43	13	12	7	15
φ63	119	146	(Stroke length/3.6) + 7.5	85	47	13	12	7	15
φ80	96	119	(Stroke length/4.3) + 2.5	105	57	14.5	13.5	8.5	16.5
φ100	98	120	(Stroke length/4.5) + 9	121	63	18.5	17.5	12.5	20.5

*1 : Position cannot be detected at rod side stroke end.
*2 : For the ℓ dimension, round up below the decimal point.
*3 : The position of the cushion needle cannot be changed.
*4 : Refer to page 599 for dimensions of projection of T2YD and HO switches.
*5 : For the dimensions of the accessories, refer to pages 454 and 455.
*6 : Non-sag block (2-dashed line) will be added depending on the stroke length.
Refer to page 598 for details on dimensions.

Dimensions

● Head side hole trunnion (TE)





[With bellows]

Code	Head side trunnion (TE) basic dimensions																	
Bore size (mm)	A	B	C	D	DA	EE	G	J	K	KK	L	LL	MM	N	Q	T	V
φ50	28	27	26	20	M8	Rc3/8	28	38	66	M18 × 1.5	41 to 43.5	101	20	2.5	14	11	20.5
φ63	28	27	26	22	M8	Rc3/8	30	38	80	M18 × 1.5	47.5 to 50.0	105	20	3	15	11	21
φ80	36	32	34	26	M12	Rc1/2	34	43	98	M22 × 1.5	56 to 59	116	25	3.5	17	13	23.5
φ100	45	41	43	28	M12	Rc1/2	36	51	118	M26 × 1.5	66 to 69	128	30	4	18	16	32

Code			Mounting dimensions							With bellows							
Bore size (mm)	WF	X	TB	TD	TE	TJ	TM	TN	TK	b	d	d*	ℓ 50 or less	ℓ Over 50 to 100	ℓ Over 100 to 150	ℓ Over 150 to 200	ℓ Over 200 to 300
φ50	37	168.5	26	12	30	94.5	70	90	46	47	47	48	22	36	49	63	90
φ63	35	171	30	14	35	92	86	104	51	45	47	48	22	36	49	63	90
φ80	48	203.5	35	20	40	109.5	105	134	58	58.5	53	55	14	26	38	49	72
φ100	53	230	40	20	40	124.5	127	150	60.5	69.5	61	65	20	32	42	53	76

Code				With switch					
Bore size (mm)	Over 300 to 400	Over 400 to 500	*2 Over 500	O	P	T0, T5 T2, T3 RD	T1, T2Y, T3Y, T2J T2YF/M, T3YFM RD	T8 RD	T2W, T3W RD
φ50	119	146	(Stroke length/3.6) + 7.5	73	43	13	12	7	15
φ63	119	146	(Stroke length/3.6) + 7.5	85	47	13	12	7	15
φ80	96	119	(Stroke length/4.3) + 2.5	105	57	14.5	13.5	8.5	16.5
φ100	98	120	(Stroke length/4.5) + 9	121	63	18.5	17.5	12.5	20.5

*1 : Position cannot be detected at head side stroke end.
*2 : For the ℓ dimension, round up below the decimal point.
*3 : The position of the cushion needle cannot be changed.
*4 : Refer to page 599 for dimensions of projection of T2YD and HO switches.
*5: For the dimensions of the accessories, refer to pages 454 and 455.
*6: Non-sag block (2-dashed line) will be added depending on the stroke length. Refer to page 598 for details on dimensions.

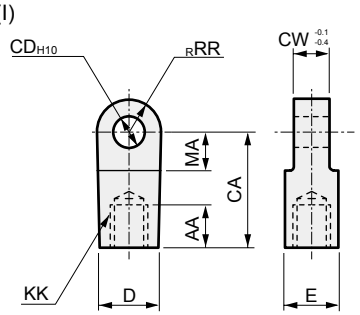
SCA2 Series common accessory dimensions (rod eye, clevis, bracket)

· The installation dimensions for the clevis, rod eye, and No. 2 bracket (φCD, CW, CQ) are all the same, and any combination is possible.
· Specify the model No. when placing an order.

CAD

● Rod eye (I)

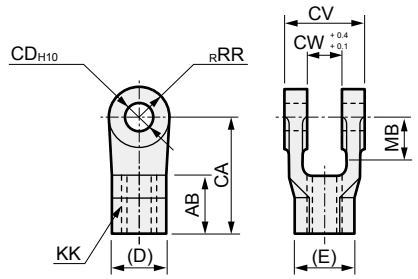
Material: Cast iron
Painting



Model No.	Bore size (mm)	AA	CA	CD	CW	D	E	KK	MA	RR	Wt. (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

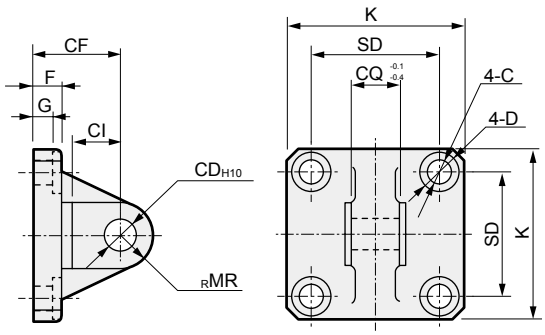


Model No.	Bore size (mm)	AB	CA	CD	CV	CW	D	E	KK	MB	RR	Wt. (kg)
S1-Y-40	40	24	50	12	36	18	27	31.2	M14×1.5	19	16	0.25
S1-Y-50	50	24	50	12	36	18	27	31.2	M18×1.5	19	16	0.24
S1-Y-63	63	24	50	14	40	20	27	31.2	M18×1.5	19	16	0.26
S1-Y-80	80	35	70	20	56	28	41	47.3	M22×1.5	30	25	0.90
S1-Y-100	100	35	70	20	56	28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

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

● Eye bracket (B1)

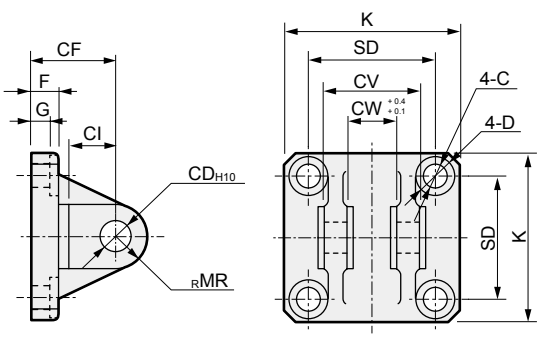
Material: Cast iron
Painting



Model No.	Bore size (mm)	C	CD	CF	CI	CQ	D	F	G	K	MR	SD	Wt. (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

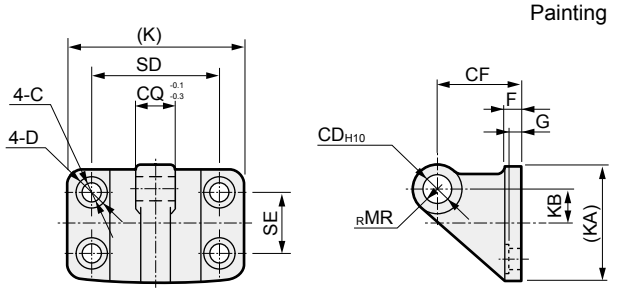


Model No.	Bore size (mm)	C	CD	CF	CI	CV	CW	D	F	G	K	MR	SD	Wt. (kg)
S1-B2-40	40	9	12	32	18	36	18	14	10	6.5	57	12	40.5	0.36
S1-B2-50	50	9	12	32	18	36	18	14	10	6.5	66	12	48	0.41
S1-B2-63	63	9	14	37	24	40	20	14	10	6.5	80	16	59	0.62
S1-B2-80	80	14	20	52	30	56	28	20	14	10.5	98	20	74	1.48
S1-B2-100	100	14	20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

Note: A pin and a snap ring are attached.

● Eye bracket (B3)

Material: Cast iron
Painting

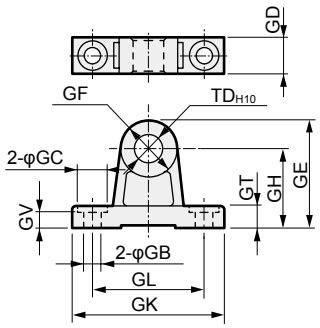


Model No.	Bore size (mm)	C	CD	CF	CQ	D	F	G	K	KA	KB	MR	SD	SE	Wt. (kg)
S1-B3-40	φ40/φ50	9	12	40	18	14	8	6.5	85	57	17.5	12	65	35	0.44
S1-B3-63	φ63	11	14	50	20	17	10	8	105	67	20	16	80	40	0.77
S1-B3-80	φ80/φ100	14	20	65	28	20	12	10	130	93	30	20	100	60	1.64

Accessory dimensions

● Trunnion No. 2 bracket dimensions

Material: Cast iron
Painting



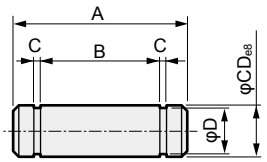
Code / Model No.	GB	GC	GD	GE	GF	GH	GK	GL	GT	GV	TD	Wt. (kg)
S1-B4-40	9	17	19	61	32	45	80	60	12	11	16	0.25
S1-B4-50	9	17	19	63	36	45	85	65	12	11	18	0.28
S1-B4-63	11	22	24	80	40	60	100	75	14	13	20	0.52
S1-B4-80	14	24	26	85	50	60	115	85	14	13	25	0.70
S1-B4-100	14	24	35	107	64	75	130	100	17	16	35	1.48

Note: The bracket is provided as 2 pcs./set.

● Pin dimensions

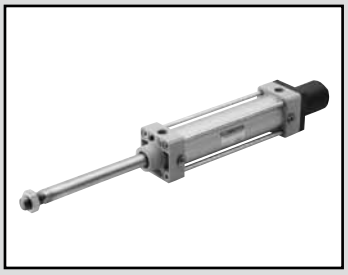
Material: Steel
Zinc chromate treatment

Pin (P): For clevis bracket/rod clevis/ clevis bracket



Model No.	Bore size (mm)	A	B	C	D	CD	Applicable snap ring	Wt. (kg)
S1-P-40	40, 50	43.5	36.2	1.15	11.5	12	C for shaft 12	0.04
S1-P-63	63	47.5	40.2	1.15	13.4	14	C for shaft 14	0.06
S1-P-80	80, 100	64	56.2	1.35	19	20	C for shaft 20	0.16

Note: A snap ring is attached.

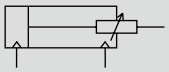


Medium bore size cylinder
Double acting/stroke adjustable (push)

SCA2-P Series

● Bore size: φ40/φ50/φ63/φ80/φ100

JIS symbol



RoHS CAD

Specifications

Descriptions		SCA2-P (stroke adjustable/push)				
Bore size mm		φ40	φ50	φ63	φ80	φ100
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)				
Proof pressure MPa		1.6 (≈230 psi, 16 bar)				
Ambient temperature °C		-10 (14°F) to 60 (140°F) (no freezing)				
Port size		Rc1/4	Rc3/8		Rc1/2	
Stroke tolerance mm		$^{+0.9}_{0}$(to 360), $^{+1.4}_{0}$(to 800)				
Working piston speed mm/s		50 to 1000 (Operate within the allowable absorbed energy.)				
Cushion		Air cushion				
Effective air cushion length mm		14.6	16.6	16.6	20.6	23.6
Adjustable stroke range mm		25, 50, 75, 100				
Lubrication		Not required (use turbine oil class 1 ISO VG32 if necessary for lubrication)				
Allowable absorbed energy J	Cushioned	4.29	8.37	15.8	27.9	49.8
	Without cushion	0.067	0.079	0.079	0.201	0.301
		Without any cushion, this product cannot absorb large energy generated by an external load. We recommend using an external shock absorber.				

Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)
φ40	25/50/75/100/ 150/200/250/ 300/350/400/ 450/500	600	25
φ50			
φ63			
φ80		700	
φ100		800	

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

Min. stroke length with switch

● T0/T5 min. stroke with switches

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

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

Min. stroke length with switch

● T2/T3 min. stroke with switches

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

● T1/T2Y/T3Y/T2YD min. stroke with switches

	Different surface mounting				Same surface mounting				Center trunnion mounting				Rod side trunnion mounting No position detection at rod side stroke end.	Head side trunnion mounting No position detection at head side stroke end.
Switch quantity	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.

● T2W/T3W min. stroke with switches

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

Switch specifications (T 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	Programming controller relay, compact solenoid valve	Dedicated for programmable controller			For programmable controller, relay				For programmable controller, relay		For programmable controller, relay (no lamp), serial		For programmable controller, relay			Dedicated 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	110 VAC	5/12/24 VDC	110 VAC	12/24 VDC	110 VAC	220 VAC	24 VDC ±10%
Load current	5 to 100 mA	5 to 20 mA (*3)			100 mA or less		50 mA or less		5 to 50 mA	7 to 20 mA	50 mA or less	20 mA or less	5 to 50 mA	7 to 20 mA	7 to 10 mA	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 3 m:87 5 m:142	1 m:18 3 m:49 5 m:80	1 m:33 3 m:87 5 m:142	1 m:18 3 m:49 5 m:80	1 m:18 3 m:49 5 m:80		1 m:33 3 m:87 5 m:142	1 m:18 3 m:49 5 m:80	1 m:18 3 m:49 5 m:80				1 m:33 3 m:87 5 m:142			1 m:61 3 m:166 5 m:272

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

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

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

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

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

Cylinder weight

(Unit: kg)

Bore size (mm)	Product weight when stroke length (S) = 0 mm						Switch weight	Mounting bracket weight	Additional weight per S = 100mm
	Basic (00)	Foot (LB)	Flange (FA, FB)	Eye bracket (CA)	Clevis bracket (CB)	Trunnion (TA, TB, TC)		T type	
φ40	1.20	1.37	1.61	1.52	1.56	1.58	Refer to the weight in the switch specifications.	0.024	0.78
φ50	1.70	1.95	2.19	2.08	2.11	2.24		0.022	0.99
φ63	2.16	2.53	3.25	2.73	2.78	3.01		0.020	1.03
φ80	3.80	4.54	5.66	5.07	5.28	5.14		0.026	2.15
φ100	5.40	6.31	8.14	7.04	7.22	7.97		0.024	2.47

(Example) Product weight of SCA2-P-LB-50B-200-25-TOH-D

- Product weight for 0 mm stroke length ..... 1.95 kg
- Additional weight for 200 mm stroke length... $0.99 \times \frac{200}{100} = 1.98$ kg
- Weight of 2 TOH switches ..... $0.018 \times 2 = 0.036$ kg
- Weight of 2 mounting brackets ..... $0.022 \times 2 = 0.044$ kg
- Product weight ..... $1.95 + 1.98 + 0.036 + 0.044 = 4.010$ kg

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/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/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/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/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/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

How to order

Without switch (built-in magnet for switch)

SCA2-P - LB - 40 ( ) B - 100 - 25 ——— S I

With switch (built-in magnet for switch)

SCA2-P - LB - 40 ( ) B - 100 - 25 - T0H - R - S I

Ⓐ Mounting *1

Ⓑ Bore size

Ⓒ Port thread

Ⓓ Cushion

Ⓔ Stroke length *2

Ⓕ Adjustable stroke range

Ⓖ Switch model No. *4

Ⓗ Switch quantity *5

Ⓘ Option *6

Ⓙ Accessory *7

Code	Content
Ⓐ Mounting	
00	Basic
LB	Axial foot
FA	Rod side flange
FB	Head side flange
TC	Intermediate trunnion
TA	Rod side trunnion
TB	Head side trunnion
TF	Intermediate supporting hole trunnion (φ40 is not available)
TD	Rod side hole trunnion (φ40 is not available)
TE	Head side hole trunnion (φ40 is not available)
Ⓑ Bore size (mm)	
40	φ40
50	φ50
63	φ63
80	φ80
100	φ100
Ⓒ Port thread	
Blank	Rc thread
N	NPT thread (custom order product)
G	G thread (custom order product)
Ⓓ Cushion	
B	Both sides cushioned
R	Rod side cushioned
H	Head side cushioned
N	Without cushion

Ⓔ Stroke length (mm)

Bore size	Stroke length *3	Custom stroke length
φ40	**25 to 600**	**In 1 mm increments**
φ50	**25 to 600**	
φ63	**25 to 600**	
φ80	**25 to 700**	
φ100	**25 to 800**	

Ⓕ Adjustable stroke range (mm)
25, 50, 75, 100

Ⓖ Switch model No.
Refer to the switch model numbers on the next page.

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

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

Ⓘ 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)		

Ⓙ Accessory	
I	Rod eye
Y	Rod clevis (pin and snap ring attached)
B4	Trunnion No. 2 bracket (2 pcs./set)

⚠ Precautions for model No. selection

*1 : Mounting bracket will be shipped with the product. (The axial foot, head side flange and trunnion are assembled at shipment.)
*2 : If the stroke exceeds the max. stroke length, refer to Ending Page 69.
*3 : Refer to page 456 for the min. stroke length with switch.
*4 : Switches are shipped with the product.
*5 : When selecting TA or TB as mounting, the number of switches is limited to "H" (1 on head side) for TA, and "R" (1 on rod side) for TB.
*6 : The instantaneous max. temperature is the temperature when sparks, cutting chips, etc., instantaneously contact the bellows.
*7 : "I" and "Y" cannot be selected together.
*8 : Refer to Ending Page 85 for custom specifications of rod end form.
*9 : Refer to page 432 for combinations of variations/ options.

[Example of model No.]

SCA2-P-LB-40B-100-25-T0H-R-SI

Model: Medium bore size cylinder, double acting/stroke adjustable (push)

Ⓐ Mounting	: Axial foot
Ⓑ Bore size	: φ40 mm
Ⓒ Port thread	: Rc thread
Ⓓ Cushion	: With two-sided air cushion
Ⓔ Stroke length	: 100 mm
Ⓕ Adjustable stroke range	: 25 mm
Ⓖ Switch model No.	: Reed T0H switch, lead wire length 1 m
Ⓗ Switch quantity	: 1 on rod side
Ⓘ Option	: Cushion needle position S
Ⓙ Accessory	: Rod eye

[F] Switch model No.

T switch model No.						
Axial lead wire	Radial lead wire	Contact	Voltage AC	Voltage DC	Display	Lead wire
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*			●		3-wire
T2WH*	T2WV*			●	2-color display	2-wire
T2YH*	T2YV*			●		
T3WH*	T3WV*			●		3-wire
T3YH*	T3YV*			●		
T3PH*	T3PV*			●	1-color display (custom order)	3-wire
T2YD*	-			●	2-color display for AC magnetic field	2-wire
T2YDT*	-			●		
T2JH*	T2JV*			●	1-color display off-delay	2-wire

How to order switch

[T switch]

● Switch body + mounting bracket set

SCA2 - T0H - 40

- T0H: Switch model No. (Item Ⓕ)
- 40: Bore size (Item Ⓑ on the previous page)

● Switch body only

SW - T0H

- T0H: Switch model No. (Item Ⓕ)

* Contact CKD when using an environment-friendly T switch.

● Switch mounting bracket set

SCA2 - TS - 40

- TS: Mounting bracket
- 40: Bore size (Item Ⓑ on the previous page)

[T2YD switch]

● Switch body + mounting bracket set

SCA2 - T2YD - 40

- T2YD: Switch model No. (Item Ⓖ on the previous page)
- 40: Bore size (Item Ⓑ on the previous page)

● Switch body only

SW - T2YD

- T2YD: Switch model No. (Item Ⓖ on the previous page)

● Mounting bracket set

SCA2 - T - 40

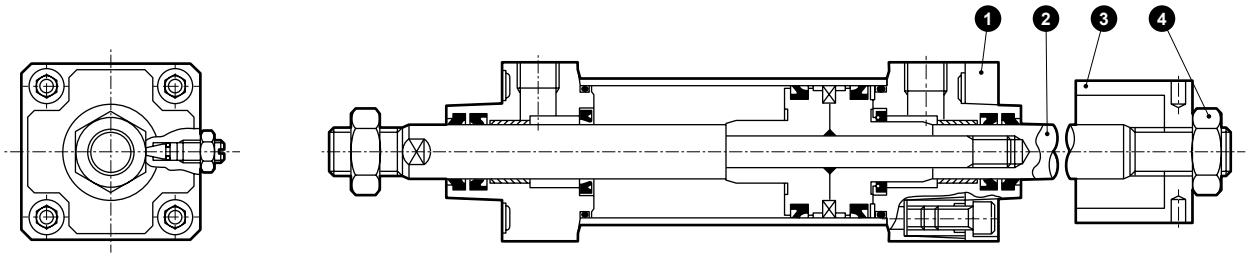
- 40: Bore size (Item Ⓑ on the previous page)

How to order mounting bracket

Bore size (mm) / Mounting bracket	φ40	φ50	φ63	φ80	φ100
Flange (FA)	S1-FA-40	S1-FA-50	S1-FA-63	S1-FA-80	S1-FA-100

*1 : For material of the mounting bracket, refer to page 440.
*2 : Mounting brackets are supplied with mounting bolts.

Internal structure and parts list



Note: Materials of the parts not listed below are the same as those of SCA2 Series (double acting/single rod) on page 440.

No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
1	Plate	Steel	Manganese phosphate treatment	3	Adjustable stopper	Steel	Manganese phosphate treatment
2	Piston rod (2)	Steel	Industrial chrome plating	4	Lock nut	Steel	Zinc chromate

Repair parts list

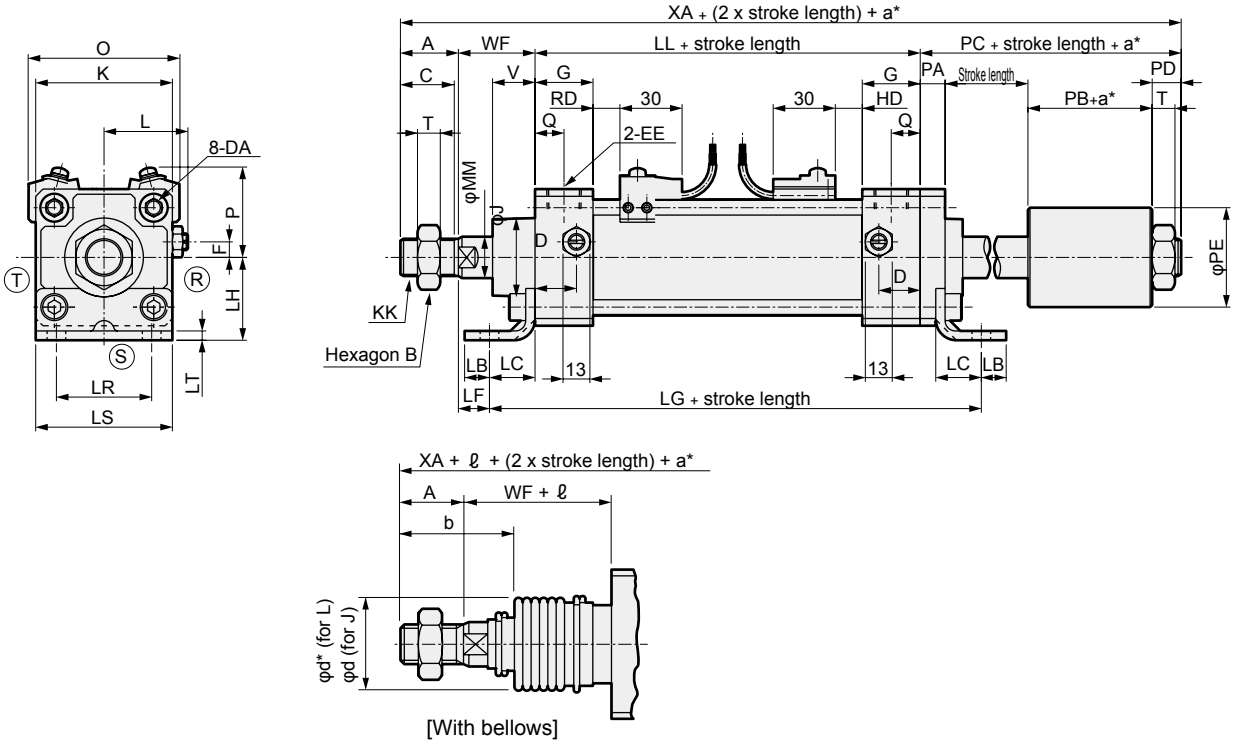
(Numbering of repair parts follows that in the internal structure of the SCA2 Series (page 440).)

Bore size (mm)	Kit No.	Repair parts No.
φ40	SCA2-P-40K	❸ ❹ ❼ ❽ ⓫ ⓮ ⓴
φ50	SCA2-P-50K	
φ63	SCA2-P-63K	
φ80	SCA2-P-80K	
φ100	SCA2-P-100K	

Note: Specify the kit No. when placing an order.

Dimensions

● Basic (00)



[With bellows]

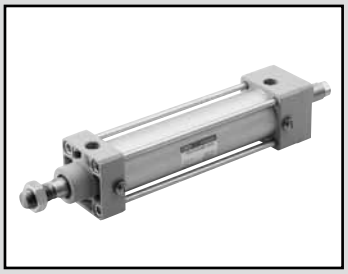
Code																					
Bore size (mm)	A	B	C	D	DA	EE	F	G	J	K	KK	L	LL	MM	PA	PB	PC	PD	PE	PF	Q
φ40	22	22	20	18	M8	Rc1/4	7.5	26	31	57	M14×1.5	38 to 39.5	93	16	12	29	52	11	40	6	13
φ50	28	27	26	20	M8	Rc3/8	0	28	38	66	M18×1.5	41 to 43.5	101	20	12	35	61	14	48	6	14
φ63	28	27	26	22	M8	Rc3/8	0	30	38	80	M18×1.5	47.5 to 50	105	20	16	31	61	14	48	6	15
φ80	36	32	34	26	M12	Rc1/2	0	34	43	98	M22×1.5	56 to 59	116	25	19	33	68	16	60	10	17
φ100	45	41	43	28	M12	Rc1/2	0	36	51	118	M26×1.5	66 to 69	128	30	19	50	90	21	70	10	18

Code						With switch										Mounting dimensions								
								T0, T5 T2, T3		T1, T2Y T3Y, T2J		T8		T2W, T3W										
Bore size (mm)	T	V	WF	XA	XF	O	P	RD	HD	RD	HD	RD	HD	RD	HD	LB	LC	LD	LF	LG	LH	LR	LS	LT
φ40	8	18.5	33.5	200.5	55.5	66	41.5	11	11	10	10	5	5	13	13	10	19.5	9	14	140.8	40	40	57	3.2
φ50	11	20.5	37	227	65	73	43	13	13	12	12	7	7	15	15	12	22	9	15	152.5	40	46	66	4.5
φ63	11	21	35	229	63	85	47	13	13	12	12	7	7	15	15	12	30	11	5	176.5	50	60	80	4.5
φ80	13	23.5	48	268	84	105	57	14.5	14.5	13.5	13.5	8.5	8.5	16.5	16.5	14	37	14	11	203	60	74	98	6.0
φ100	16	32	53	316	98	121	63	18.5	18.5	17.5	17.5	12.5	12.5	20.5	20.5	21	31	14	12	203	67	80	118	6.0

Code	With bellows										
	ℓ										
Bore size (mm)	b	d	d*	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	*1 Over 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

*1 : For the ℓ dimension, round up below the decimal point.
*2 : ◯, Ⓡ and Ⓢ indicate the cushion needle position.
*3 : In the foot mounting, the pitch in the axial direction differs from that of the standard.
*4 : Refer to page 599 for dimensions of projecting section of T2YD switch.
* a: Adjustable stroke length.

* Installation dimensions of other mounting are the same as those of the SCA2 (standard). Refer to pages 442 to 453.
* For the dimensions of the accessories, refer to pages 454 and 455.

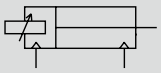


Medium bore size cylinder
Double acting/stroke adjustable (pull)

SCA2-R Series

● Bore size: φ40/φ50/φ63/φ80/φ100

JIS symbol



RoHS CAD

Specifications

Descriptions		SCA2-R (stroke adjustable/pull)				
Bore size mm		φ40	φ50	φ63	φ80	φ100
Actuation		Double acting				
Working fluid		Compressed air				
Max. working pressure MPa		1.0 (≈150 psi, 10 bar)				
Min. working pressure MPa		0.05 (≈7.3 psi, 0.5 bar)				
Proof pressure MPa		1.6 (≈230 psi, 16 bar)				
Ambient temperature °C		-10 (14°F) to 60 (140°F) (no freezing)				
Port size		Rc1/4	Rc3/8		Rc1/2	
Stroke tolerance mm		$^{+0.9}_{0}$(to 360), $^{+1.4}_{0}$(to 800)				
Working piston speed mm/s		50 to 1000 (Operate within the allowable absorbed energy.)				
Cushion		Air cushion				
Effective air cushion length mm		14.6	16.6	16.6	20.6	23.6
Adjustable stroke range mm		25, 50, 75, 100				
Lubrication		Not required (use turbine oil class 1 ISO VG32 if necessary for lubrication)				
Allowable absorbed energy J	Cushioned	4.29	8.37	15.8	27.9	49.8
	Without cushion	0.067	0.079	0.079	0.201	0.301
		Without any cushion, this product cannot absorb large energy generated by an external load. We recommend using an external shock absorber.				

Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)
φ40	25/50/75/100/ 150/200/250/ 300/350/400/ 450/500	600	25
φ50			
φ63			
φ80		700	
φ100		800	

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

Min. stroke length with switch

● T0/T5 min. stroke with switches

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

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

Min. stroke length with switch

● T2/T3 min. stroke with switches

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

● T1/T2Y/T3Y/T2YD min. stroke with switches

	Different surface mounting				Same surface mounting				Center trunnion mounting				Rod side trunnion mounting No position detection at rod side stroke end.	Head side trunnion mounting No position detection at head side stroke end.
Switch quantity	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.

● T2W/T3W min. stroke with switches

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

Switch specifications (T 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	Programming controller relay, compact solenoid valve	Dedicated for programmable controller			For programmable controller, relay				For programmable controller, relay		For programmable controller, relay (no lamp), serial		For programmable controller, relay			Dedicated 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	110 VAC	5/12/24 VDC	110 VAC	12/24 VDC	110 VAC	220 VAC	24 VDC ±10%
Load current	5 to 100 mA	5 to 20 mA (*3)			100 mA or less		50 mA or less		5 to 50 mA	7 to 20 mA	50 mA or less	20 mA or less	5 to 50 mA	7 to 20 mA	7 to 10 mA	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 3 m:87 5 m:142	1 m:18 3 m:49 5 m:80	1 m:33 3 m:87 5 m:142	1 m:18 3 m:49 5 m:80	1 m:18 3 m:49 5 m:80		1 m:33 3 m:87 5 m:142	1 m:18 3 m:49 5 m:80	1 m:18 3 m:49 5 m:80				1 m:33 3 m:87 5 m:142			1 m:61 3 m:166 5 m:272

*1 : The T0/T5 switch can also be used with 220 VAC. Contact CKD about working conditions.
*2 : Refer to Ending Page 1 for other switch specifications.
*3 : The above max. load current is 20 mA at 25°C. The current will be lower than 20 mA when operating ambient temperature around the switch is higher than 25°C. (5 to 10 mA at 60°C)
*4 : Switch for AC magnetic field (T2YD) cannot be used in DC magnetic field.
*5 : Dimensions depend on switch model No. Refer to Ending Page 18 for details.

Cylinder weight

(Unit: kg)

Bore size (mm)	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)	Eye bracket (CA)	Clevis bracket (CB)	Trunnion (TA, TB, TC)		T type	
φ40	0.96	1.13	1.37	1.28	1.32	1.34	Refer to the weight in the switch specifications.	0.024	0.55
φ50	1.45	1.70	1.94	1.83	1.86	1.99		0.022	0.71
φ63	1.88	2.25	2.97	2.45	2.50	2.73		0.020	0.75
φ80	3.15	3.89	5.01	4.42	4.63	4.49		0.026	1.26
φ100	4.80	5.71	7.54	6.44	6.62	7.37		0.024	1.37

(Example) Product weight of SCA2-R-LB-50B-200-25-TOH-D

- Product weight for 0 mm stroke length ····· 1.70 kg
- Additional weight for 200 mm stroke length ···· 0.71 x $\frac{200}{100}$ = 1.42 kg
- Weight of 2 TOH switches ····· 0.018 x 2 = 0.036 kg
- Weight of 2 mounting brackets ····· 0.022 x 2 = 0.044 kg
- Product weight ····· 1.70 + 1.42 + 0.036 + 0.044 = 3.200 kg

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}

How to order

Without switch (built-in magnet for switch)

SCA2-R - LB - 40 ○ B - 100 - 25 ——— S I

With switch (built-in magnet for switch)

SCA2-R - LB - 40 ○ B - 100 - 25 - T0H - R - S I

Ⓐ Mounting *1
Ⓑ Bore size
Ⓒ Port thread
Ⓓ Cushion
Ⓔ Stroke length *2
Ⓕ Adjustable stroke range
Ⓖ Switch model No. *4
Ⓗ Switch quantity *5
Ⓘ Option *6
Ⓙ Accessory *7

Code	Content
Ⓐ Mounting	
00	Basic
LB	Axial foot
FA	Rod side flange
TC	Intermediate trunnion
TA	Rod side trunnion
TB	Head side trunnion
TF	Intermediate supporting hole trunnion (φ40 is not available)
TD	Rod side hole trunnion (φ40 is not available)
TE	Head side hole trunnion (φ40 is not available)
Ⓑ Bore size (mm)	
40	φ40
50	φ50
63	φ63
80	φ80
100	φ100
Ⓒ Port thread	
Blank	Rc thread
N	NPT thread (custom order product)
G	G thread (custom order product)
Ⓓ Cushion	
B	Both sides cushioned
R	Rod side cushioned
H	Head side cushioned
N	Without cushion

Ⓔ Stroke length (mm)

Bore size	Stroke length *3	Custom stroke length
φ40	**25 to 600**	**In 1 mm increments**
φ50	**25 to 600**	
φ63	**25 to 600**	
φ80	**25 to 700**	
φ100	**25 to 800**	

Ⓕ Adjustable stroke range (mm)
25, 50, 75, 100

Ⓖ Switch model No.
Refer to the switch model numbers on the next page.

*** Lead wire length**	
Blank	1 m (standard)
3	3 m (option)
5	5 m (option)
Ⓗ Switch quantity	
R	1 on rod side
H	1 on head side
D	2
T	3

Ⓘ 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)		

Ⓙ Accessory	
I	Rod eye
Y	Rod clevis (pin and snap ring attached)
B4	Trunnion No. 2 bracket (2 pcs./set)

⚠ Precautions for model No. selection

*1 : Mounting bracket will be shipped with the product. (The axial foot and trunnion are assembled at shipment.)
*2 : If the stroke exceeds the max. stroke length, refer to Ending Page 74.
*3 : Refer to page 464 for the min. stroke length with switch.
*4 : Switches are shipped with the product.
*5 : When selecting TA or TB as mounting, the number of switches is limited to "H" (1 on head side) for TA, and "R" (1 on rod side) for TB.
*6 : The instantaneous max. temperature is the temperature when sparks, cutting chips, etc., instantaneously contact the bellows.
*7 : "I" and "Y" cannot be selected together.
*8 : Refer to Ending Page 85 for custom specifications of rod end form.
*9 : Refer to page 432 for combinations of variations/options.

[Example of model No.]

SCA2-R-LB-40B-100-25-T0H-R-SI

Model: Medium bore size cylinder, double acting/stroke adjustable (pull)

Ⓐ Mounting	: Axial foot
Ⓑ Bore size	: φ40 mm
Ⓒ Port thread	: Rc thread
Ⓓ Cushion	: Both sides cushioned
Ⓔ Stroke length	:100 mm
Ⓕ Adjustable stroke range	: 25 mm
Ⓖ Switch model No.	: Reed T0H switch, lead wire length 1 m
Ⓗ Switch quantity	: 1 on rod side
Ⓘ Option	: Cushion needle position S
Ⓙ Accessory	: Rod eye

[F] Switch model No.

T switch model No.						
Axial lead wire	Radial lead wire	Contact	Voltage AC	Voltage DC	Display	Lead wire
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*			●		3-wire
T2WH*	T2WV*			●	2-color display	2-wire
T2YH*	T2YV*			●		
T3WH*	T3WV*			●		3-wire
T3YH*	T3YV*			●		
T3PH*	T3PV*			●	1-color display (custom order)	3-wire
T2YD*	-			●	2-color display AC magnetic field	2-wire
T2YDT*	-			●		
T2JH*	T2JV*			●	1-color display off-delay	2-wire

How to order switch

[T switch]

● Switch body + mounting bracket set

SCA2 - T0H - 40

- 40: Bore size (Item Ⓑ on the previous page)
- T0H: Switch model No. (Item Ⓕ)

● Switch body only

SW - T0H

- T0H: Switch model No. (Item Ⓕ)

* Contact CKD when using an environment-friendly T switch.

● Switch mounting bracket set

SCA2 - TS - 40

- TS: Mounting bracket
- 40: Bore size (Item Ⓑ on the previous page)

[T2YD switch]

● Switch body + mounting bracket set

SCA2 - T2YD - 40

- T2YD: Switch model No. (Item Ⓖ on the previous page)
- 40: Bore size (Item Ⓑ on the previous page)

● Switch body only

SW - T2YD

- T2YD: Switch model No. (Item Ⓖ on the previous page)

● Mounting bracket set

SCA2 - T - 40

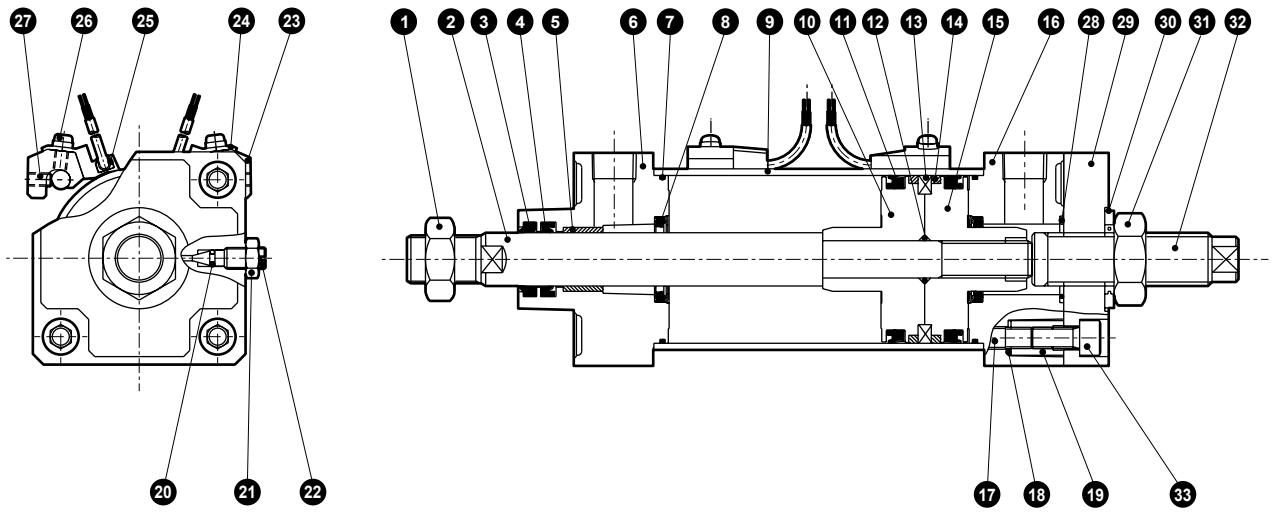
- 40: Bore size (Item Ⓑ on the previous page)

How to order mounting bracket

Bore size (mm) / Mounting bracket	φ40	φ50	φ63	φ80	φ100
Flange (FA)	S1-FA-40	S1-FA-50	S1-FA-63	S1-FA-80	S1-FA-100

*1 : For material of the mounting bracket, refer to page 440.
*2 : Mounting brackets are supplied with mounting bolts.

Internal structure and parts list



No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
1	Rod nut	Steel	Zinc chromate	18	Conical spring washer	Steel	Black finish
2	Piston rod	Steel	Industrial chrome plating	19	Round nut	Steel	Zinc chromate
3	Dust wiper	Nitrile rubber		20	Needle gasket	Nitrile rubber	
4	Rod packing	Nitrile rubber		21	Needle nut	Copper alloy	Nickel plating
5	Bush	Oil impregnated bearing alloy		22	Cushion needle	Copper alloy	Nickel plating
6	Rod cover	Aluminum alloy die-casting	Paint	23	Switch mounting base	Aluminum alloy	
7	Cylinder gasket	Nitrile rubber		24	Switch holder	Aluminum alloy	
8	Cushion packing	Nitrile rubber/steel		25	Cylinder switch		
9	Cylinder tube	Aluminum alloy	Hard alumite treatment	26	Phillips pan head machine screw/captive washer	Steel	Zinc chromate
10	Piston R	Aluminum alloy die-casting		27	Hexagon socket set screw	Alloy steel	Black finish
11	Piston packing	Nitrile rubber		28	Head cover gasket	Nitrile rubber	
12	Piston gasket	Nitrile rubber		29	Head plate	Steel	Manganese phosphate treatment
13	Magnet	Plastic		30	Seal washer	Nitrile rubber/steel	Zinc chromate
14	Wear ring	Polyacetal resin		31	Nut	Steel	Zinc chromate
15	Piston H	Aluminum alloy die-casting		32	Stud bolt	Steel	Zinc chromate
16	Head cover	Aluminum alloy die-casting	Paint	33	Hexagon socket head cap screw	Alloy steel	Black finish
17	Tie rod	Steel	Zinc chromate				

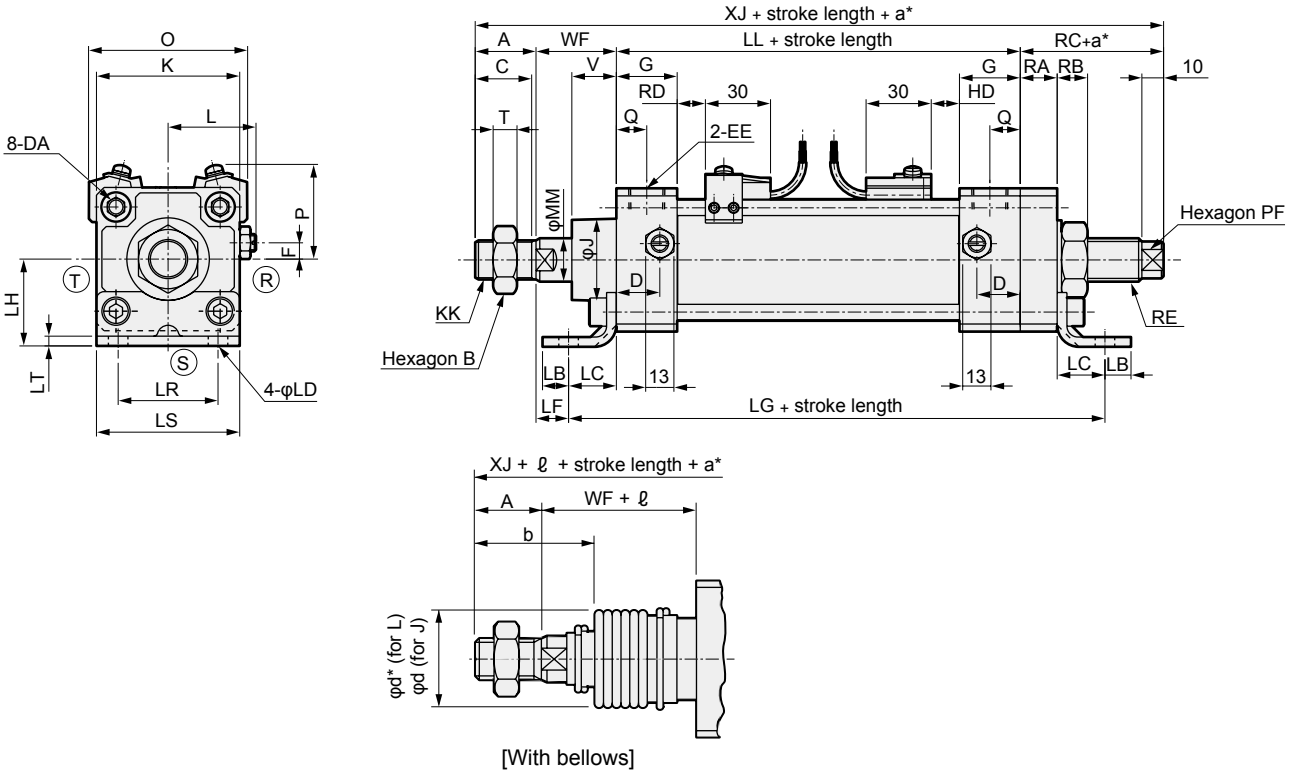
Repair parts list

Bore size (mm)	Kit No.	Repair parts No.
φ40	SCA2-R-40K	3 4 7 8 11 14 20 28 30
φ50	SCA2-R-50K	
φ63	SCA2-R-63K	
φ80	SCA2-R-80K	
φ100	SCA2-R-100K	

*1: Specify the kit No. when placing an order.

Dimensions

● Basic (00)



* a: Adjustable stroke length.

Code / Bore size (mm)	A	B	C	D	DA	EE	F	G	J	K	KK	L	LL	MM	Q	RA	RB	RC	RE	PF
φ40	22	22	20	18	M8	Rc1/4	7.5	26	31	57	M14×1.5	38 to 39.5	93	16	13	14	11	35	M16×1.5	11
φ50	28	27	26	20	M8	Rc3/8	0	28	38	66	M18×1.5	41 to 43.5	101	20	14	17	14	41	M20×1.5	14
φ63	28	27	26	22	M8	Rc3/8	0	30	38	80	M18×1.5	47.5 to 50	105	20	15	17	14	41	M20×1.5	14
φ80	36	32	34	26	M12	Rc1/2	0	34	43	98	M22×1.5	56 to 59	116	25	17	20	16	46	M24×1.5	17
φ100	45	41	43	28	M12	Rc1/2	0	36	51	118	M26×1.5	66 to 69	128	30	18	20	16	46	M24×1.5	17

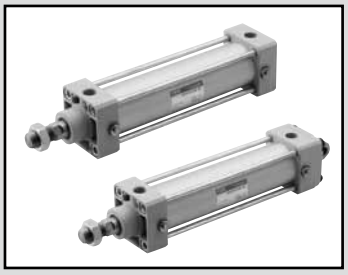
Code / Bore size (mm)	T	V	WF	XF	XJ	With switch: O	P	T0, T5 T2, T3 RD	T0, T5 T2, T3 HD	T1, T2Y T3Y, T2J RD	T1, T2Y T3Y, T2J HD	T8 RD	T8 HD	T2W, T3W RD	T2W, T3W HD	Mounting dimensions: LB	LC	LD	LF	LG	LH	LR	LS	LT
φ40	8	18.5	33.5	55.5	183.5	66	41.5	11	11	10	10	5	5	13	13	10	19.5	9	14	146	40	40	57	3.2
φ50	11	20.5	37	65	207	73	43	13	13	12	12	7	7	15	15	12	22	9	15	162	40	46	66	4.5
φ63	11	21	35	63	209	85	47	13	13	12	12	7	7	15	15	12	30	11	5	182	50	60	80	4.5
φ80	13	23.5	48	84	246	105	57	14.5	14.5	13.5	13.5	8.5	8.5	16.5	16.5	14	37	14	11	210	60	74	98	6.0
φ100	16	32	53	98	272	121	63	18.5	18.5	17.5	17.5	12.5	12.5	20.5	20.5	21	31	14	12	210	67	80	118	6.0

Code / Bore size (mm)	With bellows: ℓ b	d	d*	≤ 50	51 ≤ 100	101 ≤ 150	151 ≤ 200	201 ≤ 300	301 ≤ 400	401 ≤ 500	*1 Over 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

*1 : For the ℓ dimension, round up below the decimal point.
*2 : Ⓡ, Ⓢ and Ⓣ indicate the cushion needle position.
*3 : In the foot mounting, the pitch in the axial direction differs from that of the standard.
*4 : Refer to page 599 for dimensions of projecting section of T2YD switch.

* Installation dimensions of other mounting are the same as those of the SCA2 (standard). Refer to pages 442 to 453.

* For the dimensions of the accessories, refer to pages 454 and 455.

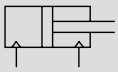


Medium bore size cylinder
Double acting/heat resistant

SCA2-T Series

● Bore size: φ40/φ50/φ63/φ80/φ100

JIS symbol



RoHS CAD

Specifications

Descriptions		SCA2-T/SCA2-L2T (heat resistance)				
Bore size mm		φ40	φ50	φ63	φ80	φ100
Actuation		Double acting				
Working fluid		Compressed air				
Max. working pressure MPa		1.0 (≈150 psi, 10 bar)				
Min. working pressure MPa		0.05 (≈7.3 psi, 0.5 bar)				
Proof pressure MPa		1.6 (≈230 psi, 16 bar)				
Ambient temperature °C		5 (41°F) to 120 (248°F)				
Port size		Rc1/4	Rc3/8		Rc1/2	
Stroke tolerance mm		$^{+0.9}_{0}$ (to 360) $^{+1.4}_{0}$ (to 800)				
Working piston speed mm/s		50 to 1000 (Operate within the absorbed energy.)				
Cushion		Air cushion				
Effective air cushion length mm		14.6	16.6	16.6	20.6	23.6
Lubrication		Unavailable *1				
Allowable absorbed energy J	Cushioned	4.29	8.37	15.8	27.9	49.8
	Without cushion	0.067	0.079	0.079	0.201	0.301
		Without any cushion, this product cannot absorb large energy generated by an external load. We recommend using an external shock absorber.				

*1: Periodically apply additional heat-resistant grease.

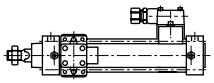
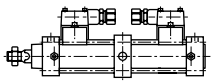
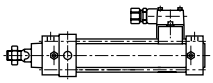
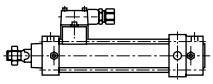
Stroke length

Bore size (mm)	Body without switch/ standard stroke (mm)	Body with switch/standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)
φ40	25/50/75/ 100/150/200/ 250/300/350/ 400/450/500	150/200/250/ 300/350/400/ 450/500	600	1 *2
φ50				
φ63				
φ80			700	
φ100			800	

*1: The custom stroke length is available in 1 mm increments.
*2: When using the type with switch, refer to the table of the min. stroke length with switch as below.

Min. stroke length with switch

(Unit: mm)

Sketch	When mounted on different surfaces			When mounted on the same surface			With intermediate support (hole) trunnion			With rod side supporting hole	With head side supporting hole
										 Position cannot be detected at the rod side stroke end.	 Position cannot be detected at the head side stroke end.
Switch quantity / Bore size (mm)	1	2	3	1	2	3	1	2	3	1	1
φ40	150	150	335	335	335	390	335	335	390	150	150
φ50	145	145	335	335	335	390	335	335	390	145	145
φ63	145	145	335	335	335	390	335	335	390	145	145
φ80	145	145	335	335	335	390	335	335	390	145	145
φ100	140	140	335	335	335	390	335	335	390	140	140

Switch specifications

Descriptions	Reed 2-wire		
	E0		
Applications	For relay, programmable controller		
Load voltage	24 VDC	100 VAC	200 VAC
Load current	5 to 50 mA	7 to 20 mA	7 to 10 mA
Indicator lamp	LED lit when ON		
Leakage current	0 mA		
Weight g	164		

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

Cylinder weight

(Unit: kg)

Bore size (mm)	Product weight when stroke length (S) = 0 mm							Switch weight	Mounting bracket weight	Additional weight per S = 100 mm
	Basic (OO)	Foot (LB)	Flange (FA, FB)	Special flange (FC)	Eye bracket (CA)	Clevis bracket (CB)	Trunnion (TA, TB, TC)		EO type	
φ40	0.83	1.00	1.24	0.92	1.15	1.19	1.21	Refer to the weight in the switch specifications.	0.043	0.39
φ50	1.20	1.45	1.69	1.31	1.58	1.61	1.74		0.059	0.46
φ63	1.60	1.97	2.69	1.78	2.17	2.22	2.45		0.070	0.50
φ80	2.60	3.34	4.46	2.96	3.87	4.08	3.94		0.105	0.90
φ100	4.20	5.11	6.94	4.75	5.84	6.02	6.77		0.132	1.12

(Example) Product weight of SCA2-L2T-LB-50B-200-EO-D

- Product weight for 0 mm stroke length ····· 1.45 kg
- Additional weight for 200 mm stroke length ··· $0.46 \times \frac{200}{100} = 0.92$ kg
- Weight of 2 EO switches ····· $0.164 \times 2 = 0.328$ kg
- Weight of 2 mounting brackets ····· $0.059 \times 2 = 0.118$ kg
- Product weight ····· 1.45 + 0.92 + 0.328 + 0.118 = 2.816 kg

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

How to order

Without switch (without magnet for switch)

SCA2- T - LB - 40 B - 100 ——— S I

With switch (built-in magnet for switch)

SCA2-L2T - LB - 40 B - 150 - E0 - R - S I

- Heat resistance/ with switch
- Ⓐ Mounting *1
- Ⓑ Bore size
- Ⓒ Port thread
- Ⓓ Cushion
- Ⓔ Stroke length *2
- Ⓕ Switch model No. *5
- Ⓖ Switch quantity
- Ⓗ Option *6
- Ⓘ Accessory *7

Code	Content
Ⓐ 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
TF	Intermediate supporting hole trunnion (φ40 is not available)
TD	Rod side hole trunnion (φ40 is not available)
TE	Head side hole trunnion (φ40 is not available)

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

Ⓒ Port thread	
Blank	Rc thread
N	NPT thread (custom order product)
G	G thread (custom order product)

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

Ⓔ Stroke length (mm)

Bore size	Stroke length *3	Custom stroke length
φ40	**1 to 600**	**In 1 mm increments**
φ50	**1 to 600**	
φ63	**1 to 600**	
φ80	**1 to 700**	
φ100	**1 to 800**	

Ⓕ Switch model No.			
E0	Reed	1-color display	2-wire

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

Ⓗ Option

		Max. ambient temp.	Instantaneous max. temp.
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		

Ⓘ Accessory	
I	Rod eye
Y	Rod clevis (pin and snap ring attached)
B1	Eye bracket
B2	Clevis bracket (pin and snap ring attached)
B3	Eye bracket
B4	Trunnion No. 2 bracket (2 pcs./set)

⚠ Precautions for model No. selection

*1 : Mounting bracket will be shipped with the product. (Trunnion are assembled at shipment.)
*2 : If the type with switch is selected, 150 mm or less stroke length cannot be selected.
*3 : Refer to page 472 for the min. stroke length with switch.
*4 : If the stroke exceeds the max. stroke length, refer to Ending Page 69.
*5 : Switches are shipped with the product.
*6 : The instantaneous max. temperature is the temperature when sparks, cutting chips, etc., instantaneously contact the bellows.
*7 : "I" and "Y" cannot be selected together.
*8 : Refer to Ending Page 85 for custom specifications of rod end form.
*9 : Refer to page 432 for combinations of variations/options.

[Example of model No.]

SCA2-L2T-LB-40B-150-E0-R-SI

Model: Medium bore size cylinder, double acting/heat resistant

- Ⓐ Mounting : Axial foot
- Ⓑ Bore size : φ40 mm
- Ⓒ Port thread : Rc thread
- Ⓓ Cushion : Both sides cushioned
- Ⓔ Stroke length : 150 mm
- Ⓕ Switch model No. : Reed E0 switch
- Ⓖ Switch quantity : 1 on rod side
- Ⓗ Option : Cushion needle position S
- Ⓘ Accessory : Rod eye

How to order switch

● Switch body + mounting bracket set

SCA2 - E0 - 40

- 40: Bore size (Item Ⓑ on the previous page)
- E0: Switch model No. (Item Ⓕ on the previous page)

● Switch body only

SW - E0

- E0: Switch model No. (Item Ⓕ on the previous page)

● Mounting bracket set

SCA2 - E - 40

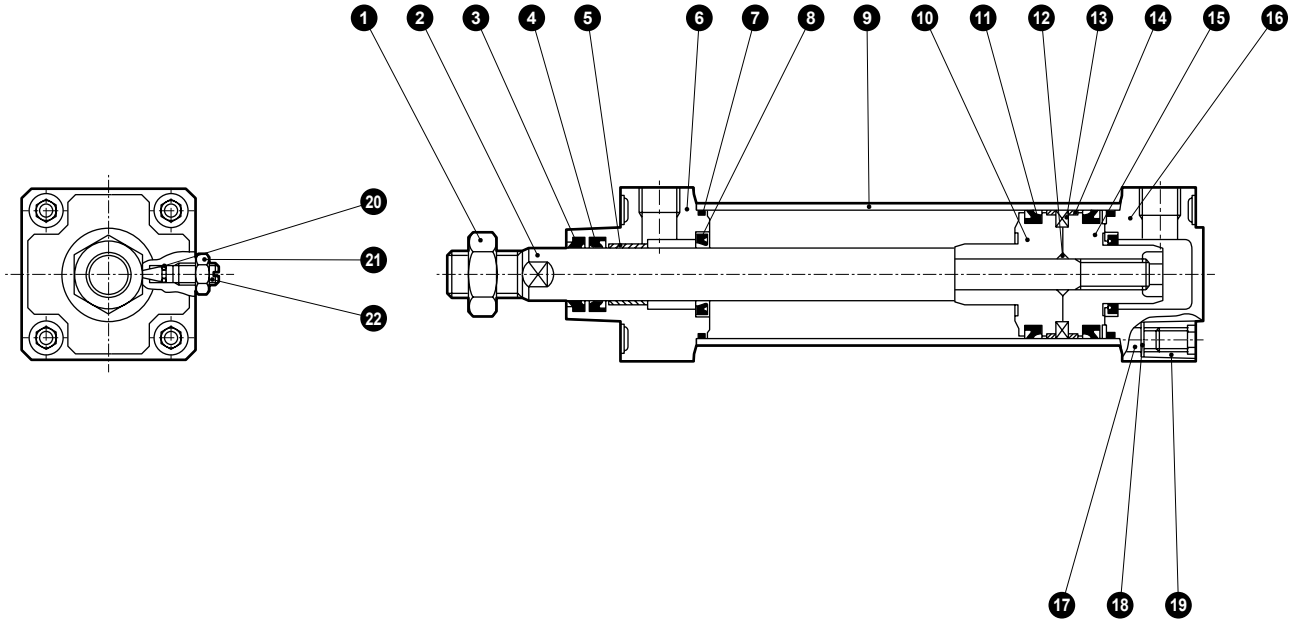
- E: Mounting bracket
- 40: Bore size (Item Ⓑ on the previous page)

How to order mounting bracket

Bore size (mm) / Mounting bracket	φ40	φ50	φ63	φ80	φ100
Foot (LB) *2	S1-LB-40	S1-LB-50	S1-LB-63	S1-LB-80	S1-LB-100
Flange (FA/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

*1 : For material of the mounting bracket, refer to page 440.
*2 : The foot mounting bracket is provided as 2 pcs./set.
*3 : All mounting brackets are supplied with mounting bolts.

Internal structure and parts list



No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
1	Rod nut	Steel	Zinc chromate	13	Piston ring	Steel	SCA2-T
2	Piston rod	Steel	Industrial chrome plating		Magnet	Rare earth plastic magnet	SCA2-L2T
3	Dust wiper	Fluoro rubber		14	Wear ring	Special resin	
4	Rod packing	Fluoro rubber		15	Piston H	Aluminum alloy die-casting	
5	Bush	Oil impregnated bearing alloy		16	Head cover	Aluminum alloy die-casting	Paint
6	Rod cover	Aluminum alloy die-casting	Paint	17	Tie rod	Steel	Zinc chromate
7	Cylinder gasket	Fluoro rubber		18	Conical spring washer	Steel	Black finish
8	Cushion packing	Fluoro rubber, steel		19	Round nut	Steel	Zinc chromate
9	Cylinder tube	Aluminum alloy	Hard alumite treatment	20	Needle gasket	Fluoro rubber	
10	Piston R	Aluminum alloy die-casting		21	Needle nut	Copper alloy	
11	Piston packing	Fluoro rubber		22	Cushion needle	Copper alloy	
12	Piston gasket	Fluoro rubber					

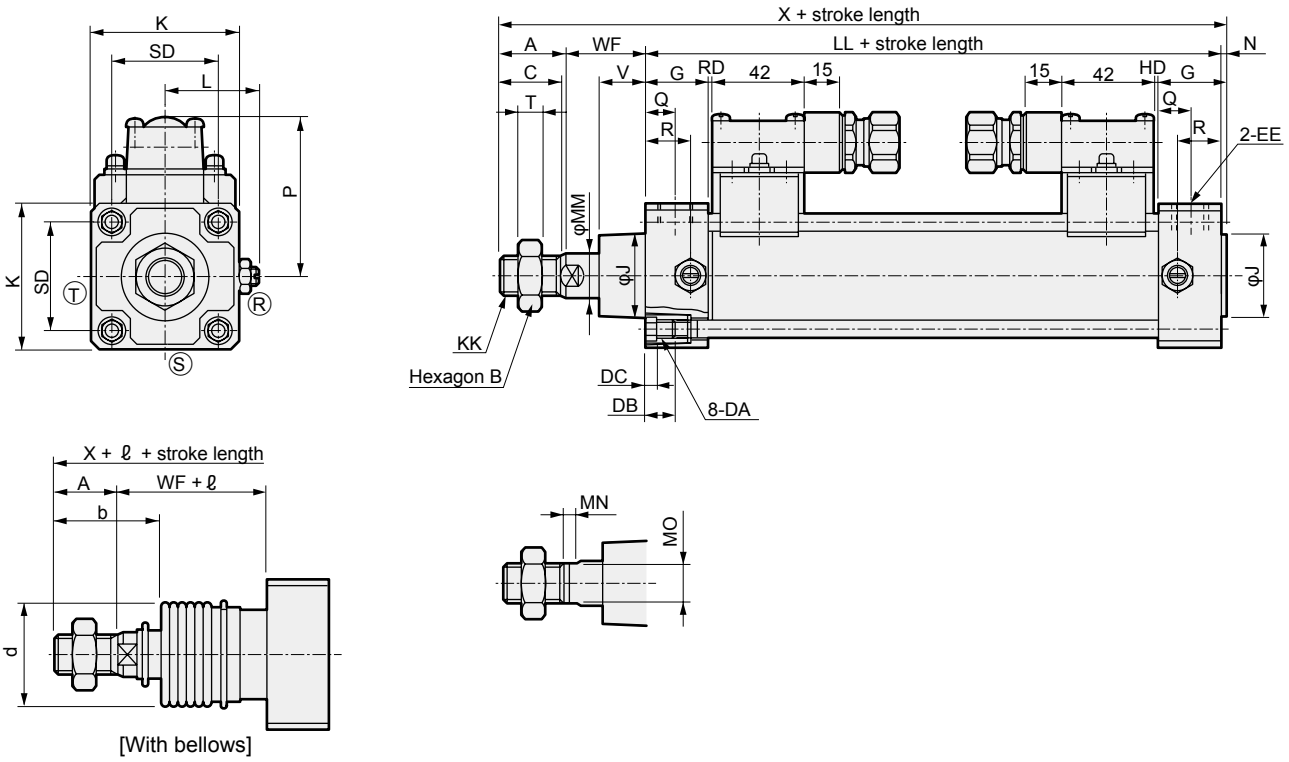
Repair parts list

Bore size (mm)	Kit No.	Repair parts No.
φ40	SCA2-T-40K	3 4 7 8 11 14 20
φ50	SCA2-T-50K	
φ63	SCA2-T-63K	
φ80	SCA2-T-80K	
φ100	SCA2-T-100K	

Note: Specify the kit No. when placing an order.

Dimensions

● Basic (00)

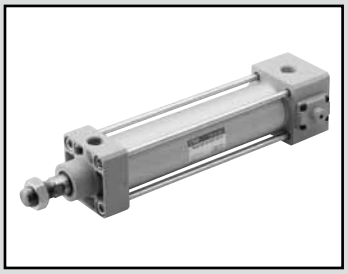


Code	Basic (00) basic dimensions																					
Bore size (mm)	A	B	C	D	DA	DB	DC	EE	F	G	J	K	KK	L	LL	MM	MN	MO	N	Q	SD	T
φ40	22	22	20	18	M8	12	4	Rc1/4	7.5	26	31	57	M14×1.5	38 to 39.5	93	16	8	14	2	13	40.5	8
φ50	28	27	26	20	M8	12	4	Rc3/8	0	28	38	66	M18×1.5	41 to 43.5	101	20	8	17	2.5	14	48	11
φ63	28	27	26	22	M8	12	4	Rc3/8	0	30	38	80	M18×1.5	47.5 to 50.0	105	20	8	17	3	15	59	11
φ80	36	32	34	26	M12	16	5	Rc1/2	0	34	43	98	M22×1.5	56 to 59	116	25	11	22	3.5	17	74	13
φ100	45	41	43	28	M12	16	5	Rc1/2	0	36	51	118	M26×1.5	66 to 69	128	30	13	27	4	18	90	16

Code				With bellows										With switch		
Bore size (mm)	V	WF	X	b	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	*1 Over 500	HD	P	RD
φ40	18.5	33.5	150.5	41	40	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke length/3.0) + 8	0	68	0
φ50	20.5	37	168.5	47	48	22	36	49	63	90	119	146	(Stroke length/3.6) + 7.5	1.5	72	1.5
φ63	21	35	171	45	48	22	36	49	63	90	119	146	(Stroke length/3.6) + 7.5	1.5	79	1.5
φ80	23.5	48	203.5	58.5	55	14	26	38	49	72	96	119	(Stroke length/4.3) + 2.5	3	89	3
φ100	32	53	230	69.5	65	20	32	42	53	76	98	120	(Stroke length/4.5) + 9	7	99	7

*1: For the ℓ dimension, round up below the decimal point.

* Installation dimensions of other mountings are the same as those of the SCA2 (standard). Refer to pages 442 to 453.
* For the dimensions of the accessories, refer to pages 454 and 455.

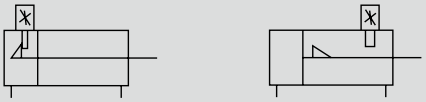


Medium bore size cylinder
Double acting/position locking

SCA2-Q2 Series

● Bore size: φ40/φ50/φ63/φ80/φ100

JIS symbol



RoHS CAD

Specifications

Descriptions		SCA2-Q2 (Position locking)				
Bore size mm		φ40	φ50	φ63	φ80	φ100
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)				
Proof pressure MPa		1.6 (≈230 psi, 16 bar)				
Ambient temperature °C		-10 (14°F) to 60 (140°F) (no freezing)				
Port size		Rc1/4	Rc3/8		Rc1/2	
Stroke tolerance mm		$^{+0.9}_{0}$ (to 360), $^{+1.4}_{0}$ (to 800)				
Working piston speed mm/s		50 to 500 (Operate within the allowable absorbed energy.)				
Cushion		Air cushion				
Effective air cushion length mm		14.6	16.6	16.6	20.6	23.6
Position locking mechanism		Head side, rod side				
Holding force N		Max. thrust x 0.7				
Lubrication		Not required (use turbine oil class 1 ISO VG32 if necessary for lubrication)				
Allowable absorbed energy J	Cushioned	4.29	8.37	15.8	27.9	49.8
	Without cushion	0.067	0.079	0.079	0.201	0.301
		Without any cushion, this product cannot absorb large energy generated by an external load. We recommend using an external shock absorber.				

Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)
φ40	25/50/75/100/ 150/200/250/ 300/350/400/ 450/500	600	5
φ50			
φ63			
φ80		700	
φ100		800	

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

Min. stroke length with switch

● T0/T5 min. stroke with switches

	Different surface mounting				Same surface mounting				Center trunnion mounting				Rod side trunnion mounting No position detection at rod side stroke end.	Head side trunnion mounting No position detection at head side stroke end.
Switch quantity	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(105)	135(135)	135(135)	200(170)	200(170)	50(50)	50(50)
φ50	15(10)	20(20)	40(40)	60(60)	15(10)	20(20)	65(50)	65(60)	160(160)	160(160)	160(160)	160(160)	60(60)	60(60)
φ63	15(10)	20(20)	40(40)	60(60)	15(10)	20(20)	70(55)	70(60)	135(120)	135(120)	135(125)	135(125)	50(45)	50(45)
φ80	15(15)	25(25)	45(45)	65(65)	15(15)	25(25)	70(55)	70(65)	140(110)	140(110)	140(130)	140(130)	55(40)	55(40)
φ100	15(15)	25(25)	45(45)	70(70)	15(15)	25(25)	70(55)	70(70)	150(120)	150(120)	150(145)	150(145)	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 min. stroke with switch

	Different surface mounting				Same surface mounting				Center trunnion mounting				Rod side trunnion mounting No position detection at rod side stroke end.	Head side trunnion mounting No position detection at head side stroke end.
Switch quantity	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)	125(125)	125(125)	190(160)	190(160)	45(40)	45(40)
φ50	10(10)	20(20)	40(40)	60(60)	10(10)	20(20)	70(55)	70(60)	150(150)	150(150)	175(175)	175(175)	50(50)	50(50)
φ63	10(10)	20(20)	40(40)	60(60)	10(10)	20(20)	70(55)	70(60)	120(110)	120(110)	140(140)	140(140)	45(35)	45(35)
φ80	15(15)	25(25)	45(45)	65(65)	15(15)	25(25)	70(55)	70(65)	130(100)	130(100)	145(145)	145(145)	50(35)	50(35)
φ100	15(15)	25(25)	45(45)	65(65)	15(15)	25(25)	70(55)	70(65)	140(110)	140(110)	155(155)	155(155)	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.

⚠ Be sure to read the Safety precautions for the Position locking on pages 600 to 603 before use.

Min. stroke length with switch

● T2/T3 min. stroke with switches

	Different surface mounting				Same surface mounting				Center trunnion mounting				Rod side trunnion mounting No position detection at rod side stroke end.	Head side trunnion mounting No position detection at head side stroke end.
Switch quantity	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)	130(100)	130(100)	190(160)	190(160)	50(35)	50(35)
φ50	15(10)	15(15)	25(25)	40(40)	15(10)	15(15)	60(45)	60(45)	130(100)	130(100)	130(105)	130(105)	45(30)	45(30)
φ63	15(10)	15(15)	25(25)	40(40)	15(10)	15(15)	60(45)	60(45)	135(105)	135(105)	135(110)	135(110)	50(35)	50(35)
φ80	15(10)	15(15)	30(30)	45(45)	15(10)	15(15)	60(45)	60(45)	140(110)	140(110)	140(120)	140(120)	55(40)	55(40)
φ100	10(10)	15(15)	30(30)	45(45)	10(10)	15(15)	60(45)	60(45)	150(120)	150(120)	150(130)	150(130)	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.

● T1/T2Y/T3Y/T2YD min. stroke with switches

	Different surface mounting				Same surface mounting				Center trunnion mounting				Rod side trunnion mounting No position detection at rod side stroke end.	Head side trunnion mounting No position detection at head side stroke end.
Switch quantity	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.

● T2W/T3W min. stroke with switches

	Different surface mounting				Same surface mounting				Center trunnion mounting				Rod side trunnion mounting No position detection at rod side stroke end.	Head side trunnion mounting No position detection at head side stroke end.
Switch quantity	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)	135(105)	135(105)	195(165)	195(165)	50(35)	50(35)
φ50	20(5)	20(10)	20(15)	20(20)	20(5)	20(10)	65(40)	65(40)	135(105)	135(105)	135(105)	135(105)	50(35)	50(35)
φ63	20(5)	20(10)	20(15)	25(25)	20(5)	20(10)	65(40)	65(40)	140(110)	140(110)	140(110)	140(110)	55(40)	55(40)
φ80	15(5)	15(10)	15(15)	25(25)	15(5)	15(10)	60(40)	60(40)	145(115)	145(115)	145(115)	145(115)	55(40)	55(40)
φ100	10(5)	10(10)	20(20)	25(25)	10(5)	10(10)	60(40)	60(40)	155(125)	155(125)	155(125)	155(125)	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.

Switch specifications (T 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	Programming controller relay, compact solenoid valve	Dedicated for programmable controller			For programmable controller, relay				For programmable controller, relay		For programmable controller, relay (no lamp), serial		For programmable controller, relay			Dedicated 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	110 VAC	5/12/24 VDC	110 VAC	12/24 VDC	110 VAC	220 VAC	24 VDC ±10%
Load current	5 to 100 mA	5 to 20 mA (*3)			100 mA or less		50 mA or less		5 to 50 mA	7 to 20 mA	50 mA or less	20 mA or less	5 to 50 mA	7 to 20 mA	7 to 10 mA	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 3 m:87 5 m:142	1 m:18 3 m:49 5 m:80	1 m:33 3 m:87 5 m:142	1 m:18 3 m:49 5 m:80	1 m:18 3 m:49 5 m:80		1 m:18 3 m:87 5 m:142	1 m:18 3 m:49 5 m:80	1 m:18 3 m:49 5 m:80				1 m:33 3 m:87 5 m:142			1 m:61 3 m:166 5 m:272

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

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

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

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

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

Cylinder weight

(Unit: kg)

Bore size (mm)	Product weight when stroke length (S) = 0 mm							Switch weight	Mounting bracket weight	Additional weight per S = 100 mm
	Basic (OO)	Foot (LB)	Flange (FA, FB)	Special flange (FC)	Eye bracket (CA)	Clevis bracket (CB)	Trunnion (TA, TB, TC)		T type	
φ40	1.21	1.38	1.62	1.30	1.53	1.57	1.59	Refer to the weight in the switch specifications.	0.024	0.39
φ50	1.70	1.95	2.19	1.81	2.08	2.11	2.24		0.022	0.46
φ63	2.36	2.73	3.45	2.54	2.93	2.98	3.21		0.020	0.50
φ80	3.84	4.58	5.70	4.20	5.11	5.32	5.18		0.026	0.90
φ100	6.12	7.03	8.86	6.67	7.76	7.94	8.69		0.024	1.12

(Example) Product weight of SCA2-Q2-LB-50B-200-H-T0H-D

- Product weight for 0 mm stroke length ····· 1.95 kg
- Additional weight for 200 mm stroke length ···· $0.46 \times \frac{200}{100} = 0.92$ kg
- Weight of 2 T0H switches ····· 0.018 x 2 = 0.036 kg
- Weight of 2 mounting brackets ····· 0.022 x 2 = 0.044 kg
- Product weight ····· 1.95 + 0.92 + 0.036 + 0.044 = 2.950 kg

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}

How to order

Without switch (built-in magnet for switch)

SCA2-Q2 - LB - 40 ( ) B - 100 - H ——— S I

With switch (built-in magnet for switch)

SCA2-Q2 - LB - 40 ( ) B - 100 - H - T0H - R - S I

Ⓐ Mounting *1

Ⓑ Bore size

Ⓒ Port thread

Ⓓ Cushion

Ⓔ Stroke length *2

Ⓕ Position locking mechanism

Ⓖ Switch model No. *4

Ⓗ Switch quantity *5

Ⓘ Option *6

Ⓙ Accessory *7

Code	Content
Ⓐ 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
TF	Intermediate supporting hole trunnion (φ40 is not available)
TD	Rod side hole trunnion (φ40 is not available)
TE	Head side hole trunnion (φ40 is not available)
Ⓑ Bore size (mm)	
40	φ40
50	φ50
63	φ63
80	φ80
100	φ100
Ⓒ Port thread	
Blank	Rc thread
N	NPT thread (custom order product)
G	G thread (custom order product)
Ⓓ Cushion	
B	Both sides cushioned
R	Rod side cushioned
H	Head side cushioned
N	Without cushion

Ⓔ Stroke length (mm)

Bore size	Stroke length *3	Custom stroke length
φ40	**5 to 600**	**In 1 mm increments**
φ50	**5 to 600**	
φ63	**5 to 600**	
φ80	**5 to 700**	
φ100	**5 to 800**	

Ⓕ Position locking mechanism	
H	With head side position locking
R	With rod side position locking
Ⓖ Switch model No.	
Refer to the switch model numbers on the next page.	
*** Lead wire length**	
Blank	1 m (standard)
3	3 m (option)
5	5 m (option)
Ⓗ Switch quantity	
R	1 on rod side
H	1 on head side
D	2
T	3
Ⓘ Option	
M	Piston rod material (stainless steel)
S	Cushion needle position S
M0	Non-locking manual override (with release bolt)
M1	Locking manual override
Ⓙ Accessory	
I	Rod eye
Y	Rod clevis (pin and snap ring attached)
B1	Eye bracket
B2	Clevis bracket (pin and snap ring attached)
B3	Eye bracket
B4	Trunnion No. 2 bracket (2 pcs./set)

⚠ Precautions for model No. selection

*1 : Mounting bracket will be shipped with the product. (Trunnion are assembled at shipment.)
TA mounting with R position locking mechanism is not available.
TB mounting with H position locking mechanism is not available.

*2 : If the stroke exceeds the max. stroke length, refer to Ending Page 69.

*3 : Refer to page 478 for the min. stroke length with switch.

*4 : Switches are shipped with the product.

*5 : When selecting TA or TB as mounting, the number of switches is limited to “H” (1 on head side) for TA, and “R” (1 on rod side) for TB.

*6 : Only non-locking manual override unless “M0” or “M1” of Ⓘ option is selected. Release bolt is not included.

*7 : “I” and “Y” cannot be selected together.

*8 : Refer to Ending Page 85 for custom specifications of rod end form.

*9 : Refer to page 432 for combinations of variations/ options.

[Example of model No.]

SCA2-Q2-LB-40B-100-H-T0H-R-SI

Model: Medium bore size cylinder, position locking

Ⓐ Mounting	: Axial foot
Ⓑ Bore size	: φ40 mm
Ⓒ Port thread	: Rc thread
Ⓓ Cushion	: Both sides cushioned
Ⓔ Stroke length	: 100 mm
Ⓕ Position locking mechanism	: With head side position locking
Ⓖ Switch model No.	: Reed T0H switch, lead wire length 1 m
Ⓗ Switch quantity	: 1 on rod side
Ⓘ Option	: Cushion needle position S
Ⓙ Accessory	: Rod eye

[G] Switch model No.

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

How to order switch

[T switch]

● Switch body + mounting bracket set

SCA2 - T0H - 40

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

● Switch body only

SW - T0H

- T0H: Switch model No. (Item Ⓖ)

* Contact CKD when using an environment-friendly T switch.

● Switch mounting bracket set

SCA2 - TS - 40

- TS: Mounting bracket
- 40: Bore size (Item Ⓑ on the previous page)

[T2YD switch]

● Switch body + mounting bracket set

SCA2 - T2YD - 40

- T2YD: Switch model No. (Item Ⓖ on the previous page)
- 40: Bore size (Item Ⓑ on the previous page)

● Switch body only

SW - T2YD

- T2YD: Switch model No. (Item Ⓖ on the previous page)

● Mounting bracket set

SCA2 - T - 40

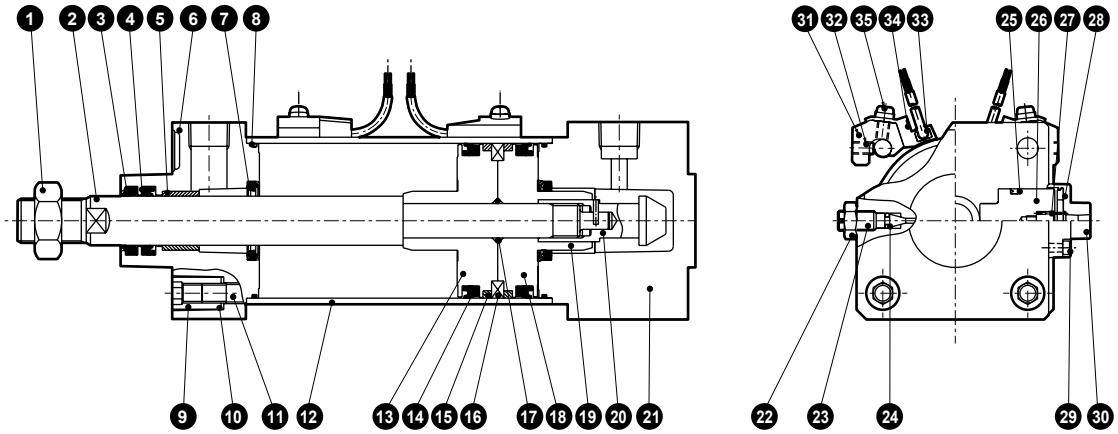
- 40: Bore size (Item Ⓑ on the previous page)

How to order mounting bracket

Bore size (mm) / Mounting bracket	φ40	φ50	φ63	φ80	φ100
Foot (LB) *2	S1-LB-40	S1-LB-50	S1-LB-63	S1-LB-80	S1-LB-100
Flange (FA/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

*1 : For material of the mounting bracket, refer to page 440.
*2 : The foot mounting bracket is provided as 2 pcs./set.
*3 : All mounting brackets are supplied with mounting bolts.

Internal structure and parts list



(The figure shows the type with head cover side position locking.)

No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
1	Rod nut	Steel	Zinc chromate	19	Sleeve	Steel	Nitriding
2	Piston rod	Steel	Industrial chrome plating	20	Spring pin	Steel	Black finish
3	Dust wiper	Nitrile rubber		21	Head cover	Aluminum alloy casting *2	Paint
4	Rod packing	Nitrile rubber		22	Hexagon nut	Copper alloy	Nickel plating
5	Bush	Oil impregnated bearing alloy		23	Cushion needle	Copper alloy	Nickel plating
6	Rod cover	Aluminum alloy die-casting *1	Paint	24	Needle gasket	Nitrile rubber	
7	Cushion packing	Nitrile rubber/steel		25	Stopper packing	Nitrile rubber	
8	Cylinder gasket	Nitrile rubber		26	Stopper piston	Steel	Nitriding
9	Round nut	Steel	Zinc chromate	27	Coil spring	Piano wire	Electrodeposition
10	Conical spring washer	Steel	Black finish	28	Cushion rubber	Urethane rubber	
11	Tie rod	Steel	Zinc chromate	29	Hex socket screw	Alloy steel	Zinc chromate
12	Cylinder tube	Aluminum alloy	Alumite treatment	30	Stopper cover	Aluminum alloy die-casting	
13	Piston (R)	Aluminum alloy die-casting		With switch			
14	Piston packing	Nitrile rubber		31	Switch mounting base	Aluminum alloy	
15	Wear ring	Polyacetal resin		32	Hexagon socket set screw	Alloy steel	Black finish
16	Magnet	Plastic		33	Cylinder switch	-	
17	Piston gasket	Nitrile rubber		34	Switch holder	Aluminum alloy	
18	Piston (B)	Aluminum alloy die-casting		35	Phillips pan head machine screw/captive washer	Steel	Zinc chromate

*1: Aluminum alloy casting for the rod side position locking.
*2: Aluminum alloy die-casting for the rod side position locking.

Repair parts list

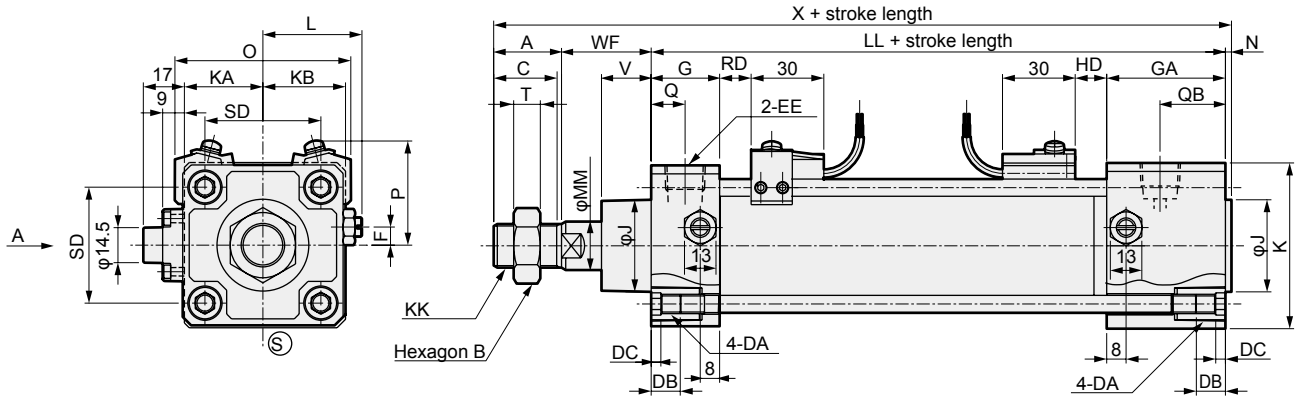
Bore size (mm)	Kit No.	Repair parts No.
φ40	SCA2-Q2-40K	③ ④ ⑦ ⑧ ⑭ ⑮ ㉔ ㉕ ㉘
φ50	SCA2-Q2-50K	
φ63	SCA2-Q2-63K	
φ80	SCA2-Q2-80K	
φ100	SCA2-Q2-100K	

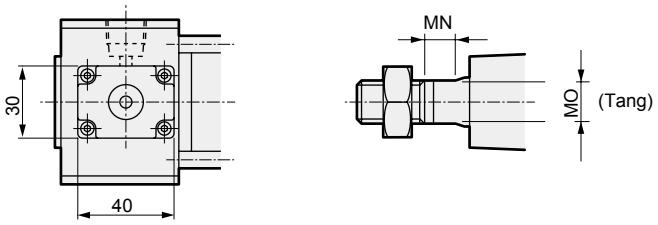
Note: Specify the kit No. when placing an order.

MEMO

Dimensions CAD

● Basic (00) with head side position locking





A arrow view

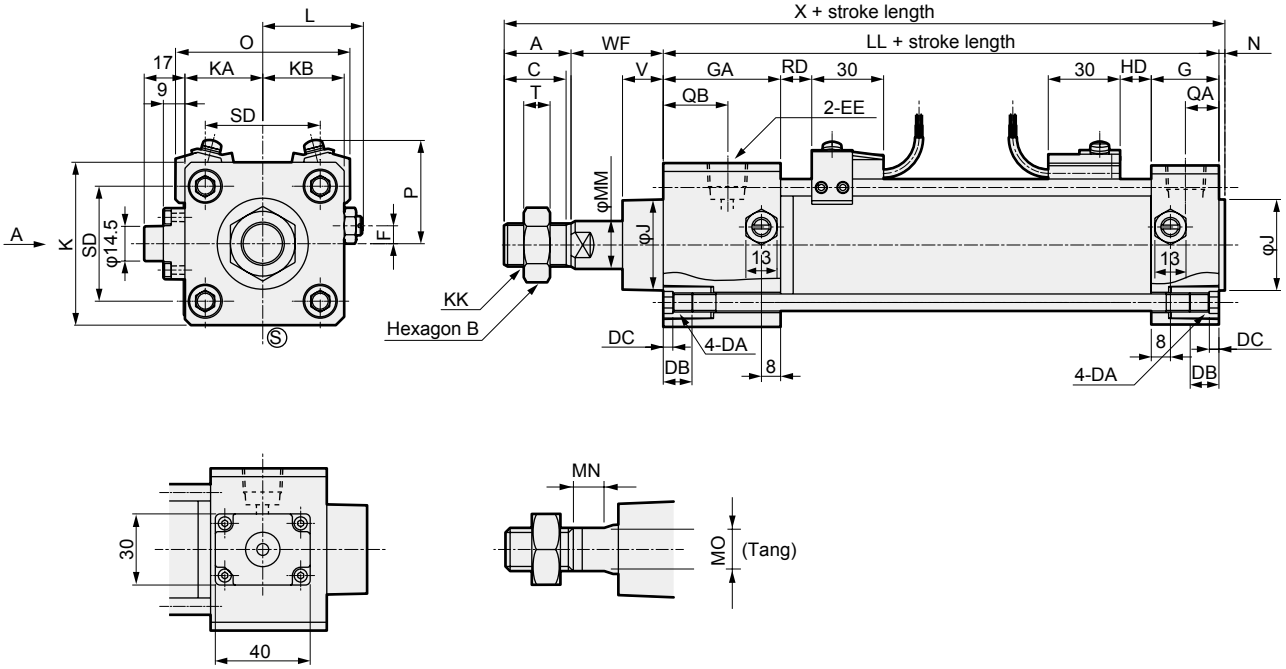
Code	Basic (00)																
Bore size (mm)	A	B	C	DA	DB	DC	EE	F	G	GA	J	K	KA	KB	KK	L	LL
φ40	22	22	20	M8	12	4	Rc1/4	7.5	26	49	31	60	30	30	M14×1.5	38 to 39.5	120.5
φ50	28	27	26	M8	12	4	Rc3/8	0	28	49	38	68	32.5	34	M18×1.5	41 to 43.5	127
φ63	28	27	26	M8	12	4	Rc3/8	0	30	49	38	80	38	40	M18×1.5	47.5 to 50	130
φ80	36	32	34	M12	16	5	Rc1/2	0	34	53	43	100	49	50	M22×1.5	56 to 59	144
φ100	45	41	43	M12	16	5	Rc1/2	0	36	53	51	118	58.5	59	M26×1.5	66 to 69	156

Code												With switch									
Bore size (mm)	MM	MN	MO	N	QA	QB	SD	T	V	WF	X	O	P	T0, T5 T2, T3		T1, T2Y T3Y, T2J		T8		T2W, T3W	
														RD	HD	RD	HD	RD	HD	RD	HD
φ40	16	8	14	2	13	26	40.5	8	18.5	33.5	178	66	41.5	11	15.5	10	14.5	5	9.5	13	17.5
φ50	20	8	17	2.5	14	27	48	11	20.5	37	194.5	73	43	13	18	12	17	7	12	15	20
φ63	20	8	17	3	15	28	59	11	21	35	196	85	47	13	19	12	18	7	13	15	21
φ80	25	11	22	3.5	17	27	74	13	23.5	48	231.5	105	57	14.5	23.5	13.5	22.5	8.5	17.5	16.5	25.5
φ100	30	13	27	4	18	27	90	16	32	53	258	121	63	18.5	29.5	17.5	28.5	12.5	23.5	20.5	31.5

*1: Refer to page 599 for dimensions of projecting section of T2YD switch.
*2: For the dimensions of the accessories, refer to pages 454 and 455.

Dimensions

● Basic (00) with rod side position locking



A arrow view

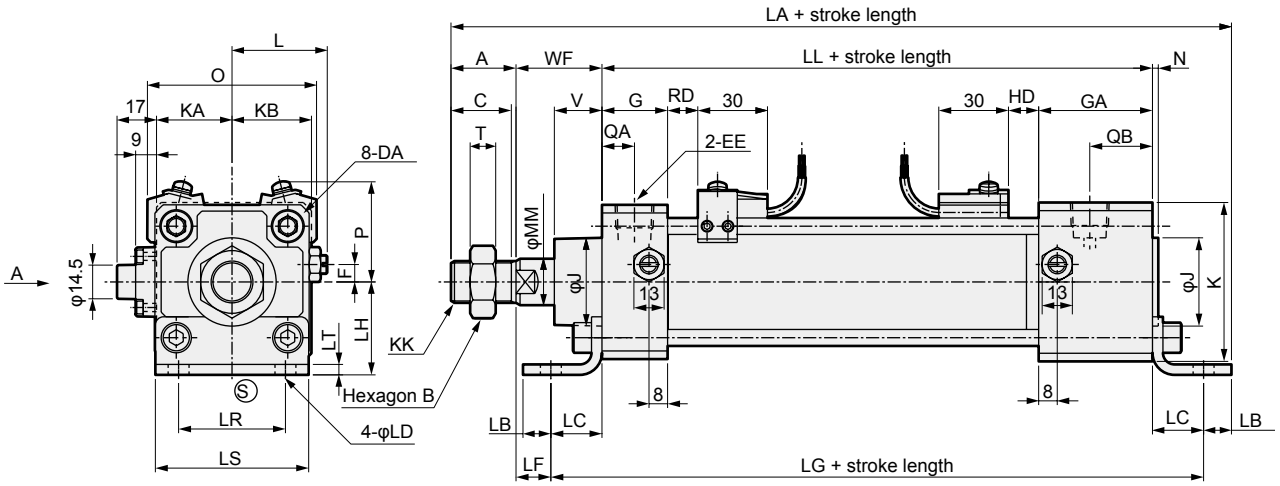
Code	Basic (00)																		
Bore size (mm)	A	B	C	DA	DB	DC	EE	F	G	GA	J	K	KA	KB	KK	L	LL	MM	MN
φ40	22	22	20	M8	12	4	Rc1/4	7.5	26	49	31	60	30	30	M14×1.5	38 to 39.5	120.5	16	8
φ50	28	27	26	M8	12	4	Rc3/8	0	28	49	38	68	32.5	34	M18×1.5	41 to 43.5	127	20	8
φ63	28	27	26	M8	12	4	Rc3/8	0	30	49	38	80	38	40	M18×1.5	47.5 to 50	130	20	8
φ80	36	32	34	M12	16	5	Rc1/2	0	34	53	43	100	49	50	M22×1.5	56 to 59	144	25	11
φ100	45	41	43	M12	16	5	Rc1/2	0	36	53	51	118	58.5	59	M26×1.5	66 to 69	156	30	13

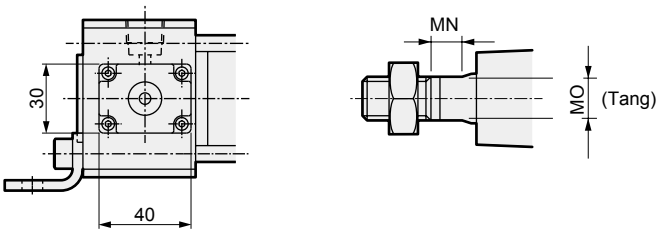
Code										With switch									
Bore size (mm)	MO	N	QA	QB	SD	T	V	WF	X	O	P	T0, T5 T2, T3		T1, T2Y T3Y, T2J		T8		T2W, T3W	
												RD	HD	RD	HD	RD	HD	RD	HD
φ40	14	2	13	26	40.5	8	18.5	33.5	178	66	41.5	15.5	11	14.5	10	9.5	5	17.5	13
φ50	17	2.5	14	27	48	11	17	33.5	191	73	43	18	13	17	12	12	7	20	15
φ63	17	3	15	28	59	11	17	31	192	85	47	19	13	18	12	13	7	21	15
φ80	22	3.5	17	27	74	13	18.5	43	226.5	105	57	23.5	14.5	22.5	13.5	17.5	8.5	25.5	16.5
φ100	27	4	18	27	90	16	29	50	255	121	63	29.5	18.5	28.5	17.5	23.5	12.5	31.5	20.5

*1: Refer to page 599 for dimensions of projecting section of T2YD switch.
*2: For the dimensions of the accessories, refer to pages 454 and 455.

Dimensions

● Axial foot (LB) with head side position locking





A arrow view

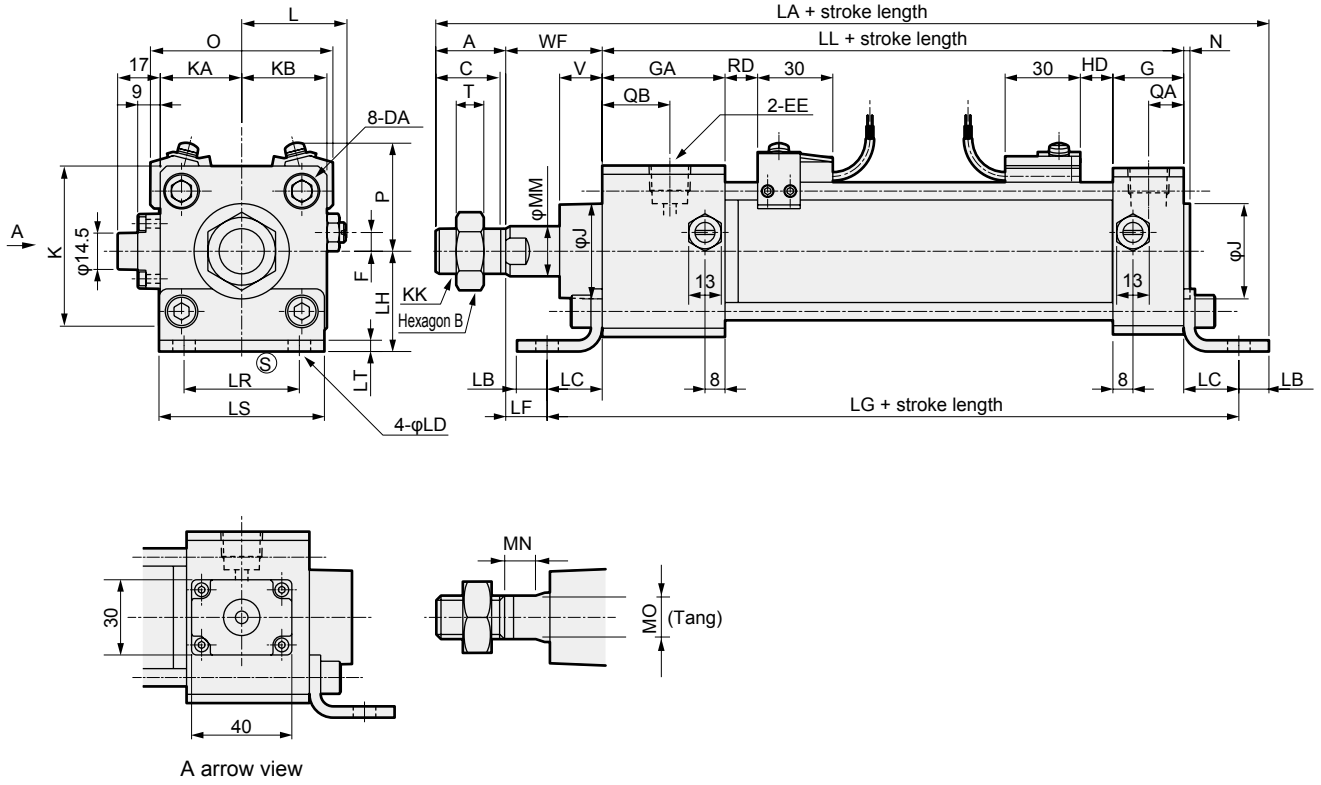
Code	Axial foot (LB) (unit: mm)																			
Bore size (mm)	A	B	C	DA	EE	F	G	GA	J	K	KA	KB	KK	L	LL	MM	MN	MO	N	QA	QB
φ40	22	22	20	M8	Rc1/4	7.5	26	49	31	60	30	30	M14×1.5	38 to 39.5	120.5	16	8	14	2	13	26
φ50	28	27	26	M8	Rc3/8	0	28	49	38	68	32.5	34	M18×1.5	41 to 43.5	127	20	8	17	2.5	14	27
φ63	28	27	26	M8	Rc3/8	0	30	49	38	80	38	40	M18×1.5	47.5 to 50	130	20	8	17	3	15	28
φ80	36	32	34	M12	Rc1/2	0	34	53	43	100	49	50	M22×1.5	56 to 59	144	25	11	22	3.5	17	27
φ100	45	41	43	M12	Rc1/2	0	36	53	51	118	58.5	59	M26×1.5	66 to 69	156	30	13	27	4	18	27

Code				Mounting method										With switch									
Bore size (mm)	T	V	WF	LA	LB	LC	LD	LF	LG	LH	LR	LS	LT	O	P	T0, T5 T2, T3		T1, T2Y T3Y, T2J		T8		T2W, T3W	
																RD	HD	RD	HD	RD	HD	RD	HD
φ40	8	18.5	33.5	205.5	10	19.5	9	14	159.5	40	40	57	3.2	66	41.5	11	15.5	10	14.5	5	9.5	13	17.5
φ50	11	20.5	37	226	12	22	9	15	171	40	46	66	4.5	73	43	13	18	12	17	7	12	15	20
φ63	11	21	35	235	12	30	11	5	190	50	60	80	4.5	85	47	13	19	12	18	7	13	15	21
φ80	13	23.5	48	279	14	37	14	11	218	60	74	98	6.0	105	57	14.5	23.5	13.5	22.5	8.5	17.5	16.5	25.5
φ100	16	32	53	306	21	31	14	22	218	67	80	118	6.0	121	63	18.5	29.5	17.5	28.5	12.5	23.5	20.5	31.5

*1: Refer to page 599 for dimensions of projecting section of T2YD switch.
*2: For the dimensions of the accessories, refer to pages 454 and 455.

Dimensions

● Axial foot (LB) with rod side position locking



A arrow view

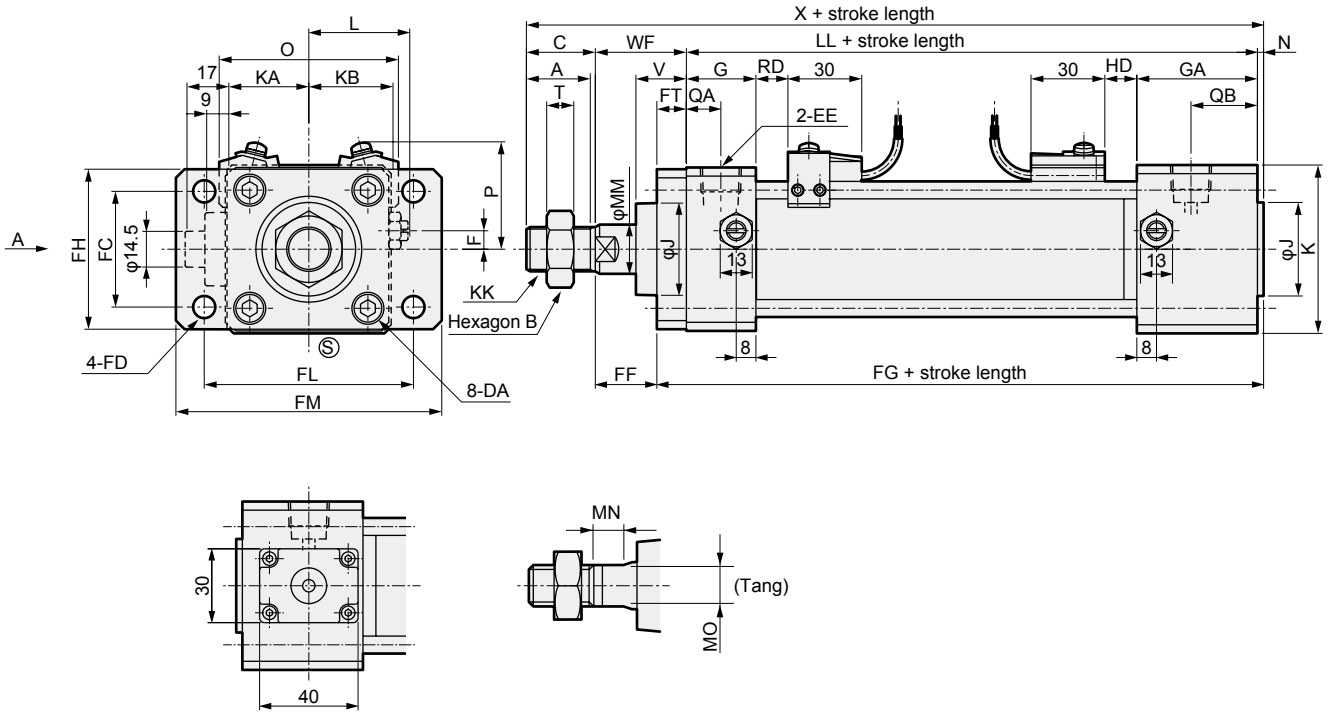
Code	Axial foot (LB) (unit: mm)																				
Bore size (mm)	A	B	C	DA	EE	F	G	GA	J	K	KA	KB	KK	L	LL	MM	MN	MO	N	QA	QB
φ40	22	22	20	M8	Rc1/4	7.5	26	49	31	60	30	30	M14×1.5	38 to 39.5	120.5	16	8	14	2	13	26
φ50	28	27	26	M8	Rc3/8	0	28	49	38	68	32.5	34	M18×1.5	41 to 43.5	127	20	8	17	2.5	14	27
φ63	28	27	26	M8	Rc3/8	0	30	49	38	80	38	40	M18×1.5	47.5 to 50	130	20	8	17	3	15	28
φ80	36	31	34	M12	Rc1/2	0	34	53	43	100	49	50	M22×1.5	56 to 59	144	25	11	22	3.5	17	27
φ100	45	42	43	M12	Rc1/2	0	36	53	51	118	58.5	59	M26×1.5	66 to 69	156	30	13	27	4	18	27

Code				Mounting method										With switch									
Bore size (mm)	T	V	WF	LA	LB	LC	LD	LF	LG	LH	LR	LS	LT	O	P	T0, T5 T2, T3		T1, T2Y T3Y, T2J		T8		T2W, T3W	
																RD	HD	RD	HD	RD	HD	RD	HD
φ40	8	18.5	33.5	205.5	10	19.5	9	14	159.5	40	40	57	3.2	66	41.5	15.5	11	14.5	10	9.5	5	17.5	13
φ50	11	17	33.5	222.5	12	22	9	11.5	171	40	46	66	4.5	73	43	18	13	17	12	12	7	20	15
φ63	11	17	31	231	12	30	11	1	190	50	60	80	4.5	85	47	19	13	18	12	13	7	21	15
φ80	13	18.5	43	274	14	37	14	6	218	60	74	98	6.0	105	57	23.5	14.5	22.5	13.5	17.5	8.5	25.5	16.5
φ100	16	29	50	303	21	31	14	19	218	67	80	118	6.0	121	63	29.5	18.5	28.5	17.5	23.5	12.5	31.5	20.5

*1: Refer to page 599 for dimensions of projecting section of T2YD switch.
*2: For the dimensions of the accessories, refer to pages 454 and 455.

Dimensions CAD

● Rod side flange (FA) with head side position locking



A arrow view

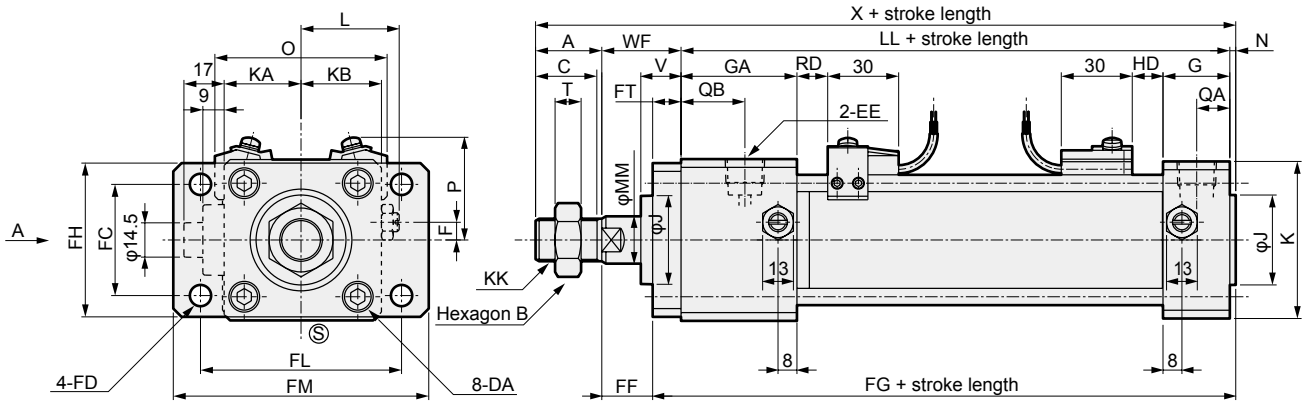
Code	Rod side flange (FA) (unit: mm)																			
Bore size (mm)	A	B	C	DA	EE	F	G	GA	J	K	KA	KB	KK	L	LL	MM	MN	MO	N	QA	QB
φ40	22	22	20	M8	Rc1/4	7.5	26	49	31	60	30	30	M14×1.5	38 to 39.5	120.5	16	8	14	2	13	26
φ50	28	27	26	M8	Rc3/8	0	28	49	38	68	32.5	34	M18×1.5	41 to 43.5	127	20	8	17	2.5	14	27
φ63	28	27	26	M8	Rc3/8	0	30	49	38	80	38	40	M18×1.5	47.5 to 50	130	20	8	17	3	15	28
φ80	36	32	34	M12	Rc1/2	0	34	53	43	100	49	50	M22×1.5	56 to 59	144	25	11	22	3.5	17	27
φ100	45	41	43	M12	Rc1/2	0	36	53	51	118	58.5	59	M26×1.5	66 to 69	156	30	13	27	4	18	27

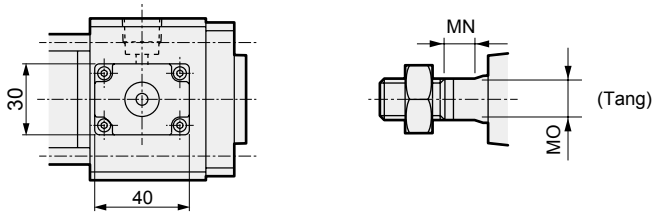
Code					Mounting method								With switch									
Bore size (mm)	T	V	WF	X	FC	FD	FF	FG	FH	FL	FM	FT	O	P	T0, T5 T2, T3		T1, T2Y T3Y, T2J		T8		T2W, T3W	
															RD	HD	RD	HD	RD	HD	RD	HD
φ40	8	18.5	33.5	178	40	9	21.5	134.5	57	80	100	12	66	41.5	11	15.5	10	14.5	5	9.5	13	17.5
φ50	11	20.5	37	194.5	47	9	25	141.5	65	85	108	12	73	43	13	18	12	17	7	12	15	20
φ63	11	21	35	196	60	11	19	149	80	106	130	16	85	47	13	19	12	18	7	13	15	21
φ80	13	23.5	48	231.5	74	14	29	166.5	98	125	153	19	105	57	14.5	23.5	13.5	22.5	8.5	17.5	16.5	25.5
φ100	16	32	53	258	88	14	34	179	118	144	180	19	121	63	18.5	29.5	17.5	28.5	12.5	23.5	20.5	31.5

*1: Refer to page 599 for dimensions of projecting section of T2YD switch.
*2: For the dimensions of the accessories, refer to pages 454 and 455.

Dimensions

● Rod side flange (FA) with rod side position locking





A arrow view

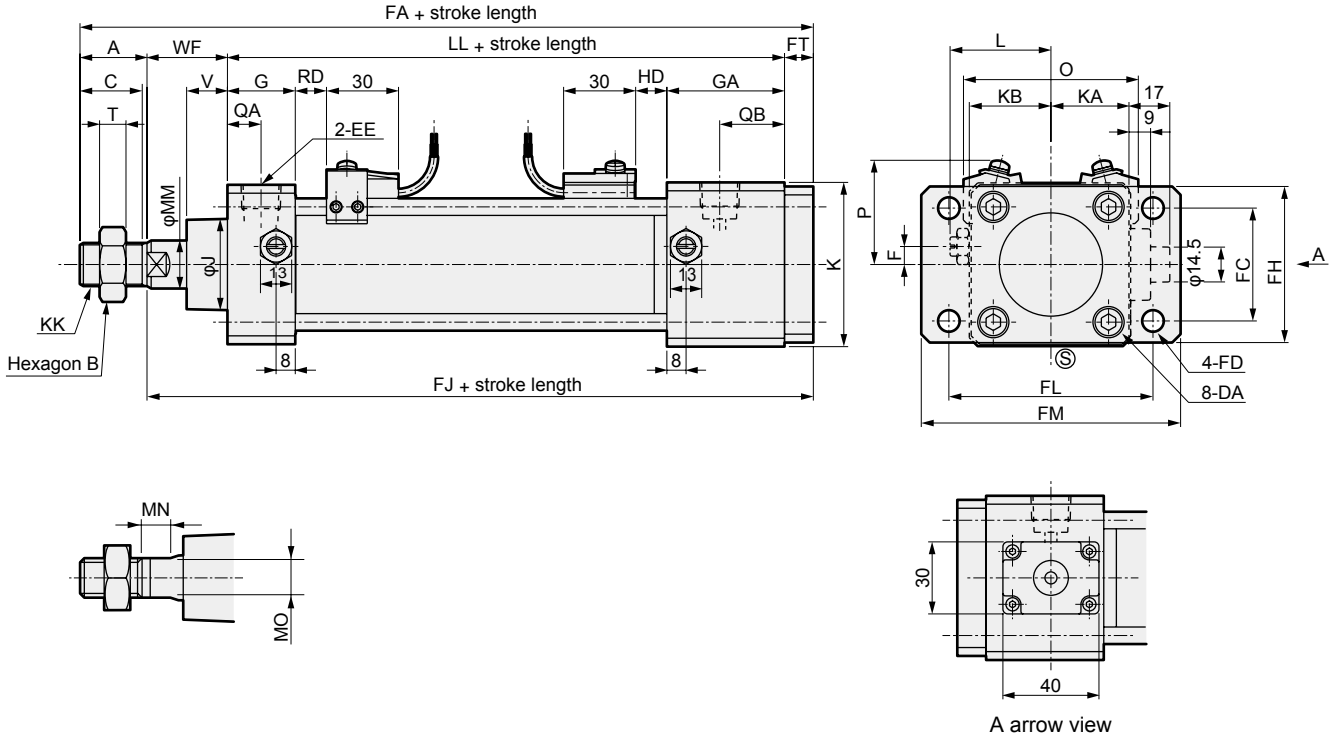
Code	Rod side flange (FA) (unit: mm)																				
Bore size (mm)	A	B	C	DA	EE	F	G	GA	J	K	KA	KB	KK	L	LL	MM	MN	MO	N	QA	QB
φ40	22	22	20	M8	Rc1/4	7.5	26	49	31	60	30	30	M14×1.5	38 to 39.5	120.5	16	8	14	2	13	26
φ50	28	27	26	M8	Rc3/8	0	28	49	38	68	32.5	34	M18×1.5	41 to 43.5	127	20	8	17	2.5	14	27
φ63	28	27	26	M8	Rc3/8	0	30	49	38	80	38	40	M18×1.5	47.5 to 50	130	20	8	17	3	15	28
φ80	36	32	34	M12	Rc1/2	0	34	53	43	100	49	50	M22×1.5	56 to 59	144	25	11	22	3.5	17	27
φ100	45	41	43	M12	Rc1/2	0	36	53	51	118	58.5	59	M26×1.5	66 to 69	156	30	13	27	4	18	27

Code					Mounting method								With switch									
Bore size (mm)	T	V	WF	X	FC	FD	FF	FG	FH	FL	FM	FT	O	P	T0, T5 T2, T3		T1, T2Y T3Y, T2J		T8		T2W, T3W	
															RD	HD	RD	HD	RD	HD	RD	HD
φ40	8	18.5	33.5	178	40	9	21.5	134.5	57	80	100	12	66	41.5	15.5	11	14.5	10	9.5	5	17.5	13
φ50	11	17	33.5	191	47	9	21.5	141.5	65	85	108	12	73	43	18	13	17	12	12	7	20	15
φ63	11	17	31	192	60	11	15	149	80	106	130	16	85	47	19	13	18	12	13	7	21	15
φ80	13	18.5	43	226.5	74	14	24	166.5	98	125	153	19	105	57	23.5	14.5	22.5	13.5	17.5	8.5	25.5	16.5
φ100	16	29	50	255	88	14	31	179	118	144	180	19	121	63	29.5	18.5	28.5	17.5	23.5	12.5	31.5	20.5

*1: Refer to page 599 for dimensions of projecting section of T2YD switch.
*2: For the dimensions of the accessories, refer to pages 454 and 455.

Dimensions CAD

● Head side flange (FB) with head side position locking



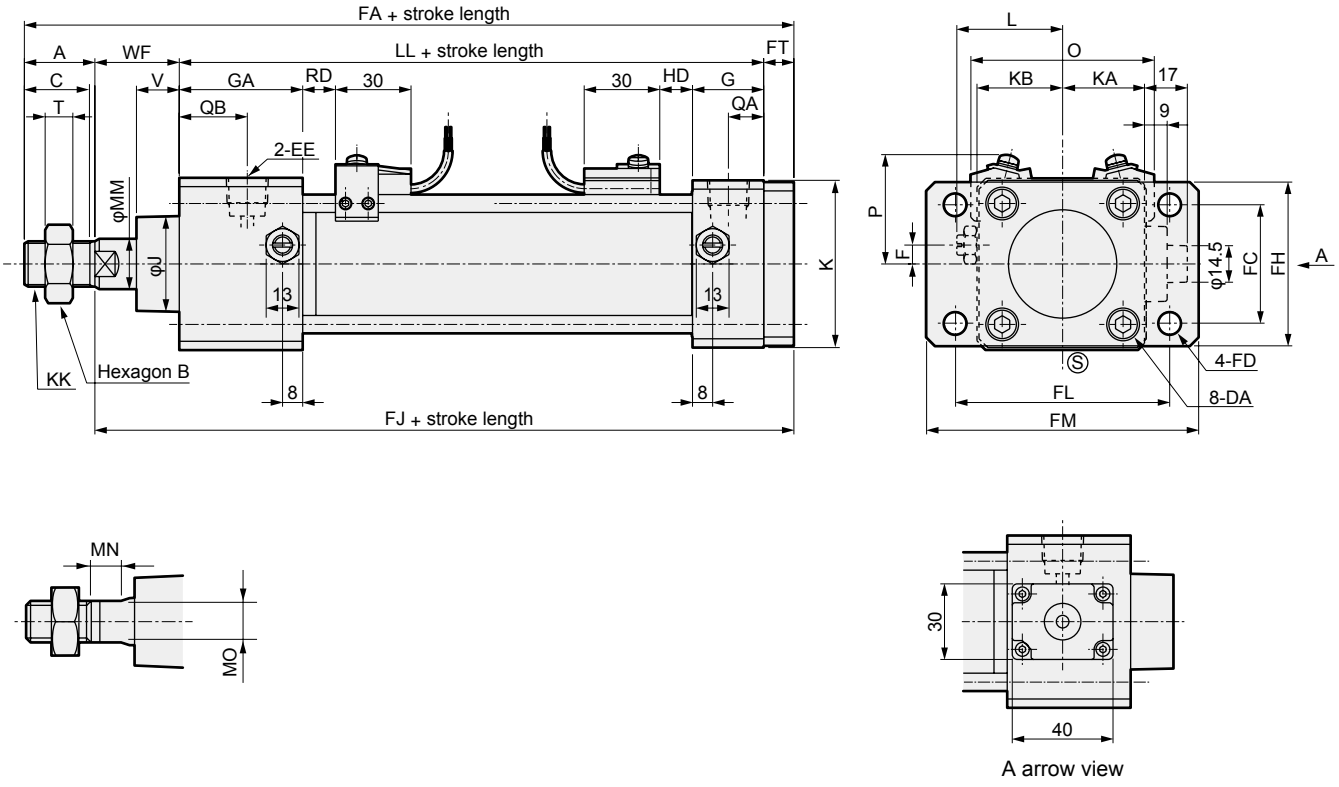
Code	Head side flange (FB) (unit: mm)																			
Bore size (mm)	A	B	C	DA	EE	F	G	GA	J	K	KA	KB	KK	L	LL	MM	MN	MO	QA	QB	T
φ40	22	22	20	M8	Rc1/4	7.5	26	49	31	60	30	30	M14×1.5	38 to 39.5	120.5	16	8	14	13	26	8
φ50	28	27	26	M8	Rc3/8	0	28	49	38	68	32.5	34	M18×1.5	41 to 43.5	127	20	8	17	14	27	11
φ63	28	27	26	M8	Rc3/8	0	30	49	38	80	38	40	M18×1.5	47.5 to 50	130	20	8	17	15	28	11
φ80	36	32	34	M12	Rc1/2	0	34	53	43	100	49	50	M22×1.5	56 to 59	144	25	11	22	17	27	13
φ100	45	41	43	M12	Rc1/2	0	36	53	51	118	58.5	59	M26×1.5	66 to 69	156	30	13	27	18	27	16

Code			Mounting method								With switch									
Bore size (mm)	V	WF	FA	FC	FD	FJ	FH	FL	FM	FT	O	P	T0, T5 T2, T3		T1, T2Y T3Y, T2J		T8		T2W, T3W	
													RD	HD	RD	HD	RD	HD	RD	HD
φ40	18.5	33.5	188	40	9	166	57	80	100	12	66	41.5	11	15.5	10	14.5	5	9.5	13	17.5
φ50	20.5	37	204	47	9	176	65	85	108	12	73	43	13	18	12	17	7	12	15	20
φ63	21	35	209	60	11	181	80	106	130	16	85	47	13	19	12	18	7	13	15	21
φ80	23.5	48	247	74	14	211	98	125	153	19	105	57	14.5	23.5	13.5	22.5	8.5	17.5	16.5	25.5
φ100	32	53	273	88	14	228	118	144	180	19	121	63	18.5	29.5	17.5	28.5	12.5	23.5	20.5	31.5

*1: Refer to page 599 for dimensions of projecting section of T2YD switch.
*2: For the dimensions of the accessories, refer to pages 454 and 455.

Dimensions

● Head side flange (FB) with rod side position locking



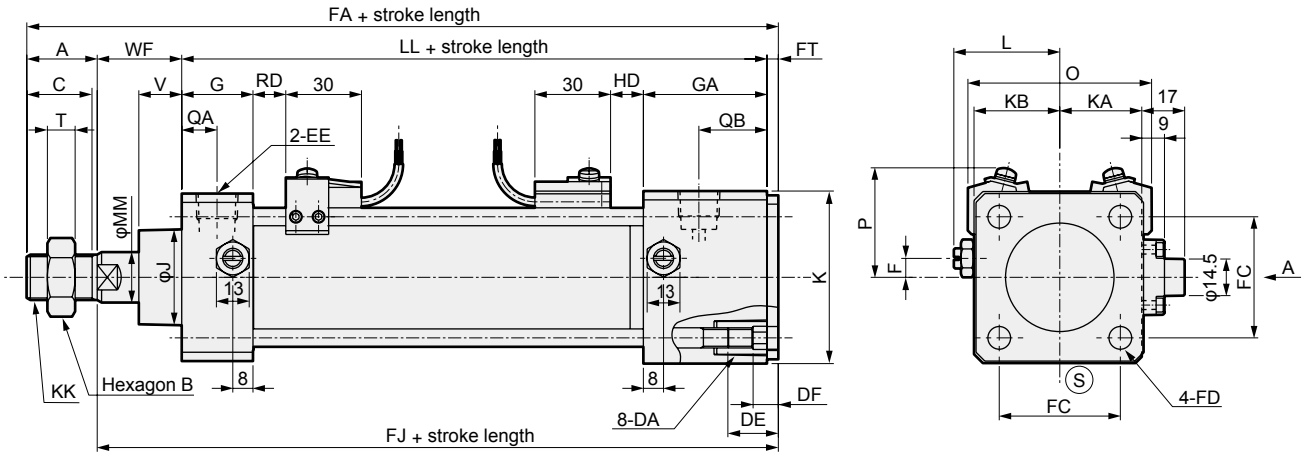
Code	Head side flange (FB) (unit: mm)																			
Bore size (mm)	A	B	C	DA	EE	F	G	GA	J	K	KA	KB	KK	L	LL	MM	MN	MO	QA	QB	T
φ40	22	22	20	M8	Rc1/4	7.5	26	49	31	60	30	30	M14×1.5	38 to 39.5	120.5	16	8	14	13	26	8
φ50	28	27	26	M8	Rc3/8	0	28	49	38	68	32.5	34	M18×1.5	41 to 43.5	127	20	8	17	14	27	11
φ63	28	27	26	M8	Rc3/8	0	30	49	38	80	38	40	M18×1.5	47.5 to 50	130	20	8	17	15	28	11
φ80	36	32	34	M12	Rc1/2	0	34	53	43	100	49	50	M22×1.5	56 to 59	144	25	11	22	17	27	13
φ100	45	41	43	M12	Rc1/2	0	36	53	51	118	58.5	59	M26×1.5	66 to 69	156	30	13	27	18	27	16

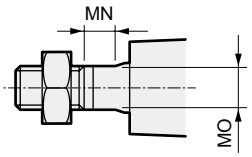
Code			Mounting method								With switch									
Bore size (mm)	V	WF	FA	FC	FD	FJ	FH	FL	FM	FT	O	P	T0, T5 T2, T3		T1, T2Y T3Y, T2J		T8		T2W, T3W	
													RD	HD	RD	HD	RD	HD	RD	HD
φ40	18.5	33.5	188	40	9	166	57	80	100	12	66	41.5	15.5	11	14.5	10	9.5	5	17.5	13
φ50	17	33.5	200.5	47	9	172.5	65	85	108	12	73	43	18	13	17	12	12	7	20	15
φ63	17	31	205	60	11	177	80	106	130	16	85	47	19	13	18	12	13	7	21	15
φ80	18.5	43	242	74	14	206	98	125	153	19	105	57	23.5	14.5	22.5	13.5	17.5	8.5	25.5	16.5
φ100	29	50	270	88	14	225	118	144	180	19	121	63	29.5	18.5	28.5	17.5	23.5	12.5	31.5	20.5

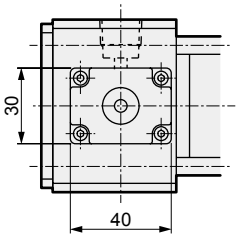
*1: Refer to page 599 for dimensions of projecting section of T2YD switch.
*2: For the dimensions of the accessories, refer to pages 454 and 455.

Dimensions CAD

● Head side special flange (FC) with head side position locking







A arrow view

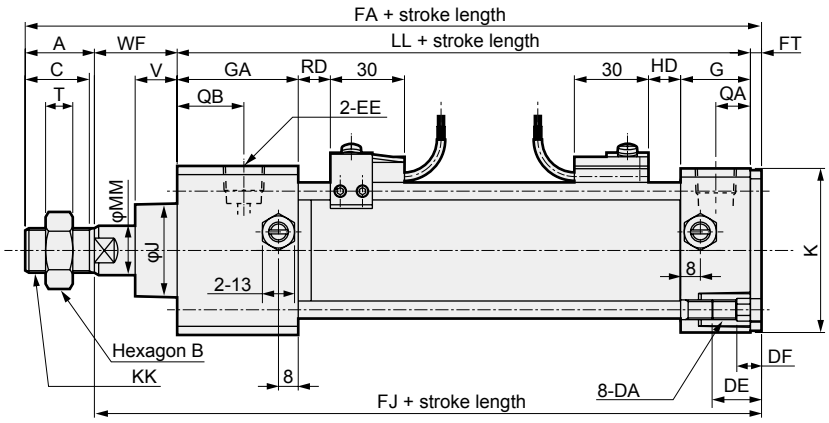
Code	Head side special flange (FC) (unit: mm)																				
Bore size (mm)	A	B	C	DA	DE	DF	EE	F	G	GA	J	K	KA	KB	KK	L	LL	MM	MN	MO	QA
φ40	22	22	20	M8	16.5	8.5	Rc1/4	7.5	26	49	31	60	30	30	M14×1.5	38 to 39.5	120.5	16	8	14	13
φ50	28	27	26	M8	16.5	8.5	Rc3/8	0	28	49	38	68	32.5	34	M18×1.5	41 to 43.5	127	20	8	17	14
φ63	28	27	26	M8	16.5	8.5	Rc3/8	0	30	49	38	80	38	40	M18×1.5	47.5 to 50	130	20	8	17	15
φ80	36	32	34	M12	22	11	Rc1/2	0	34	53	43	100	49	50	M22×1.5	56 to 59	144	25	11	22	17
φ100	45	41	43	M12	22	11	Rc1/2	0	36	53	51	118	58.5	59	M26×1.5	66 to 69	156	30	13	27	18

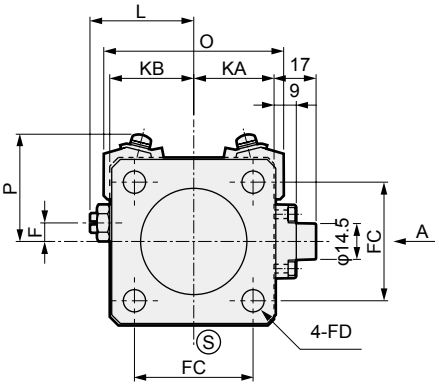
Code					Mounting method					With switch									
Bore size (mm)	QB	T	V	WF	FA	FC	FD	FJ	FT	O	P	T0, T5 T2, T3		T1, T2Y T3Y, T2J		T8		T2W, T3W	
												RD	HD	RD	HD	RD	HD	RD	HD
φ40	26	8	18.5	33.5	180.5	40.5	9	158.5	4.5	66	41.5	11	15.5	10	14.5	5	9.5	13	17.5
φ50	27	11	20.5	37	196.5	48	9	168.5	4.5	73	43	13	18	12	17	7	12	15	20
φ63	28	11	21	35	197.5	59	9	169.5	4.5	85	47	13	19	12	18	7	13	15	21
φ80	27	13	23.5	48	234	74	14	198	6	105	57	14.5	23.5	13.5	22.5	8.5	17.5	16.5	25.5
φ100	27	16	32	53	260	90	14	215	6	121	63	18.5	29.5	17.5	28.5	12.5	23.5	20.5	31.5

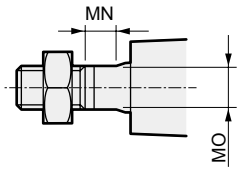
*1: Refer to page 599 for dimensions of projecting section of T2YD switch.
*2: For the dimensions of the accessories, refer to pages 454 and 455.

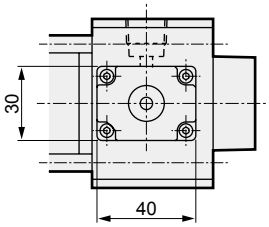
Dimensions

● Head side special flange (FC) with rod side position locking









A arrow view

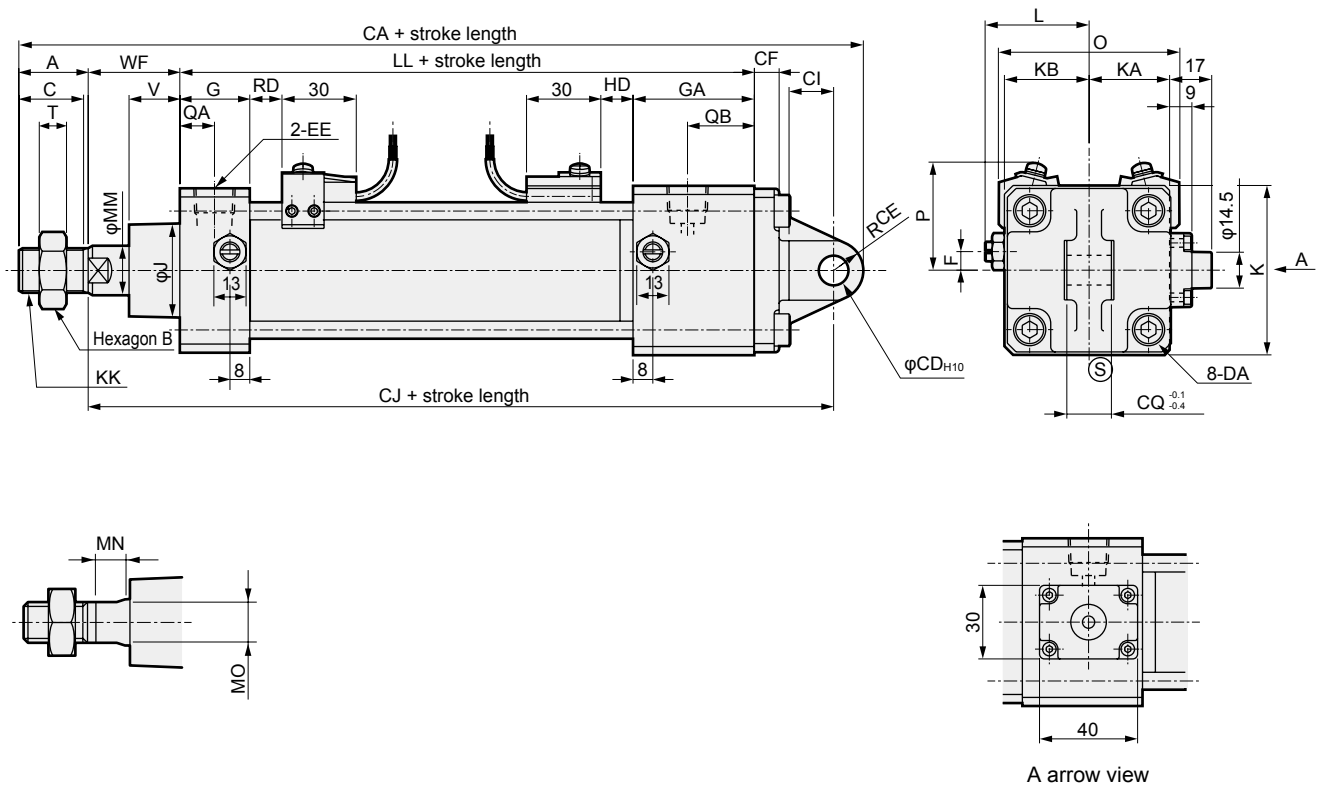
Code	Head side special flange (FC) (unit: mm)																				
Bore size (mm)	A	B	C	DA	DE	DF	EE	F	G	GA	J	K	KA	KB	KK	L	LL	MM	MN	MO	QA
φ40	22	22	20	M8	19	10	Rc1/4	7.5	26	49	31	60	30	30	M14×1.5	38 to 39.5	120.5	16	8	14	13
φ50	28	27	26	M8	20	10	Rc3/8	0	28	49	38	68	32.5	34	M18×1.5	41 to 43.5	127	20	8	17	14
φ63	28	27	26	M8	20	10	Rc3/8	0	30	49	38	80	38	40	M18×1.5	47.5 to 50	130	20	8	17	15
φ80	36	32	34	M12	22	11	Rc1/2	0	34	53	43	100	49	50	M22×1.5	56 to 59	144	25	11	22	17
φ100	45	41	43	M12	22	11	Rc1/2	0	36	53	51	118	58.5	59	M26×1.5	66 to 69	156	30	13	27	18

Code					Mounting method					With switch									
Bore size (mm)	QB	T	V	WF	FA	FC	FD	FJ	FT	O	P	T0, T5 T2, T3		T1, T2Y T3Y, T2J		T8		T2W, T3W	
												RD	HD	RD	HD	RD	HD	RD	HD
φ40	26	8	18.5	33.5	180.5	40	9	158.5	4.5	66	41.5	15.5	11	14.5	10	9.5	5	17.5	13
φ50	27	11	17	33.5	193	47	9	165	4.5	73	43	18	13	17	12	12	7	20	15
φ63	28	11	17	31	193.5	60	11	165.5	4.5	85	47	19	13	18	12	13	7	21	15
φ80	27	13	18.5	43	229	74	14	193	6	105	57	23.5	14.5	22.5	13.5	17.5	8.5	25.5	16.5
φ100	27	16	29	50	257	88	14	212	6	121	63	29.5	18.5	28.5	17.5	23.5	12.5	31.5	20.5

*1: Refer to page 599 for dimensions of projecting section of T2YD switch.
*2: For the dimensions of the accessories, refer to pages 454 and 455.

Dimensions CAD

● Eye bracket (CA) with head side position locking



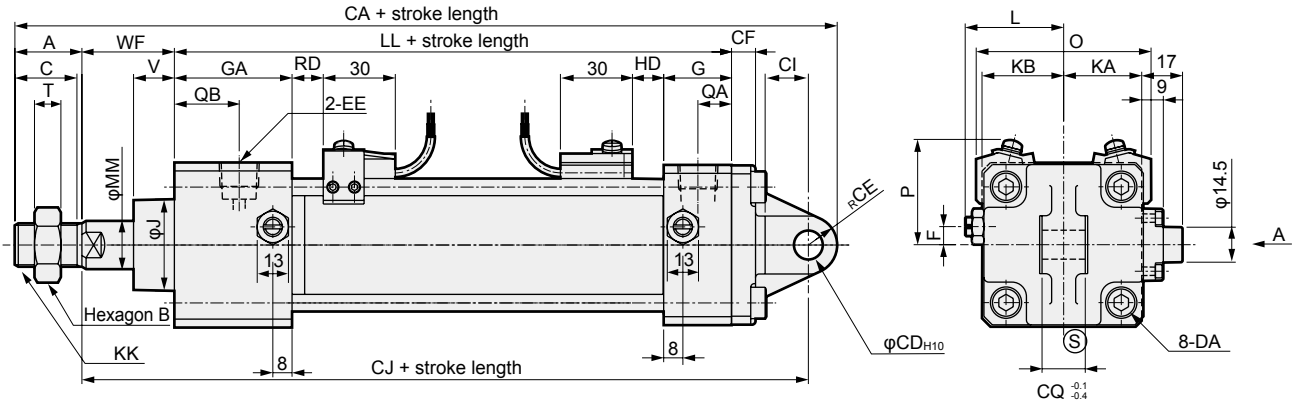
Code	Eye bracket (CA) (unit: mm)																				
Bore size (mm)	A	B	C	DA	EE	F	G	GA	J	K	KA	KB	KK	L	LL	MM	MN	MO	QA	QB	T
φ40	22	22	20	M8	Rc1/4	7.5	26	49	31	60	30	30	M14×1.5	38 to 39.5	120.5	16	8	14	13	26	8
φ50	28	27	26	M8	Rc3/8	0	28	49	38	68	32.5	34	M18×1.5	41 to 43.5	127	20	8	17	14	27	11
φ63	28	27	26	M8	Rc3/8	0	30	49	38	80	38	40	M18×1.5	47.5 to 50	130	20	8	17	15	28	11
φ80	36	32	34	M12	Rc1/2	0	34	53	43	100	49	50	M22×1.5	56 to 59	144	25	11	22	17	27	13
φ100	45	41	43	M12	Rc1/2	0	36	53	51	118	58.5	59	M26×1.5	66 to 69	156	30	13	27	18	27	16

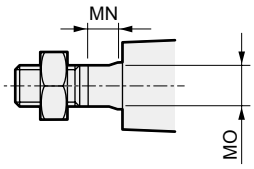
Code			Mounting method							With switch									
Bore size (mm)	V	WF	CA	CD	CE	CF	CI	CJ	CQ	O	P	T0, T5 T2, T3		T1, T2Y T3Y, T2J		T8		T2W, T3W	
												RD	HD	RD	HD	RD	HD	RD	HD
φ40	18.5	33.5	220	12	12	10	18	186	18	66	41.5	11	15.5	10	14.5	5	9.5	13	17.5
φ50	20.5	37	236	12	12	10	18	196	18	73	43	13	18	12	17	7	12	15	20
φ63	21	35	246	14	16	10	24	202	20	85	47	13	19	12	18	7	13	15	21
φ80	23.5	48	300	20	20	14	30	244	28	105	57	14.5	23.5	13.5	22.5	8.5	17.5	16.5	25.5
φ100	32	53	326	20	20	16	30	261	28	121	63	18.5	29.5	17.5	28.5	12.5	23.5	20.5	31.5

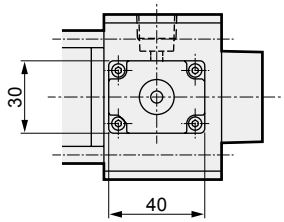
*1: Refer to page 599 for dimensions of projecting section of T2YD switch.
*2: For the dimensions of the accessories, refer to pages 454 and 455.

Dimensions

● Eye bracket (CA) with rod side position locking







A arrow view

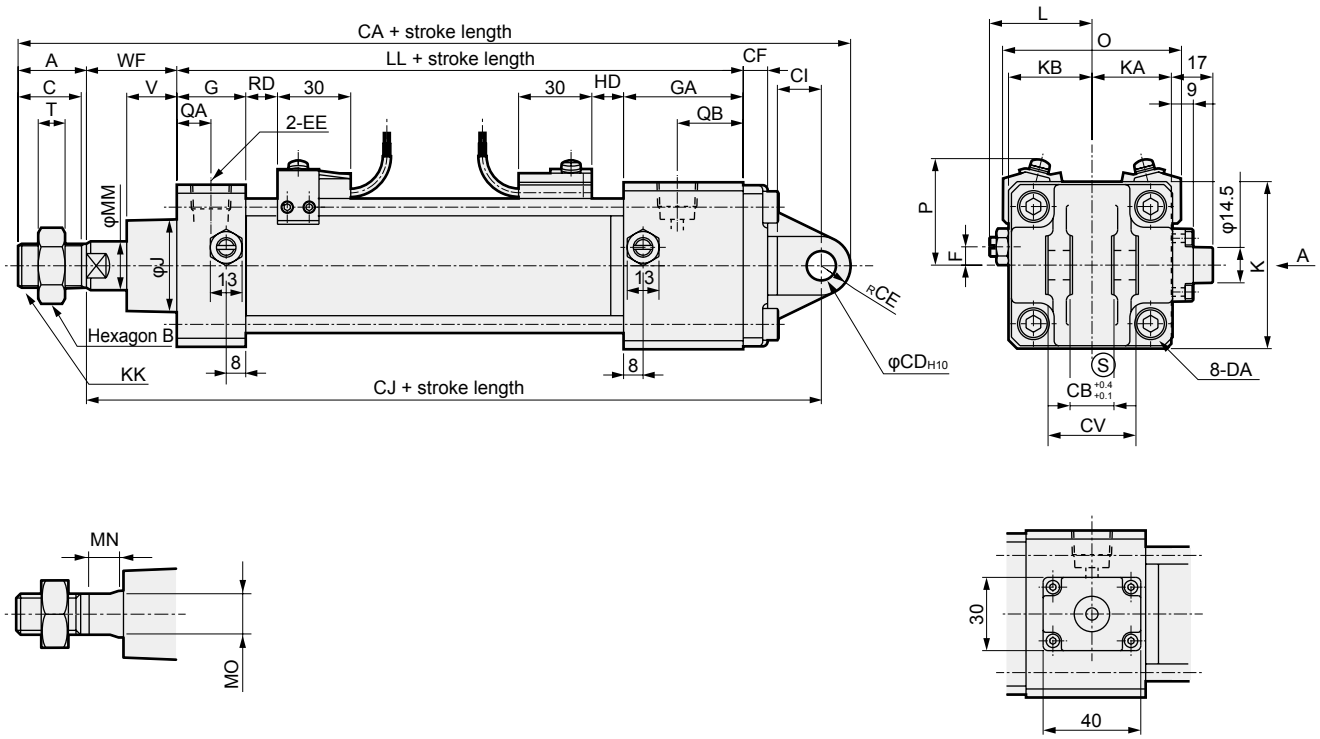
Code	Eye bracket (CA) (unit: mm)																				
Bore size (mm)	A	B	C	DA	EE	F	G	GA	J	K	KA	KB	KK	L	LL	MM	MN	MO	QA	QB	T
φ40	22	22	20	M8	Rc1/4	7.5	26	49	31	60	30	30	M14×1.5	38 to 39.5	120.5	16	8	14	13	26	8
φ50	28	27	26	M8	Rc3/8	0	28	49	38	68	32.5	34	M18×1.5	41 to 43.5	127	20	8	17	14	27	11
φ63	28	27	26	M8	Rc3/8	0	30	49	38	80	38	40	M18×1.5	47.5 to 50	130	20	8	17	15	28	11
φ80	36	32	34	M12	Rc1/2	0	34	53	43	100	49	50	M22×1.5	56 to 59	144	25	11	22	17	27	13
φ100	45	41	43	M12	Rc1/2	0	36	53	51	118	58.5	59	M26×1.5	66 to 69	156	30	13	27	18	27	16

Code			Mounting method							With switch									
Bore size (mm)	V	WF	CA	CD	CE	CF	CI	CJ	CQ	O	P	T0, T5 T2, T3		T1, T2Y T3Y, T2J		T8		T2W, T3W	
												RD	HD	RD	HD	RD	HD	RD	HD
φ40	18.5	33.5	220	12	12	10	18	186	18	66	41.5	15.5	11	14.5	10	9.5	5	17.5	13
φ50	17	33.5	232.5	12	12	10	18	192.5	18	73	43	18	13	17	12	12	7	20	15
φ63	17	31	242	14	16	10	24	198	20	85	47	19	13	18	12	13	7	21	15
φ80	18.5	43	295	20	20	14	30	239	28	105	57	23.5	14.5	22.5	13.5	17.5	8.5	25.5	16.5
φ100	29	50	323	20	20	16	30	258	28	121	63	29.5	18.5	28.5	17.5	23.5	12.5	31.5	20.5

*1: Refer to page 599 for dimensions of projecting section of T2YD switch.
*2: For the dimensions of the accessories, refer to pages 454 and 455.

Dimensions CAD

● Clevis bracket (CB) with head side position locking



A arrow view

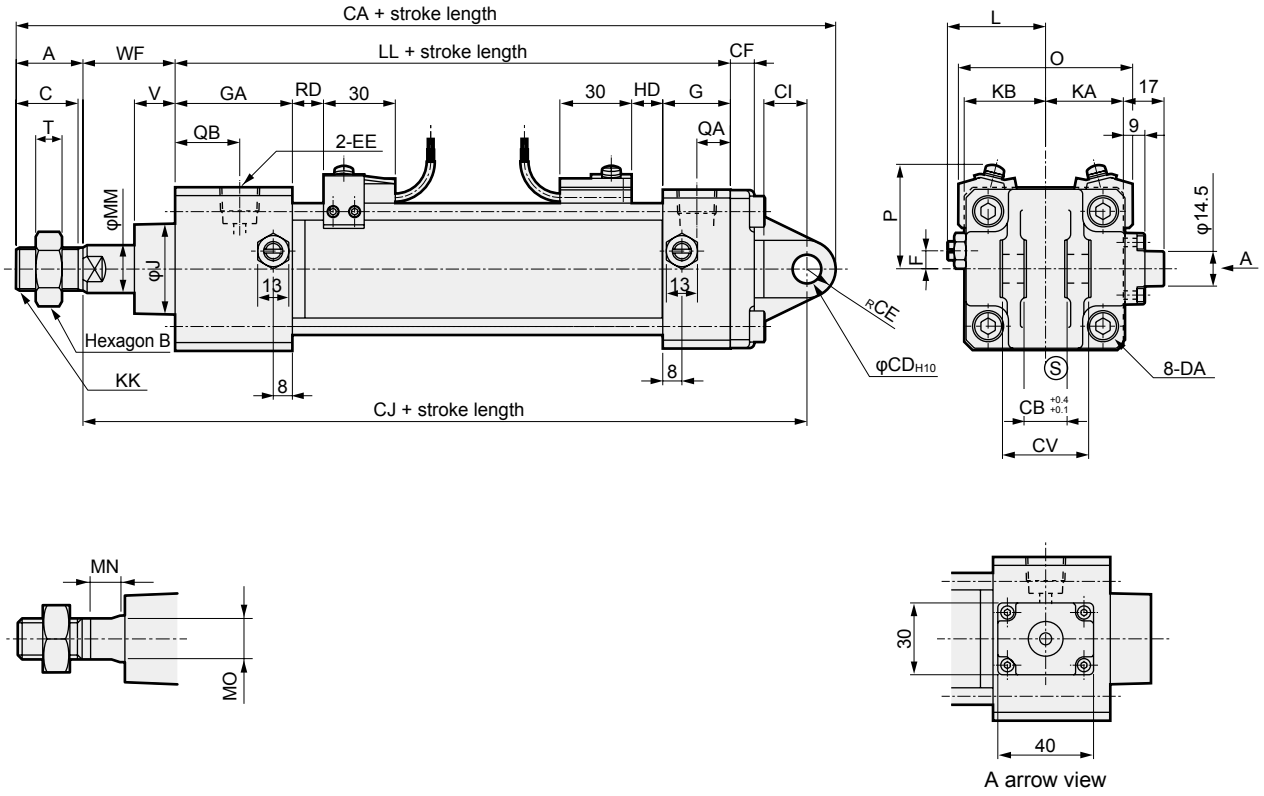
Code	Clevis bracket (CB) (unit: mm)																				
Bore size (mm)	A	B	C	DA	EE	F	G	GA	J	K	KA	KB	KK	L	LL	MM	MN	MO	QA	QB	T
φ40	22	22	20	M8	Rc1/4	7.5	26	49	31	60	30	30	M14×1.5	38 to 39.5	120.5	16	8	14	13	26	8
φ50	28	27	26	M8	Rc3/8	0	28	49	38	68	32.5	34	M18×1.5	41 to 43.5	127	20	8	17	14	27	11
φ63	28	27	26	M8	Rc3/8	0	30	49	38	80	38	40	M18×1.5	47.5 to 50	130	20	8	17	15	28	11
φ80	36	32	34	M12	Rc1/2	0	34	53	43	100	49	50	M22×1.5	56 to 59	144	25	11	22	17	27	13
φ100	45	41	43	M12	Rc1/2	0	36	53	51	118	58.5	59	M26×1.5	66 to 69	156	30	13	27	18	27	16

Code			Mounting method								With switch									
Bore size (mm)	V	WF	CA	CB	CD	CE	CF	CI	CJ	CV	O	P	T0, T5 T2, T3		T1, T2Y T3Y, T2J		T8		T2W, T3W	
													RD	HD	RD	HD	RD	HD	RD	HD
φ40	18.5	33.5	220	18	12	12	10	18	186	36	66	41.5	11	15.5	10	14.5	5	9.5	13	17.5
φ50	20.5	37	236	18	12	12	10	18	196	36	73	43	13	18	12	17	7	12	15	20
φ63	21	35	246	20	14	16	10	24	202	40	85	47	13	19	12	18	7	13	15	21
φ80	23.5	48	300	28	20	20	14	30	244	56	105	57	14.5	23.5	13.5	22.5	8.5	17.5	16.5	25.5
φ100	32	53	326	28	20	20	16	30	261	56	121	63	18.5	29.5	17.5	28.5	12.5	23.5	20.5	31.5

*1: Refer to page 599 for dimensions of projecting section of T2YD switch.
*2: For the dimensions of the accessories, refer to pages 454 and 455.

Dimensions

● Clevis bracket (CB) with rod side position locking



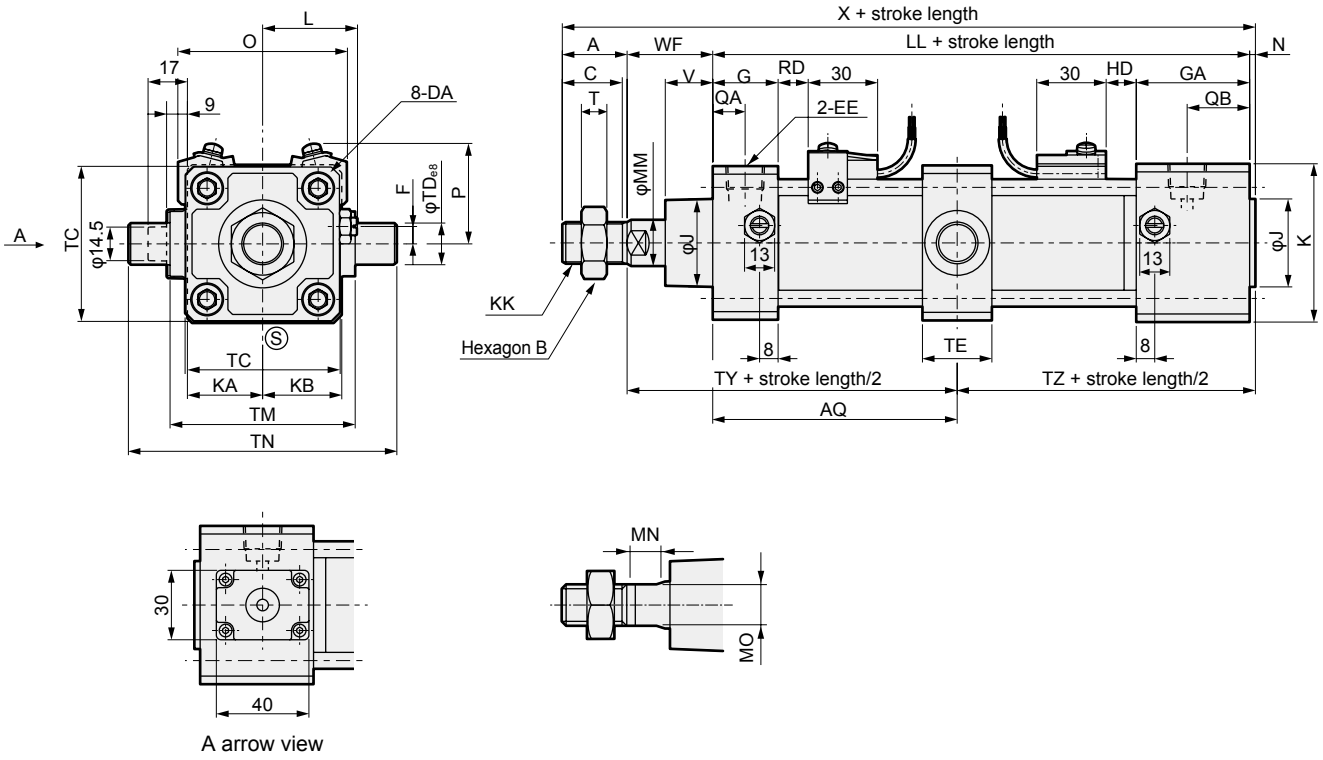
Code	Clevis bracket (CB) (unit: mm)																				
Bore size (mm)	A	B	C	DA	EE	F	G	GA	J	K	KA	KB	KK	L	LL	MM	MN	MO	QA	QB	T
φ40	22	22	20	M8	Rc1/4	7.5	26	49	31	60	30	30	M14×1.5	38 to 39.5	120.5	16	8	14	13	26	8
φ50	28	27	26	M8	Rc3/8	0	28	49	38	68	32.5	34	M18×1.5	41 to 43.5	127	20	8	17	14	27	11
φ63	28	27	26	M8	Rc3/8	0	30	49	38	80	38	40	M18×1.5	47.5 to 50	130	20	8	17	15	28	11
φ80	36	32	34	M12	Rc1/2	0	34	53	43	100	49	50	M22×1.5	56 to 59	144	25	11	22	17	27	13
φ100	45	41	43	M12	Rc1/2	0	36	53	51	118	58.5	59	M26×1.5	66 to 69	156	30	13	27	18	27	16

Code			Mounting method								With switch									
Bore size (mm)	V	WF	CA	CB	CD	CE	CF	CI	CJ	CV	O	P	T0, T5 T2, T3		T1, T2Y T3Y, T2J		T8		T2W, T3W	
													RD	HD	RD	HD	RD	HD	RD	HD
φ40	18.5	33.5	220	18	12	12	10	18	186	36	66	41.5	15.5	11	14.5	10	9.5	5	17.5	13
φ50	17	33.5	232.5	18	12	12	10	18	192.5	36	73	43	18	13	17	12	12	7	20	15
φ63	17	31	242	20	14	16	10	24	198	40	85	47	19	13	18	12	13	7	21	15
φ80	18.5	43	295	28	20	20	14	30	239	56	105	57	23.5	14.5	22.5	13.5	17.5	8.5	25.5	16.5
φ100	29	50	323	28	20	20	16	30	258	56	121	63	29.5	18.5	28.5	17.5	23.5	12.5	31.5	20.5

*1: Refer to page 599 for dimensions of projecting section of T2YD switch.
*2: For the dimensions of the accessories, refer to pages 454 and 455.

Dimensions CAD

● Intermediate trunnion (TC) with head side position locking



A arrow view

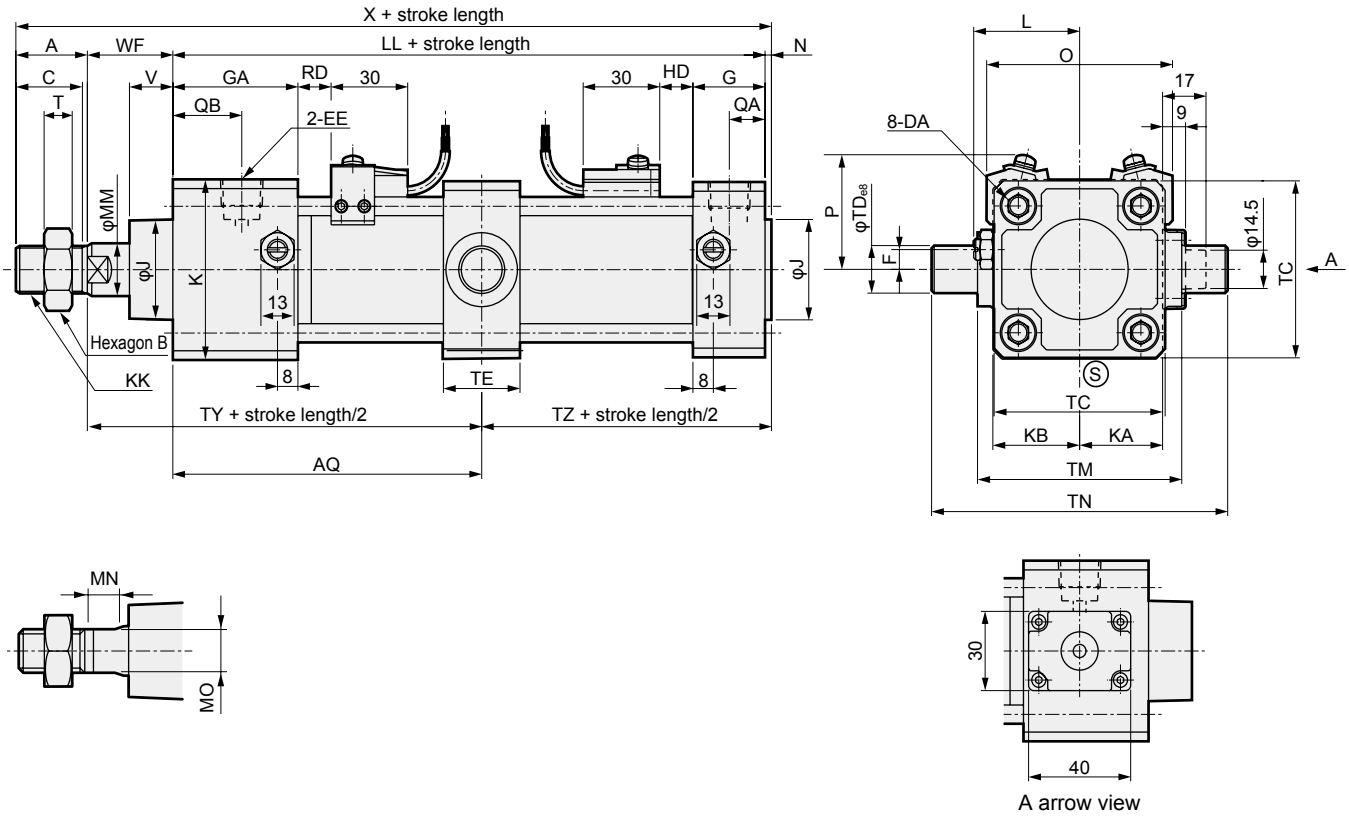
Code	Intermediate trunnion (TC) (unit: mm)																				
Bore size (mm)	A	B	C	DA	EE	F	G	GA	J	K	KA	KB	KK	L	LL	MM	MN	MO	N	QA	QB
φ40	22	22	20	M8	Rc1/4	7.5	26	49	31	60	30	30	M14×1.5	38 to 39.5	120.5	16	8	14	2	13	26
φ50	28	27	26	M8	Rc3/8	0	28	49	38	68	32.5	34	M18×1.5	41 to 43.5	127	20	8	17	2.5	14	27
φ63	28	27	26	M8	Rc3/8	0	30	49	38	80	38	40	M18×1.5	47.5 to 50	130	20	8	17	3	15	28
φ80	36	32	34	M12	Rc1/2	0	34	53	43	100	49	50	M22×1.5	56 to 59	144	25	11	22	3.5	17	27
φ100	45	41	43	M12	Rc1/2	0	36	53	51	118	58.5	59	M26×1.5	66 to 69	156	30	13	27	4	18	27

Code					Mounting method								With switch									
Bore size (mm)	T	V	WF	X	AQ	TC	TD	TE	TM	TN	TY	TZ	O	P	T0, T5 T2, T3		T1, T2Y T3Y, T2J		T8		T2W, T3W	
															RD	HD	RD	HD	RD	HD	RD	HD
φ40	8	18.5	33.5	178	60.5 + Stroke length/2	57	16	30	63	95	94	62	66	41.5	11	15.5	10	14.5	5	9.5	13	17.5
φ50	11	20.5	37	194.5	80 + Stroke length/2	67	18	30	80	116	100.5	66	73	43	13	18	12	17	7	12	15	20
φ63	11	21	35	196	65 + Stroke length/2	82	20	35	90	130	100	68	85	47	13	19	12	18	7	13	15	21
φ80	13	23.5	48	231.5	72 + Stroke length/2	100	25	40	115	165	120	75.5	105	57	14.5	23.5	13.5	22.5	8.5	17.5	16.5	25.5
φ100	16	32	53	258	78 + Stroke length/2	121	35	50	135	205	131	82	121	63	18.5	29.5	17.5	28.5	12.5	23.5	20.5	31.5

*1: Refer to page 599 for dimensions of projecting section of T2YD switch.
*2: For the dimensions of the accessories, refer to pages 454 and 455.

Dimensions

● Intermediate trunnion (TC) with rod side position locking



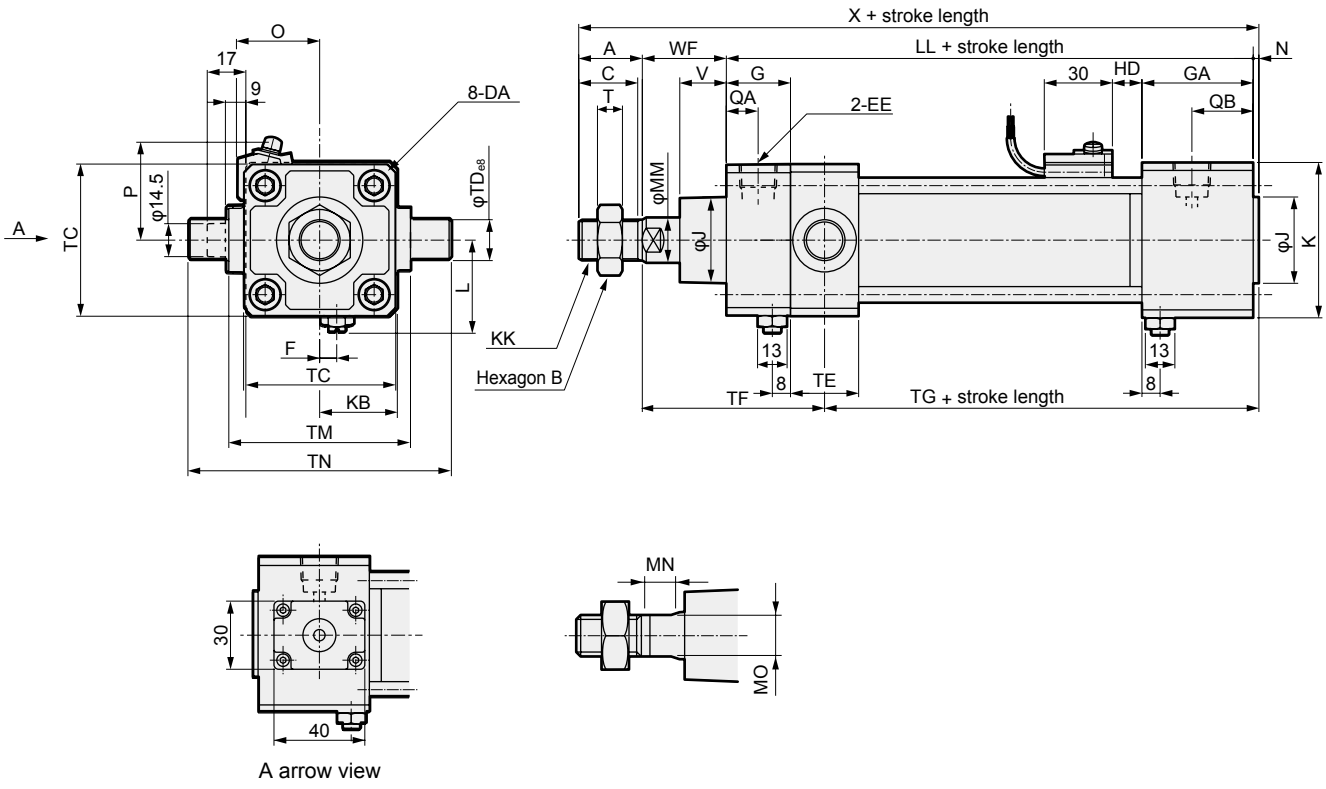
Code	Intermediate trunnion (TC) (unit: mm)																				
Bore size (mm)	A	B	C	DA	EE	F	G	GA	J	K	KA	KB	KK	L	LL	MM	MN	MO	N	QA	QB
φ40	22	22	20	M8	Rc1/4	7.5	26	49	31	60	30	30	M14×1.5	38 to 39.5	120.5	16	8	14	2	13	26
φ50	28	27	26	M8	Rc3/8	0	28	49	38	68	32.5	34	M18×1.5	41 to 43.5	127	20	8	17	2.5	14	27
φ63	28	27	26	M8	Rc3/8	0	30	49	38	80	38	40	M18×1.5	47.5 to 50	130	20	8	17	3	15	28
φ80	36	32	34	M12	Rc1/2	0	34	53	43	100	49	50	M22×1.5	56 to 59	144	25	11	22	3.5	17	27
φ100	45	41	43	M12	Rc1/2	0	36	53	51	118	58.5	59	M26×1.5	66 to 69	156	30	13	27	4	18	27

Code					Mounting method								With switch									
Bore size (mm)	T	V	WF	X	AQ	TC	TD	TE	TM	TN	TY	TZ	O	P	T0, T5 T2, T3		T1, T2Y T3Y, T2J		T8		T2W, T3W	
															RD	HD	RD	HD	RD	HD	RD	HD
φ40	8	18.5	33.5	178	60.5+Stroke length/2	57	16	30	63	95	94	62	66	41.5	15.5	11	14.5	10	9.5	5	17.5	13
φ50	11	17	33.5	191	63.5+Stroke length/2	67	18	30	80	116	97	66	73	43	18	13	17	12	12	7	20	15
φ63	11	17	31	192	65+Stroke length/2	82	20	35	90	130	96	68	85	47	19	13	18	12	13	7	21	15
φ80	13	18.5	43	226.5	72+Stroke length/2	100	25	40	115	165	115	75.5	105	57	23.5	14.5	22.5	13.5	17.5	8.5	25.5	16.5
φ100	16	29	50	255	78+Stroke length/2	121	35	50	135	205	128	82	121	63	29.5	18.5	28.5	17.5	23.5	12.5	31.5	20.5

*1: Refer to page 599 for dimensions of projecting section of T2YD switch.
*2: For the dimensions of the accessories, refer to pages 454 and 455.

Dimensions

● Rod side trunnion (TA) with head side position locking



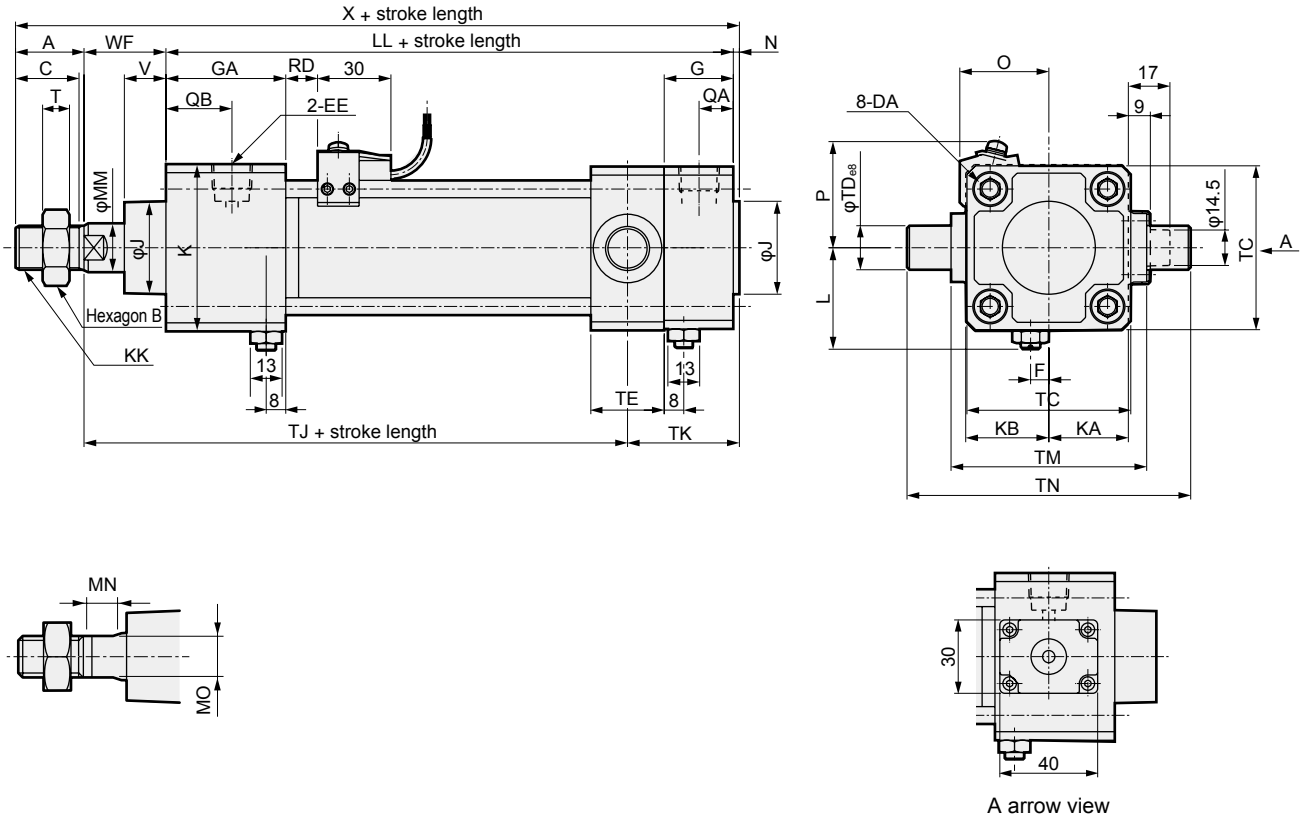
Code	Rod side trunnion (TA) (unit: mm)																				
Bore size (mm)	A	B	C	DA	EE	F	G	GA	J	K	KA	KB	KK	L	LL	MM	MN	MO	N	QA	QB
φ40	22	22	20	M8	Rc1/4	7.5	26	49	31	60	30	30	M14×1.5	38 to 39.5	120.5	16	8	14	2	13	26
φ50	28	27	26	M8	Rc3/8	0	28	49	38	68	32.5	34	M18×1.5	41 to 43.5	127	20	8	17	2.5	14	27
φ63	28	27	26	M8	Rc3/8	0	30	49	38	80	38	40	M18×1.5	47.5 to 50	130	20	8	17	3	15	28
φ80	36	32	34	M12	Rc1/2	0	34	53	43	100	49	50	M22×1.5	56 to 59	144	25	11	22	3.5	17	27
φ100	45	41	43	M12	Rc1/2	0	36	53	51	118	58.5	59	M26×1.5	66 to 69	156	30	13	27	4	18	27

Code					Mounting method							With switch					
Bore size (mm)	T	V	WF	X	TC	TD	TE	TF	TG	TM	TN	O	P	HD			
														T0, T5 T2, T3	T1, T2Y T3Y, T2J	T8	T2W, T3W
φ40	8	18.5	33.5	178	57	16	30	74.5	81.5	63	95	66	41.5	15.5	14.5	9.5	17.5
φ50	11	20.5	37	194.5	67	18	30	80	86.5	80	116	73	43	18	17	12	20
φ63	11	21	35	196	82	20	35	82.5	85.5	90	130	85	47	19	18	13	21
φ80	13	23.5	48	231.5	100	25	40	102	93.5	115	165	105	57	23.5	22.5	17.5	25.5
φ100	16	32	53	258	121	35	50	114	99	135	205	121	63	29.5	28.5	23.5	31.5

*1 : Refer to page 599 for dimensions of projecting section of T2YD switch.
*2 : For the dimensions of the accessories, refer to pages 454 and 455.
*3 : The position of the cushion needle cannot be changed.

Dimensions

● Head side trunnion (TB) with rod side position locking



A arrow view

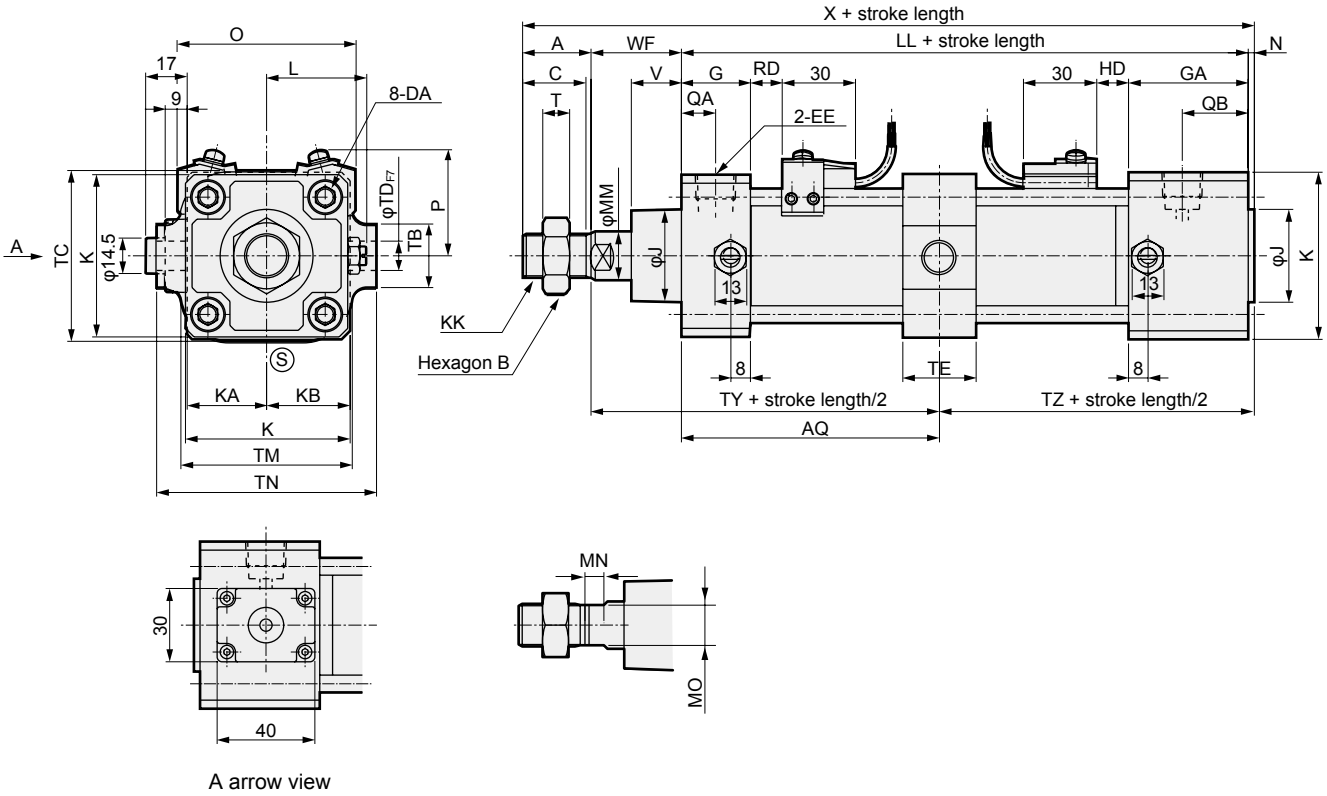
Code	Head side trunnion (TB) (unit: mm)																				
Bore size (mm)	A	B	C	DA	EE	F	G	GA	J	K	KA	KB	KK	L	LL	MM	MN	MO	N	QA	QB
φ40	22	22	20	M8	Rc1/4	7.5	26	49	31	60	30	30	M14×1.5	38 to 39.5	120.5	16	8	14	2	13	26
φ50	28	27	26	M8	Rc3/8	0	28	49	38	68	32.5	34	M18×1.5	41 to 43.5	127	20	8	17	2.5	14	27
φ63	28	27	26	M8	Rc3/8	0	30	49	38	80	38	40	M18×1.5	47.5 to 50	130	20	8	17	3	15	28
φ80	36	32	34	M12	Rc1/2	0	34	53	43	100	49	50	M22×1.5	56 to 59	144	25	11	22	3.5	17	27
φ100	45	41	43	M12	Rc1/2	0	36	53	51	118	58.5	59	M26×1.5	66 to 69	156	30	13	27	4	18	27

Code					Mounting method							With switch					
Bore size (mm)	T	V	WF	X	TC	TD	TE	TJ	TK	TM	TN	O	P	RD			
														T0, T5 T2, T3	T1, T2Y T3Y, T2J	T8	T2W, T3W
φ40	8	18.5	33.5	178	57	16	30	112.5	43.5	63	95	66	41.5	15.5	14.5	9.5	17.5
φ50	11	17	33.5	191	67	18	30	117	46	80	116	73	43	18	17	12	20
φ63	11	17	31	192	82	20	35	113	51	90	130	85	47	19	18	13	21
φ80	13	18.5	43	226.5	100	25	40	132.5	58	115	165	105	57	23.5	22.5	17.5	25.5
φ100	16	29	50	256	121	35	50	144.5	65.5	135	205	121	63	29.5	28.5	23.5	31.5

*1 : Refer to page 599 for dimensions of projecting section of T2YD switch.
*2 : For the dimensions of the accessories, refer to pages 454 and 455.
*3 : The position of the cushion needle cannot be changed.

Dimensions

● Intermediate supporting hole trunnion (TF) with head side position locking



A arrow view

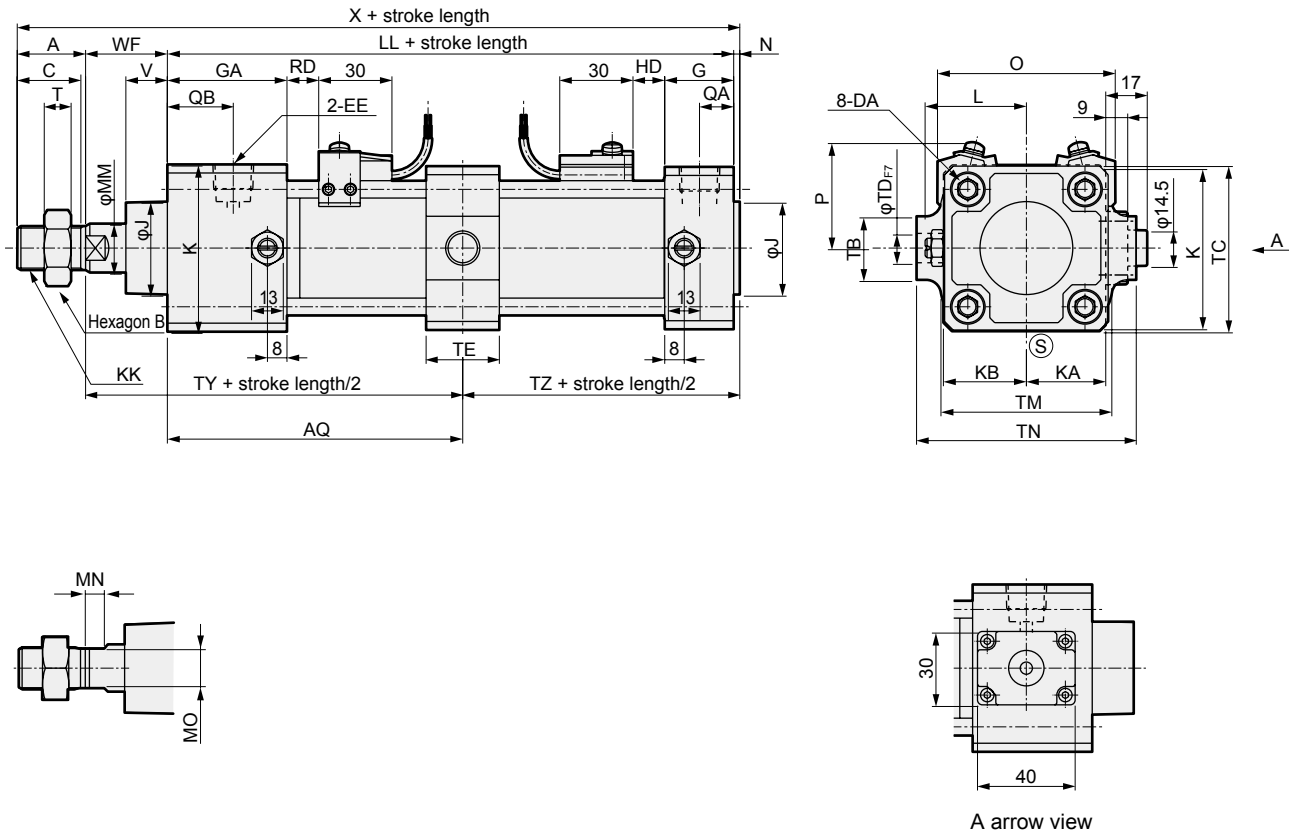
Code	Intermediate supporting hole trunnion (TF) (unit: mm)																			
Bore size (mm)	A	B	C	DA	EE	G	GA	J	K	KA	KB	KK	L	LL	MM	MN	MO	N	QA	QB
φ50	28	27	26	M8	Rc3/8	28	49	38	68	32.5	34	M18×1.5	41 to 43.5	127	20	8	17	2.5	14	27
φ63	28	27	26	M8	Rc3/8	30	49	38	80	38	40	M18×1.5	47.5 to 50	130	20	8	17	3	15	28
φ80	36	32	34	M12	Rc1/2	34	53	43	100	49	50	M22×1.5	56 to 59	144	25	11	22	3.5	17	27
φ100	45	41	43	M12	Rc1/2	36	53	51	118	58.5	59	M26×1.5	66 to 69	156	30	13	27	4	18	27

Code					Mounting method									With switch									
Bore size (mm)	T	V	WF	X	AQ	TB	TC	TD	TE	TM	TN	TY	TZ	O	P	T0, T5 T2, T3		T1, T2Y T3Y, T2J		T8		T2W, T3W	
																RD	HD	RD	HD	RD	HD	RD	HD
φ50	11	20.5	37	194.5	63.5+Stroke length/2	26	67	12	30	70	90	97	66	73	43	13	18	12	17	7	12	15	20
φ63	11	21	35	196	65+Stroke length/2	30	82	14	35	86	104	96	68	85	47	13	19	12	18	7	13	15	21
φ80	13	23.5	48	231.5	72+Stroke length/2	35	100	20	40	105	134	115	75.5	105	57	14.5	23.5	13.5	22.5	8.5	17.5	16.5	25.5
φ100	16	32	53	258	78+Stroke length/2	40	121	20	40	127	150	128	82	121	63	18.5	29.5	17.5	28.5	12.5	23.5	20.5	31.5

*1: Refer to page 599 for dimensions of projecting section of T2YD switch.
*2: For the dimensions of the accessories, refer to pages 454 and 455.

Dimensions

● Intermediate supporting hole trunnion (TF) with rod side position locking



A arrow view

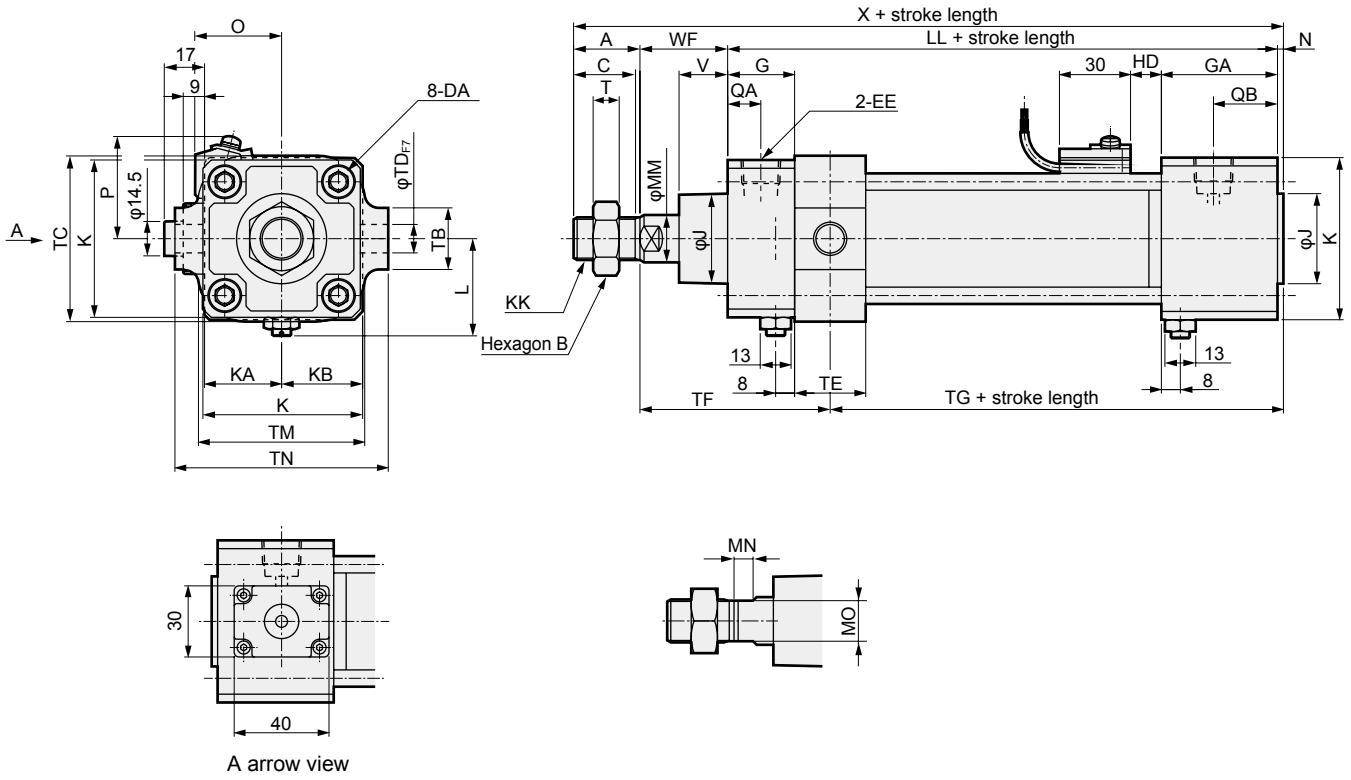
Code	Intermediate supporting hole trunnion (TF) (unit: mm)																			
Bore size (mm)	A	B	C	DA	EE	G	GA	J	K	KA	KB	KK	L	LL	MM	MN	MO	N	QA	QB
φ50	28	27	26	M8	Rc3/8	28	49	38	68	32.5	34	M18×1.5	41 to 43.5	127	20	8	17	2.5	14	27
φ63	28	27	26	M8	Rc3/8	30	49	38	80	38	40	M18×1.5	47.5 to 50	130	20	8	17	3	15	28
φ80	36	32	34	M12	Rc1/2	34	53	43	100	49	50	M22×1.5	56 to 59	144	25	11	22	3.5	17	27
φ100	45	41	43	M12	Rc1/2	36	53	51	118	58.5	59	M26×1.5	66 to 69	156	30	13	27	4	18	27

Code					Mounting method									With switch									
Bore size (mm)	T	V	WF	X	AQ	TB	TC	TD	TE	TM	TN	TY	TZ	O	P	T0, T5 T2, T3		T1, T2Y T3Y, T2J		T8		T2W, T3W	
																RD	HD	RD	HD	RD	HD	RD	HD
φ50	11	17	33.5	191	$63.5+\frac{\text{Stroke length}}{2}$	26	67	12	30	70	90	97	66	73	43	18	13	17	12	12	7	20	15
φ63	11	17	31	192	$65+\frac{\text{Stroke length}}{2}$	30	82	14	35	86	104	96	68	85	47	19	13	18	12	13	7	21	15
φ80	13	18.5	43	226.5	$72+\frac{\text{Stroke length}}{2}$	35	100	20	40	105	134	115	75.5	105	57	23.5	14.5	22.5	13.5	17.5	8.5	25.5	16.5
φ100	16	29	50	255	$78+\frac{\text{Stroke length}}{2}$	40	121	20	40	127	150	128	82	121	63	29.5	18.5	28.5	17.5	23.5	12.5	31.5	20.5

*1: Refer to page 599 for dimensions of projecting section of T2YD switch.
*2: For the dimensions of the accessories, refer to pages 454 and 455.

Dimensions

● Rod side hole trunnion (TD) with head side position locking



A arrow view

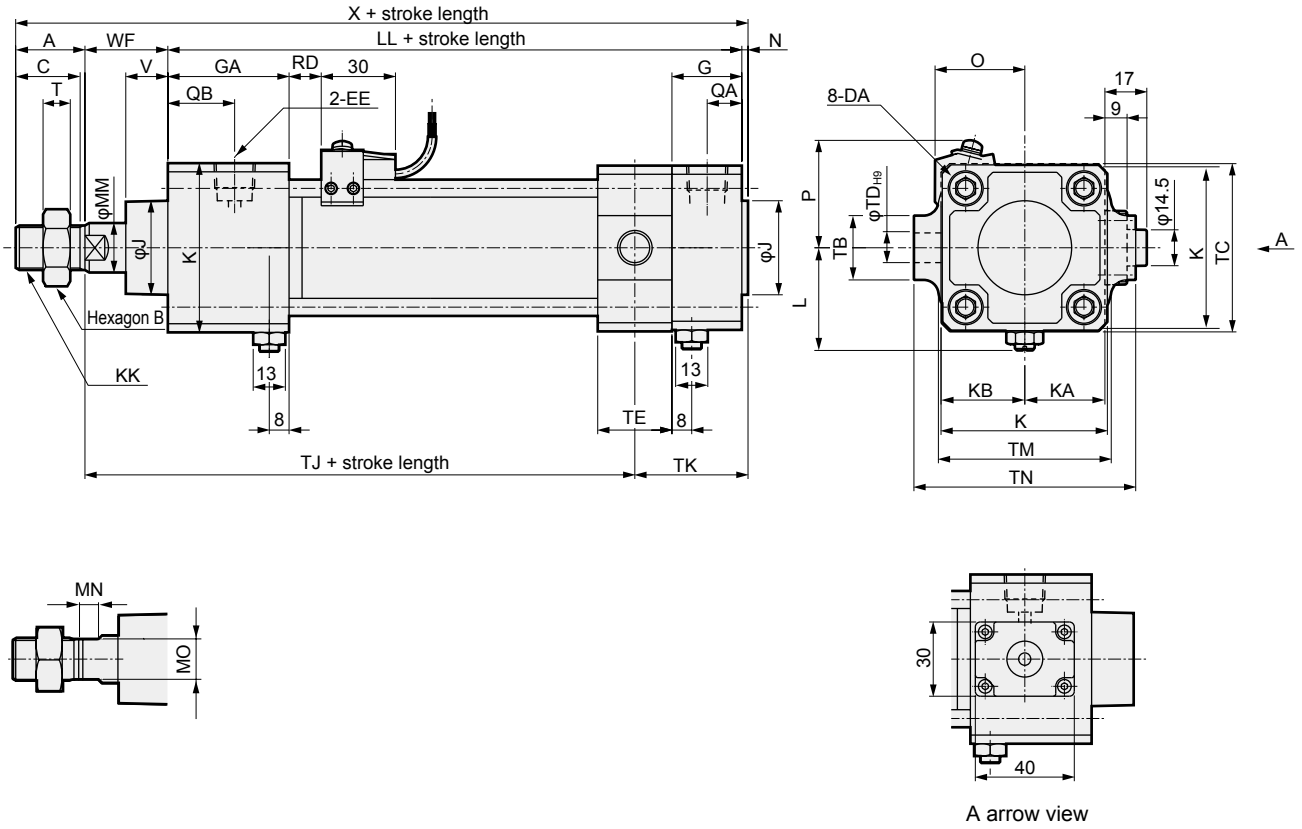
Code	Rod side hole trunnion (TD) (unit: mm)																		
Bore size (mm)	A	B	C	DA	EE	G	GA	J	K	KA	KB	KK	L	LL	MM	MN	MO	N	QA	QB
φ50	28	27	26	M8	Rc3/8	28	49	38	68	32.5	34	M18×1.5	41 to 43.5	127	20	8	17	2.5	14	27
φ63	28	27	26	M8	Rc3/8	30	49	38	80	38	40	M18×1.5	47.5 to 50	130	20	8	17	3	15	28
φ80	36	32	34	M12	Rc1/2	34	53	43	100	49	50	M22×1.5	56 to 59	144	25	11	22	3.5	17	27
φ100	45	41	43	M12	Rc1/2	36	53	51	118	58.5	59	M26×1.5	66 to 69	156	30	13	27	4	18	27

Code					Mounting method										With switch					
Bore size (mm)	T	V	WF	X	TB	TC	TD	TE	TF	TG	TJ	TK	TM	TN	O	P	HD T0, T5 T2, T3	HD T1, T2Y T3Y, T2J	HD T8	HD T2W, T3W
φ50	11	20.5	37	194.5	26	67	12	30	80	86.5	117	46	70	90	73	43	18	17	12	20
φ63	11	21	35	196	30	82	14	35	82.5	85.5	113	51	86	104	85	47	19	18	13	21
φ80	13	23.5	48	231.5	35	100	20	40	102	93.5	132.5	58	105	134	105	57	23.5	22.5	17.5	25.5
φ100	16	32	53	258	40	121	20	40	109	104	144.5	65.5	127	150	121	63	29.5	28.5	23.5	31.5

*1 : Refer to page 599 for dimensions of projecting section of T2YD switch.
*2 : For the dimensions of the accessories, refer to pages 454 and 455.
*3 : The position of the cushion needle cannot be changed.

Dimensions

● Head side hole trunnion (TE) with rod side position locking



A arrow view

Code	Head side hole trunnion (TE) (unit: mm)																			
Bore size (mm)	A	B	C	DA	EE	G	GA	J	K	KA	KB	KK	L	LL	MM	MN	MO	N	QA	QB
φ50	28	27	26	M8	Rc3/8	28	49	38	68	32.5	34	M18×1.5	41 to 43.5	127	20	8	17	2.5	14	27
φ63	28	27	26	M8	Rc3/8	30	49	38	80	38	40	M18×1.5	47.5 to 50	130	20	8	17	3	15	28
φ80	36	32	34	M12	Rc1/2	34	53	43	100	49	50	M22×1.5	56 to 59	144	25	11	22	3.5	17	27
φ100	45	41	43	M12	Rc1/2	36	53	51	118	58.5	59	M26×1.5	66 to 69	156	30	13	27	4	18	27

Code					Mounting method								With switch					
Bore size (mm)	T	V	WF	X	TB	TC	TD	TE	TJ	TK	TM	TN	O	P	RD			
															T0, T5 T2, T3	T1, T2Y T3Y, T2J	T8	T2W, T3W
φ50	11	17	33.5	191	26	67	12	30	117	46	70	90	73	43	18	17	12	20
φ63	11	17	31	192	30	82	14	35	113	51	86	104	85	47	19	18	13	21
φ80	13	18.5	43	226.5	35	100	20	40	132.5	58	105	134	105	57	23.5	22.5	17.5	25.5
φ100	16	29	50	255	40	121	20	40	149.5	60.5	127	150	121	63	29.5	28.5	23.5	31.5

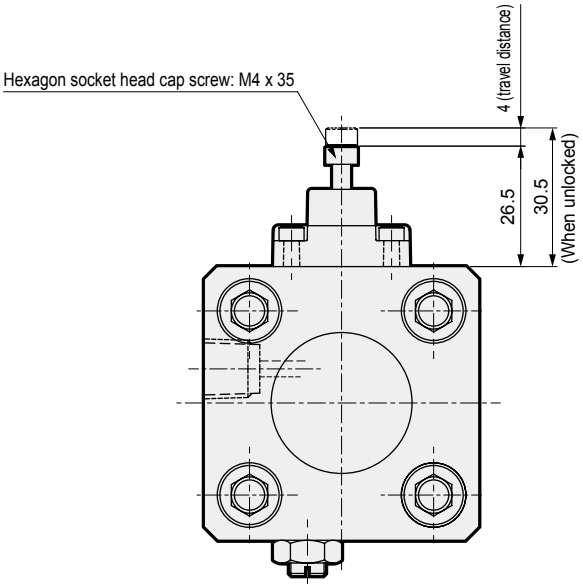
*1 : Refer to page 599 for dimensions of projecting section of T2YD switch.
*2 : The position of the cushion needle cannot be changed.

* For the dimensions of the accessories, refer to pages 454 and 455.

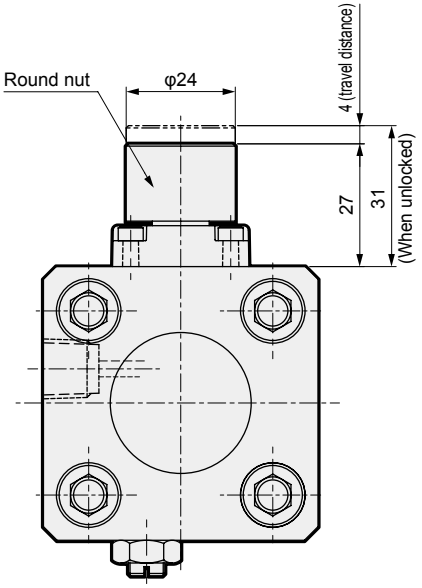
Dimensions

● Main dimensions of M0 (non-locking manual override) and M1 (locking manual override)

Dimensions of the manual override are the same in all sizes (φ40 to 100).

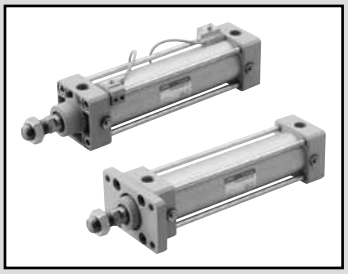


M0 (Non-locking manual override)



M1 (Locking manual override)

MEMO

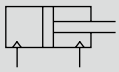


Medium bore size cylinder
Double acting/low friction (low friction at low pressure (0.2 MPa or less))

SCA2-O Series

● Bore size: φ40/φ50/φ63/φ80/φ100

JIS symbol



RoHS CAD

Specifications

Descriptions		SCA2-O (Low friction)				
Bore size	mm	φ40	φ50	φ63	φ80	φ100
Actuation		Double acting				
Working fluid		Compressed air				
Max. working pressure	MPa	1.0 (≈150 psi, 10 bar)				
Min. working pressure	MPa	0.01 (≈1.5 psi, 0.1 bar)				
Proof pressure	MPa	1.6 (≈230 psi, 16 bar)				
Ambient temperature	°C	5 (41°F) to 60 (140°F)				
Port size		Rc1/4	Rc3/8		Rc1/2	
Stroke tolerance	mm	$^{+0.9}_{0}$ (to 360) $^{+1.4}_{0}$ (to 800)				
Working piston speed	mm/s	10 to 200 (Operate within the allowable absorbed energy.)				
Cushion		None				
Lubrication		Not available				
Allowable absorbed energy	J	0.067	0.079	0.079	0.201	0.301
		As it has no cushion, this product cannot absorb large energy generated by an external load. We recommend using an external shock absorber.				

Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)
φ40	25/50/75/100/150/200/250/300/350/400/450/500	600	1
φ50			
φ63			
φ80		700	
φ100		800	

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

Min. stroke length with switch

● T0/T5 min. stroke with switches

	Different surface mounting				Same surface mounting				Center trunnion mounting				Rod side trunnion mounting No position detection at rod side stroke end.	Head side trunnion mounting No position detection at head side stroke end.
Switch quantity	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(105)	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 min. stroke with switch

	Different surface mounting				Same surface mounting				Center trunnion mounting				Rod side trunnion mounting No position detection at rod side stroke end.	Head side trunnion mounting No position detection at head side stroke end.
Switch quantity	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.

Switch specifications

● T2/T3 min. stroke with switches

	Different surface mounting				Same surface mounting				Center trunnion mounting				Rod side trunnion mounting No position detection at rod side stroke end.	Head side trunnion mounting No position detection at head side stroke end.
Switch quantity	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.

● T1/T2Y/T3Y/T2YD min. stroke with switches

	Different surface mounting				Same surface mounting				Center trunnion mounting				Rod side trunnion mounting No position detection at rod side stroke end.	Head side trunnion mounting No position detection at head side stroke end.
Switch quantity	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.

● T2W/T3W min. stroke with switches

	Different surface mounting				Same surface mounting				Center trunnion mounting				Rod side trunnion mounting No position detection at rod side stroke end.	Head side trunnion mounting No position detection at head side stroke end.
Switch quantity	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.

Switch specifications (T 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 programming controller, relay, compact solenoid valve	Dedicated for programmable controller			For programmable controller, relay				For programmable controller, relay		For programmable controller, relay (no lamp), serial		For programmable controller, relay			Dedicated 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	110 VAC	5/12/24 VDC	110 VAC	12/24 VDC	110 VAC	220 VAC	24 VDC ±10%
Load current	5 to 100 mA	5 to 20 mA (*3)			100 mA or less		50 mA or less		5 to 50 mA	7 to 20 mA	50 mA or less	20 mA or less	5 to 50 mA	7 to 20 mA	7 to 10 mA	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 3 m:87 5 m:142	1 m:18 3 m:49 5 m:80	1 m:33 3 m:87 5 m:142	1 m:18 3 m:49 5 m:80	1 m:18 3 m:49 5 m:80		1 m:33 3 m:87 5 m:142	1 m:18 3 m:49 5 m:80	1 m:18 3 m:49 5 m:80				1 m:33 3 m:87 5 m:142			1 m:61 3 m:166 5 m:272

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

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

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

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

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

Cylinder weight

(Unit: kg)

Bore size (mm)	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)	Eye bracket (CA)	Clevis bracket (CB)	Trunnion (TA, TB, TC)		T type	
φ40	0.83	1.00	1.24	1.15	1.19	1.21	Refer to the weight in the switch specifications.	0.024	0.39
φ50	1.20	1.45	1.69	1.58	1.61	1.74		0.022	0.46
φ63	1.60	1.97	2.69	2.17	2.22	2.45		0.020	0.50
φ80	2.60	3.34	4.46	3.87	4.08	3.94		0.026	0.90
φ100	4.20	5.11	6.94	5.84	6.02	6.77		0.024	1.12

(Example) Product weight of SCA2-O-LB-50B-200-T0H-D

- Product weight for 0 mm stroke length ····· 1.45 kg
- Additional weight for 200 mm stroke length ····· 0.46 x $\frac{200}{100}$ = 0.92 kg
- Weight of 2 TOH switches ····· 0.018 x 2 = 0.036 kg
- Weight of 2 mounting brackets ····· 0.022 x 2 = 0.044 kg
- Product weight ····· 1.45 + 0.92 + 0.036 + 0.044 = 2.450 kg

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

How to order

Without switch (built-in magnet for switch)

SCA2-O - LB - 40 ○ N - 100 ——— M I

With switch (built-in magnet for switch)

SCA2-O - LB - 40 ○ N - 100 - T0H - R - M I

Ⓐ Mounting *1

Ⓑ Bore size

Ⓒ Port thread

Ⓓ Cushion

Ⓔ Stroke length *2

Ⓕ Switch model No. *4

Ⓖ Switch quantity *5

Ⓗ Option

Ⓘ Accessory *6

Code	Content
Ⓐ 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
TF	Intermediate supporting hole trunnion (φ40 is not available)
TD	Rod side hole trunnion (φ40 is not available)
TE	Head side hole trunnion (φ40 is not available)

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

Ⓒ Port thread	
Blank	Rc thread
N	NPT thread (custom order product)
G	G thread (custom order product)

Ⓓ Cushion	
N	Without cushion

Ⓔ Stroke length (mm)

Bore size	Stroke length *3	Custom stroke length
φ40	**1 to 600**	**In 1 mm increments**
φ50	**1 to 600**	
φ63	**1 to 600**	
φ80	**1 to 700**	
φ100	**1 to 800**	

Ⓕ Switch model No.

Refer to the switch model numbers on the next page.

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

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

Ⓗ Option	
M	Piston rod material (stainless steel)
P6	Copper and PTFE free (custom order product)

Ⓘ Accessory	
I	Rod eye
Y	Rod clevis (pin and snap ring attached)
B1	Eye bracket
B2	Clevis bracket (pin and snap ring attached)
B3	Eye bracket
B4	Trunnion No. 2 bracket (2 pcs./set)

⚠ Precautions for model No. selection

*1 : Mounting bracket will be shipped with the product. (Trunnion are assembled at shipment.)
*2 : If the stroke exceeds the max. stroke length, refer to Ending Page 69.
*3 : Refer to page 510 for the min. stroke length with switch.
*4 : Switches are shipped with the product.
*5 : When selecting TA or TB as mounting, the number of switches is limited to "H" (1 on head side) for TA, and "R" (1 on rod side) for TB.
*6 : "I" and "Y" cannot be selected together.
*7 : Refer to Ending Page 85 for custom specifications of rod end form.
*8 : Refer to page 432 for combinations of variations/options.

[Example of model No.]

SCA2-O-LB-40N-100-T0H-R-MI

Model: Medium bore size cylinder, double acting/low friction

Ⓐ Mounting : Axial foot
Ⓑ Bore size : φ40 mm
Ⓒ Port thread : Rc thread
Ⓓ Cushion : Without cushion
Ⓔ Stroke length : 100 mm
Ⓕ Switch model No. : Reed T0H switch, lead wire length 1 m
Ⓖ Switch quantity : 1 on rod side
Ⓗ Option : Piston rod material change (stainless steel)
Ⓘ Accessory : Rod eye

[F] Switch model No.

T switch model No.						
Lead wire Straight	Lead wire L-shaped	Contact	Voltage AC	Voltage DC	Display	Lead wire
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*			●		3-wire
T2WH*	T2WV*			●	2-color display	2-wire
T2YH*	T2YV*			●		
T3WH*	T3WV*			●		3-wire
T3YH*	T3YV*			●		
T3PH*	T3PV*			●	1-color display (custom order)	3-wire
T2YD*	-			●	2-color display AC magnetic field	2-wire
T2YDT*	-			●		
T2JH*	T2JV*			●	1-color display off-delay	2-wire

How to order switch

[T switch]

● Switch body + mounting bracket set

SCA2 - T0H - 40

- T0H: Switch model No. (Item Ⓕ)
- 40: Bore size (Item Ⓑ on the previous page)

● Switch body only

SW - T0H

- T0H: Switch model No. (Item Ⓕ)

* Contact CKD when using an environment-friendly T switch.

● Switch mounting bracket set

SCA2 - TS - 40

- TS: Mounting bracket
- 40: Bore size (Item Ⓑ on the previous page)

[T2YD switch]

● Switch body + mounting bracket set

SCA2 - T2YD - 40

- T2YD: Switch model No. (Item Ⓕ)
- 40: Bore size (Item Ⓑ on the previous page)

● Switch body only

SW - T2YD

- T2YD: Switch model No. (Item Ⓕ)

● Mounting bracket set Ⓑ

SCA2 - T - 40

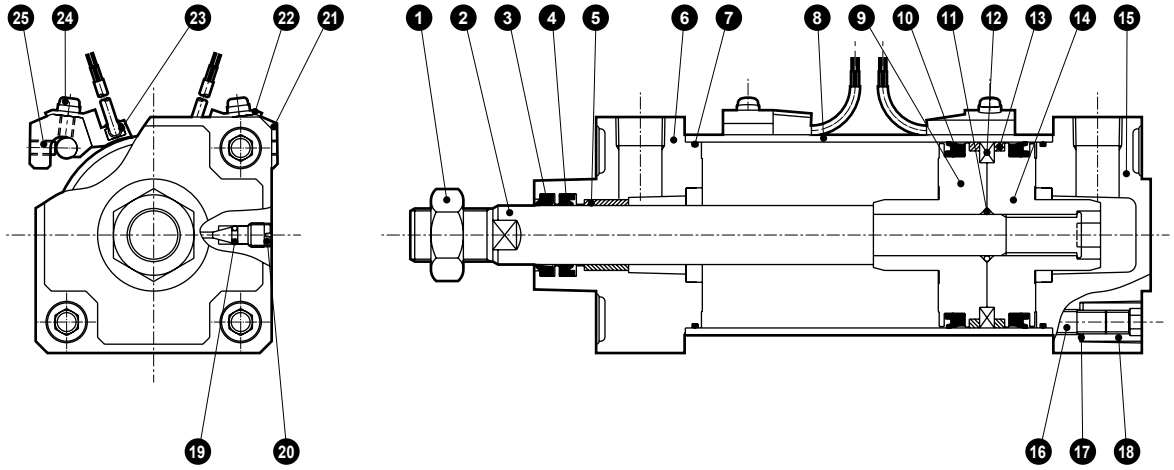
- 40: Bore size (Item Ⓑ on the previous page)

How to order mounting bracket

Bore size (mm) / Mounting bracket	φ40	φ50	φ63	φ80	φ100
Foot (LB) *2	S1-LB-40	S1-LB-50	S1-LB-63	S1-LB-80	S1-LB-100
Flange (FA/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

*1 : For material of the mounting bracket, refer to page 440.
*2 : The foot mounting bracket is provided as 2 pcs./set.
*3 : All mounting brackets are supplied with mounting bolts.

Internal structure and parts list



No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
1	Rod nut	Steel	Zinc chromate	14	Piston H	Aluminum alloy die-casting	
2	Piston rod	Steel	Industrial chrome plating	15	Head cover	Aluminum alloy die-casting	Paint
3	Dust wiper	Nitrile rubber		16	Tie rod	Steel	Zinc chromate
4	Rod packing	Nitrile rubber		17	Conical spring washer	Steel	Black finish
5	Bush	Oil impregnated bearing alloy		18	Round nut	Steel	Zinc chromate
6	Rod cover	Aluminum alloy die-casting	Paint	19	Needle gasket	Nitrile rubber	
7	Cylinder gasket	Nitrile rubber		20	Cushion plug	Copper alloy	Nickel plating
8	Cylinder tube	Aluminum alloy	Hard alumite treatment	21	Switch mounting base	Aluminum alloy	
9	Piston R	Aluminum alloy die-casting		22	Switch holder	Aluminum alloy	
10	Piston packing	Nitrile rubber		23	Cylinder switch		
11	Piston gasket	Nitrile rubber		24	Phillips pan head machine screw(captive washer	Steel	Zinc chromate
12	Magnet	Plastic		25	Hexagon socket set screw	Alloy steel	Black finish
13	Wear ring	Polyacetal resin					

Repair parts list

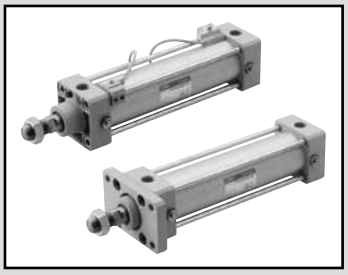
Bore size (mm)	Kit No.	Repair parts No.
φ 40	SCA2-O-40K	❸ ❹ ❼ ❿ ⓭ ⓳
φ 50	SCA2-O-50K	
φ 63	SCA2-O-63K	
φ 80	SCA2-O-80K	
φ100	SCA2-O-100K	

*1 : Specify the kit No. when placing an order.

Dimensions

Same as double acting/standard single rod. Refer to pages 441 to 453.

MEMO

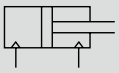


Medium bore size cylinder
Double acting/low friction (constant friction when pressurized)

SCA2-U Series

● Bore size: φ40/φ50/φ63/φ80/φ100

JIS symbol



RoHS CAD

Specifications

Descriptions		SCA2-U				
Bore size		φ40	φ50	φ63	φ80	φ100
Actuation		Double acting				
Working fluid		Compressed air				
Max. working pressure	MPa	0.7 (≈100 psi, 7 bar)				
Min. working pressure	MPa	0.03 (≈4.4 psi, 0.3 bar)				
Proof pressure	MPa	1.0 (≈150 psi, 10 bar)				
Ambient temperature	°C	5 (41°F) to 60 (140°F)				
Port size		Rc1/4	Rc3/8		Rc1/2	
Stroke tolerance	mm	$^{+0.9}_{0}$ (to 360), $^{+1.4}_{0}$ (to 800)				
Working piston speed	mm	10 to 1000				
Cushion		None				
Lubrication		Not available				
Internal leakage	ℓ/min	5			8	
Allowable absorbed energy	J	0.067	0.079	0.079	0.201	0.301
		As it has no cushion, this product cannot absorb high energy generated by an external load. We recommend using an external shock absorber.				

Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)
φ40	25/50/75/100 150/200/250 300/350/400 450/500	600	1
φ50			
φ63			
φ80		700	
φ100		800	

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

Min. stroke length with switch

● T0/T5 min. stroke with switches

	Different surface mounting				Same surface mounting				Center trunnion mounting				Rod side trunnion mounting No position detection at rod side stroke end.	Head side trunnion mounting No position detection at head side stroke end.
Switch quantity	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(105)	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 min. stroke with switch

	Different surface mounting				Same surface mounting				Center trunnion mounting				Rod side trunnion mounting No position detection at rod side stroke end.	Head side trunnion mounting No position detection at head side stroke end.
Switch quantity	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.

Min. stroke with switch

● T2/T3 min. stroke with switches

	Different surface mounting				Same surface mounting				Center trunnion mounting				Rod side trunnion mounting No position detection at rod side stroke end.	Head side trunnion mounting No position detection at head side stroke end.
Switch quantity	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.

● T1/T2Y/T3Y/T2YD min. stroke with switches

	Different surface mounting				Same surface mounting				Center trunnion mounting				Rod side trunnion mounting No position detection at rod side stroke end.	Head side trunnion mounting No position detection at head side stroke end.
Switch quantity	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.

● T2W/T3W min. stroke with switches

	Different surface mounting				Same surface mounting				Center trunnion mounting				Rod side trunnion mounting No position detection at rod side stroke end.	Head side trunnion mounting No position detection at head side stroke end.
Switch quantity	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.

Switch specifications (T 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 programming controller, relay, compact solenoid valve	Dedicated for programmable controller			For programmable controller, relay				For programmable controller, relay		For programmable controller, relay (no lamp), serial		For programmable controller, relay			Dedicated 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	110 VAC	5/12/24 VDC	110 VAC	12/24 VDC	110 VAC	220 VAC	24 VDC ±10%
Load current	5 to 100 mA	5 to 20 mA (*3)			100 mA or less		50 mA or less		5 to 50 mA	7 to 20 mA	50 mA or less	20 mA or less	5 to 50 mA	7 to 20 mA	7 to 10 mA	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 3 m:87 5 m:142	1 m:18 3 m:49 5 m:80	1 m:33 3 m:87 5 m:142	1 m:18 3 m:49 5 m:80	1 m:18 3 m:49 5 m:80		1 m:33 3 m:87 5 m:142	1 m:18 3 m:49 5 m:80	1 m:18 3 m:49 5 m:80				1 m:33 3 m:87 5 m:142			1 m:61 3 m:166 5 m:272

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

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

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

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

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

Cylinder weight

(Unit: kg)

Bore size (mm)	Product weight when stroke length (S) = 0 mm							Switch weight	Mounting bracket weight	Additional weight per S = 100 mm
	Basic (OO)	Foot (LB)	Flange (FA, FB)	Special flange (FC)	Eye bracket (CA)	Clevis bracket (CB)	Trunnion (TA, TB, TC)		T type	
φ40	0.83	1.00	1.24	0.92	1.15	1.19	1.21	Refer to the weight in the switch specifications.	0.024	0.39
φ50	1.20	1.45	1.69	1.31	1.58	1.61	1.74		0.022	0.46
φ63	1.60	1.97	2.69	1.78	2.17	2.22	2.45		0.020	0.50
φ80	2.60	3.34	4.46	2.96	3.87	4.08	3.94		0.026	0.90
φ100	4.20	5.11	6.94	4.75	5.84	6.02	6.77		0.024	1.12

(Example) Product weight of SCA2-U-LB-50B-200-T0H-D

- Product weight for 0 mm stroke lengtht····· 1.45 kg
- Additional weight for 200 mm stroke length.t····· $0.46 \times \frac{200}{100} = 0.92$ kg
- Weight of 2 TOH switchest····· 0.018 x 2 = 0.036 kg
- Weight of 2 mounting bracketst····· 0.022 x 2 = 0.044 kg
- ● Product weight····· 1.45 + 0.92 + 0.036 + 0.044 = 2.450 kg

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

Dimensions

Same as SCA2 Series (double acting/single rod). Refer to pages 441 to 453.

Technical data

Refer to page 290 for technical data regarding sliding resistance values.
SCA2-U Series shows a similar trend to the data of “SCM-U Series” on page 290.

How to order

Without switch (built-in magnet for switch)

SCA2-U — LB - 40 ○ N - 100 ——— M I

With switch (built-in magnet for switch)

SCA2-U — LB - 40 ○ N - 100 - T0H - R - M I

Ⓐ Mounting *1

Without cushion

Ⓑ Bore size

Ⓒ Port thread

Ⓓ Stroke length

Ⓔ Switch model No. *3

Ⓕ Switch quantity *4

Ⓖ Option

Ⓗ Accessory *5

Code	Content
Ⓐ 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
TF	Intermediate supporting hole trunnion (φ40 is not available)
TD	Rod side hole trunnion (φ40 is not available)
TE	Head side hole trunnion (φ40 is not available)

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

Ⓒ Port thread	
Blank	Rc thread
N	NPT thread (custom order product)
G	G thread (custom order product)

Ⓓ Stroke length (mm)

Bore size	Stroke length *2	Custom stroke length
φ40	**1 to 600**	**In 1 mm increments**
φ50	**1 to 600**	
φ63	**1 to 600**	
φ80	**1 to 700**	
φ100	**1 to 800**	

Ⓔ Switch model No.

Refer to the switch model numbers on the next page.

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

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

Ⓖ Option	
M	Piston rod material (stainless steel)

Ⓗ Accessory	
I	Rod eye
Y	Rod clevis (pin and snap ring attached)
B1	Eye bracket
B2	Clevis bracket (pin and snap ring attached)
B3	Eye bracket
B4	Trunnion No. 2 bracket (2 pcs./set)

⚠ Precautions for model No. selection

*1 : Mounting bracket will be shipped with the product. (Trunnion are assembled at shipment.)
*2 : Refer to page 518 for the min. stroke length with switch.
*3 : Switches are shipped with the product.
*4 : When selecting TA or TB as mounting, the number of switches is limited to "H" (1 on head side) for TA, and "R" (1 on rod side) for TB.
*5 : "I" and "Y" cannot be selected together.
*6 : Refer to Ending Page 85 for custom specifications of rod end form.
*7 : Refer to page 432 for combinations of variations/ options.

[Example of model No.]

SCA2-U-LB-40N-100-T0H-R-MI

Model: Medium bore size cylinder, double acting/low friction

Ⓐ Mounting : Axial foot
Ⓑ Bore size : φ40 mm
Ⓒ Port thread : Rc thread
Ⓓ Stroke length : 100 mm
Ⓔ Switch model No. : Reed T0H switch, lead wire length 1 m
Ⓕ Switch quantity : 1 on rod side
Ⓖ Option : Piston rod material change (stainless steel)
Ⓗ Accessory : Rod eye

[E] Switch model number

T switch model No.						
Axial lead wire	Radial lead wire	Contact	Voltage AC	Voltage DC	Display	Lead wire
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*			●		3-wire
T2WH*	T2WV*			●	2-color display	2-wire
T2YH*	T2YV*			●		
T3WH*	T3WV*			●		3-wire
T3YH*	T3YV*			●		
T3PH*	T3PV*			●	1-color display (custom order)	3-wire
T2YD*	-			●	2-color display AC magnetic field	2-wire
T2YDT*	-			●		
T2JH*	T2JV*			●	1-color display off-delay	2-wire

How to order switch

[T switch]

● Switch body + mounting bracket set

SCA2 - T0H - 40

- T0H: Switch model No. (Item Ⓔ)
- 40: Bore size (Item Ⓑ on the previous page)

●Switch body only

SW - T0H

- T0H: Switch model No. (Item Ⓔ)

* Contact CKD when using an environment-friendly T switch.

● Switch mounting bracket set

SCA2 - TS - 40

- TS: Mounting bracket
- 40: Bore size (Item Ⓑ on the previous page)

[T2YD switch]

● Switch body + mounting bracket set

SCA2 - T2YD - 40

- 40: Bore size (Item Ⓑ on the previous page)
- T2YD: Switch model No. (Item Ⓔ)

● Switch body only

SW - T2YD

- T2YD: Switch model No. (Item Ⓔ)

● Mounting bracket set

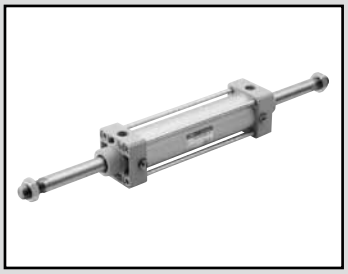
SCA2 - T - 40

- 40: Bore size (Item Ⓑ on the previous page)

How to order mounting bracket

Bore size (mm) / Mounting bracket		φ40	φ50	φ63	φ80	φ100
Foot (LB)	*2	S1-LB-40	S1-LB-50	S1-LB-63	S1-LB-80	S1-LB-100
Flange (FA/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

*1 : For material of the mounting bracket, refer to page 440.
*2 : The foot mounting bracket is provided as 2 pcs./set.
*3 : All mounting brackets are supplied with mounting bolts.

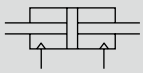


Medium bore size cylinder
Double acting/double rod

SCA2-D Series

● Bore size: φ40/φ50/φ63/φ80/φ100

JIS symbol



RoHS CAD

Specifications

Descriptions		SCA2-D (Double rod)				
Bore size mm		φ40	φ50	φ63	φ80	φ100
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)				
Proof pressure MPa		1.6 (≈230 psi, 16 bar)				
Ambient temperature °C		-10 (14°F) to 60 (140°F) (no freezing)				
Port size		Rc1/4	Rc3/8		Rc1/2	
Stroke tolerance mm		$^{+0.9}_{0}$(to 360), $^{+1.4}_{0}$(to 800)				
Working piston speed mm/s		50 to 1000 (Operate within the allowable absorbed energy.)				
Cushion		Air cushion				
Effective air 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 absorbed energy J	Cushioned	4.29	8.37	15.8	27.9	49.8
	Without cushion	0.067	0.079	0.079	0.201	0.301
		Without any cushion, this product cannot absorb large energy generated by an external load. We recommend using an external shock absorber.				

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/ 150/200/250/ 300/350/400/ 450/500	600	800	1
φ50				
φ63				
φ80		700		
φ100		800		

*1 : The custom stroke length is available in 1 mm increments.
*2 : If max. stroke length is exceeded, product specifications may not be satisfied depending on the conditions. Refer to Ending Page 69.

Min. stroke length with switch

● T0/T5 min. stroke with switches

	Different surface mounting				Same surface mounting				Center trunnion mounting				Rod side trunnion mounting No position detection at rod side stroke end.	Head side trunnion mounting No position detection at head side stroke end.
Switch quantity	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(105)	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 min. stroke with switch

	Different surface mounting				Same surface mounting				Center trunnion mounting				Rod side trunnion mounting No position detection at rod side stroke end.	Head side trunnion mounting No position detection at head side stroke end.
Switch quantity	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.

Min. stroke length with switch

● T2/T3 min. stroke with switches

	Different surface mounting				Same surface mounting				Center trunnion mounting				Rod side trunnion mounting No position detection at rod side stroke end.	Head side trunnion mounting No position detection at head side stroke end.
Switch quantity	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.

● T1/T2Y/T3Y/T2YD min. stroke with switches

	Different surface mounting				Same surface mounting				Center trunnion mounting				Rod side trunnion mounting No position detection at rod side stroke end.	Head side trunnion mounting No position detection at head side stroke end.
Switch quantity	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.

● T2W/T3W min. stroke with switches

	Different surface mounting				Same surface mounting				Center trunnion mounting				Rod side trunnion mounting No position detection at rod side stroke end.	Head side trunnion mounting No position detection at head side stroke end.
Switch quantity	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.

Switch specifications (T 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 programming controller, relay, compact solenoid valve	Dedicated for programmable controller			For programmable controller, relay				For programmable controller, relay		For programmable controller, relay (no lamp), serial		For programmable controller, relay			Dedicated 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	110 VAC	5/12/24 VDC	110 VAC	12/24 VDC	110 VAC	220 VAC	24 VDC ±10%
Load current	5 to 100 mA	5 to 20 mA (*3)			100 mA or less		50 mA or less		5 to 50 mA	7 to 20 mA	50 mA or less	20 mA or less	5 to 50 mA	7 to 20 mA	7 to 10 mA	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 3 m:87 5 m:142	1 m:18 3 m:49 5 m:80	1 m:33 3 m:87 5 m:142	1 m:18 3 m:49 5 m:80	1 m:18 3 m:49 5 m:80		1 m:33 3 m:87 5 m:142	1 m:18 3 m:49 5 m:80	1 m:18 3 m:49 5 m:80				1 m:33 3 m:87 5 m:142			1 m:61 3 m:166 5 m:272

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

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

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

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

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

Cylinder weight

(Unit: kg)

Bore size (mm)	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)	Eye bracket (CA)	Clevis bracket (CB)	Trunnion (TA, TB, TC)		T type	
φ40	1.15	1.32	1.56	1.47	1.51	1.53	Refer to the weight in the switch specifications.	0.024	0.55
φ50	1.63	1.88	2.12	2.01	2.04	2.17		0.022	0.71
φ63	2.06	2.43	3.15	2.63	2.68	2.91		0.020	0.75
φ80	3.66	4.40	5.52	4.93	5.14	5.00		0.026	1.29
φ100	5.70	6.61	8.44	7.34	7.52	8.27		0.024	1.67

(Example) Product weight of SCA2-D-LB-50B-200-TOH-D

- Product weight for 0 mm stroke length····· 1.88 kg
- Additional weight for 200 mm stroke length····· 0.71 x $\frac{200}{100}$ = 1.42 kg
- Weight of 2 TOH switches····· 0.018 x 2 = 0.036 kg
- Weight of 2 mounting brackets····· 0.022 x 2 = 0.044 kg
- Product weight····· 1.88 + 1.42 + 0.036 + 0.044 = 3.380 kg

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/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/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/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/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/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

How to order

Without switch (built-in magnet for switch)

SCA2-D - LB - 40 ( ) B - 100 ——— S I

With switch (built-in magnet for switch)

SCA2-D - LB - 40 ( ) B - 100 - T0H - R - S I

Ⓐ Mounting *1

Ⓑ Bore size

Ⓒ Port thread

Ⓓ Cushion

Ⓔ Stroke length *2

Ⓕ Switch model No. *4

Ⓖ Switch quantity *5

Ⓗ Option *6

Ⓘ Accessory

Code	Content
Ⓐ Mounting	
00	Basic
LB	Axial foot
FA	Rod side flange
FB	Head side flange
TC	Intermediate trunnion
TA	Rod side trunnion
TB	Head side trunnion
TF	Intermediate supporting hole trunnion (φ40 is not available)
TD	Rod side hole trunnion (φ40 is not available)
TE	Head side hole trunnion (φ40 is not available)
Ⓑ Bore size (mm)	
40	φ40
50	φ50
63	φ63
80	φ80
100	φ100
Ⓒ Port thread	
Blank	Rc thread
N	NPT thread (custom order product)
G	G thread (custom order product)
Ⓓ Cushion	
B	Both sides cushioned
R	Rod side cushioned
H	Head side cushioned
N	Without cushion

Ⓔ Stroke length (mm)

Bore size	Stroke *3	Available stroke	Custom stroke
φ40	**1 to 600**	**800**	**In 1 mm increments**
φ50	**1 to 600**	**800**	
φ63	**1 to 600**	**800**	
φ80	**1 to 700**	**800**	
φ100	**1 to 800**	**800**	

Ⓕ Switch model No.	
Refer to the switch model numbers on the next page.	
*** Lead wire length**	
Blank	1 m (standard)
3	3 m (option)
5	5 m (option)
Ⓖ Switch quantity	
R	1 on rod side
H	1 on head side
D	2
T	3

Ⓗ 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)		

Ⓘ Accessory	
I	Rod eye
Y	Rod clevis (pin and snap ring attached)
B4	Trunnion No. 2 bracket (2 pcs./set)

⚠ Precautions for model No. selection

*1 : Mounting bracket will be shipped with the product. (Trunnion are assembled at shipment.)
*2 : If the stroke exceeds the max. stroke length, refer to Ending Page 69.
*3 : Refer to page 524 for the min. stroke length with switch.
*4 : Switches are shipped with the product.
*5 : When selecting TA or TB as mounting, the number of switches is limited to "H" (1 on head side) for TA, and "R" (1 on rod side) for TB.
*6 : The instantaneous max. temperature is the temperature when sparks, cutting chips, etc., instantaneously contact the bellows.
*7 : Refer to Ending Page 85 for custom specifications of rod end form.
*8 : Refer to page 432 for combinations of variations/ options.

[Example of model No.]

SCA2-D-LB-40B-100-T0H-R-SI

Model: Medium bore size cylinder, double acting/double rod

Ⓐ Mounting : Axial foot
Ⓑ Bore size : φ40 mm
Ⓒ Port thread : Rc thread
Ⓓ Cushion : Both sides cushioned
Ⓔ Stroke length : 100 mm
Ⓕ Switch model No. : Reed T0H switch, lead wire length 1 m
Ⓖ Switch quantity : 1 on rod side
Ⓗ Option : Cushion needle position S
Ⓘ Accessory : Rod eye

[F] Switch model No.

T switch model No.						
Axial lead wire	Radial lead wire	Contact	Voltage AC	Voltage DC	Display	Lead wire
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*			●		3-wire
T2WH*	T2WV*			●	2-color display	2-wire
T2YH*	T2YV*			●		
T3WH*	T3WV*			●		3-wire
T3YH*	T3YV*			●		
T3PH*	T3PV*			●	1-color display (custom order)	3-wire
T2YD*	-			●	2-color display AC magnetic field	2-wire
T2YDT*	-			●		
T2JH*	T2JV*			●	1-color display off-delay	2-wire

How to order switch

[T switch]

● Switch body + mounting bracket set

SCA2 - T0H - 40

- T0H: Switch model No. (Item F)
- 40: Bore size (Item B on the previous page)

● Switch body only

SW - T0H

- T0H: Switch model No. (Item F)

* Contact CKD when using an environment-friendly T switch.

● Switch mounting bracket set

SCA2 - TS - 40

- TS: Mounting bracket
- 40: Bore size (Item B on the previous page)

[T2YD switch]

● Switch body + mounting bracket set

SCA2 - T2YD - 40

- T2YD: Switch model No. (Item F)
- 40: Bore size (Item B on the previous page)

● Switch body only

SW - T2YD

- T2YD: Switch model No. (Item F)

● Mounting bracket set

SCA2 - T - 40

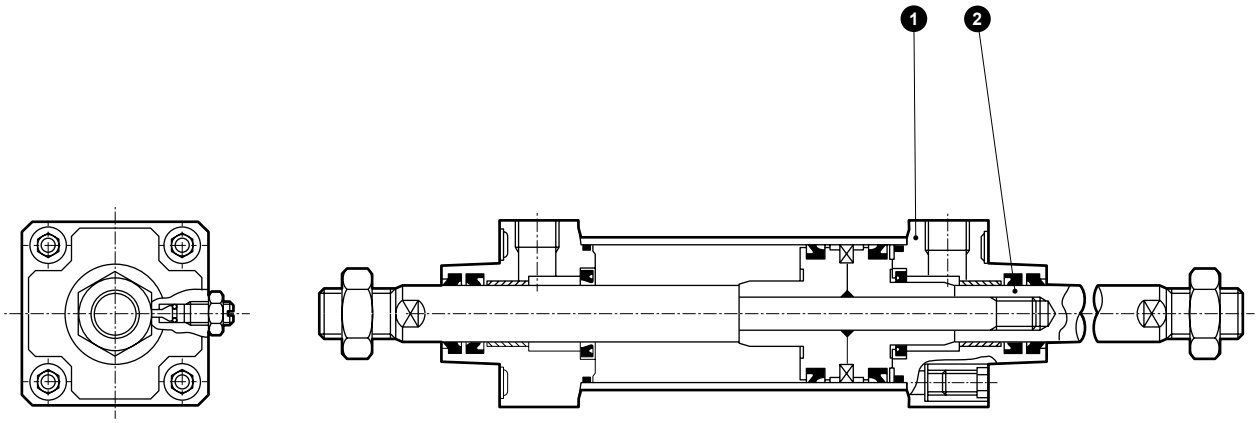
- 40: Bore size (Item B on the previous page)

How to order mounting bracket

Bore size (mm) / Mounting bracket		φ40	φ50	φ63	φ80	φ100
Foot (LB)	*2	S1-LB-40	S1-LB-50	S1-LB-63	S1-LB-80	S1-LB-100
Flange (FA/FB)		S1-FA-40	S1-FA-50	S1-FA-63	S1-FA-80	S1-FA-100

*1 : For material of the mounting bracket, refer to page 440.
*2 : The foot mounting bracket is provided as 2 pcs./set.
*3 : All mounting brackets are supplied with mounting bolts.

Internal structure and parts list



No.	Part name	Material	Remarks
1	Rod cover (T)	Aluminum alloy die-casting	Paint
2	Piston rod (2)	Steel	Industrial chrome plating

Note: Materials of the parts not listed on the right are the same as those of SCA2 Series (double acting/single rod) on page 440.

Repair parts list

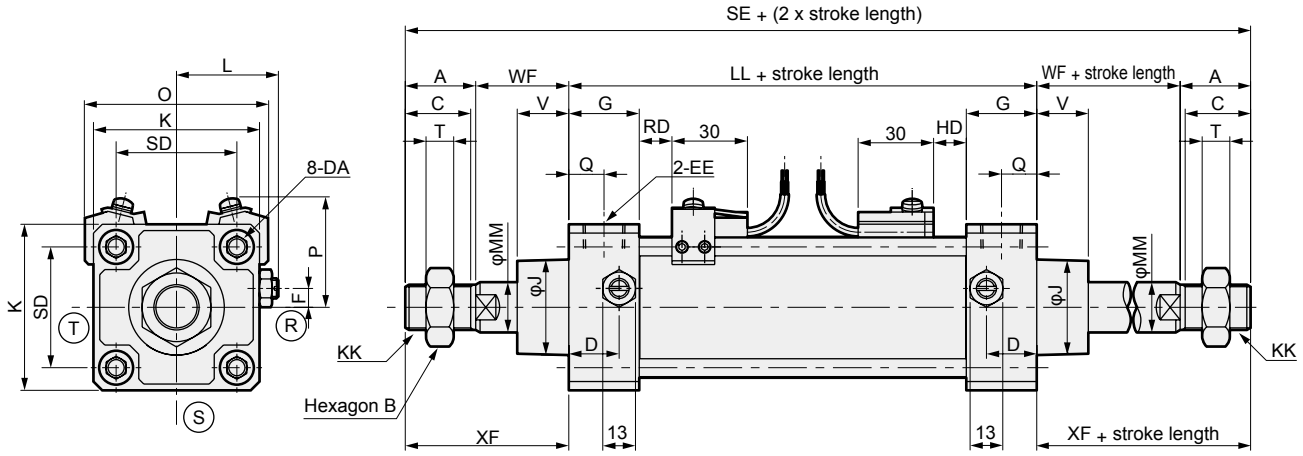
(Numbering of repair parts follows that in the internal structure of the SCA2 Series (page 440).)

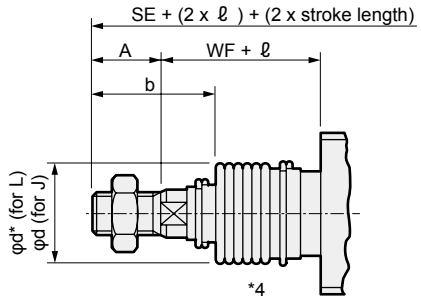
Bore size (mm)	Kit No.	Repair parts No.
φ 40	SCA2-D-40K	❸ ❹ ❼ ❽ ⓫ ⓴
φ 50	SCA2-D-50K	
φ 63	SCA2-D-63K	
φ 80	SCA2-D-80K	
φ100	SCA2-D-100K	

Note: Specify the kit No. when placing an order.

Dimensions

● Basic (00)





[With bellows]

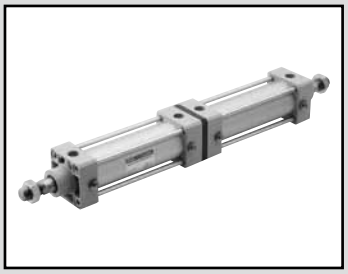
Code	Basic dimensions																				
Bore size (mm)	A	B	C	D	DA	EE	F	G	J	K	KK	L	LL	MM	Q	SE	SD	T	V	WF	XF
φ40	22	22	20	18	M8	Rc1/4	7.5	26	31	57	M14×1.5	38 to 39.5	93	16	13	204	40.5	8	18.5	33.5	55.5
φ50	28	27	26	20	M8	Rc3/8	0	28	38	66	M18×1.5	41 to 43.5	101	20	14	231	48	11	20.5	37	65
φ63	28	27	26	22	M8	Rc3/8	0	30	38	80	M18×1.5	47.5 to 50.0	105	20	15	231	59	11	21	35	63
φ80	36	32	34	26	M12	Rc1/2	0	34	43	98	M22×1.5	56 to 59	116	25	17	284	74	13	23.5	48	84
φ100	45	41	43	28	M12	Rc1/2	0	36	51	118	M26×1.5	66 to 69	128	30	18	324	90	16	32	53	98

Code	With switch										With bellows								
Bore size (mm)	O	P	T0, T5 T2, T3		T1, T2Y T3Y, T2J		T8		T2W, T3W		b	d	d*	ℓ					
			RD	HD	RD	HD	RD	HD	RD	HD				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	66	41.5	11	11	10	10	5	5	13	13	41	40	40	25.5	41.5	58.5	75.5	108.5	141.5	174.5
φ50	73	43	13	13	12	12	7	7	15	15	47	47	48	22	36	49	63	90	119	146
φ63	85	47	13	13	12	12	7	7	15	15	45	47	48	22	36	49	63	90	119	146
φ80	105	57	14.5	14.5	13.5	13.5	8.5	8.5	16.5	16.5	58.5	53	55	14	26	38	49	72	96	119
φ100	121	63	18.5	18.5	17.5	17.5	12.5	12.5	20.5	20.5	69.5	61	65	20	32	42	53	76	98	120

Code	
Bore size (mm)	*3 Over 500
φ40	(Stroke length/3.0) + 8
φ50	(Stroke length/3.6) + 7.5
φ63	(Stroke length/3.6) + 7.5
φ80	(Stroke length/4.3) + 2.5
φ100	(Stroke length/4.5) + 9

*1 : Ⓡ , Ⓢ and Ⓣ in dicate the cushion needle position.
*2 : The positions for the left and right tangs are unspecified.
*3 : For the ℓ dimension, round up below the decimal point.
*4 : Bellows are attached to both rods.
*5 : Refer to page 599 for dimensions of projecting section of T2YD switch.

* Installation dimensions of other mounting are the same as those of the SCA2 (standard). Refer to pages 442 to 453.
* For the dimensions of the accessories, refer to pages 454 and 455.

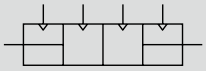


Medium bore size cylinder
Double acting/back to back

SCA2-B Series

● Bore size: φ40/φ50/φ63/φ80/φ100

JIS symbol



RoHS CAD

Specifications

Descriptions		SCA2-B (back to back)				
Bore size mm		φ40	φ50	φ63	φ80	φ100
Actuation		Double acting				
Working fluid		Compressed air				
Max. working pressure MPa		1.0 (≈150 psi, 10 bar)				
Min. working pressure MPa		0.05 (≈7.3 psi, 0.5 bar)				
Proof pressure MPa		1.6 (≈230 psi, 16 bar)				
Ambient temperature °C		-10 (14°F) to 60 (140°F) (no freezing)				
Port size		Rc1/4	Rc3/8		Rc1/2	
Stroke tolerance mm		$^{+0.9}_{0}$ (to 360), $^{+1.4}_{0}$ (to 800)				
Working piston speed mm/s		50 to 1000 (Operate within the allowable absorbed energy.)				
Cushion		Air cushion				
Effective air 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 absorbed energy J	Cushioned	4.29	8.37	15.8	27.9	49.8
	Without cushion	0.067	0.079	0.079	0.201	0.301
		Without any cushion, this product cannot absorb large energy generated by an external load. We recommend using an external shock absorber.				

Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)
φ40	25/50/75/100/ 150/200/250/ 300/350/400/ 450/500	600	1
φ50			
φ63			
φ80		700	
φ100		800	(the same for cylinder 1 and cylinder 2)

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

Min. stroke length with switch

● T0/T5 min. stroke with switches

	Different surface mounting				Same surface mounting				Rod side trunnion mounting No position detection at rod side stroke end.	Head side trunnion mounting No position detection at head side stroke end.
Switch quantity	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(105)	50(50)	50(50)
φ50	15(10)	20(20)	40(40)	60(60)	15(10)	20(20)	65(50)	65(60)	60(60)	60(60)
φ63	15(10)	20(20)	40(40)	60(60)	15(10)	20(20)	70(55)	70(60)	50(45)	50(45)
φ80	15(15)	25(25)	45(45)	65(65)	15(15)	25(25)	70(55)	70(65)	55(40)	55(40)
φ100	15(15)	25(25)	45(45)	70(70)	15(15)	25(25)	70(55)	70(70)	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 min. stroke with switch

	Different surface mounting				Same surface mounting				Rod side trunnion mounting No position detection at rod side stroke end.	Head side trunnion mounting No position detection at head side stroke end.
Switch quantity	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)	45(40)	45(40)
φ50	10(10)	20(20)	40(40)	60(60)	10(10)	20(20)	70(55)	70(60)	50(50)	50(50)
φ63	10(10)	20(20)	40(40)	60(60)	10(10)	20(20)	70(55)	70(60)	45(35)	45(35)
φ80	15(15)	25(25)	45(45)	65(65)	15(15)	25(25)	70(55)	70(65)	50(35)	50(35)
φ100	15(15)	25(25)	45(45)	65(65)	15(15)	25(25)	70(55)	70(65)	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.

Min. stroke length with switch

● T2/T3 min. stroke with switches

	Different surface mounting				Same surface mounting				Rod side trunnion mounting No position detection at rod side stroke end.	Head side trunnion mounting No position detection at head side stroke end.
Switch quantity	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)	50(35)	50(35)
φ50	15(10)	15(15)	25(25)	40(40)	15(10)	15(15)	60(45)	60(45)	45(30)	45(30)
φ63	15(10)	15(15)	25(25)	40(40)	15(10)	15(15)	60(45)	60(45)	50(35)	50(35)
φ80	15(10)	15(15)	30(30)	45(45)	15(10)	15(15)	60(45)	60(45)	55(40)	55(40)
φ100	10(10)	15(15)	30(30)	45(45)	10(10)	15(15)	60(45)	60(45)	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.

● T1/T2Y/T3Y/T2YD min. stroke with switches

	Different surface mounting				Same surface mounting				Center trunnion mounting				Rod side trunnion mounting No position detection at rod side stroke end.	Head side trunnion mounting No position detection at head side stroke end.
Switch quantity	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.

● T2W/T3W min. stroke with switches

	Different surface mounting				Same surface mounting				Rod side trunnion mounting No position detection at rod side stroke end.	Head side trunnion mounting No position detection at head side stroke end.
Switch quantity	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)	50(35)	50(35)
φ50	20(5)	20(10)	20(15)	20(20)	20(5)	20(10)	65(40)	65(40)	50(35)	50(35)
φ63	20(5)	20(10)	20(15)	25(25)	20(5)	20(10)	65(40)	65(40)	55(40)	55(40)
φ80	15(5)	15(10)	15(15)	25(25)	15(5)	15(10)	60(40)	60(40)	55(40)	55(40)
φ100	10(5)	10(10)	20(20)	25(25)	10(5)	10(10)	60(40)	60(40)	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.

Switch specifications (T 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 programming controller, relay, compact solenoid valve	Dedicated for programmable controller			For programmable controller, relay				For programmable controller, relay		For programmable controller, relay (no lamp), serial		For programmable controller, relay			Dedicated 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	110 VAC	5/12/24 VDC	110 VAC	12/24 VDC	110 VAC	220 VAC	24 VDC ±10%
Load current	5 to 100 mA	5 to 20 mA (*3)			100mA or less		50mA or less		5 to 50 mA	7 to 20 mA	50 mA or less	20 mA or less	5 to 50 mA	7 to 20 mA	7 to 10 mA	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 3 m:87 5 m:142	1 m:18 3 m:49 5 m:80	1 m:33 3 m:87 5 m:142	1 m:18 3 m:49 5 m:80	1 m:18 3 m:49 5 m:80		1 m:33 3 m:87 5 m:142	1 m:18 3 m:49 5 m:80	1 m:18 3 m:49 5 m:80				1 m:33 3 m:87 5 m:142			1 m:61 3 m:166 5 m:272

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

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

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

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

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

Cylinder weight

(Unit: kg)

Bore size (mm)	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)	Eye bracket (CA)	Clevis bracket (CB)	Trunnion (TA, TB, TC)		T type	
φ40	1.66	1.83	2.07	1.98	2.02	2.04	Refer to the weight in the switch specifications.	0.024	0.39
φ50	2.40	2.65	2.89	2.78	2.81	2.94		0.022	0.46
φ63	3.20	3.57	4.29	3.77	3.82	4.05		0.020	0.50
φ80	5.20	5.94	7.06	6.47	6.68	6.54		0.026	0.90
φ100	8.40	9.31	11.14	10.04	10.22	10.97		0.024	1.12

(Example) Product weight of SCA2-B-LB-50-B200-TOH-D-B100-TOH-R

- Product weight for 0 mm stroke length..... 2.65 kg
- Additional weight for 200 mm S1 stroke length..... $0.46 \times \frac{200}{100} = 0.92$ kg
- Additional weight for 100 mm S2 stroke length..... $0.46 \times \frac{100}{100} = 0.46$ kg
- Weight of 3 TOH switches..... 0.018 x 3 = 0.054 kg
- Weight of 3 mounting brackets..... 0.022 x 3 = 0.066 kg
- ● Product weight..... 2.65 + 0.92 + 0.46 + 0.054 +0.066 = 4.150 kg

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

How to order

Without switch (built-in magnet for switch)

SCA2-B-LB-40-B100-B50-SI

With switch (built-in magnet for switch)

SCA2-B-LB-40-B100-T0H-D-B50-T0H-R-SI

Cylinder 1 stroke length S1 — Cylinder 2 stroke length S2

Cylinder 1 — Cylinder 2

Ⓐ Mounting *1
Ⓑ Bore size
Ⓒ Port thread
Ⓓ Cushion
Ⓔ Stroke length *2
Ⓕ Switch model No. *4
Ⓖ Switch quantity *5
Ⓗ Option *6
Ⓘ Accessory

Code	Content
Ⓐ Mounting	
00	Basic
LB	Axial foot
FA	Rod side flange
TA	Rod side trunnion
TB	Head side trunnion
TD	Rod side hole trunnion (φ40 is not available)
TE	Head side hole trunnion (φ40 is not available)

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

Ⓒ Port thread	
Blank	Rc thread
N	NPT thread (custom order product)
G	G thread (custom order product)

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

Ⓔ Stroke length (mm)

Bore size	Stroke length *3	Custom stroke length
φ40	**1 to 600**	**In 1 mm increments**
φ50	**1 to 600**	
φ63	**1 to 600**	
φ80	**1 to 700**	
φ100	**1 to 800**	

Ⓕ Switch model No.

Refer to the switch model numbers on the next page.

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

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

Ⓗ 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)		

Ⓘ Accessory	
I	Rod eye
Y	Rod clevis (pin and snap ring attached)
B4	Trunnion No. 2 bracket (2 pcs./set)

⚠ Precautions for model No. selection

*1 : Mounting bracket will be shipped with the product. (Trunnion are assembled at shipment.)
*2 : If the stroke exceeds the max. stroke length, refer to Ending Page 69.
*3 : Refer to page 532 for the min. stroke length with switch.
*4 : Switches are shipped with the product.
*5 : When selecting TA or TB as mounting, the number of switches is limited to "H" (1 on head side) for TA, and "R" (1 on rod side) for TB.
*6 : The instantaneous max. temperature is the temperature when sparks and cutting chips, etc., instantaneously contact the bellows.
*7 : Refer to Ending Page 85 for custom specifications of rod end form.
*8 : Refer to page 432 for combination of variations/options.

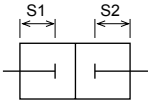
[Example of model No.]

SCA2-B-LB-40-B100-T0H-D-B50-T0H-R-SI

Model: Medium bore size cylinder, double acting/back to back

Ⓐ Mounting	: Axial foot	
Ⓑ Bore size	: φ40 mm	
Ⓒ Port thread	: Rc thread	
Ⓓ Cushion	: Both sides cushioned	Cylinder 1
Ⓔ Stroke length S1	: 100 mm	
Ⓕ Switch model No.	: Reed T0H switch, lead wire 1m	
Ⓖ Switch quantity	: 2	
Ⓒ Port thread	: Rc thread	
Ⓓ Cushion	: Both sides cushioned	Cylinder 2
Ⓔ Stroke length S2	: 50 mm	
Ⓕ Switch model No.	: Reed T0H switch, lead wire 1m	
Ⓖ Switch quantity	: 1 on rod side	
Ⓗ Option	: Cushion needle position S	
Ⓘ Accessory	: Rod eye	

1st stage stroke length	100 mm indicated by S1
+ 2nd stage stroke length	50 mm indicated by S2
Total stroke length	150 mm S1 + S2



[F] Switch model No.

T switch model No.						
Axial lead wire	Radial lead wire	Contact	Voltage AC	Voltage DC	Display	Lead wire
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*			●		3-wire
T2WH*	T2WV*			●	2-color display	2-wire
T2YH*	T2YV*			●		
T3WH*	T3WV*			●		3-wire
T3YH*	T3YV*			●		
T3PH*	T3PV*			●	1-color display (custom order)	3-wire
T2YD*	-			●	2-color display (AC magnetic field)	2-wire
T2YDT*	-			●		
T2JH*	T2JV*			●	Off-delay	2-wire

How to order switch

[T switch]

● Switch body + mounting bracket set

SCA2 - T0H - 40

- T0H: Switch model No. (Item Ⓕ)
- 40: Bore size (Item Ⓑ on the previous page)

● Switch body only

SW - T0H

- T0H: Switch model No. (Item Ⓕ)

* Contact CKD when using an environment-friendly T switch.

● Switch mounting bracket set

SCA2 - TS - 40

- TS: Mounting bracket
- 40: Bore size (Item Ⓑ on the previous page)

[T2YD switch]

● Switch body + mounting bracket set

SCA2 - T2YD - 40

- T2YD: Switch model No. (Item Ⓕ)
- 40: Bore size (Item Ⓑ on the previous page)

● Switch body only

SW - T2YD

- T2YD: Switch model No. (Item Ⓕ)

● Mounting bracket set

SCA2 - T - 40

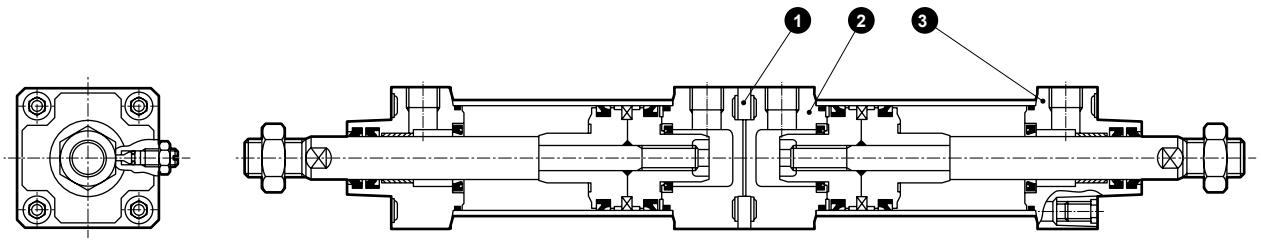
- 40: Bore size (Item Ⓑ on the previous page)

How to order mounting bracket

Bore size (mm) / Mounting bracket	φ40	φ50	φ63	φ80	φ100
Foot (LB) *2	S1-LB-40	S1-LB-50	S1-LB-63	S1-LB-80	S1-LB-100
Flange (FA)	S1-FA-40	S1-FA-50	S1-FA-63	S1-FA-80	S1-FA-100

*1 : For material of the mounting bracket, refer to page 440.
*2 : The foot mounting bracket is provided as 2 pcs./set.
*3 : All mounting brackets are supplied with mounting bolts.

Internal structure and parts list



Note: Materials of the parts not listed below are the same as those of SCA2 Series (double acting/single rod) on page 440.

No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
1	Spacer	Steel	Manganese phosphate treatment	3	Rod cover Ⓣ	Aluminum alloy die-casting	Paint
2	Head cover Ⓣ	Aluminum alloy die-casting	Paint				

Repair parts list

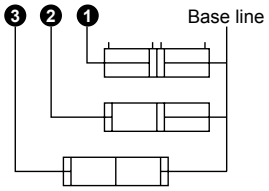
(Numbering of repair parts follows that in the internal structure of the SCA2 Series (page 440).)

Bore size (mm)	Kit No.	Repair parts No.
φ40	SCA2-B-40K	❸ ❹ ❼ ❽ ⓫ ⓮ ⓴
φ50	SCA2-B-50K	
φ63	SCA2-B-63K	
φ80	SCA2-B-80K	
φ100	SCA2-B-100K	

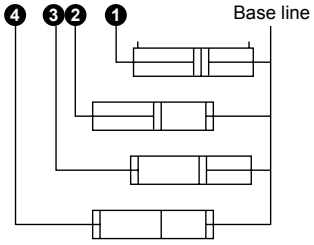
Note: Specify the kit No. when placing an order.

Applications

When the same stroke lengths are combined,
3 positions are available.

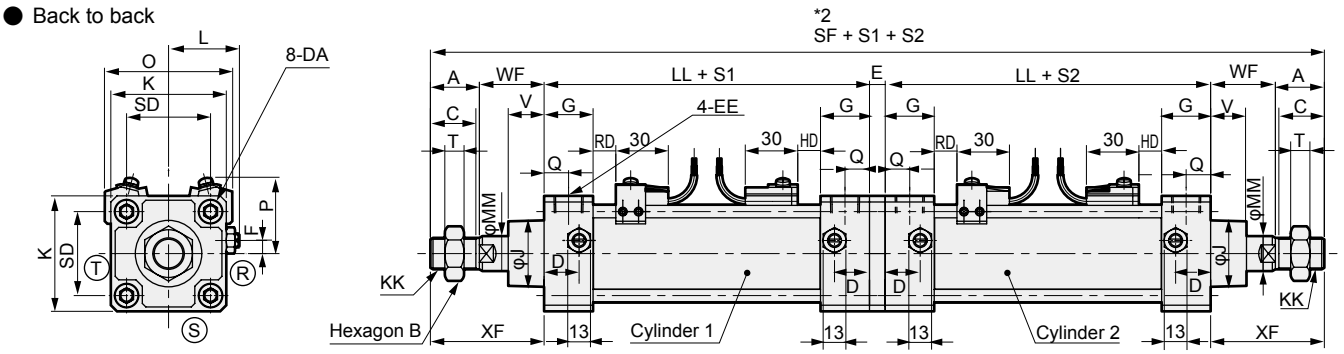


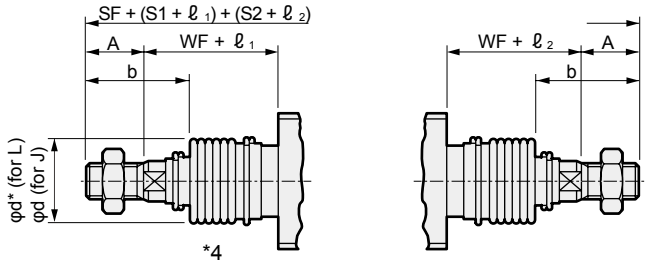
When different stroke lengths are combined,
4 positions are available.



Dimensions

● Back to back





[With bellows]

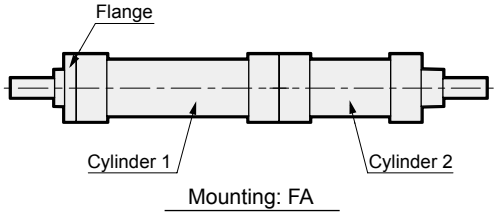
Code / Bore size (mm)	A	B	C	D	E	F	DA	EE	G	J	K	KK	L	LL	MM	Q	SD	SF	T	V	WF	XF
φ40	22	22	20	18	4.5	7.5	M8	Rc1/4	26	31	57	M14×1.5	38 to 39.5	93	16	13	40.5	301.5	8	18.5	33.5	55.5
φ50	28	27	26	20	9	0	M8	Rc3/8	28	38	66	M18×1.5	41 to 43.5	101	20	14	48	341	11	20.5	37	65
φ63	28	27	26	22	9	0	M8	Rc3/8	30	38	80	M18×1.5	47.5 to 50.0	105	20	15	59	345	11	21	35	63
φ80	36	32	34	26	12	0	M12	Rc1/2	34	43	98	M22×1.5	56 to 59	116	25	17	74	412	13	23.5	48	84
φ100	45	41	43	28	12	0	M12	Rc1/2	36	51	118	M26×1.5	66 to 69	128	30	18	90	464	16	32	53	98

Code	With switch										With bellows									
			T0, T5 T2, T3		T1, T2Y T3Y, T2J		T8		T2W, T3W					ℓ 1, ℓ 2						
Bore size (mm)	O	P	RD	HD	RD	HD	RD	HD	RD	HD	b	d	d*	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	*3 Over 500
φ40	66	41.5	11	11	10	10	5	5	13	13	41	40	40	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke length/3.0) + 8
φ50	73	43	13	13	12	12	7	7	15	15	47	47	48	22	36	49	63	90	119	146	(Stroke length/3.6) + 7.5
φ63	85	47	13	13	12	12	7	7	15	15	45	47	48	22	36	49	63	90	119	146	(Stroke length/3.6) + 7.5
φ80	105	57	14.5	14.5	13.5	13.5	8.5	8.5	16.5	16.5	58.5	53	55	14	26	38	49	72	96	119	(Stroke length/4.3) + 2.5
φ100	121	63	18.5	18.5	17.5	17.5	12.5	12.5	20.5	20.5	69.5	61	65	20	32	42	53	76	98	120	(Stroke length/4.5) + 9

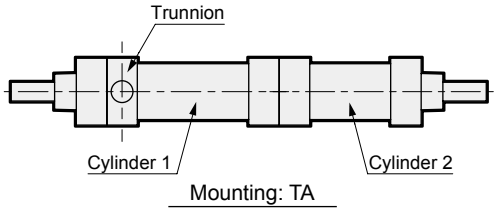
*1 : Ⓡ, ⓈⓉ indicates the cushion needle position.
*2 : S1: Cylinder 1 stroke length, S2: Cylinder 2 stroke length
*3 : For the ℓ 1 and ℓ 2 dimensions, round up below the decimal point.
*4 : Bellows are attached to both rods.
*5 : Refer to page 599 for dimensions of projecting section of T2YD switch.

Installation dimensions of other mounting are the same as those of the SCA2 (standard). Refer to pages 442 to 453.

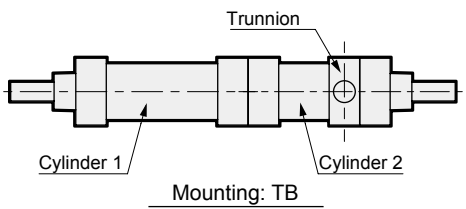
Installation positions of the flange (mounting: FA) and trunnion (mounting: TA/TB) are as below.



Mounting: FA

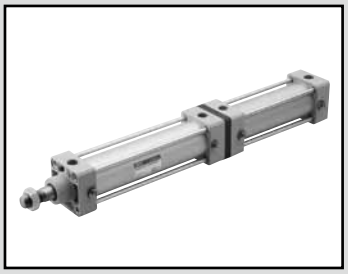


Mounting: TA



Mounting: TB

*For the dimensions of the accessories, refer to pages 454 and 455.

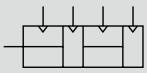


Medium bore size cylinder
Double acting/two-stage

SCA2-W Series

● Bore size: φ40/φ50/φ63/φ80/φ100

JIS symbol



RoHS CAD

Specifications

Descriptions		SCA2-W (two-stage)				
Bore size mm		φ40	φ50	φ63	φ80	φ100
Actuation		Double acting				
Working fluid		Compressed air				
Max. working pressure MPa		1.0 (≈150 psi, 10 bar) *1				
Min. working pressure MPa		0.1 (≈15 psi, 1 bar)				
Proof pressure MPa		1.6 (≈230 psi, 16 bar)				
Ambient temperature °C		-10 (14°F) to 60 (140°F) (no freezing)				
Port size		Rc1/4	Rc3/8		Rc1/2	
Stroke tolerance mm		$^{+0.9}_{0}$ (to 360), $^{+1.4}_{0}$ (to 800)				
Working piston speed mm/s		50 to 1000 (Operate within the allowable absorbed energy.)				
Cushion		Air cushion				
Effective air 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 absorbed energy J	Cushioned	4.29	8.37	15.8	27.9	49.8
	Without cushion	0.067	0.079	0.079	0.201	0.301
		Without any cushion, this product cannot absorb large energy generated by an external load. We recommend using an external shock absorber.				

*1: The max. working pressure is 0.5 MPa when S1 and S2 are the same value.

Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)
φ40	25/50/75/100/ 150/200/250/ 300/350/400/ 450/500	600	2 (Total stroke)
φ50			
φ63			
φ80		700	
φ100		800	

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

Min. stroke length with switch

● T0/T5 min. stroke with switches

	Different surface mounting				Same surface mounting				Rod side trunnion mounting No position detection at rod side stroke end.	Head side trunnion mounting No position detection at head side stroke end.
Switch quantity	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(105)	50(50)	50(50)
φ50	15(10)	20(20)	40(40)	60(60)	15(10)	20(20)	65(50)	65(60)	60(60)	60(60)
φ63	15(10)	20(20)	40(40)	60(60)	15(10)	20(20)	70(55)	70(60)	50(45)	50(45)
φ80	15(15)	25(25)	45(45)	65(65)	15(15)	25(25)	70(55)	70(65)	55(40)	55(40)
φ100	15(15)	25(25)	45(45)	70(70)	15(15)	25(25)	70(55)	70(70)	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 min. stroke with switch

	Different surface mounting				Same surface mounting				Rod side trunnion mounting No position detection at rod side stroke end.	Head side trunnion mounting No position detection at head side stroke end.
Switch quantity	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)	45(40)	45(40)
φ50	10(10)	20(20)	40(40)	60(60)	10(10)	20(20)	70(55)	70(60)	50(50)	50(50)
φ63	10(10)	20(20)	40(40)	60(60)	10(10)	20(20)	70(55)	70(60)	45(35)	45(35)
φ80	15(15)	25(25)	45(45)	65(65)	15(15)	25(25)	70(55)	70(65)	50(35)	50(35)
φ100	15(15)	25(25)	45(45)	65(65)	15(15)	25(25)	70(55)	70(65)	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.

Min. stroke length with switch

● T2/T3 min. stroke with switches

	Different surface mounting				Same surface mounting				Rod side trunnion mounting No position detection at rod side stroke end.	Head side trunnion mounting No position detection at head side stroke end.
Switch quantity	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)	50(35)	50(35)
φ50	15(10)	15(15)	25(25)	40(40)	15(10)	15(15)	60(45)	60(45)	45(30)	45(30)
φ63	15(10)	15(15)	25(25)	40(40)	15(10)	15(15)	60(45)	60(45)	50(35)	50(35)
φ80	15(10)	15(15)	30(30)	45(45)	15(10)	15(15)	60(45)	60(45)	55(40)	55(40)
φ100	10(10)	15(15)	30(30)	45(45)	10(10)	15(15)	60(45)	60(45)	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.

● T1/T2Y/T3Y/T2YD min. stroke with switches

	Different surface mounting				Same surface mounting				Center trunnion mounting				Rod side trunnion mounting No position detection at rod side stroke end.	Head side trunnion mounting No position detection at head side stroke end.
Switch quantity	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.

● T2W/T3W min. stroke with switches

	Different surface mounting				Same surface mounting				Rod side trunnion mounting No position detection at rod side stroke end.	Head side trunnion mounting No position detection at head side stroke end.
Switch quantity	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)	50(35)	50(35)
φ50	20(5)	20(10)	20(15)	20(20)	20(5)	20(10)	65(40)	65(40)	50(35)	50(35)
φ63	20(5)	20(10)	20(15)	25(25)	20(5)	20(10)	65(40)	65(40)	55(40)	55(40)
φ80	15(5)	15(10)	15(15)	25(25)	15(5)	15(10)	60(40)	60(40)	55(40)	55(40)
φ100	10(5)	10(10)	20(20)	25(25)	10(5)	10(10)	60(40)	60(40)	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.

Switch specifications (T 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 programming controller, relay, compact solenoid valve	Dedicated for programmable controller			For programmable controller, relay				For programmable controller, relay		For programmable controller, relay (no lamp), serial		For programmable controller, relay			Dedicated 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	110 VAC	5/12/24 VDC	110 VAC	12/24 VDC	110 VAC	220 VAC	24 VDC ±10%
Load current	5 to 100 mA	5 to 20 mA (*3)			100 mA or less		50 mA or less		5 to 50 mA	7 to 20 mA	50 mA or less	20 mA or less	5 to 50 mA	7 to 20 mA	7 to 10 mA	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 3 m:87 5 m:142	1 m:18 3 m:49 5 m:80	1 m:33 3 m:87 5 m:142	1 m:18 3 m:49 5 m:80	1 m:18 3 m:49 5 m:80		1 m:33 3 m:87 5 m:142	1 m:18 3 m:49 5 m:80	1 m:18 3 m:49 5 m:80				1 m:33 3 m:87 5 m:142			1 m:61 3 m:166 5 m:272

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

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

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

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

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

Cylinder weight

(Unit: kg)

Bore size (mm)	Product weight when stroke length (S) = 0 mm						Switch weight	Mounting bracket weight	Added weight/ S=100 mm
	Basic (00)	Foot (LB)	Flange (FA, FB)	Eye bracket (CA)	Clevis bracket (CB)	Trunnion (TA, TB, TC)		T type	
φ40	1.34	1.51	1.75	1.66	1.70	1.72	Refer to the weight in the switch specifications.	0.024	0.78
φ50	1.97	2.22	2.46	2.35	2.38	2.51		0.022	0.92
φ63	2.74	3.11	3.83	3.31	3.36	3.59		0.020	1.00
φ80	4.14	4.88	6.00	5.41	5.62	5.48		0.026	1.80
φ100	6.90	7.81	9.64	8.54	8.72	9.47		0.024	2.24

(Example) Product weight of SCA2-W-LB-50-B200-T0H-D-B100-TOH-R

- Product weight for 0 mm stroke length ····· 2.22 kg
- Additional weight for 200 mm S1 stroke length ····· $0.46 \times \frac{200}{100} = 0.92$ kg
- Additional weight for 100 mm S2 stroke length ····· $0.46 \times \frac{100}{100} = 0.46$ kg
- Weight of 3 TOH switches ····· 0.018 x 3 = 0.054 kg
- Weight of 3 mounting brackets ····· 0.022 x 3 = 0.066 kg
- Product weight ····· 2.22 + 0.92 + 0.46 + 0.054 +0.066 = 3.720 kg

How to order

Without switch (built-in magnet for switch)

SCA2-W - LB - 40 - B 150 — B 50 — S I

With switch (built-in magnet for switch)

SCA2-W - LB - 40 - B 150 - T0H - D - B 50 - T0H - R - S I

Total stroke S1 = 150 + 50 = 200 mm

Cylinder 1: B 150 - T0H - D

Cylinder 2: B 50 - T0H - R

- A Mounting *1
- B Bore size
- C Port thread
- D Cushion
- E Stroke length *2 / *3
- F Switch model No. *5
- G Switch quantity *6
- H Option *7
- I Accessory *8

Precautions for model No. selection

*1 : Mounting bracket will be shipped with the product. (Trunnion are assembled at shipment.)
*2 : If the stroke exceeds the max. stroke length, refer to Ending Page 69.
*3 : The max. stroke length of S2 (1st stage) is 200 mm.
*4 : Refer to page 540 for the min. stroke length with switch.
*5 : Switches are shipped with the product.
*6 : When selecting TA or TB as mounting, the number of switches is limited to "H" (1 on head side) for TA, and "R" (1 on rod side) for TB.
*7 : The instantaneous max. temperature is the temperature when sparks and cutting chips, etc., instantaneously contact the bellows.
*8 : "I" and "Y" cannot be selected together.
*9 : Refer to Ending Page 85 for custom specifications of rod end form.
*10 : Refer to page 432 for combinations of variations/options.

[Example of model No.]

SCA2-W-LB-40-B150-T0H-D-B50-T0H-R-SI

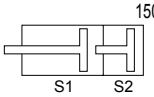
Model: Medium bore size cylinder, double acting/two-stage

Cylinder 1
- A Mounting : Axial foot
- B Bore size : φ40 mm
- C Port thread : Rc thread
- D Cushion : Both sides cushioned
- E Stroke length S1 : 150 mm
- F Switch model No. : Reed T0H switch, Lead wire 1m

Cylinder 2
- G Switch quantity : 2
- C Port thread : Rc thread
- D Cushion : Both sides cushioned
- E Stroke length S2 : 50 mm
- F Switch model No. : Reed T0H switch, Lead wire 1m

- G Switch quantity : 1 on rod side
- H Option : Cushion needle position S
- I Accessory : Rod eye

1st stage stroke length 50 mm indicated by S2
+ 2nd stage stroke length 100 mm
Total stroke 150 mm indicated by S1



Code	Content
A 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)
TA	Rod side trunnion
TB	Head side trunnion
TD	Rod side hole trunnion (φ40 is not available)
TE	Head side hole trunnion (φ40 is not available)
B Bore size (mm)	
40	φ40
50	φ50
63	φ63
80	φ80
100	φ100
C Port thread	
Blank	Rc thread
N	NPT thread (custom order product)
G	G thread (custom order product)
D Cushion	
B	Both sides cushioned
R	Rod side cushioned
H	Head side cushioned
N	Without cushion

E Stroke length (mm)

Bore size	Stroke length *4	Custom stroke length
φ40	**2 to 600**	**In 1 mm increments**
φ50	**2 to 600**	
φ63	**2 to 600**	
φ80	**2 to 700**	
φ100	**2 to 800**	

F Switch model No.

Refer to the switch model numbers on the next page.

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

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

H Option

		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)		

I Accessory	
I	Rod eye
Y	Rod clevis (pin and snap ring attached)
B1	Eye bracket
B2	Clevis bracket (pin and snap ring attached)
B3	Eye bracket
B4	Trunnion No. 2 bracket (2 pcs./set)

[F] Switch model No.

T switch model No.						
Axial lead wire	Radial lead wire	Contact	Voltage AC	Voltage DC	Display	Lead wire
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*			●		3-wire
T2WH*	T2WV*			●	2-color display	2-wire
T2YH*	T2YV*			●		
T3WH*	T3WV*			●		3-wire
T3YH*	T3YV*			●		
T3PH*	T3PV*			●	1-color display (custom order)	3-wire
T2YD*	-			●	2-color display (AC magnetic field)	2-wire
T2YDT*	-			●		
T2JH*	T2JV*			●	Off-delay	2-wire

How to order switch

[T switch]

● Switch body + mounting bracket set

SCA2 - T0H - 40

- T0H: Switch model No. (Item Ⓕ)
- 40: Bore size (Item Ⓑ on the previous page)

● Switch body only

SW - T0H

- T0H: Switch model No. (Item Ⓕ)

* Contact CKD when using an environment-friendly T switch.

● Switch mounting bracket set

SCA2 - TS - 40

- TS: Mounting bracket
- 40: Bore size (Item Ⓑ on the previous page)

[T2YD switch]

● Switch body + mounting bracket set

SCA2 - T2YD - 40

- T2YD: Switch model No. (Item Ⓕ)
- 40: Bore size (Item Ⓑ on the previous page)

● Switch body only

SW - T2YD

- T2YD: Switch model No. (Item Ⓕ)

● Mounting bracket set

SCA2 - T - 40

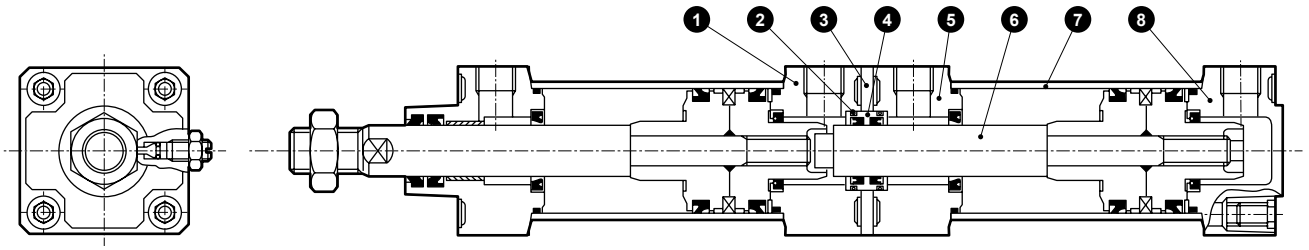
- 40: Bore size (Item Ⓑ on the previous page)

How to order mounting bracket

Bore size (mm) / Mounting bracket		φ40	φ50	φ63	φ80	φ100
Foot (LB)	*2	S1-LB-40	S1-LB-50	S1-LB-63	S1-LB-80	S1-LB-100
Flange (FA/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

*1 : For material of the mounting bracket, refer to page 440.
*2 : The foot mounting bracket is provided as 2 pcs./set.
*3 : All mounting brackets are supplied with mounting bolts.

Internal structure and parts list



Note: Materials of the parts not listed below are the same as those of SCA2 Series (double acting/single rod) on page 440.

No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
1	Intermediate cover H	Aluminum alloy die-casting	Paint	5	Intermediate cover R	Aluminum alloy die-casting	Paint
2	Metal gasket	Nitrile rubber	O-ring	6	Piston rod (2)	Steel	Industrial chrome plating
3	Spacer	Steel	Manganese phosphate treatment	7	Cylinder tube	Aluminum alloy	Hard alumite treatment
4	Rod metal	Cast iron	Manganese phosphate treatment	8	Head cover	Aluminum alloy die-casting	Paint

Repair parts list

(Numbering of repair parts follows that in the internal structure of the SCA2 Series (page 440).)

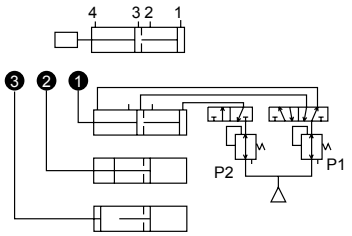
Bore size (mm)	Kit No.	Repair parts No.
φ 40	SCA2-W-40K	❷ ❸ ❹ ❼ ❽ ⓫ ⓮ ⓴
φ 50	SCA2-W-50K	
φ 63	SCA2-W-63K	
φ 80	SCA2-W-80K	
φ100	SCA2-W-100K	

Note: Specify the kit No. when placing an order.

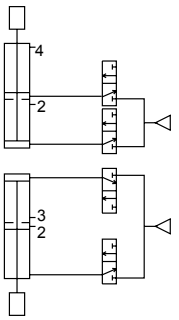
Applications

Pressure setting: P2 > P1

- 1st stage push
  Keeping port 4 pressurized, pressurize port 1.
- 2nd stage push
  Keeping port 1 pressurized, pressurize port 3.

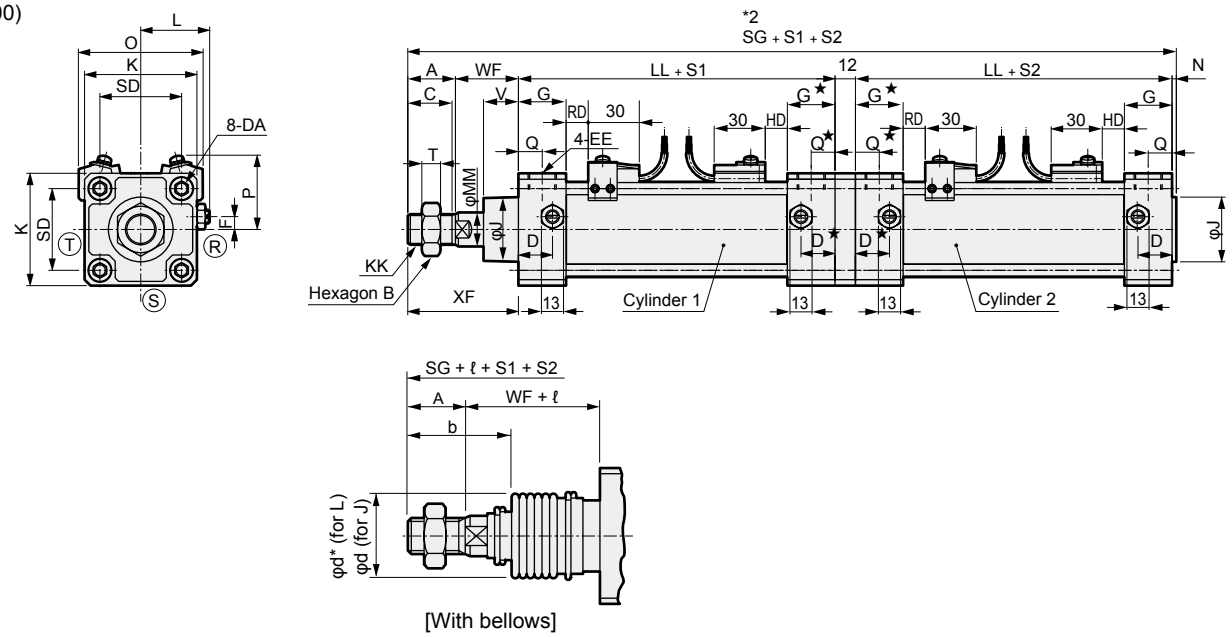


P2 = P1 is allowed depending on the load direction.
When using a single acting cylinder with free fall load, ports 2 and 4 in the upper figure and ports 2 and 3 in the lower figure are breathing holes.
Cushion performance will be better when all ports are piped even if piping them is not necessary (port 2 in this case).



Dimensions

● Basic (00)



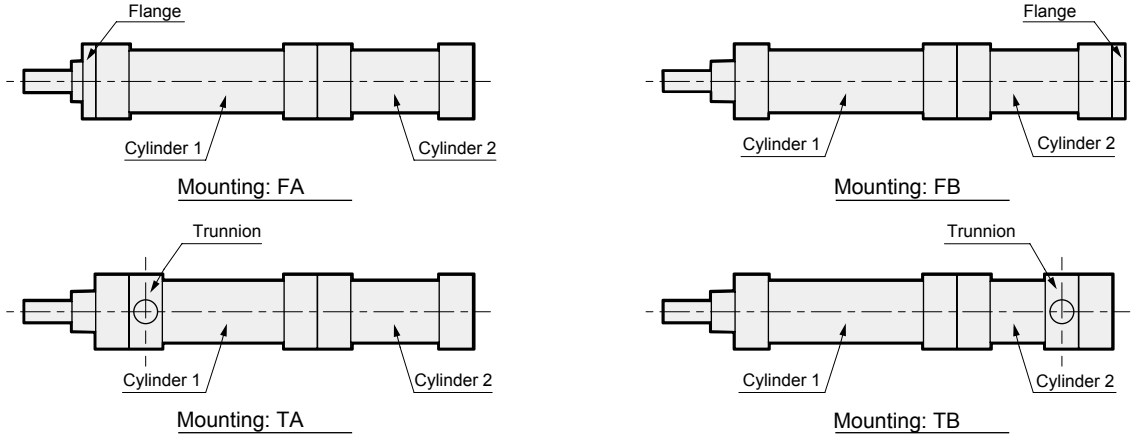
[With bellows]

Code / Bore size (mm)	A	B	C	D	D*	DA	EE	F	G	G*	J	K	KK	L	LL	MM	N	Q	Q*	SD	SG	T
φ40	22	22	20	18	17.5	M 8	RC1/4	7.5	26	25.5	31	57	M14×1.5	38 to 39.5	92.5	16	2	13	12.5	40.5	254.5	8
φ50	28	27	26	20	19.5	M 8	RC3/8	0	28	27.5	38	66	M18×1.5	41 to 43.5	100.5	20	2.5	14	13.5	48	280.5	11
φ63	28	27	26	22	21.5	M 8	RC3/8	0	30	29.5	38	80	M18×1.5	47.5 to 50.0	104.5	20	3	15	14.5	59	287	11
φ80	36	32	34	26	25.5	M12	RC1/2	0	34	33.5	43	98	M22×1.5	56 to 59	115.5	25	3.5	17	16.5	74	330.5	13
φ100	45	41	43	28	27.5	M12	RC1/2	0	36	35.5	51	118	M26×1.5	66 to 69	127.5	30	4	18	17.5	90	369	16

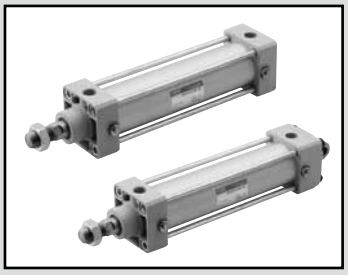
Code / Bore size (mm)	With switch													With bellows										
	V	WF	XF	O	P	T0, T5 T2, T3		T1, T2Y T3Y, T2J		T8		T2W, T3W		b	d	d*	ℓ							
						RD	HD	RD	HD	RD	HD	RD	HD				50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 300	Over 300 to 400	Over 400 to 500	*3 Over 500
φ40	18.5	33.5	55.5	66	41.5	11	11	10	10	5	5	13	13	41	40	40	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke length/3.0) + 8
φ50	20.5	37	65	73	43	13	13	12	12	7	7	15	15	47	47	48	22	36	49	63	90	119	146	(Stroke length/3.6) + 7.5
φ63	21	35	63	85	47	13	13	12	12	7	7	15	15	45	47	48	22	36	49	63	90	119	146	(Stroke length/3.6) + 7.5
φ80	23.5	48	84	105	57	14.5	14.5	13.5	13.5	8.5	8.5	16.5	16.5	58.5	53	55	14	26	38	49	72	96	119	(Stroke length/4.3) + 2.5
φ100	32	53	98	121	63	18.5	18.5	17.5	17.5	12.5	12.5	20.5	20.5	69.5	61	65	20	32	42	53	76	98	120	(Stroke length/4.5) + 9

*1 : Ⓡ, Ⓢ and Ⓣ indicate the cushion needle position.
*2 : S1 = cylinder 1 stroke length (total stroke length), S2 = cylinder 2 stroke length (1st stage stroke length)
*3 : For the ℓ dimension, round up below the decimal point.
*4 : Refer to page 599 for dimensions of projecting section of T2YD switch.

Installation dimensions of other mounting are the same as those of the SCA2 (standard). Refer to pages 442 to 453.
Installation positions of the flange (mounting: FA/FB) and trunnion (mounting: TA/TB) are as below.



* For the dimensions of the accessories, refer to pages 454 and 455.

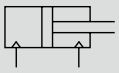


Medium bore size cylinder
Double acting/steel tube

SCA2-K Series

● Bore size: φ40/φ50/φ63/φ80/φ100

JIS symbol



RoHS CAD

Specifications

Descriptions		SCA2-K (steel tube)				
Bore size mm		φ40	φ50	φ63	φ80	φ100
Actuation		Double acting				
Working fluid		Compressed air				
Max. working pressure MPa		1.0 (≈150 psi, 10 bar)				
Min. working pressure MPa		0.05 (≈7.3 psi, 0.5 bar)				
Proof pressure MPa		1.6 (≈230 psi, 16 bar)				
Ambient temperature °C		-10 (14°F) to 60 (140°F) (no freezing)				
Port size		Rc1/4	Rc3/8		Rc1/2	
Stroke tolerance mm		$^{+0.9}_{0}$(to 360), $^{+1.4}_{0}$(to 800)				
Working piston speed mm/s		50 to 1000 (Operate within the allowable absorbed energy.)				
Cushion		Air cushion				
Effective air 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 absorbed energy J	Cushioned	4.29	8.37	15.8	27.9	49.8
	Without cushion	0.067	0.079	0.079	0.201	0.301
		Without any cushion, this product cannot absorb large energy generated by an external load. We recommend using an external shock absorber.				

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/ 150/200/250/ 300/350/400/ 450/500	600	1600	1
φ50			1900	
φ63				
φ80		700		
φ100		800		

*1 : The custom stroke length is available in 1 mm increments.
*2 : If max. stroke length is exceeded, product specifications may not be satisfied depending on the conditions. Refer to Ending Page 69.

Cylinder weight

(Unit: kg)

Bore size (mm)	Product weight when stroke length (S) = 0 mm						Added weight/ S = 100 mm
	Basic (00)	Foot (LB)	Flange (FA, FB)	Eye bracket (CA)	Clevis bracket (CB)	Trunnion (TA, TB, TC)	
φ40	1.01	1.18	1.42	1.33	1.37	1.39	0.56
φ50	1.42	1.67	1.91	1.80	1.83	1.96	0.72
φ63	1.85	2.22	2.94	2.42	2.47	2.70	0.82
φ80	2.94	3.68	4.80	4.21	4.42	4.28	1.37
φ100	4.64	5.55	7.38	6.28	6.46	7.21	1.70

(Example) Product weight of SCA2-K-LB-50B-200
- Product weight for 0 mm stroke length.....1.67 kg
- Additional weight for 200 mm stroke length.....$0.72 \times \frac{200}{100} = 1.44$ kg
- Product weight.....1.67 + 1.44 = 3.11 kg

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

How to order

SCA2-K - LB - 40 ( ) B - 100 - S I

- Ⓐ Mounting *1
- Ⓑ Bore size
- Ⓒ Port thread
- Ⓓ Cushion
- Ⓔ Stroke length *2
- Ⓕ Option *4
- Ⓖ Accessory *5

Code	Content
Ⓐ 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
TF	Intermediate supporting hole trunnion (φ40 is not available)
TD	Rod side hole trunnion (φ40 is not available)
TE	Head side hole trunnion (φ40 is not available)
Ⓑ Bore size (mm)	
40	φ40
50	φ50
63	φ63
80	φ80
100	φ100
Ⓒ Port thread	
Blank	Rc thread
N	NPT thread (custom order product)
G	G thread (custom order product)
Ⓓ Cushion	
B	Both sides cushioned
R	Rod side cushioned
H	Head side cushioned
N	Without cushion

Ⓔ Stroke length (mm)

Bore size	Stroke length	Available stroke	Custom stroke
φ40	**1 to 600**	**1600**	**In 1 mm increments**
φ50	**1 to 600**	**1900**	
φ63	**1 to 600**	**1900**	
φ80	**1 to 700**	**1900**	
φ100	**1 to 800**	**1900**	

Ⓕ 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)		

Ⓖ Accessory	
I	Rod eye
Y	Rod clevis (pin and snap ring attached)
B1	Eye bracket
B2	Clevis bracket (pin and snap ring attached)
B3	Eye bracket
B4	Trunnion No. 2 bracket (2 pcs./set)

⚠ Precautions for model No. selection

*1 : Mounting bracket will be shipped with the product. (Trunnion are assembled at shipment.)
*2 : If the stroke exceeds the max. stroke length, refer to Ending Page 69.
*3 : The instantaneous max. temperature is the temperature when sparks and cutting chips, etc., instantaneously contact the bellows.
*4 : "I" and "Y" cannot be selected together.
*5 : Refer to Ending Page 85 for custom specifications of rod end form.
*6 : Refer to page 432 for combinations of variations/options.

[Example of model No.]
SCA2-K-LB-40B-100-SI

Model: Medium bore size cylinder, double acting/standard single rod/steel tube

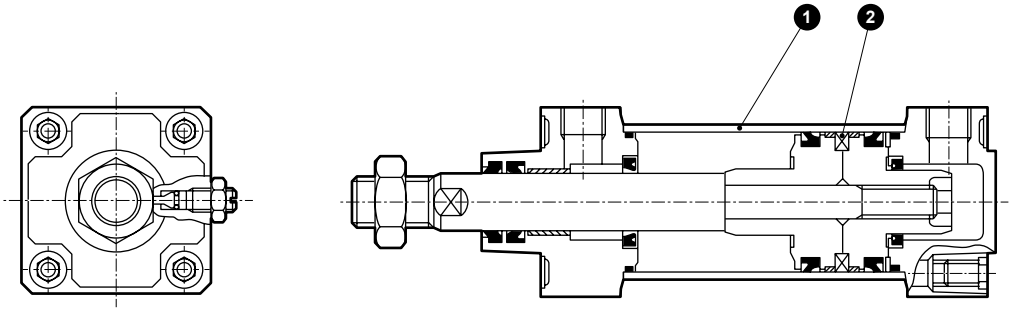
- Ⓐ Mounting : Axial foot
- Ⓑ Bore size : φ40 mm
- Ⓒ Port thread : Rc thread
- Ⓓ Cushion : Both sides cushioned
- Ⓔ Stroke length : 100 mm
- Ⓕ Option : Cushion needle position S
- Ⓖ Accessory : Rod eye

How to order mounting bracket

Bore size (mm) / Mounting bracket	φ40	φ50	φ63	φ80	φ100
Foot (LB) *2	S1-LB-40	S1-LB-50	S1-LB-63	S1-LB-80	S1-LB-100
Flange (FA/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

*1 : For material of the mounting bracket, refer to page 440.
*2 : The foot mounting bracket is provided as 2 pcs./set.
*3 : All mounting brackets are supplied with mounting bolts.

Internal structure and parts list



No.	Part name	Material	Remarks
1	Cylinder tube	Steel	Industrial chrome plating
2	Piston ring	Steel	Zinc chromate

- Note: Materials of the parts not listed on the right are the same as those of SCA2 Series (double acting/standard single rod) on page 440.
- Tube O.D. of the φ50 to φ100 bore sizes differ from that of the double acting/standard single rod. Therefore, the trunnion bracket is not compatible with the double acting/standard single rod.

Repair parts list

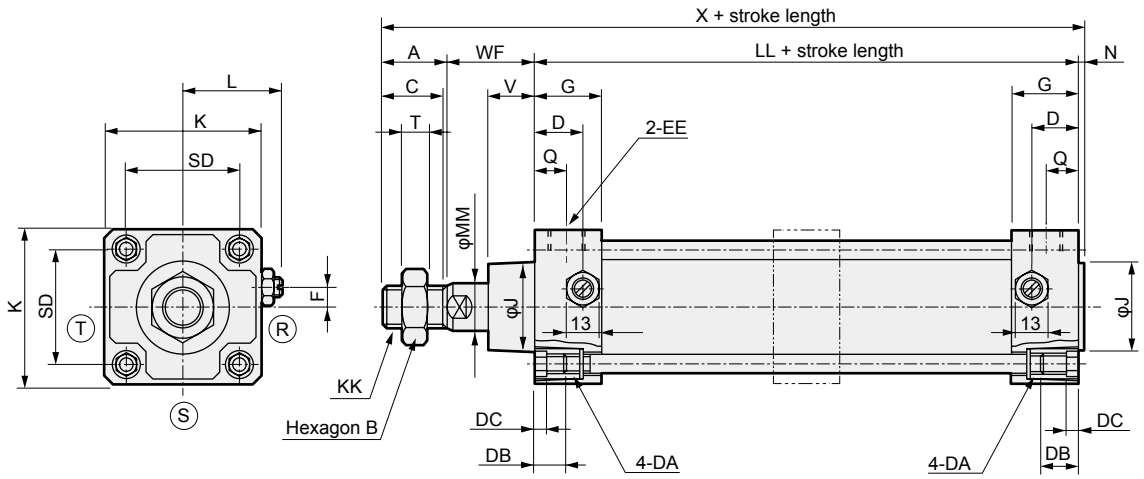
Numbering of repair parts follows that in the internal structure of the SCA2 Series (page 440).

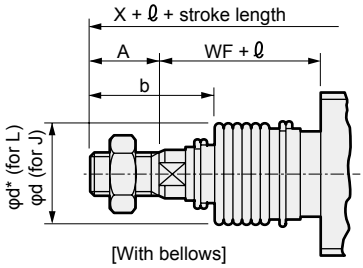
Bore size (mm)	Kit No.	Repair parts No.
φ 40	SCA2-K-40K	❸ ❹ ❼ ❽ ⓫ ⓮ ⓴
φ 50	SCA2-K-50K	
φ 63	SCA2-K-63K	
φ 80	SCA2-K-80K	
φ100	SCA2-K-100K	

Note: Specify the kit No. when placing an order.

Dimensions

● Basic (00)





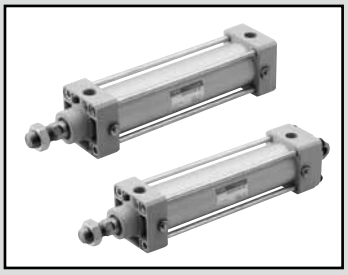
[With bellows]

Code	Basic (00) basic dimensions																						
Bore size (mm)	A	B	C	D	DA	DB	DC	EE	F	G	J	K	KK	L	LL	MM	N	Q	SD	T	V	WF	X
φ40	22	22	20	18	M8	12	4	Rc1/4	7.5	26	31	57	M14×1.5	38 to 39.5	93	16	2	13	40.5	8	18.5	33.5	150.5
φ50	28	27	26	20	M8	12	4	Rc3/8	0	28	38	66	M18×1.5	41 to 43.5	101	20	2.5	14	48	11	20.5	37	168.5
φ63	28	27	26	22	M8	12	4	Rc3/8	0	30	38	80	M18×1.5	47.5 to 50	105	20	3	15	59	11	21	35	171
φ80	36	32	34	26	M12	16	5	Rc1/2	0	34	43	98	M22×1.5	56 to 59	116	25	3.5	17	74	13	23.5	48	203.5
φ100	45	41	43	28	M12	16	5	Rc1/2	0	36	51	118	M26×1.5	66 to 69	128	30	4	18	90	16	32	53	230

Code	With bellows										
				ℓ							
Bore size (mm)	b	d	d*	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	*2: Over 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

*1 : Ⓡ Ⓢ and Ⓣ indicate the cushion needle position.
*2 : For the ℓ dimension, round up below the decimal point.
*3 : Non-sag block (2-dashed line) will be added depending on the stroke length.
Refer to page 598 for details on dimensions.

* Installation dimensions of other mounting are the same as those of the SCA2 (standard). Refer to pages 442 to 453.
* For the dimensions of the accessories, refer to pages 454 and 455.

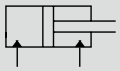


Medium bore size cylinder
Double acting/low hydraulic

SCA2-H Series

● Bore size: φ40/φ50/φ63/φ80/φ100

JIS symbol



RoHS CAD

Specifications

Descriptions		SCA2-H (Low hydraulic)				
Bore size mm		φ40	φ50	φ63	φ80	φ100
Actuation		Double acting				
Working fluid *1		Hydraulic fluid				
Max. working pressure MPa		1.0 (≈150 psi, 10 bar)				
Min. working pressure MPa		0.2 (≈29 psi, 2 bar)		0.15 (≈22 psi, 1.5 bar)		
Proof pressure MPa		1.6 (≈230 psi, 16 bar)				
Ambient temperature °C		5 (41°F) to 50 (122°F)				
Port size		Rc1/4	Rc3/8		Rc1/2	
Stroke tolerance mm		$^{+0.9}_{0}$ (to 360), $^{+1.4}_{0}$ (to 800)				
Cushion		Cushioned				
Effective air cushion length mm		14.6	16.6	16.6	20.6	23.6
Allowable surge pressure MPa		2.9 (cushioned), 4.9 (no cushion)				
Allowable absorbed energy J	Cushioned	The cushioning of the low hydraulic cylinder cannot absorb large energy. We recommend using an external shock absorber.				
	Without cushion	0.067	0.079	0.079	0.201	0.301
		Without any cushion, this product cannot absorb large energy generated by an external load. We recommend using an external shock absorber.				

*1: Hydraulic fluid of viscosity 40 mm²/s is recommended at working oil temperature.
For oil, use Fuji Kosan/Fukkol Hydrol × 22 or equivalent oil such as MITSUBISHI/Diamond Power Fluid 18, Showa-Shell/SHELL Tellus Oil 22, ESSO/Univis J26, Mobile DTE22, Cosmohydro HV22, JX Nippon Oil & Energy Corporation/Highlandwide 22 or Idemitsu/Daphne Super Hydro 22 WR.

Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)
φ40	25/50/75/100/ 150/200/250/ 300/350/400/ 450/500	600	1
φ50			
φ63			
φ80		700	
φ100		800	

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

Min. stroke length with switch

● T0/T5 min. stroke with switches

	Different surface mounting				Same surface mounting				Center trunnion mounting				Rod side trunnion mounting No position detection at rod side stroke end.	Head side trunnion mounting No position detection at head side stroke end.
Switch quantity	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(105)	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 min. stroke with switch

	Different surface mounting				Same surface mounting				Center trunnion mounting				Rod side trunnion mounting No position detection at rod side stroke end.	Head side trunnion mounting No position detection at head side stroke end.
Switch quantity	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.

Min. stroke length with switch

● T2/T3 min. stroke with switches

	Different surface mounting				Same surface mounting				Center trunnion mounting				Rod side trunnion mounting No position detection at rod side stroke end.	Head side trunnion mounting No position detection at head side stroke end.
Switch quantity	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.

● T1/T2Y/T3Y/T2YD min. stroke with switches

	Different surface mounting				Same surface mounting				Center trunnion mounting				Rod side trunnion mounting No position detection at rod side stroke end.	Head side trunnion mounting No position detection at head side stroke end.
Switch quantity	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.

● T2W/T3W min. stroke with switches

	Different surface mounting				Same surface mounting				Center trunnion mounting				Rod side trunnion mounting No position detection at rod side stroke end.	Head side trunnion mounting No position detection at head side stroke end.
Switch quantity	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.

Switch specifications (T 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 programming controller, relay, compact solenoid valve	Dedicated for programmable controller			For programmable controller, relay				For programmable controller, relay		For programmable controller, relay (no lamp), serial		For programmable controller, relay			Dedicated 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	110 VAC	5/12/24 VDC	110 VAC	12/24 VDC	110 VAC	220 VAC	24 VDC ±10%
Load current	5 to 100 mA	5 to 20 mA (*3)			100 mA or less		50 mA or less		5 to 50 mA	7 to 20 mA	50 mA or less	20 mA or less	5 to 50 mA	7 to 20 mA	7 to 10 mA	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 3 m:87 5 m:142	1 m:18 3 m:49 5 m:80	1 m:33 3 m:87 5 m:142	1 m:18 3 m:49 5 m:80	1 m:18 3 m:49 5 m:80		1 m:33 3 m:87 5 m:142	1 m:18 3 m:49 5 m:80	1 m:18 3 m:49 5 m:80				1 m:33 3 m:87 5 m:142			1 m:61 3 m:166 5 m:272

*1: The T0/T5 switch can also be used with 220 VAC. Contact CKD about working conditions.
*2: Refer to Ending Page 1 for other switch specifications.
*3: The above max. load current is 20 mA at 25°C. The current will be lower than 20 mA when operating ambient temperature around the switch is higher than 25°C. (5 to 10 mA at 60°C)
*4: Switch for AC magnetic field (T2YD) cannot be used in DC magnetic field.
*5: Dimensions depend on switch model No. Refer to Ending Page 18 for details.

Cylinder weight

(Unit: kg)

Bore size (mm)	Product weight when stroke length (S) = 0 mm							Switch weight	Mounting bracket weight	Additional weight per S = 100 mm
	Basic (OO)	Foot (LB)	Flange (FA, FB)	Special flange (FC)	Eye bracket (CA)	Clevis bracket (CB)	Trunnion (TA, TB, TC)		T type	
φ40	0.83	1.00	1.24	0.92	1.15	1.19	1.21	Refer to the weight in the switch specifications.	0.024	0.39
φ50	1.20	1.45	1.69	1.31	1.58	1.61	1.74		0.022	0.46
φ63	1.60	1.97	2.69	1.78	2.17	2.22	2.45		0.020	0.50
φ80	2.60	3.34	4.46	2.96	3.87	4.08	3.94		0.026	0.90
φ100	4.20	5.11	6.94	4.75	5.84	6.02	6.77		0.024	1.12

(Example) Product weight of SCA2-H-LB-50B-200-TOH-D

- Product weight for 0 mm stroke length ..... 1.45 kg
- Additional weight for 200 mm stroke length..... 0.46 x $\frac{200}{100}$ = 0.92 kg
- Weight of 2 TOH switches ..... 0.018 x 2 = 0.036 kg
- Weight of 2 mounting brackets ..... 0.022 x 2 = 0.044 kg
- Product weight..... 1.45 + 0.92 + 0.036 + 0.044 = 2.450 kg

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}

How to order

Without switch (built-in magnet for switch)

SCA2-H - LB - 40 ○ B - 100 ——— S I

With switch (built-in magnet for switch)

SCA2-H - LB - 40 ○ B - 100 - T0H - R - S I

Ⓐ Mounting *1

Ⓑ Bore size

Ⓒ Port thread

Ⓓ Cushion

Ⓔ Stroke length *2

Ⓕ Switch model No. *4

Ⓖ Switch quantity *5

Ⓗ Option *6

Ⓘ Accessory *7

Code	Content
Ⓐ 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
TF	Intermediate supporting hole trunnion (φ40 is not available)
TD	Rod side hole trunnion (φ40 is not available)
TE	Head side hole trunnion (φ40 is not available)

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

Ⓒ Port thread	
Blank	Rc thread
N	NPT thread (custom order product)
G	G thread (custom order product)

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

Ⓔ Stroke length (mm)

Bore size	Stroke length *3	Custom stroke length
φ40	**1 to 600**	**In 1 mm increments**
φ50	**1 to 600**	
φ63	**1 to 600**	
φ80	**1 to 700**	
φ100	**1 to 800**	

Ⓕ Switch model No.

Refer to the switch model numbers on the next page.

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

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

Ⓗ 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)		

Ⓘ Accessory	
I	Rod eye
Y	Rod clevis (pin and snap ring attached)
B1	Eye bracket
B2	Clevis bracket (pin and snap ring attached)
B3	Eye bracket
B4	Trunnion No. 2 bracket (2 pcs./set)

⚠ Precautions for model No. selection

*1 : Mounting bracket will be shipped with the product. (Trunnion are assembled at shipment.)
*2 : If the stroke exceeds the max. stroke length, refer to Ending Page 69.
*3 : Refer to page 552 for the min. stroke length with switch.
*4 : Switches are shipped with the product.
*5 : When selecting TA or TB as mounting, the number of switches is limited to "H" (1 on head side) for TA, and "R" (1 on rod side) for TB.
*6 : The instantaneous max. temperature is the temperature when sparks and cutting chips, etc., instantaneously contact the bellows.
*7 : "I" and "Y" cannot be selected together.
*8 : Refer to Ending Page 85 for custom specifications of rod end form.
*9 : Refer to page 432 for combination of variations/ options.

[Example of model No.]

SCA2-H-LB-40B-100-T0H-R-SI

Model: Medium bore size cylinder, double acting/low hydraulic

Ⓐ Mounting : Axial foot
Ⓑ Bore size : φ40 mm
Ⓒ Port thread : Rc thread
Ⓓ Cushion : Both sides cushioned
Ⓔ Stroke length : 100 mm
Ⓕ Switch model No. : Reed T0H switch, lead wire length 1 m
Ⓖ Switch quantity : 1 on rod side
Ⓗ Option : Cushion needle position S
Ⓘ Accessory : Rod eye

[F] Switch model No.

T switch model No.						
Axial lead wire	Radial lead wire	Contact	Voltage AC	Voltage DC	Display	Lead wire
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*			●		3-wire
T2WH*	T2WV*			●	2-color display	2-wire
T2YH*	T2YV*			●		
T3WH*	T3WV*			●		3-wire
T3YH*	T3YV*			●		
T3PH*	T3PV*			●	1-color display (custom order)	3-wire
T2YD*	-			●	2-color display	2-wire
T2YDT*	-			●	AC magnetic field	
T2JH*	T2JV*			●	1-color display off-delay	2-wire

How to order switch

[T switch]

● Switch body + mounting bracket set

SCA2 - T0H - 40

- T0H: Switch model No. (Item Ⓕ)
- 40: Bore size (Item Ⓑ on the previous page)

● Switch body only

SW - T0H

- T0H: Switch model No. (Item Ⓕ)

* Contact CKD when using an environment-friendly T switch.

● Switch mounting bracket set

SCA2 - TS - 40

- TS: Mounting bracket
- 40: Bore size (Item Ⓑ on the previous page)

[T2YD switch]

● Switch body + mounting bracket set

SCA2 - T2YD - 40

- T2YD: Switch model No. (Item Ⓕ)
- 40: Bore size (Item Ⓑ on the previous page)

● Switch body only

SW - T2YD

- T2YD: Switch model No. (Item Ⓕ)

● Mounting bracket set

SCA2 - T - 40

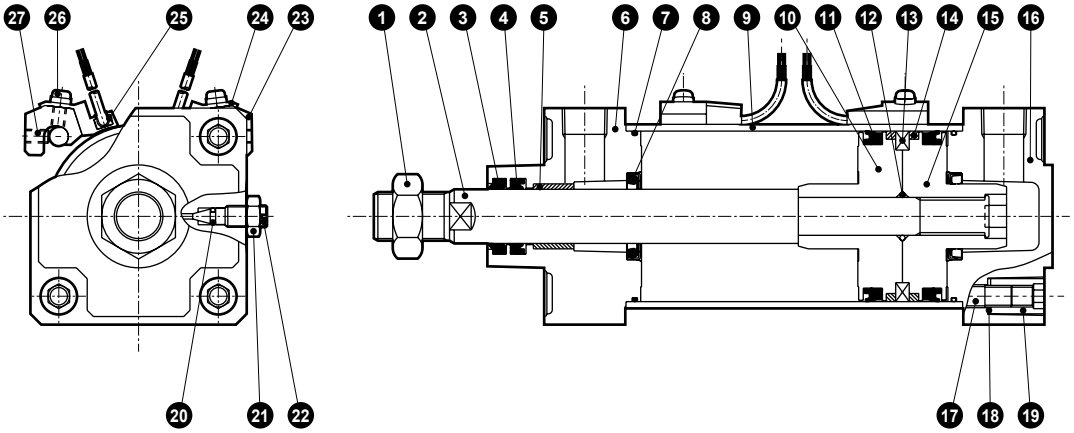
- 40: Bore size (Item Ⓑ on the previous page)

How to order mounting bracket

Bore size (mm) / Mounting bracket	φ40	φ50	φ63	φ80	φ100
Foot (LB) *2	S1-LB-40	S1-LB-50	S1-LB-63	S1-LB-80	S1-LB-100
Flange (FA/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

*1 : For material of the mounting bracket, refer to page 440.
*2 : The foot mounting bracket is provided as 2 pcs./set.
*3 : All mounting brackets are supplied with mounting bolts.

Internal structure and parts list



No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
1	Rod nut	Steel	Zinc chromate	15	Piston H	Aluminum alloy die-casting	
2	Piston rod	Steel	Industrial chrome plating	16	Head cover	Aluminum alloy die-casting	Paint
3	Dust wiper	Nitrile rubber		17	Tie rod	Steel	Zinc chromate
4	Rod packing	Nitrile rubber		18	Conical spring washer	Steel	Black finish
5	Bush	Oil impregnated bearing alloy	*1	19	Round nut	Steel	Zinc chromate
6	Rod cover	Aluminum alloy die-casting	Paint	20	Needle gasket	Nitrile rubber	
7	Cylinder gasket	Nitrile rubber		21	Needle nut	Copper alloy	Nickel plating *2
8	Cushion packing	Nitrile rubber, steel		22	Cushion needle	Copper alloy	Nickel plating *2
9	Cylinder tube	Aluminum alloy	Hard alumite treatment	With switch			
10	Piston R	Aluminum alloy die-casting		23	Switch mounting base	Aluminum alloy	
11	Piston packing	Nitrile rubber		24	Switch holder	Aluminum alloy	
12	Piston gasket	Nitrile rubber		25	Cylinder switch		
13	Magnet	Plastic		26	Philips pan head machine screw/captive washer	Steel	Zinc chromate
14	Wear ring	Polyacetal resin		27	Hexagon socket set screw	Alloy steel	Black finish

*1: Oil-impregnated cast iron bearing for copper and PTFE free.
*2: Copper + galvanizing for copper and PTFE free.

Repair parts list

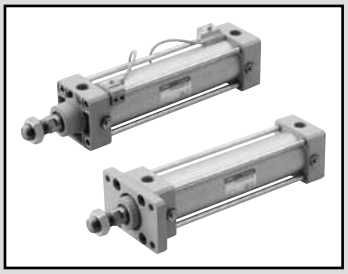
Bore size (mm)	Kit No.	Repair parts No.
φ40	SCA2-H-40K	
φ50	SCA2-H-50K	
φ63	SCA2-H-63K	
φ80	SCA2-H-80K	
φ100	SCA2-H-100K	

Note: Specify the kit No. when placing an order.

Dimensions

Same dimensions as the double acting/single rod. Refer to pages 441 to 453.

MEMO

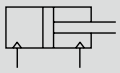


Medium bore size cylinder
Double acting/rubber scraper

SCA2-G Series

● Bore size: φ40/φ50/φ63/φ80/φ100

JIS symbol



RoHS CAD

Specifications

Descriptions		SCA2-G (Rubber scraper)				
Bore size mm		φ40	φ50	φ63	φ80	φ100
Actuation		Double acting				
Working fluid		Compressed air				
Max. working pressure MPa		1.0 (≈150 psi, 10 bar)				
Min. working pressure MPa		0.05 (≈7.3 psi, 0.5 bar)				
Proof pressure MPa		1.6 (≈230 psi, 16 bar)				
Ambient temperature °C		-10 (14°F) to 60 (140°F) (no freezing)				
Port size		Rc1/4	Rc3/8		Rc1/2	
Stroke tolerance mm		$^{+0.9}_{0}$ (to 360), $^{+1.4}_{0}$ (to 800)				
Working piston speed mm/s		50 to 1000 (Operate within the allowable absorbed energy.)				
Cushion		Air cushion				
Effective air 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 absorbed energy J	Cushioned	4.29	8.37	15.8	27.9	49.8
	Without cushion	0.067	0.079	0.079	0.201	0.301
		Without any cushion, this product cannot absorb large energy generated by an external load. We recommend using an external shock absorber.				

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/ 150/200/250/ 300/350/400/ 450/500	600	1600	1
φ50			2000	
φ63			2500	
φ80		700		
φ100		800		

*1 : The custom stroke length is available in 1 mm increments.
*2 : If max. stroke length is exceeded, product specifications may not be satisfied depending on the conditions. Refer to Ending Page 69.

Min. stroke length with switch

● T0/T5 min. stroke with switches

	Different surface mounting				Same surface mounting				Center trunnion mounting				Rod side trunnion mounting No position detection at rod side stroke end.	Head side trunnion mounting No position detection at head side stroke end.
Switch Qty	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(105)	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 min. stroke with switch

	Different surface mounting				Same surface mounting				Center trunnion mounting				Rod side trunnion mounting No position detection at rod side stroke end.	Head side trunnion mounting No position detection at head side stroke end.
Switch Qty	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.

Min. stroke length with switch

● T2/T3 min. stroke with switches

	Different surface mounting				Same surface mounting				Center trunnion mounting				Rod side trunnion mounting No position detection at rod side stroke end.	Head side trunnion mounting No position detection at head side stroke end.
Switch Qty	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.

● T1/T2Y/T3Y/T2YD min. stroke with switches

	Different surface mounting				Same surface mounting				Center trunnion mounting				Rod side trunnion mounting No position detection at rod side stroke end.	Head side trunnion mounting No position detection at head side stroke end.
Switch Qty	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.

● T2W/T3W min. stroke with switches

	Different surface mounting				Same surface mounting				Center trunnion mounting				Rod side trunnion mounting No position detection at rod side stroke end.	Head side trunnion mounting No position detection at head side stroke end.
Switch Qty	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.

Switch specifications (T 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 programming controller, relay, compact solenoid valve	Dedicated for programmable controller			For programmable controller, relay				For programmable controller, relay		For programmable controller, relay (no lamp), serial		For programmable controller, relay			Dedicated 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	110 VAC	5/12/24 VDC	110 VAC	12/24 VDC	110 VAC	220 VAC	24 VDC ±10%
Load current	5 to 100 mA	5 to 20 mA (*3)			100 mA or less		50 mA or less		5 to 50 mA	7 to 20 mA	50 mA or less	20 mA or less	5 to 50 mA	7 to 20 mA	7 to 10 mA	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 3 m:87 5 m:142	1 m:18 3 m:49 5 m:80	1 m:33 3 m:87 5 m:142	1 m:18 3 m:49 5 m:80	1 m:18 3 m:49 5 m:80		1 m:33 3 m:87 5 m:142	1 m:18 3 m:49 5 m:80	1 m:18 3 m:49 5 m:80				1 m:33 3 m:87 5 m:142			1 m:61 3 m:166 5 m:272

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

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

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

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

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

Cylinder weight

(Unit: kg)

Bore size (mm)	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)	Eye bracket (CA)	Clevis bracket (CB)	Trunnion (TA, TB, TC)		T type	
φ40	0.83	1.00	1.24	1.15	1.19	1.21	Refer to the weight in the switch specifications.	0.024	0.39
φ50	1.20	1.45	1.69	1.58	1.61	1.74		0.022	0.46
φ63	1.60	1.97	2.69	2.17	2.22	2.45		0.020	0.50
φ80	2.60	3.34	4.46	3.87	4.08	3.94		0.026	0.90
φ100	4.20	5.11	6.94	5.84	6.02	6.77		0.024	1.12

(Example) Product weight of SCA2-G-LB-50B-200-TOH-D

- Product weight for 0 mm stroke length ..... 1.45 kg
- Additional weight for 200 mm stroke length..... $0.46 \times \frac{200}{100} = 0.92$ kg
- Weight of 2 TOH switches ..... 0.018 x 2 = 0.036 kg
- Weight of 2 mounting brackets ..... 0.022 x 2 = 0.044 kg
- Product weight ..... 1.45 + 0.92 + 0.036 + 0.044 = 2.450 kg

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}

How to order

Without switch (built-in magnet for switch)

SCA2-G - LB - 40 ○ B - 100 ——— S I

With switch (built-in magnet for switch)

SCA2-G - LB - 40 ○ B - 100 - T0H - R - S I

Ⓐ Mounting *1

Ⓑ Bore size

Ⓒ Port thread

Ⓓ Cushion

Ⓔ Stroke length *2

Ⓕ Switch model No. *4

Ⓖ Switch quantity *5

Ⓗ Option

Ⓘ Accessory *6

Code	Content
Ⓐ 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
TF	Intermediate supporting hole trunnion (φ40 is not available)
TD	Rod side hole trunnion (φ40 is not available)
TE	Head side hole trunnion (φ40 is not available)

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

Ⓒ Port thread	
Blank	Rc thread
N	NPT thread (custom order product)
G	G thread (custom order product)

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

Ⓔ Stroke length (mm)

Bore size	Stroke *3	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**		
φ100	**1 to 800**		

Ⓕ Switch model No.

Refer to the switch model numbers on the next page.

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

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

Ⓗ Option	
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)

Ⓘ Accessory	
I	Rod eye
Y	Rod clevis (pin and snap ring attached)
B1	Eye bracket
B2	Clevis bracket (pin and snap ring attached)
B3	Eye bracket
B4	Trunnion No. 2 bracket (2 pcs./set)

⚠ Precautions for model No. selection

*1 : Mounting bracket will be shipped with the product. (Trunnion are assembled at shipment.)
*2 : If the stroke exceeds the max. stroke length, refer to Ending Page 69.
*3 : Refer to page 560 for the min. stroke length with switch.
*4 : Switches are shipped with the product.
*5 : When selecting TA or TB as mounting, the number of switches is limited to "H" (1 on head side) for TA, and "R" (1 on rod side) for TB.
*6 : "I" and "Y" cannot be selected together.
*7 : Refer to Ending Page 85 for custom specifications of rod end form.
*8 : Refer to page 432 for combination of variations/options.

[Example of model No.]

SCA2-G-LB-40B-100-T0H-R-SI

Model: Medium bore size cylinder, double acting/rubber scraper

Ⓐ Mounting	: Axial foot
Ⓑ Bore size	: φ40 mm
Ⓒ Port thread	: Rc thread
Ⓓ Cushion	: Both sides cushioned
Ⓔ Stroke length	: 100 mm
Ⓕ Switch model No.	: Reed T0H switch, lead wire length 1 m
Ⓖ Switch quantity	: 1 on rod side
Ⓗ Option	: Cushion needle position S
Ⓘ Accessory	: Rod eye

[F] Switch model No.

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

How to order switch

[T switch]

● Switch body + mounting bracket set

SCA2 - T0H - 40

- T0H: Switch model No. (Item Ⓕ)
- 40: Bore size (Item Ⓑ on the previous page)

● Switch body only

SW - T0H

- T0H: Switch model No. (Item Ⓕ)

* Contact CKD when using an environment-friendly T switch.

● Switch mounting bracket set

SCA2 - TS - 40

- TS: Mounting bracket
- 40: Bore size (Item Ⓑ on the previous page)

[T2YD switch]

● Switch body + mounting bracket set

SCA2 - T2YD - 40

- T2YD: Switch model No. (Item Ⓕ)
- 40: Bore size (Item Ⓑ on the previous page)

● Switch body only

SW - T2YD

- T2YD: Switch model No. (Item Ⓕ)

● Mounting bracket set

SCA2 - T - 40

- 40: Bore size (Item Ⓑ on the previous page)

How to order mounting bracket

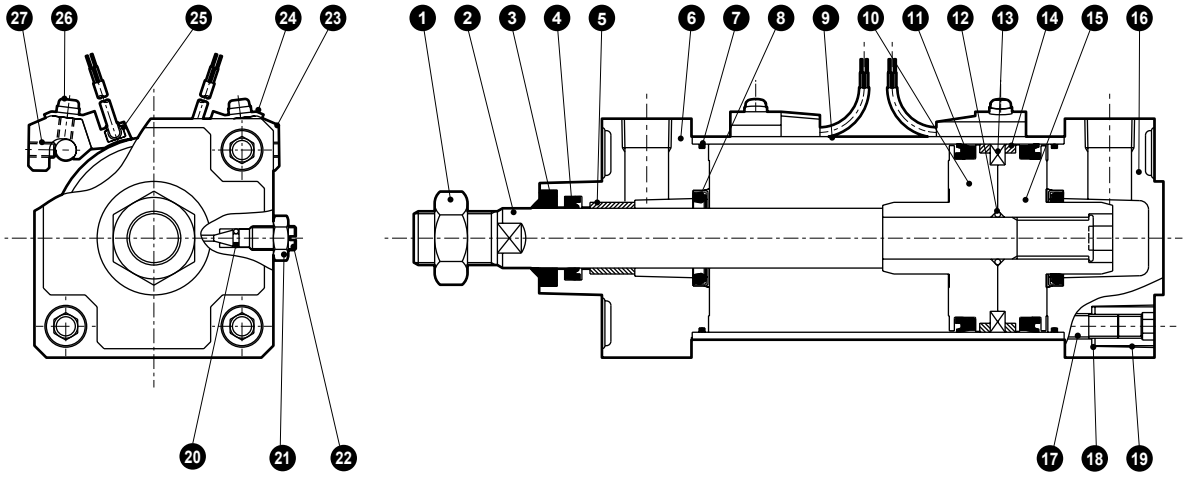
Bore size (mm) / Mounting bracket	φ40	φ50	φ63	φ80	φ100
Foot (LB) *2	S1-LB-40	S1-LB-50	S1-LB-63	S1-LB-80	S1-LB-100
Flange (FA/FB)	S1-FA-40	S1-FA-50	S1-FA-63	S1-FA-80	S1-FA-100
Eye bracket (CA)	S1-CA-40	S1-CA-50	S1-CA-63	S1-CA-80	S1-CA-100
Clevis bracket (CB)	S1-CB-40	S1-CB-50	S1-CB-63	S1-CB-80	S1-CB-100

*1 : For material of the mounting bracket, refer to page 440.
*2 : The foot mounting bracket is provided as 2 pcs./set.
*3 : All mounting brackets are supplied with mounting bolts.

Dimensions

Same as double acting/standard single rod. Refer to pages 441 to 453.

Internal structure and parts list



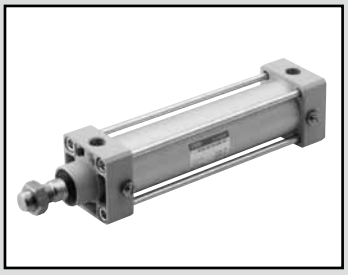
No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
1	Rod nut	Steel	Zinc chromate	15	Piston H	Aluminum alloy die-casting	
2	Piston rod	Steel	Industrial chrome plating	16	Head cover	Aluminum alloy die-casting	Paint
3	Dust wiper	Nitrile rubber		17	Tie rod	Steel	Zinc chromate
4	Rod packing	Nitrile rubber		18	Conical spring washer	Steel	Black finish
5	Bush	Oil impregnated bearing alloy		19	Round nut	Steel	Zinc chromate
6	Rod cover	Aluminum alloy die-casting	Paint	20	Needle gasket	Nitrile rubber	
7	Cylinder gasket	Nitrile rubber		21	Needle nut	Copper alloy	Nickel plating
8	Cushion packing	Nitrile rubber/steel		22	Cushion needle	Copper alloy	Nickel plating
9	Cylinder tube	Aluminum alloy	Hard alumite	23	Switch mounting base	Aluminum alloy	
10	Piston R	Aluminum alloy die-casting		24	Switch holder	Aluminum alloy	
11	Piston packing	Nitrile rubber		25	Cylinder switch		
12	Piston gasket	Nitrile rubber		26	Phillips pan head machine screw/captive washer	Steel	Zinc chromate
13	Magnet	Plastic		27	Hexagon socket set screw	Alloy steel	Black finish
14	Wear ring	Polyacetal resin					

Repair parts list

Bore size (mm)	Kit No.	Repair parts No.
φ40	SCA2-G-40K	③ ④ ⑦ ⑧ ⑪ ⑭ ⑳
φ50	SCA2-G-50K	
φ63	SCA2-G-63K	
φ80	SCA2-G-80K	
φ100	SCA2-G-100K	

*1: Specify the kit No. when placing an order.

MEMO

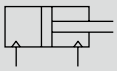


Medium bore size cylinder
Double acting/coolant proof

SCA2- G2 G3 Series

● Bore size: φ40/φ50/φ63/φ80/φ100

JIS symbol



RoHS CAD

Specifications

Descriptions		SCA2-G2/G3				
Bore size mm		φ40	φ50	φ63	φ80	φ100
Actuation		Double acting/coolant proof				
Working fluid		Compressed air				
Max. working pressure MPa		1.0 (≈150 psi, 10 bar)				
Min. working pressure MPa		0.05 (≈7.3 psi, 0.5 bar)				
Proof pressure MPa		1.6 (≈230 psi, 16 bar)				
Ambient temperature °C		-10 (14°F) to 60 (140°F) (no freezing)				
Port size		Rc1/4	Rc3/8		Rc1/2	
Stroke tolerance mm		$^{+0.9}_{0}$ (to 360), $^{+1.4}_{0}$ (to 800)				
Working piston speed mm/s		50 to 1000 (Use within the allowable absorbed energy.)				
Cushion		Air cushion				
Effective air 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 absorbed energy J	Cushioned	4.29	8.37	15.8	27.9	49.8
	Without cushion	0.067	0.079	0.079	0.201	0.301
		Without any cushion, this product cannot absorb large energy generated by an external load. We recommend using an external shock absorber.				

Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Available stroke length (mm)	Min. stroke length (mm)
φ 40	25, 50, 75, 100, 150, 200, 250, 300, 350, 400, 450, 500	600	1600	1
φ 50			2000	
φ 63			2500	
φ 80		700		
φ100		800		

*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 below for details.
When the stroke length is 15 mm or less, the two switches could turn ON at the same time.
In this case, increase the space between the switches to adjust their positions.
*3 : If max. stroke length is exceeded, product specifications may not be satisfied depending on the conditions. Refer to Ending Page 69.

● Min. stroke length with T2YL/T3YL switches

	Different surface mounting				Same surface mounting				Center trunnion mounting				Rod side trunnion mounting No position detection at rod side stroke end.	Head side trunnion mounting No position detection at head side stroke end.
Switch quantity	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).
*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.

Switch specifications

Descriptions	Proximity 2-wire	Proximity 3-wire
	T2YLH/T2YLV	T3YLH/T3YLV
Applications	Dedicated for programmable controller	Programmable controller, relay
Power supply voltage	-	10 to 28 VDC
Load voltage/current	10 to 30 VDC, 5 to 20 mA *1	30 VDC or less, 50 mA or less
Lamp	Red/green LED (Lit when ON)	
Max. shock resistance	980 m / S^2	
Leakage current	1 mA or less	10 μA or less
Weight g	1 m:33 3 m:87 5 m:142	

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

Cylinder weight

(Unit: kg)

Bore size (mm)	Product weight when stroke length (S) = 0 mm							Switch weight	Mounting bracket weight	Additional weight per S = 100 mm
	Basic (OO)	Foot (LB)	Flange (FA, FB)	Special flange (FC)	Eye bracket (CA)	Clevis bracket (CB)	Trunnion (TA, TB, TC)		T type	
φ40	0.84	1.01	1.25	0.93	1.16	1.20	1.22	Refer to the weight in the switch specifications.	0.024	0.39
φ50	1.23	1.48	1.72	1.34	1.61	1.64	1.77		0.022	0.46
φ63	1.63	2.00	2.72	1.81	2.20	2.25	2.48		0.020	0.50
φ80	2.63	3.37	4.49	2.99	3.90	4.11	3.97		0.026	0.90
φ100	4.24	5.15	6.98	4.79	5.88	6.06	6.81		0.024	1.12

(Example) Product weight of SCA2-G2-LB-50-200-T2YLH-D

- Product weight for 0 mm stroke length ..... 1.48 kg
- Additional weight for 200 mm stroke length..... $0.46 \times \frac{200}{100} = 0.92$ kg
- Weight of 2 T2YLH switches ..... $0.033 \times 2 = 0.066$ kg
- Weight of 2 mounting brackets ..... $0.022 \times 2 = 0.044$ kg
- Product weight ..... $1.48 + 0.92 + 0.066 + 0.044 = 2.510$ kg

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

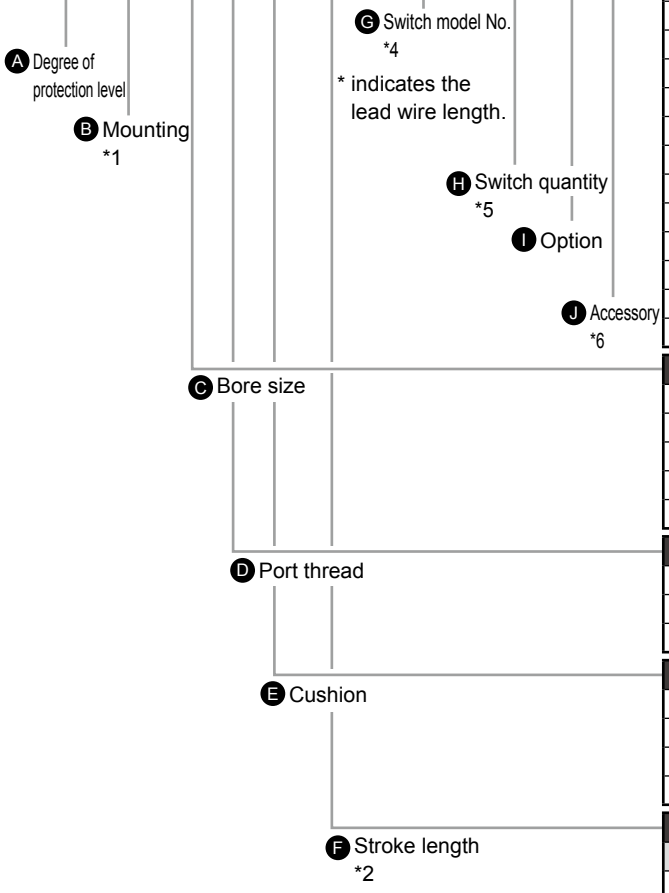
How to order

Without switch (built-in magnet for switch)

SCA2 - G2 - LB - 50 ( ) B - 75 ——— S Y

With switch (built-in magnet for switch)

SCA2 - G2 - LB - 50 ( ) B - 75 - T2YLH - R - S Y



Code	Content
A Degree of protection level	
G2	Coolant proof scraper + packing NBR
G3	Coolant proof scraper + packing FKM

B Mounting	
00	Basic
LB	Axial foot (Both sides)
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
TF	Intermediate supporting hole trunnion (φ40 is not available)
TD	Rod side hole trunnion (φ40 is not available)
TE	Head side hole trunnion (φ40 is not available)

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

D Port thread	
Blank	Rc thread
N	NPT thread (custom order product)
G	G thread (custom order product)

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

F Stroke length (mm)

Bore size	Stroke length *3	Available stroke length	Custom stroke length
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**	

G Switch model No.

Axial lead wire	Radial lead wire	Contact	Voltage AC	Voltage DC	Indicator	Lead wire
T2YLH*	**T2YLV***	Proximity		●	2-color display	2-wire
T3YLH*	**T3YLV***			●		3-wire

*** 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	
Blank	Cushion needle position change R (standard)
S	Cushion needle position change S
T	Cushion needle position change T

J Accessory	
I	Rod eye
Y	Rod clevis (pin and snap ring attached)
B1	Eye bracket
B2	Clevis bracket (pin and snap ring attached)
B3	Eye bracket
B4	Trunnion No. 2 bracket (2 pcs./set)

⚠ Precautions for model No. selection

*1 : Mounting bracket will be shipped with the product. (Trunnion are assembled at shipment.)
*2 : If the stroke exceeds the max. stroke length, refer to Ending Page 69.
*3 : Refer to page 568 for the min. stroke length with switch.
*4 : Switches are shipped with the product.
*5 : When selecting TA or TB as mounting, the number of switches is limited to “H” (1 on head side) for TA, and “R” (1 on rod side) for TB.
*6 : “I” and “Y” cannot be selected together.
*7 : Refer to Ending Page 85 for custom specifications of rod end form.
*8 : Refer to page 432 for combination of variations/ options.

[Example of model No.]

SCA2-G2-LB-50B-75-T2YLH-R-SI

Model: Medium bore size cylinder

- A Degree of protection level : Coolant proof scraper + packing NBR
- B Mounting : Axial foot
- C Bore size : φ50 mm
- D Port thread : Rc thread
- E Cushion : Both sides cushioned
- F Stroke length : 75 mm
- G Switch model No. : Proximity switch T2YLH, lead wire 1 m
- H Switch quantity : 1 on rod side
- I Option : Cushion needle position change
- J Accessory : Rod eye

How to order switch

● Switch body + mounting bracket set

SCA2 - G2 - T2YLH - 40

- 40: Bore size (Item Ⓒ on the previous page)
- T2YLH: Switch model No. (Item Ⓖ on the previous page)

● Mounting bracket set

SCA2 - G2 - T - 50

- 50: Bore size (Item Ⓒ on the previous page)
- T: Mounting bracket

● Switch body only

SW - T2YLH

- T2YLH: Switch model No. (Item Ⓖ on the previous page)

How to order mounting bracket

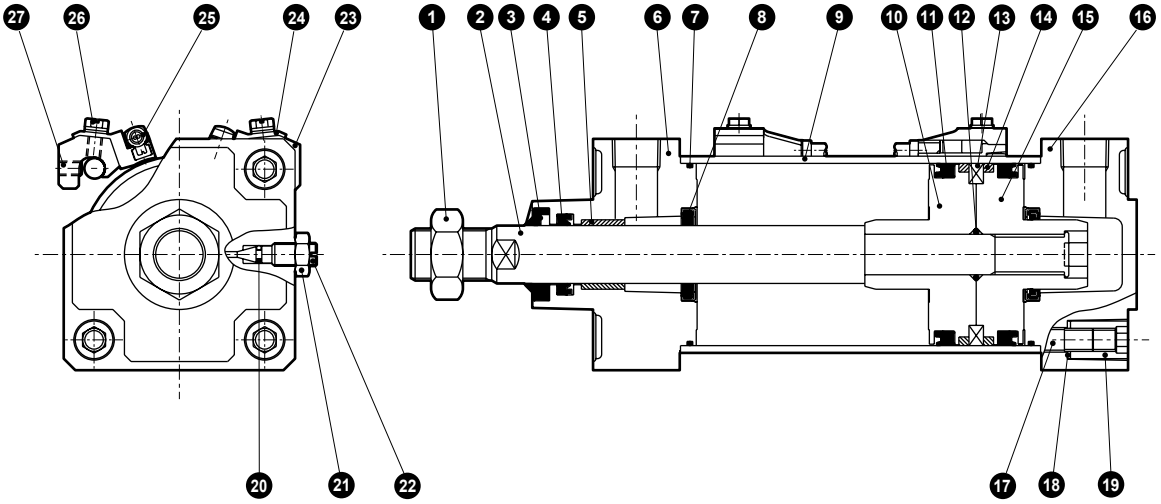
Bore size (mm) / Mounting bracket	φ40	φ50	φ63	φ80	φ100
Foot (LB) *2	S1-LB-40	S1-LB-50	S1-LB-63	S1-LB-80	S1-LB-100
Flange (FA/FB)	S1-FA-40	S1-FA-50	S1-FA-63	S1-FA-80	S1-FA-100
Eye bracket (CA)	S1-CA-40	S1-CA-50	S1-CA-63	S1-CA-80	S1-CA-100
Clevis bracket (CB)	S1-CB-40	S1-CB-50	S1-CB-63	S1-CB-80	S1-CB-100

*1 : For material of the mounting bracket, refer to page 440.
*2 : The foot mounting bracket is provided as 2 pcs./set.
*3 : All mounting brackets are supplied with mounting bolts.

Internal structure and parts list

● Degree of protection: Packing NBR
SCA2 - G2

● Degree of protection: Packing FKM
SCA2 - G3



Main parts list

No.	Part name		Material	Remarks	No.	Part name		Material	Remarks
1	Rod nut		Stainless steel		13	Magnet		Plastic	
2	Piston rod		Stainless steel	Industrial chrome plating	14	Wear ring		Polyacetal resin	
3	Scraper	G2	Nitrile rubber		15	Piston H		Aluminum alloy	Chromate treatment
		G3	Fluoro rubber		16	Head cover		Aluminum alloy	Paint
4	Rod packing	G2	Nitrile rubber		17	Round nut		Steel	Zinc chromate treatment
		G3	Fluoro rubber		18	Conical spring washer		Steel	Black finish
5	Bush		Oil impregnated bearing alloy		19	Tie rod		Steel	Zinc chromate treatment
6	Rod cover		Aluminum alloy	Paint	20	Needle gasket	G2	Nitrile rubber	
7	Cylinder gasket	G2	Nitrile rubber				G3	Fluoro rubber	
		G3	Fluoro rubber		21	Needle nut		Copper alloy	Nickel plating
8	Cushion packing	G2	Nitrile rubber, steel		22	Cushion needle		Copper alloy	Nickel plating
		G3	Fluoro rubber, steel		23	Cylinder switch			
9	Cylinder tube		Aluminum alloy	Hard alumite treatment	24	Slotted hexagon head bolt/captive washer		Stainless steel	
10	Piston R		Aluminum alloy	Chromate treatment	25	Spring washer		Stainless steel	
11	Piston packing	G2	Nitrile rubber		26	Small washer		Stainless steel	
		G3	Fluoro rubber		27	Switch holder		Aluminum alloy	Chromate treatment
12	Piston gasket	G2	Nitrile rubber		28	Switch mounting base		Aluminum alloy	Chromate treatment
		G3	Fluoro rubber		29	Hexagon socket set screw		Stainless steel	

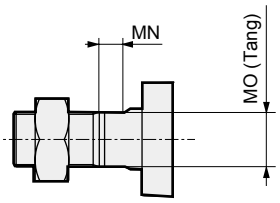
Repair parts list

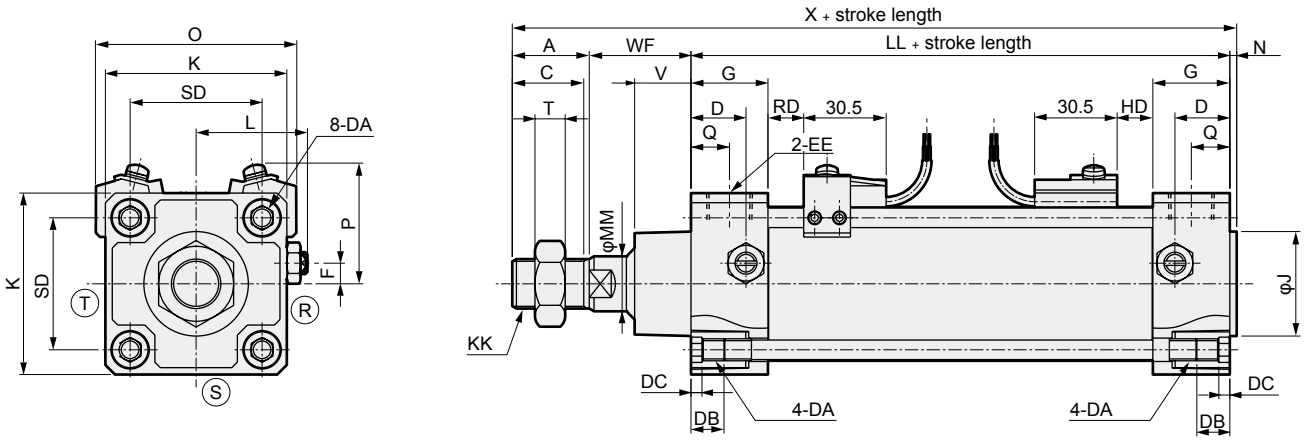
No./part name / Bore size (mm)	Kit No.	Repair parts No.
φ40	SCA2-G2- 40K	❸ ❹ ❼ ❽ ⓫ ⓮ ⓴
	SCA2-G3- 40K	
φ50	SCA2-G2- 50K	
	SCA2-G3- 50K	
φ63	SCA2-G2- 63K	
	SCA2-G3- 63K	
φ80	SCA2-G2- 80K	
	SCA2-G3- 80K	
φ100	SCA2-G2-100K	
	SCA2-G3-100K	

*1: Specify the kit No. when placing an order.

Dimensions CAD

● Basic (00)

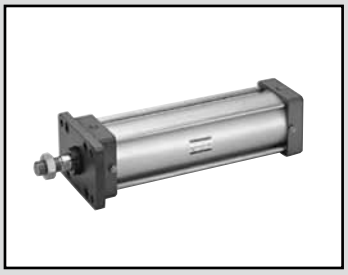




Code	Basic (00) with switch														
Bore size (mm)	A	C	D	DA	DB	DC	EE	F	G	J	K	KK	L	LL	MM
φ40	22	20	18	M8	12	4	Rc1/4	7.5	26	31	57	M14×1.5	38 to 39.5	93	16
φ50	28	26	20	M8	12	4	Rc3/8	0	28	38	66	M18×1.5	41 to 43.5	101	20
φ63	28	26	22	M8	12	4	Rc3/8	0	30	38	80	M18×1.5	47.5 to 50.0	105	20
φ80	36	34	26	M12	16	5	Rc1/2	0	34	43	98	M22×1.5	56 to 59	116	25
φ100	45	43	26	M12	16	5	Rc1/2	0	36	51	118	M26×1.5	66 to 69	128	30

Code										With switch			
Bore size (mm)	MN	MO	N	Q	SD	T	V	WF	X	HD	P	O	RD
φ40	8	14	2	13	40.5	8	18.5	33.5	150.5	10	42	66	10
φ50	8	17	2.5	14	48	11	20.5	37	168.5	12	44	73	12
φ63	8	17	3	15	59	11	21	35	171	12	47	84	12
φ80	11	22	3.5	17	74	13	23.5	48	203.5	13.5	58	104	13.5
φ100	13	27	4	18	90	16	32	53	230	17.5	64	120	17.5

* Installation dimensions of other mounting are the same as those of the SCA2 (standard). Refer to pages 442 to 453.
* For the dimensions of the accessories, refer to pages 454 and 455.



Medium bore size cylinder
Double acting/coil scraper

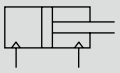
SCA2-G1 Series

Double acting/anti-spatter adherence

SCA2-G4 Series

● Bore size: φ40/φ50/φ63/φ80/φ100

JIS symbol



RoHS CAD

Specifications

Descriptions		SCA2-G1/G4 SCA2-G1L2/G4L2				
Bore size mm		φ40	φ50	φ63	φ80	φ100
Actuation		Double acting				
Working fluid		Compressed air				
Max. working pressure MPa		1.0 (≈150 psi, 10 bar)				
Min. working pressure MPa		0.05 (≈7.3 psi, 0.5 bar)				
Proof pressure MPa		1.6 (≈230 psi, 16 bar)				
Ambient temperature °C		-10 (14°F) to 60 (140°F) (no freezing)				
Port size		Rc1/4	Rc3/8		Rc1/2	
Stroke tolerance mm		$^{+0.9}_{0}$(to 360), $^{+1.4}_{0}$(to 800)				
Working piston speed mm/s		50 to 1000 (Operate within the allowable absorbed energy.)				
Cushion		Air cushion				
Effective air 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 absorbed energy J	Cushioned	4.29	8.37	15.8	27.9	49.8
	Without cushion	0.067	0.079	0.079	0.201	0.301
		Without any cushion, this product cannot absorb large energy generated by an external load. We recommend using an external shock absorber.				

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/ 150/200/250/ 300/350/400/ 450/500	600	1600	1
φ50			2000	
φ63			2500	
φ80		700		
φ100		800		

*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 following table.

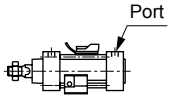
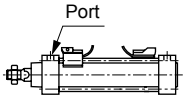
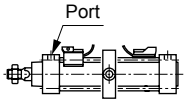
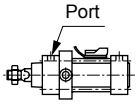
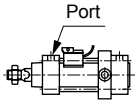
Min. stroke length with switch (T2YD switch)

	Different surface mounting				Same surface mounting				Center trunnion mounting				Rod side trunnion mounting No position detection at rod side stroke end.	Head side trunnion mounting No position detection at head side stroke end.
Switch quantity	1	2	3	4	1	2	3	4	1	2	3	4	1	1
φ40	20	20	25	40	20	60	105	150	105	105	165	165	50	50
φ50	15	15	25	40	15	15	60	60	100	100	100	100	45	45
φ63	15	15	25	40	15	15	60	60	105	105	105	105	50	50
φ80	15	15	30	45	15	15	60	60	110	110	110	110	55	55
φ100	10	15	0	45	10	15	60	60	120	120	120	120	60	60

*1: 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 switch (H switch)

(Unit: mm)

Sketch	When mounted on different surfaces	When mounted on same surface	With intermediate support (hole) trunnion	With rod side supporting hole	With head side supporting hole
				 Position cannot be detected at the rod side stroke end.	 Position cannot be detected at the head side stroke end.

Switch quantity / Bore size (mm)	1	2	3	4	1	2	3	4	1	2	3	4	1	1
φ40	10	20	35	50	10	50	100	150	86	86	92	92	38	38
φ50	10	20	40	55	10	50	100	150	86	86	92	92	36	36
φ63	10	20	40	55	10	35	100	150	91	91	97	97	41	41
φ80	10	20	40	55	10	20	100	150	96	96	102	102	44	44
φ100	10	20	40	55	10	20	100	150	106	106	112	112	50	50

*1: 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.

Switch specifications

Descriptions	Proximity 2-wire		Reed 2-wire		
	T2YD		H0		H0Y (2-color display)
Applications	Dedicated for programmable controller		For programmable controller, relay		Dedicated for programmable controller
Load voltage	24 VDC ±10%		12/24 VDC	110 VAC	24 VDC
Load current	5 to 20 mA		5 to 50 mA	7 to 20 mA	5 to 20 mA
Indicator lamp	Red/green LED (Lit when ON)		Green LED (Lit when ON)		Red/green LED (Lit when ON)
Internal voltage drop	6V or less		5V or less		6V or less
Leakage current	1.0 mA or less		10 μA or less		
Output delay time *1 (ON delay, OFF delay)	60 ms or less		-		
Lead wire length	1 m (oil resistant vinyl cabtyre cable φ6, 0.5 mm^2 x 2-conductor) *2, *3	0.3 m (flame-resistant cabtyre cable φ6, 0.5 mm^2 x 2-conductor with M12 cable connector)	1 m (flame-resistant cabtyre cable φ6, 0.5 mm^2 x 2-conductor)		
Insulation resistance	100 MΩ or more at 500 VDC megger		100 MΩ and over with 500 VDC megger		
Withstand voltage	No failure after 1 minute of 1,000 VAC application.		No failure after 1 minute of 1,000 VAC application.		
Max. shock resistance	980 m/s^2		294 m/s^2		
Ambient temperature	-10 to +60°C		-10 to +60°C		
Degree of protection	JIS C0920 (water-tight), IEC standards IP67, oil resistance		IEC Standard IP67, JIS C0920 (water-tight), oil resistance		
Weight g	1 m:61 3 m:166 5 m:272		1 m:76 3 m:181 5 m:289		

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

Cylinder weight

(Unit: kg)

Bore size (mm)	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)	Clevis bracket (CB)	Trunnion (TA, TB, TC)		T type	H type	
φ40	0.84	1.01	1.25	0.93	1.16	1.20	1.22	Refer to the weight in the switch specifications.	0.024	0.028	0.39
φ50	1.23	1.48	1.72	1.34	1.61	1.64	1.77		0.022	0.026	0.46
φ63	1.63	2.00	2.72	1.81	2.20	2.25	2.48		0.020	0.024	0.50
φ80	2.63	3.37	4.49	2.99	3.90	4.11	3.97		0.026	0.029	0.90
φ100	4.24	5.15	6.98	4.79	5.88	6.06	6.81		0.024	0.028	1.12

(Example) Product weight of SCA2-G4-LB-50B-200-HO-D
- Product weight for 0 mm stroke length ..... 1.48 kg
- Additional weight for 200 mm stroke length..... $0.46 \times \frac{200}{100} = 0.92$ kg
- Weight of 2 HO switches ..... $0.076 \times 2 = 0.152$ kg
- Weight of 2 mounting brackets ..... $0.026 \times 2 = 0.052$ kg
- Product weight..... 1.48 + 0.92 + 0.152 + 0.052 = 2.604 kg

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

How to order

Without switch (built-in magnet for switch)

SCA2 - G4 —— LB - 40 B - 100 —————— S I

With switch (built-in magnet for switch)

SCA2 - G4 —— LB - 40 B - 100 - T2YD - R - S I

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

SCA2 - G4 L2 - LB - 40 B - 100 - H0Y - R - S I

Ⓐ Model No.
Ⓑ Mounting *1
Ⓒ Bore size
Ⓓ Cushion
Ⓔ Stroke length *2 *3
Ⓕ Switch model No. *4
Ⓖ Switch quantity *5
Ⓗ Option
Ⓘ Accessory *6

Code	Content
Ⓐ Model No.	
G1	Double acting/coil scraper
G4	Double acting/anti-spatter adherence

Ⓑ 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
TC	Intermediate trunnion
TA	Rod side trunnion
TB	Head side trunnion
TF	Intermediate supporting hole trunnion (φ40 is not available)
TD	Rod side hole trunnion (φ40 is not available)
TE	Head side hole trunnion (φ40 is not available)

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

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

Ⓔ Stroke length (mm)

Bore size	Stroke *3	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**		
φ100	**1 to 800**		

Ⓕ Switch model No.

Grommet	Contact	Voltage AC	Voltage DC	Display	Lead wire
T2YD*	Proximity		●	2-color display (AC magnetic field)	2-wire
T2YDT*	Proximity		●	2-color display (AC magnetic field)	2-wire
H0*	Reed	●	●	Strong magnetic field proof switch, strong magnetic field, 2 color display	2-wire
H0Y*	Reed		●	Strong magnetic field proof switch, strong magnetic field, 2 color display	2-wire

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

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

Ⓗ Option	
Blank	Cushion needle position R (standard)
S	Cushion needle position S
T	Cushion needle position T

Ⓘ Accessory	
I	Rod eye
Y	Rod clevis (pin and snap ring attached)
B1	Eye bracket
B2	Clevis bracket (pin and snap ring attached)
B3	Eye bracket
B4	Trunnion No. 2 bracket (2 pcs./set)

⚠ Precautions for model No. selection

*1 : Mounting bracket will be shipped with the product. (Trunnion are assembled at shipment.)
*2 : If the stroke exceeds the max. stroke length, refer to Ending Page 69.
*3 : Refer to page 574 for the min. stroke length with switch.
*4 : Switches are shipped with the product.
*5 : When selecting TA or TB as mounting, the number of switches is limited to “H” (1 on head side) for TA, and “R” (1 on rod side) for TB.
*6 : “I” and “Y” cannot be selected together.
*7 : Refer to Ending Page 85 for custom specifications of rod end form.
*8 : Refer to page 432 for combination of variations/ options.

[Example of model No.]

SCA2-G4-LB-40B-100-T2YD-R-SI

Model: Medium bore size cylinder

Ⓐ Model No. : Double acting/anti-spatter adherence
Ⓑ Mounting : Axial foot
Ⓒ Bore size : φ40 mm
Ⓓ Cushion : Both sides cushioned
Ⓔ Stroke length : 100 mm
Ⓕ Switch model No. : Proximity switch T2YD, lead wire 1 m
Ⓖ Switch quantity : 1 on rod side
Ⓗ Option : Cushion needle position S
Ⓘ Accessory : Rod eye

How to order H switch

● Switch body + mounting bracket set

SCA2-L2 - H0 - 40

- H0: Switch model No. (Item Ⓕ on the previous page)
- 40: Bore size (Item Ⓒ on the previous page)

● Switch body only

SW - H0

- H0: Switch model No. (Item Ⓕ on the previous page)

● Mounting bracket set

SCA2-L2 - H - 40

- 40: Bore size (Item Ⓒ on the previous page)

How to order T2YD switch

● Switch body + mounting bracket set

SCA2 - T2YD - 40

- T2YD: Switch model No. (Item Ⓕ on the previous page)
- 40: Bore size (Item Ⓒ on the previous page)

● Switch body only

SW - T2YD

- T2YD: Switch model No. (Item Ⓕ on the previous page)

● Mounting bracket set

SCA2 - T - 40

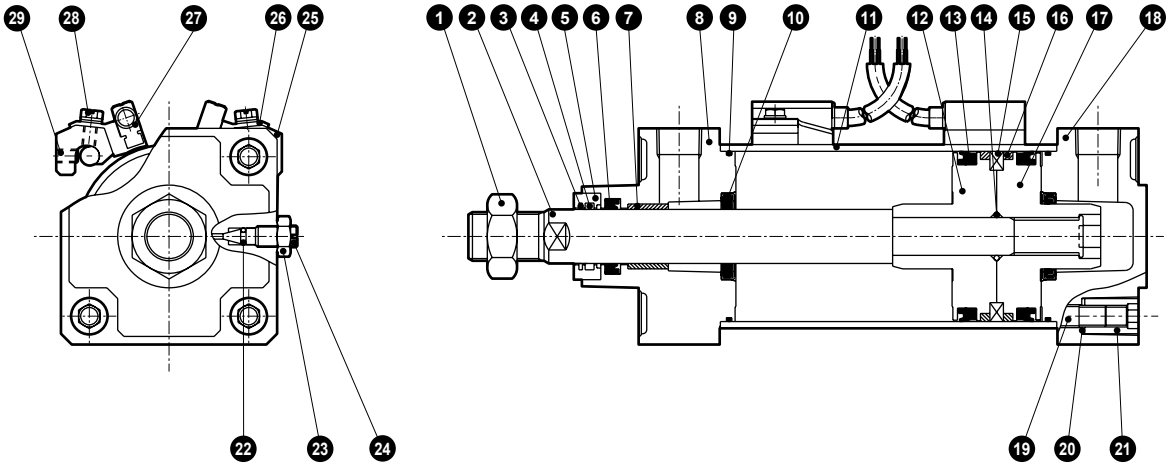
- 40: Bore size (Item Ⓒ on the previous page)

How to order mounting bracket

Bore size (mm) / Mounting bracket	φ40	φ50	φ63	φ80	φ100
Foot (LB) *2	S1-LB-40	S1-LB-50	S1-LB-63	S1-LB-80	S1-LB-100
Flange (FA/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

*1 : For material of the mounting bracket, refer to page 440.
*2 : The foot mounting bracket is provided as 2 pcs./set.
*3 : All mounting brackets are supplied with mounting bolts.

Internal structure and parts list



No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
1	Rod nut	Steel	Zinc chromate	16	Wear ring	Polyacetal resin	
2	Piston rod	Steel	Industrial chrome plating	17	Piston H	Aluminum alloy die-casting	
3	Coil scraper	Phosphor bronze		18	Head cover	Aluminum alloy die-casting	Paint
4	Lube keeping structure	Special rubber	”G4” only	19	Tie rod	Steel	Zinc chromate
5	Adaptor	Stainless steel		20	Conical spring washer	Steel	Black finish
6	Rod packing	Nitrile rubber		21	Round nut	Steel	Zinc chromate
7	Bush	Oil impregnated bearing alloy		22	Needle gasket	Nitrile rubber	
8	Rod cover	Aluminum alloy die-casting	Paint	23	Needle nut	Copper alloy	Nickel plating
9	Cylinder gasket	Nitrile rubber		24	Cushion needle	Copper alloy	Nickel plating
10	Cushion packing	Nitrile rubber, steel	Special	With switch			
11	Cylinder tube	Aluminum alloy	Hard alumite treatment	25	Switch mounting base	Aluminum alloy	
12	Piston R	Aluminum alloy die-casting		26	Switch holder	Aluminum alloy	Chromate
13	Piston packing	Nitrile rubber		27	Cylinder switch		
14	Piston gasket	Nitrile rubber		28	Slotted hexagon head bolt/captive washer	Stainless steel	
15	Magnet	Plastic		29	Hexagon socket set screw	Alloy steel	Black finish

Repair parts list (SCA2-G1)

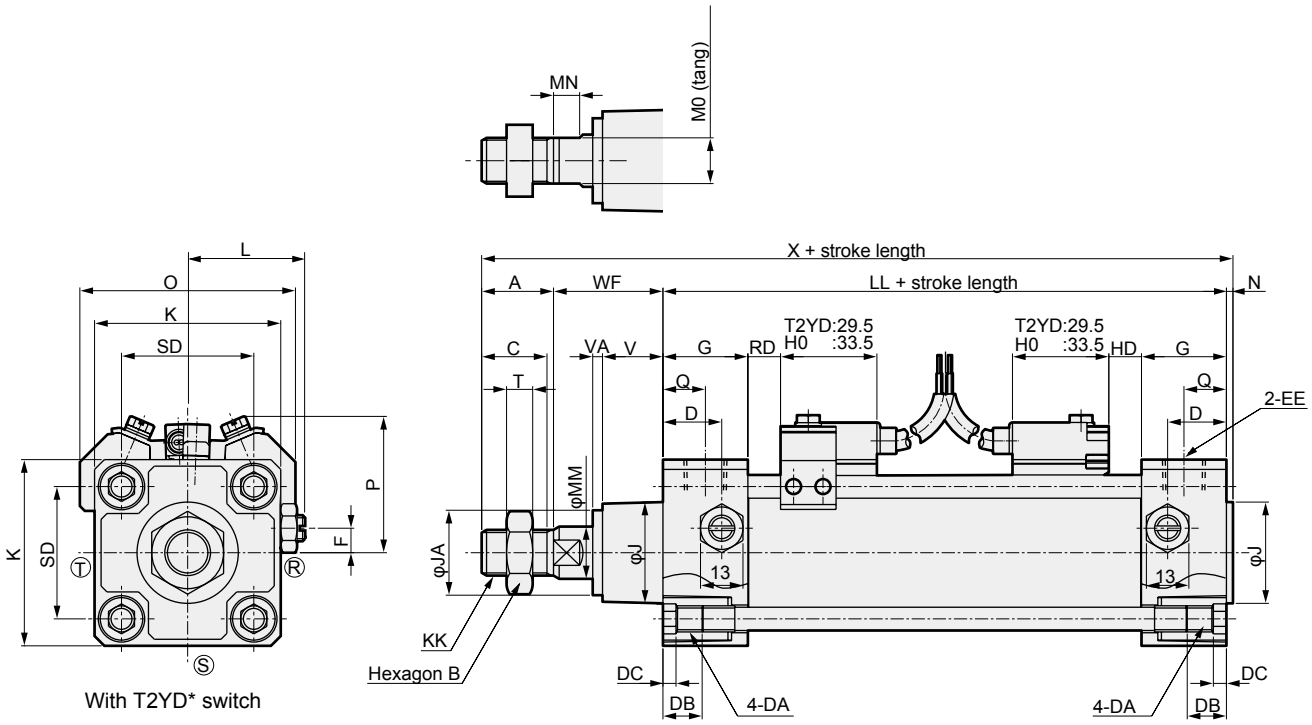
Bore size	Kit No.	Repair parts No.
φ40	SCA2-G1-40K	❸ ❻ ❾ ❿ ⓭ ⓰ ㉒
φ50	SCA2-G1-50K	
φ63	SCA2-G1-63K	
φ80	SCA2-G1-80K	
φ100	SCA2-G1-100K	

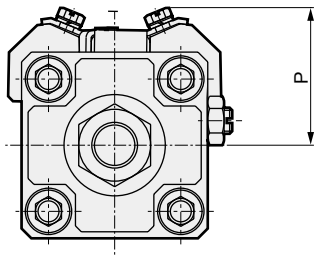
Note: Specify the kit No. when placing an order.

· No repair parts kit is available for SCA2-G4 Series.

Dimensions

● Basic (00)





With H0* switch

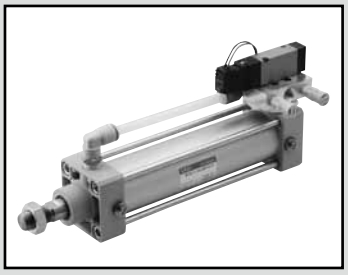
RD: Rod side max. sensitivity position
HD: Head side max. sensitivity position

Code	Basic (00) basic dimensions																				
Bore size (mm)	A	B	C	D	DA	DB	DC	EE	F	G	J	JA	K	KK	L	LL	MM	MN	MO	N	Q
φ40	22	22	20	18	M8	12	4	Rc1/4	7.5	26	31	26	57	M14×1.5	38 to 39.5	93	16	8	14	2	13
φ50	28	27	26	20	M8	12	4	Rc3/8	0	28	38	32	66	M18×1.5	41 to 43.5	101	20	8	17	2.5	14
φ63	28	27	26	22	M8	12	4	Rc3/8	0	30	38	32	80	M18×1.5	47.5 to 50.0	105	20	8	17	3	15
φ80	36	32	34	26	M12	16	5	Rc1/2	0	34	43	37	98	M22×1.5	56 to 59	116	25	11	22	3.5	17
φ100	45	41	43	28	M12	16	5	Rc1/2	0	36	51	42	118	M26×1.5	66 to 69	128	30	13	27	4	18

Code	Basic (00) basic dimensions							With T2YD* switch				With H0* switch			
Bore size (mm)	SD	T	V	VA		WF	X	HD	P	O	RD	HD	P	O	RD
				G1	G4										
φ40	40.5	8	18.5	0	3	33.5	150.5	10	40	66	10	4	42	66	4
φ50	48	11	20.5	0	3	37	168.5	12	44.5	73	12	6	44	73	6
φ63	59	11	21	0	3	35	171	12	50	84	12	6	47	84	6
φ80	74	13	23.5	0	3	48	203.5	13.5	60	104	13.5	7.5	58	104	7.5
φ100	90	16	32	0	2	53	230	17.5	68	120	17.5	11.5	64	120	11.5

*1: ⓇⓈⓉ indicates the cushion needle position.

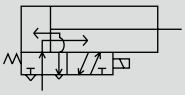
* Installation dimensions of other mounting are the same as those of the SCA2 (standard). Refer to pages 442 to 453.
* For the dimensions of the accessories, refer to pages 454 and 455.



Medium bore size cylinder
Double acting/with valve

SCA2-V Series

● Bore size: φ40/φ50/φ63/φ80/φ100

JIS symbol 

(Single solenoid
Push out when energized)

RoHS CAD

Specifications

Descriptions		SCA2-V1/V2/V (with valve)				
Bore size mm		φ40	φ50	φ63	φ80	φ100
Actuation		Double acting				
Working fluid		Compressed air				
Max. working pressure MPa		0.7 (≈100 psi, 7 bar)				
Min. working pressure MPa		0.15 (≈22 psi, 1.5 bar)				
Proof pressure MPa		1.05 (≈150 psi, 10.5 bar)				
Ambient temperature °C		-5 (23°F) to 50 (122°F) (no freezing)				
Port size		Rc1/4	Rc3/8		Rc1/2	
Stroke tolerance mm		$^{+0.9}_{0}$ (to 360) $^{+1.4}_{0}$ (to 800)				
Working piston speed *1 mm/s		50 to 500				50 to 450
Cushion		Air cushion				
Effective air 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 absorbed energy J	Cushioned	4.29	8.37	15.8	27.9	49.8
	Without cushion	0.067	0.079	0.079	0.201	0.301
		Without any cushion, this product cannot absorb large energy generated by an external load. We recommend using an external shock absorber.				

*1: Operate within the absorbed energy.
500 mm/s piston speed of φ100 bore size can be attained when a silencer (SLW-10A) is used instead of a metering valve (SMW-10A).

Valve specifications

Model No. / Descriptions	V1 SCA2-V2-40/50 V			V1 SCA2-V2-63 V			V1 SCA2-V2-80/100 V		
Model No.	4KB2*9-00-voltage			4KB3*9-00-voltage			4KB4*9-00-voltage		
Rated voltage	100 VAC(50/60 Hz)	200 VAC(50/60 Hz)	24 VDC	100 VAC(50/60 Hz)	200 VAC(50/60 Hz)	24 VDC	100 VAC(50/60 Hz)	200 VAC(50/60 Hz)	24 VDC
Starting current (A)	0.056/0.044	0.028/0.022	0.075	0.046/0.042	0.023/0.021	0.075	0.046/0.042	0.023/0.021	0.075
Holding current (A)	0.028/0.022	0.014/0.011		0.028/0.021	0.014/0.011		0.028/0.022	0.014/0.011	
Power consumption (W)	1.8/1.4	1.8/1.4	1.8	1.6/1.3	1.6/1.3	1.8	1.6/1.3	1.6/1.3	1.8
Rated voltage fluctuation	±10%	±10%	±10%	±10%	±10%	±10%	±10%	±10%	±10%
Thermal class	Class B molded coil	Class B molded coil	Class B molded coil	Class B molded coil	Class B molded coil	Class B molded coil	Class B molded coil	Class B molded coil	Class B molded coil
Lead wire outlet	Grommet lead wire (300 mm)								

Note: Refer to "Pneumatic Valves (CB-23SA)" for details on valves.

Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)
φ40	50/75/100/ 150/200/250/ 300/350/400/ 450/500	600	50
φ50			
φ63			
φ80		700	
φ100		800	

*1: The custom stroke length is available in 1 mm increments.
*2: Less than 50 mm stroke length is not available with or without switch.

Min. stroke length with switch

● T0/T5 min. stroke with switches

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

*1: The values in ( ) are of T*V (radial lead wire).
*2: Less than 50 mm stroke length is not available.
*3: T8 switch cannot be installed.

Min. stroke length with switch

● T2/T3 min. stroke with switches

	Different surface mounting				Same surface mounting				Center trunnion mounting				Rod side trunnion mounting No position detection at rod side stroke end.
Switch quantity	1	2	3	4	1	2	3	4	1	2	3	4	1
φ40	50(50)	50(50)	50(50)	50(50)	50(50)	60(50)	105(75)	150(105)	105(75)	105(75)	165(135)	165(135)	50(50)
φ50	50(50)	50(50)	50(50)	50(50)	50(50)	50(50)	60(50)	60(50)	105(75)	105(75)	105(75)	105(75)	50(50)
φ63	50(50)	50(50)	50(50)	50(50)	50(50)	50(50)	60(50)	60(50)	110(80)	110(80)	110(85)	110(85)	50(50)
φ80	50(50)	50(50)	50(50)	50(50)	50(50)	50(50)	60(50)	60(50)	115(85)	115(85)	115(90)	115(90)	55(50)
φ100	50(50)	50(50)	50(50)	50(50)	50(50)	50(50)	60(50)	60(50)	125(95)	125(95)	125(100)	125(100)	60(50)

*1: The values in ( ) are of T*V (radial lead wire).
*2: Less than 50 mm stroke length is not available.

● T1/T2Y/T3Y/T2YD min. stroke with switches

	Different surface mounting				Same surface mounting				Center trunnion mounting				Rod side trunnion mounting No position detection at rod side stroke end.
Switch quantity	1	2	3	4	1	2	3	4	1	2	3	4	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)
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)
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)
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)
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)

*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.

● T2W/T3W min. stroke with switches

	Different surface mounting				Same surface mounting				Center trunnion mounting				Rod side trunnion mounting No position detection at rod side stroke end.
Switch quantity	1	2	3	4	1	2	3	4	1	2	3	4	1
φ40	50(50)	50(50)	50(50)	50(50)	50(50)	65(50)	110(80)	155(110)	110(80)	110(80)	170(140)	170(140)	50(50)
φ50	50(50)	50(50)	50(50)	50(50)	50(50)	50(50)	65(50)	65(50)	110(80)	110(80)	110(60)	110(60)	50(50)
φ63	50(50)	50(50)	50(50)	50(50)	50(50)	50(50)	65(50)	65(50)	115(85)	115(85)	115(65)	115(65)	55(50)
φ80	50(50)	50(50)	50(50)	50(50)	50(50)	50(50)	60(50)	60(50)	120(90)	120(90)	120(70)	120(70)	55(50)
φ100	50(50)	50(50)	50(50)	50(50)	50(50)	50(50)	60(50)	60(50)	130(100)	130(100)	130(85)	130(85)	60(50)

*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.

Switch specifications (T 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		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
Output method	-				NPN output	PNP output	NPN output	NPN output	-				
Pwr. supp. V.	-				10 to 28 VDC				-				
Load voltage	85 to 265 VAC	10 to 30 VDC		24 VDC ±10%	30 VDC or less				12/24 VDC	110 VAC	5/12/24 VDC	110 VAC	24 VDC ±10%
Load current	5 to 100 mA	5 to 20 mA (*3)			100 mA or less		50 mA or less		5 to 50 mA	7 to 20 mA	50 mA or less	20 mA or less	5 to 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		Red/green LED (Lit when ON)
Leakage current	1 mA or less with 100 VAC, 2 mA or less with 200 VAC	1 mA or less			10 μA or less				0 mA				1 mA or less
Weight g	1 m:33 3 m:87 5 m:142	1 m:18 3 m:49 5 m:80	1 m:33 3 m:87 5 m:142	1 m:18 3 m:49 5 m:80	1 m:18 3 m:49 5 m:80		1 m:33 3 m:87 5 m:142	1 m:18 3 m:49 5 m:80	1 m:18 3 m:49 5 m:80				1 m:61 3 m:166 5 m:272

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

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

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

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

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

Cylinder weight

● SCA2-V

(Unit: kg)

Bore size (mm)	Product weight when stroke length (S) = 0 mm						Switch weight	Mounting bracket weight	Additional weight per S = 100mm
	Basic (00)	Foot (LB)	Flange (FA, FB)	Eye bracket (CA)	Clevis bracket (CB)	Trunnion (TA, TB, TC)		T type	
φ40	1.27	1.45	1.69	1.59	1.63	1.66	Refer to the weight in the switch specifications.	0.030	0.39
φ50	1.64	1.89	2.14	2.02	2.05	2.18		0.027	0.46
φ63	2.39	2.76	3.48	2.96	3.01	3.24		0.027	0.50
φ80	4.17	4.91	6.03	5.44	5.65	5.51		0.040	0.90
φ100	5.77	6.67	8.51	7.40	7.59	8.33		0.035	1.12

● SCA2-V1,V2

(Unit: kg)

Bore size (mm)	Product weight when stroke length (S) = 0 mm						Switch weight	Mounting bracket weight	Additional weight per S = 100mm
	Basic (00)	Foot (LB)	Flange (FA, FB)	Eye bracket (CA)	Clevis bracket (CB)	Trunnion (TA, TB, TC)		T type	
φ40	1.23	1.40	1.64	1.55	1.59	1.61	Refer to the weight in the switch specifications.	0.030	0.39
φ50	1.60	1.84	2.09	1.97	2.01	2.13		0.027	0.46
φ63	2.28	2.65	3.38	2.85	2.91	3.13		0.027	0.50
φ80	4.07	4.81	5.93	5.34	5.55	5.41		0.040	0.90
φ100	5.67	6.57	8.41	7.30	7.49	8.23		0.035	1.12

(Example) Product weight of SCA2-V1-LB-50B-200-TOH-D

- Product weight for 0 mm stroke length ..... 1.84 kg
- Additional weight for 200 mm stroke length.... 0.46 x $\frac{200}{100}$ = 0.92 kg
- Weight of 2 TOH switches ..... 0.018 x 2 = 0.036 kg
- Weight of 2 mounting brackets.....0.027 x 2 = 0.054 kg
- Product weight..... 1.45 + 0.92 + 0.036 + 0.054 = 2.460 kg

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}

How to order

Without switch (built-in magnet for switch)

SCA2 - V1 - LB - 40 ○ B - 100 - 1 ——— S I

With switch (built-in magnet for switch)

SCA2 - V1 - LB - 40 ○ B - 100 - 1 - T0H - R - S I

Ⓐ Actuation

Ⓑ Mounting *1

Ⓒ Bore size

Ⓓ Port thread

Ⓔ Cushion

Ⓕ Stroke length

Ⓖ Valve voltage

Ⓗ Switch model No. *3

Ⓘ Switch quantity *4

Ⓙ Option *5

Ⓚ Accessory *6

Code	Content
Ⓐ Actuation	
V1	Push when energized, single solenoid
V2	Pull when energized, single solenoid
V	Double solenoid
Ⓑ Mounting	
00	Basic
LB	Axial foot
FA	Rod side flange
FB	Head side flange
CA	Eye bracket
CB	Clevis bracket (pin and snap ring attached)
TC	Intermediate trunnion
TA	Rod side trunnion
TF	Intermediate supporting hole trunnion (φ40 is not available)
TD	Rod side hole trunnion (φ40 is not available)
Ⓒ Bore size (mm)	
40	φ40
50	φ50
63	φ63
80	φ80
100	φ100
Ⓓ Port thread	
Blank	Rc thread
N	NPT thread (custom order product)
G	G thread (custom order product)
Ⓔ Cushion	
B	Both sides cushioned
R	Rod side cushioned
H	Head side cushioned
N	Without cushion

Ⓕ Stroke length (mm)

Bore size	Stroke length *2	Custom stroke length
φ40	**50 to 600**	**In 1 mm increments**
φ50	**50 to 600**	
φ63	**50 to 600**	
φ80	**50 to 700**	
φ100	**50 to 800**	

Ⓖ Valve voltage	
1	100 VAC
2	200 VAC
3	24 VDC
Ⓗ Switch model No.	
Refer to the switch model numbers on the next page.	
*** Lead wire length**	
Blank	1 m (standard)
3	3 m (option)
5	5 m (option)
Ⓘ Switch quantity	
R	1 on rod side
H	1 on head side
D	2
T	3

Ⓙ 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		

Ⓚ Accessory	
I	Rod eye
Y	Rod clevis (pin and snap ring attached)
B1	Eye bracket
B2	Clevis bracket (pin and snap ring attached)
B3	Eye bracket
B4	Trunnion No. 2 bracket (2 pcs./set)

⚠ Precautions for model No. selection

*1 : Mounting bracket will be shipped with the product. (Trunnion are assembled at shipment.)
*2 : Refer to page 581 for the min. stroke length with switch.
*3 : Switches are shipped with the product.
*4 : When selecting TA or TB as mounting, the number of switches is limited to "H" (one on head side) for TA, and "R" (1 on rod side) for TB.
*5 : The instantaneous max. temperature is the temperature when sparks, cutting chips, etc., instantaneously contact the bellows.
*6 : "I" and "Y" cannot be selected together.
*7 : Refer to Ending Page 85 for custom specifications of rod end form.
*8 : Refer to page 432 for combination of variations/options.

[Example of model No.]

SCA2-V1-LB-40B-100-1-T0H-R-SI

Model: Medium bore size cylinder double acting/with valve

Ⓐ Actuation	: Push out when energized/single solenoid
Ⓑ Mounting	: Axial foot
Ⓒ Bore size	: φ40 mm
Ⓓ Port thread	: Rc thread
Ⓔ Cushion	: Both sides cushioned
Ⓕ Stroke length	: 100 mm
Ⓖ Valve voltage	: 100 VAC
Ⓗ Switch model No.	: Reed T0H switch, lead wire length 1 m
Ⓘ Switch quantity	: 1 on rod side
Ⓙ Option	: Cushion needle position S
Ⓚ Accessory	: Rod eye

[H] Switch model No.

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

How to order switch

[T switch]

For rod side

● Switch body + mounting bracket set

SCA2 - T0H - 40

- T0H: Switch model No. (Item Ⓗ)
- 40: Bore size (Item Ⓒ on the previous page)

● Switch body only

SW - T0H

- T0H: Switch model No. (Item Ⓗ)

* Contact CKD when using an environment-friendly T switch.

● Switch mounting bracket set

SCA2 - TS - 40

- TS: Mounting bracket
- 40: Bore size (Item Ⓒ on the previous page)

For head side

● Switch body + mounting bracket set

SCA2 - V - T0H - 40

- T0H: Switch model No. (Item Ⓗ)
- 40: Bore size (Item Ⓒ on the previous page)

● Switch body only

SW - T0H

- T0H: Switch model No. (Item Ⓗ)

* Contact CKD when using an environment-friendly T type switch.

● Switch mounting bracket set

SCA2 - V - TS - 40

- TS: Mounting bracket
- 40: Bore size (Item Ⓒ on the previous page)

[T2YD switch]

● Switch body + mounting bracket set

SCA2 - T2YD - 40

- T2YD: Switch model No. (Item Ⓗ)
- 40: Bore size (Item Ⓒ on the previous page)

● Switch body only

SW - T2YD

- T2YD: Switch model No. (Item Ⓗ)

● Mounting bracket set

SCA2 - T - 40

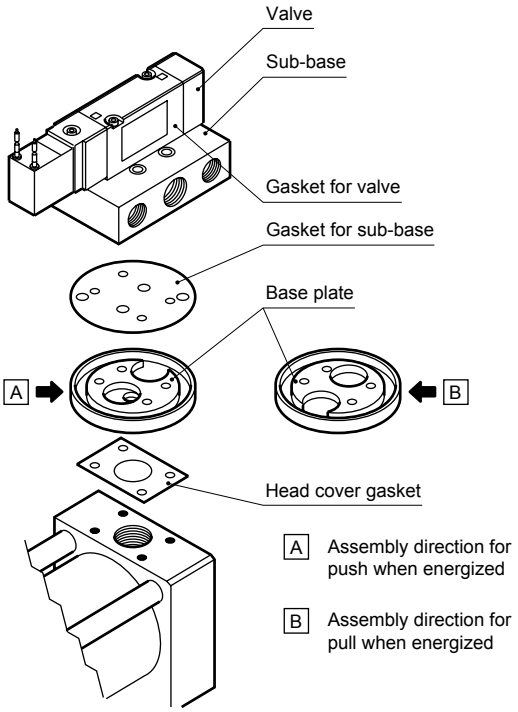
- 40: Bore size (Item Ⓒ on the previous page)

How to order mounting bracket

Bore size (mm) / Mounting bracket	φ40	φ50	φ63	φ80	φ100
Foot (LB) *2	S1-LB-40	S1-LB-50	S1-LB-63	S1-LB-80	S1-LB-100
Flange (FA/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

*1 : For material of the mounting bracket, refer to page 440.
*2 : The foot mounting bracket is provided as 2 pcs./set.
*3 : All mounting brackets are supplied with mounting bolts.

Changing to push when energized or pull when energized



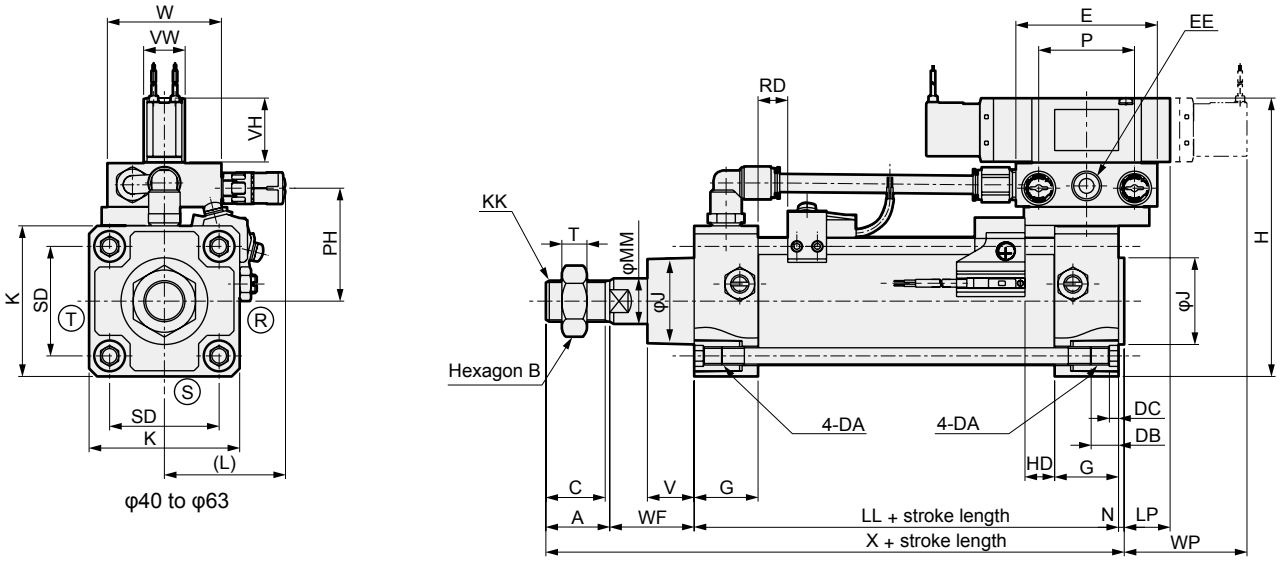
Internal structure

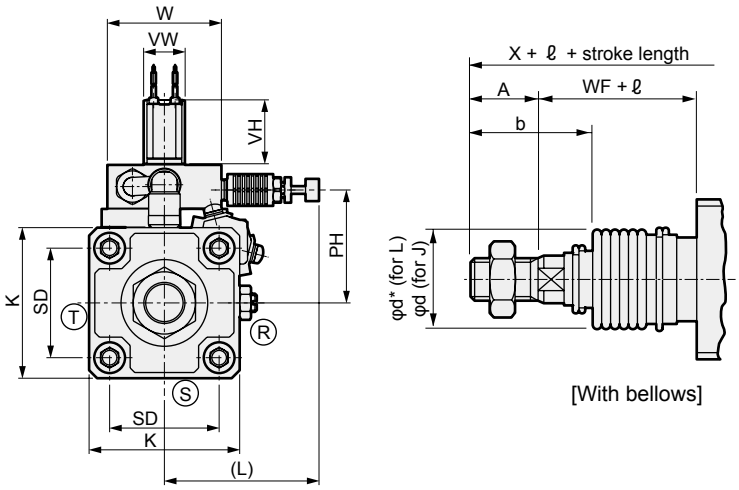
Same as SCA2 Series (double acting/single rod). Refer to page 440.

MEMO

Dimensions

● Basic (00)





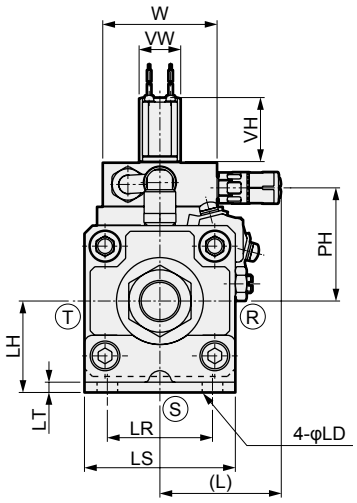
Code	Basic (00) basic dimensions																										
Bore size	A	B	C	E	EE	DB	DC	G	H	J	K	KK	L	LL	LP	MM	N	P	PH	SD	T	V	VH	VW	W	WF	WP	X
φ40	22	22	20	62	Rc1/4	12	4	26	113	31	57	M14×1.5	60	93	22	16	2	42	45	40.5	8	18.5	28	18	50	33.5	55	150.5
φ50	28	27	26	62	Rc1/4	12	4	28	122	38	66	M18×1.5	60	101	20.5	20	2.5	42	49.5	48	11	20.5	28	18	50	37	53.5	168.5
φ63	28	27	26	76	Rc3/8	12	4	30	149	38	80	M18×1.5	64	105	20	20	3	51	60.5	59	11	21	36	23	60	35	62	171
φ80	36	32	34	94	Rc1/2	16	5	34	188	43	98	M22×1.5	122	116	26.5	25	3.5	64	78.5	74	13	23.5	43	29	90	48	72.5	203.5
φ100	45	41	43	94	Rc1/2	16	5	36	208	51	118	M26×1.5	122	128	25	30	4	64	88.5	90	16	32	43	29	90	53	71	230

Code	With switch								With bellows										
Bore size	T0,T5 T2,T3		T1,T2Y T3Y,T2J		T8		T2W, T3W		b	d	d*	ℓ							
	RD	HD	RD	HD	RD	HD	RD	HD				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	*1 Over 500
φ40	11	11	10	10	5	5	13	13	41	40	40	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke length/3.0) + 8
φ50	13	13	12	12	7	7	15	15	47	47	48	22	36	49	63	90	119	146	(Stroke length/3.6) + 7.5
φ63	13	13	12	12	7	7	15	15	45	47	48	22	36	49	63	90	119	146	(Stroke length/3.6) + 7.5
φ80	14.5	14.5	13.5	13.5	8.5	8.5	16.5	16.5	58.5	53	55	14	26	38	49	72	96	119	(Stroke length/4.3) + 2.5
φ100	18.5	18.5	17.5	17.5	12.5	12.5	20.5	20.5	69.5	61	65	20	32	42	53	76	98	120	(Stroke length/4.5) + 9

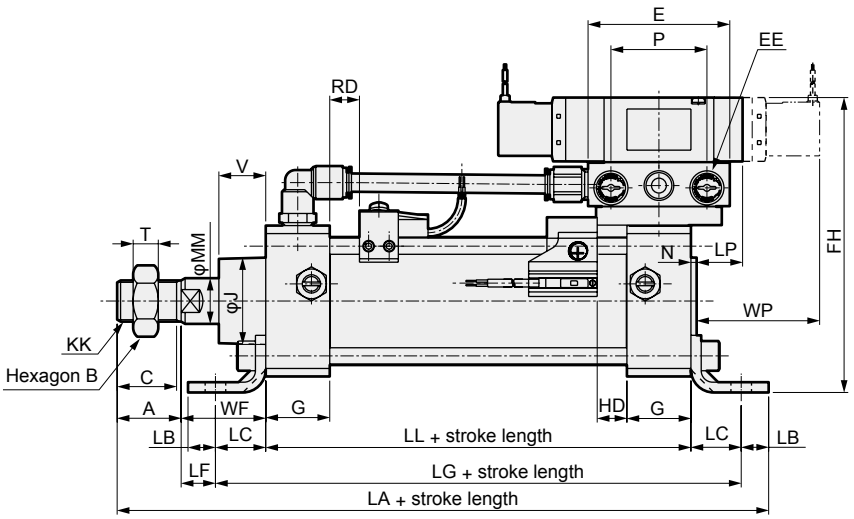
*1 : For the ℓ dimension, round up below the decimal point.
*2 : Refer to page 599 for dimensions of projecting section of T2YD switch.
*3 : For the dimensions of the accessories, refer to pages 454 and 455.

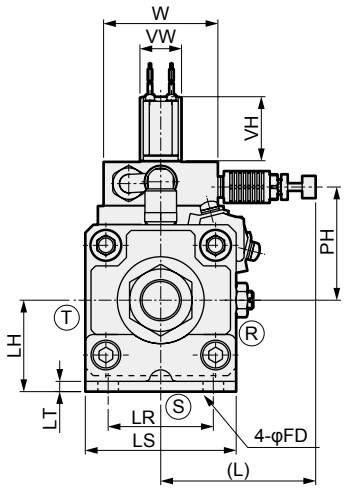
Dimensions CAD

● Axial foot (LB)

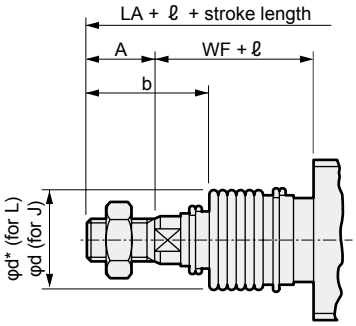


φ40 to φ63





φ80, φ100



[With bellows]

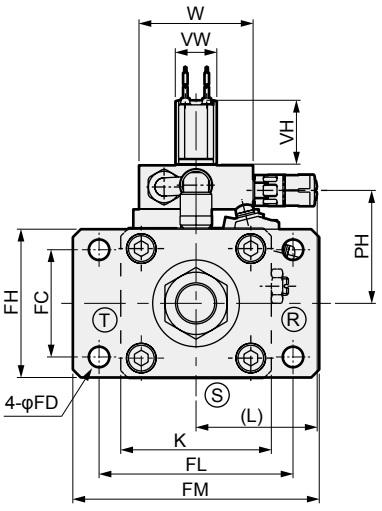
Code	Axial foot (LB) basic dimensions																						Mounting method									
Bore size	A	B	C	E	EE	FH	G	KK	L	LL	LP	MM	N	P	PH	T	V	VH	VW	W	WF	WP	LA	LB	LC	LD	LF	LG	LH	LR	LS	LT
φ40	22	22	20	62	Rc1/4	124.5	26	M14×1.5	60	93	22	16	2	42	45	8	18.5	28	18	50	33.5	55	178	10	19.5	9	14	132	40	40	57	3.2
φ50	28	27	26	62	Rc1/4	129	28	M18×1.5	60	101	20.5	20	2.5	42	49.5	11	20.5	28	18	50	37	53.5	200	12	22	9	15	145	40	46	66	4.5
φ63	28	27	26	76	Rc3/8	159	30	M18×1.5	64	105	20	20	3	51	60.5	11	21	36	23	60	35	62	210	12	30	11	5	165	50	60	80	4.5
φ80	36	32	34	94	Rc1/2	199	34	M22×1.5	122	116	26.5	25	3.5	64	78.5	13	23.5	43	29	90	48	72.5	251	14	37	14	11	190	60	74	98	6.0
φ100	45	41	43	94	Rc1/2	216	36	M26×1.5	122	128	25	30	4	64	88.5	16	32	43	29	90	53	71	278	21	31	14	22	190	67	80	118	6.0

Code	With switch								With bellows											
Bore size	T0,T5 T2,T3		T1,T2Y T3Y,T2J		T8		T2W,T3W		b	d	d*	ℓ								
	RD	HD	RD	HD	RD	HD	RD	HD				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	*1 Over 500	
φ40	11	11	10	10	5	5	13	13	41	40	40	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke length/3.0) + 8	
φ50	13	13	12	12	7	7	15	15	47	47	48	22	36	49	63	90	119	146	(Stroke length/3.6) + 7.5	
φ63	13	13	12	12	7	7	15	15	45	47	48	22	36	49	63	90	119	146	(Stroke length/3.6) + 7.5	
φ80	14.5	14.5	13.5	13.5	8.5	8.5	16.5	16.5	58.5	53	55	14	26	38	49	72	96	119	(Stroke length/4.3) + 2.5	
φ100	18.5	18.5	17.5	17.5	12.5	12.5	20.5	20.5	69.5	61	65	20	32	42	53	76	98	120	(Stroke length/4.5) + 9	

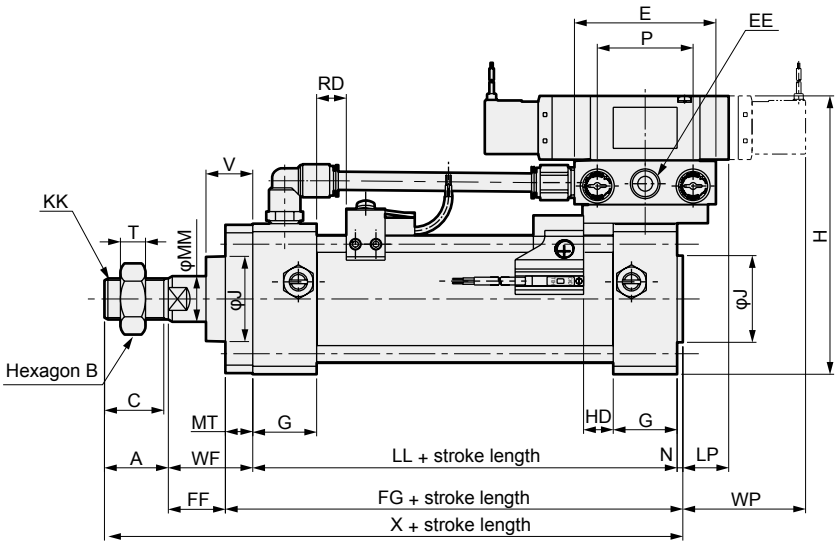
*1 : For the ℓ dimension, round up below the decimal point.
*2 : Refer to page 599 for dimensions of projecting section of T2YD switch.
*3 : For the dimensions of the accessories, refer to pages 454 and 455.

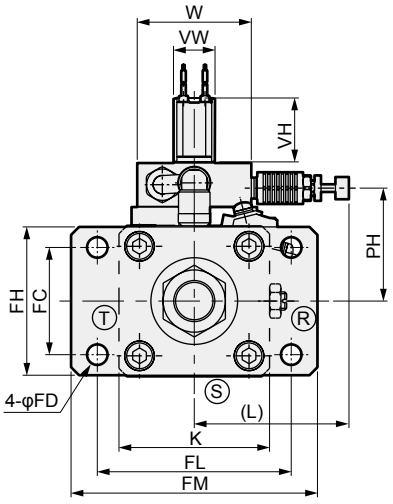
Dimensions CAD

● Rod side flange (FA)

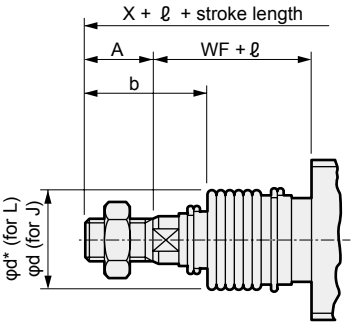


φ40 to φ63





φ80,φ100



[With bellows]

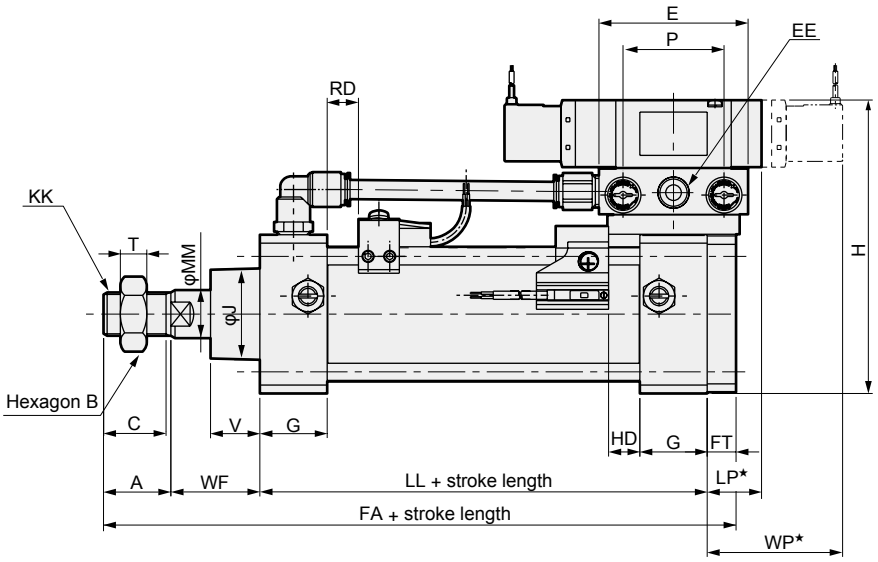
Code	Rod side flange (FA) basic dimensions																								Mounting method						
Bore size	A	B	C	E	EE	G	H	J	K	KK	L	LL	LP	MM	MT	N	P	PH	T	V	VH	VW	W	WF	WP	X	FC	FD	FF	FG	FH	FL	FM
φ40	22	22	20	62	Rc1/4	26	113	31	57	M14×1.5	60	93	22	16	12	2	42	45	8	18.5	28	18	50	33.5	55	150.5	40	9	21.5	107	57	80	100
φ50	28	27	26	62	Rc1/4	28	122	38	66	M18×1.5	60	101	20.5	20	12	2.5	42	49.5	11	20.5	28	18	50	37	53.5	168.5	47	9	25	115.5	65	85	108
φ63	28	27	26	76	Rc3/8	30	149	38	80	M18×1.5	64	105	20	20	16	3	51	60.5	11	21	36	23	60	35	62	171	60	11	19	124	80	106	130
φ80	36	32	34	94	Rc1/2	34	188	43	98	M22×1.5	122	116	26.5	25	19	3.5	64	78.5	13	23.5	43	29	90	48	72.5	203.5	74	14	29	138.5	98	125	153
φ100	45	41	43	94	Rc1/2	36	208	51	118	M26×1.5	122	128	25	30	19	4	64	88.5	16	32	43	29	90	53	71	230	88	14	34	151	118	144	180

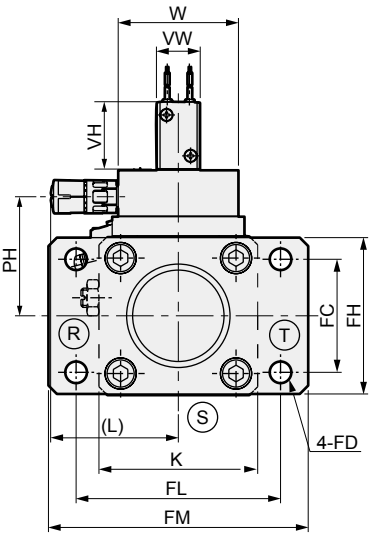
Code	With switch								With bellows										
	T0, T5 T2, T3		T1, T2Y T3Y, T2J		T8		T2W, T3W		b	d	d*	ℓ							
Bore size	RD	HD	RD	HD	RD	HD	RD	HD				50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 300	Over 300 to 400	Over 400 to 500	*1 Over 500
φ40	11	11	10	10	5	5	13	13	41	40	40	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke length/3.0) + 8
φ50	13	13	12	12	7	7	15	15	47	47	48	22	36	49	63	90	119	146	(Stroke length/3.6) + 7.5
φ63	13	13	12	12	7	7	15	15	45	47	48	22	36	49	63	90	119	146	(Stroke length/3.6) + 7.5
φ80	14.5	14.5	13.5	13.5	8.5	8.5	16.5	16.5	58.5	53	55	14	26	38	49	72	96	119	(Stroke length/4.3) + 2.5
φ100	18.5	18.5	17.5	17.5	12.5	12.5	20.5	20.5	69.5	61	65	20	32	42	53	76	98	120	(Stroke length/4.5) + 9

*1 : For the ℓ dimension, round up below the decimal point.
*2 : Refer to page 599 for dimensions of projecting section of T2YD switch.
*3 : For the dimensions of the accessories, refer to pages 454 and 455.

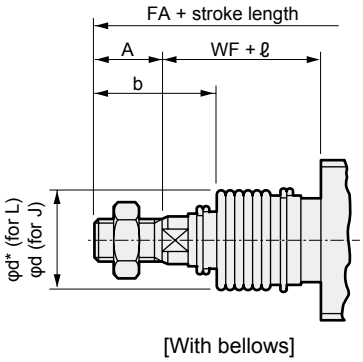
Dimensions

● Head side flange (FB)

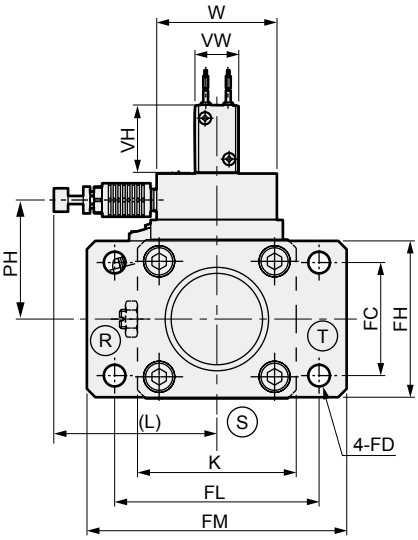




φ40 to φ63



[With bellows]



φ80, φ100

Code	Head side flange (FB) basic dimensions																					Mounting method							
Bore size	A	B	C	E	EE	G	H	K	KK	L	LL	LP*	MM	P	PH	T	V	VH	VW	W	WP*	FA	FC	FD	FH	FJ	FL	FM	FT
φ40	22	22	20	62	Rc1/4	26	113	57	M14×1.5	60	93	20	16	42	45	8	18.5	28	18	50	57	160.5	40	9	57	131	80	100	12
φ50	28	27	26	62	Rc1/4	28	122	66	M18×1.5	60	101	18	20	42	49.5	11	20.5	28	18	50	56	178	47	9	65	142.5	85	108	12
φ63	28	27	26	76	Rc3/8	30	149	80	M18×1.5	64	105	17	20	51	60.5	11	21	36	23	60	65	184	60	11	80	144.5	106	130	16
φ80	36	32	34	94	Rc1/2	34	188	98	M22×1.5	122	116	23	25	64	78.5	13	23.5	43	29	90	76	219	74	14	98	170	125	153	19
φ100	45	41	43	94	Rc1/2	36	208	118	M26×1.5	122	128	21	30	64	88.5	16	32	43	29	90	75	245	88	14	118	187	144	180	19

Code	With switch								With bellows										
Bore size	T0, T5 T2, T3		T1, T2Y T3Y, T2J		T8		T2W, T3W		b	d	d*	ℓ							
	RD	HD	RD	HD	RD	HD	RD	HD				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
φ40	11	11	10	10	5	5	13	13	41	40	40	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke length/3.0) + 8
φ50	13	13	12	12	7	7	15	15	47	47	48	22	36	49	63	90	119	146	(Stroke length/3.6) + 7.5
φ63	13	13	12	12	7	7	15	15	45	47	48	22	36	49	63	90	119	146	(Stroke length/3.6) + 7.5
φ80	14.5	14.5	13.5	13.5	8.5	8.5	16.5	16.5	58.5	53	55	14	26	38	49	72	96	119	(Stroke length/4.3) + 2.5
φ100	18.5	18.5	17.5	17.5	12.5	12.5	20.5	20.5	69.5	61	65	20	32	42	53	76	98	120	(Stroke length/4.5) + 9

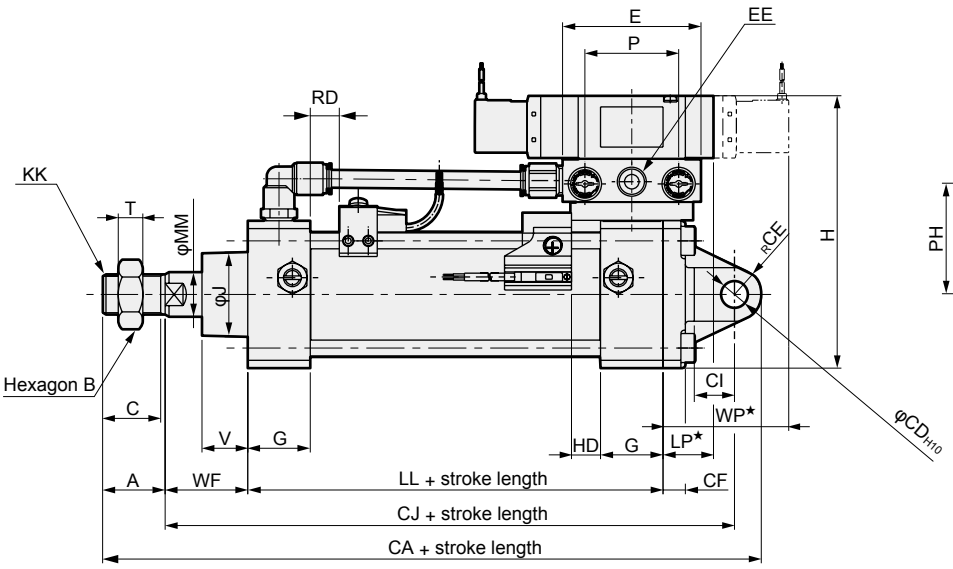
*1 : For the ℓ dimension, round up below the decimal point.

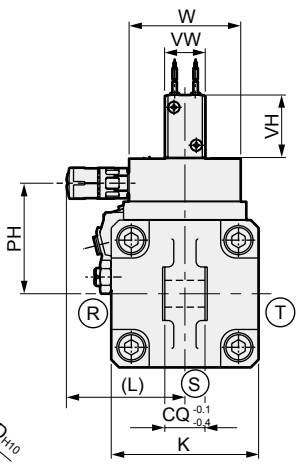
*2 : **Refer to page 599 for dimensions of projecting section of T2YD switch.**

*3 : **For the dimensions of the accessories, refer to pages 454 and 455.**

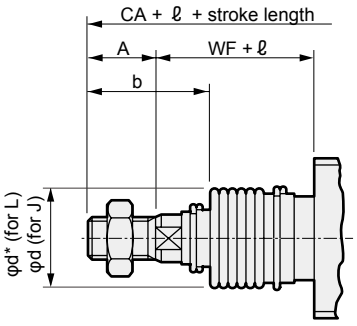
Dimensions CAD

● Eye bracket (CA)

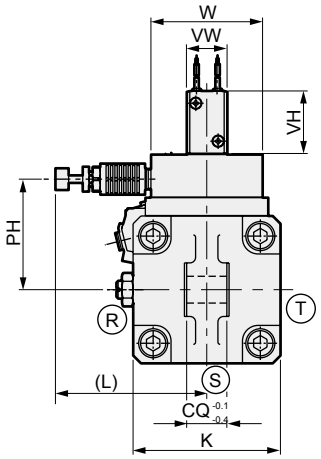




φ40 to φ63



[With bellows]



φ80,φ100

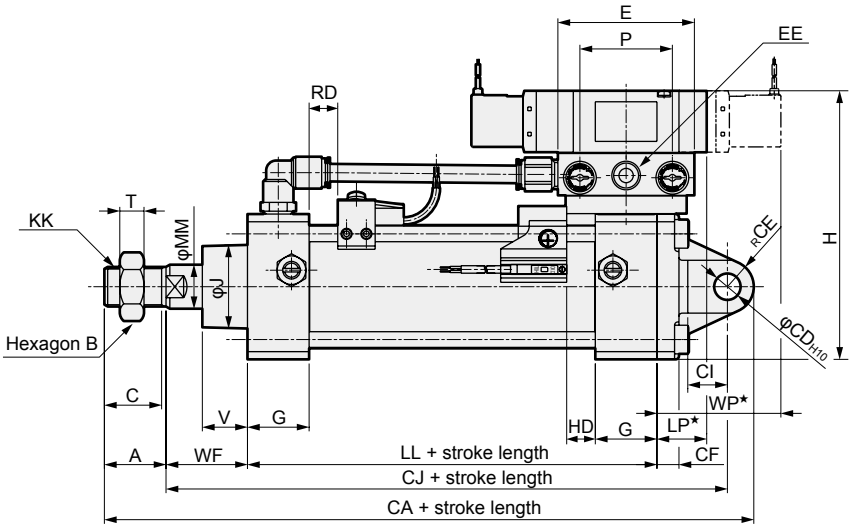
Code	Eye bracket (CA) basic dimensions																					Mounting method						
Bore size	A	B	C	E	EE	G	H	K	KK	L	LL	LP*	MM	P	PH	T	V	VH	VW	W	WF	WP*	CA	CD	CE	CF	CI	CJ	CQ
φ40	22	22	20	62	Rc1/4	26	113	57	M14×1.5	60	93	20	16	42	45	8	18.5	28	18	50	33.5	57	192.5	12	12	10	18	158.5	18
φ50	28	27	26	62	Rc1/4	28	122	66	M18×1.5	60	101	18	20	42	49.5	11	20.5	28	18	50	37	56	210	12	12	10	18	170	18
φ63	28	27	26	76	Rc3/8	30	149	80	M18×1.5	64	105	17	20	51	60.5	11	21	36	23	60	35	65	221	14	16	10	24	177	20
φ80	36	32	34	94	Rc1/2	34	188	98	M22×1.5	122	116	23	25	64	78.5	13	23.5	43	29	90	48	76	272	20	20	14	30	216	28
φ100	45	41	43	94	Rc1/2	36	208	118	M26×1.5	122	128	21	30	64	88.5	16	32	43	29	90	53	75	298	20	20	16	30	233	28

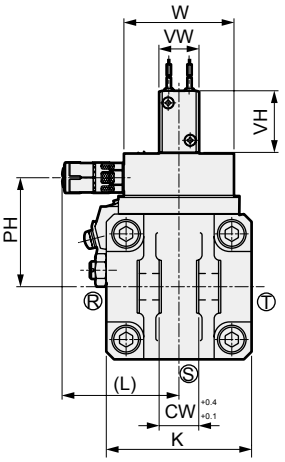
Code	With switch								With bellows											
Bore size	T0, T5 T2, T3		T1, T2Y T3Y, T2J		T8		T2W, T3W		b	d	d*	ℓ								
	RD	HD	RD	HD	RD	HD	RD	HD				50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 300	Over 300 to 400	Over 400 to 500	*1 Over 500	
φ40	11	11	10	10	5	5	13	13	41	40	40	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke length/3.0) + 8	
φ50	13	13	12	12	7	7	15	15	47	47	48	22	36	49	63	90	119	146	(Stroke length/3.6) + 7.5	
φ63	13	13	12	12	7	7	15	15	45	47	48	22	36	49	63	90	119	146	(Stroke length/3.6) + 7.5	
φ80	14.5	14.5	13.5	13.5	8.5	8.5	16.5	16.5	58.5	53	55	14	26	38	49	72	96	119	(Stroke length/4.3) + 2.5	
φ100	18.5	18.5	17.5	17.5	12.5	12.5	20.5	20.5	69.5	61	65	20	32	42	53	76	98	120	(Stroke length/4.5) + 9	

*1 : For the ℓ dimension, round up below the decimal point.
*2 : Refer to page 599 for dimensions of projecting section of T2YD switch.
*3 : For the dimensions of the accessories, refer to pages 454 and 455.

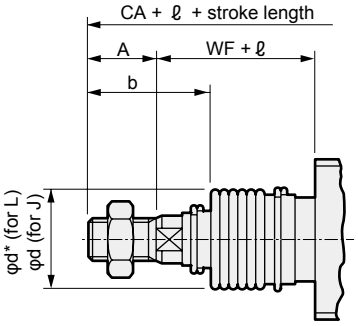
Dimensions CAD

● Clevis bracket (CB)

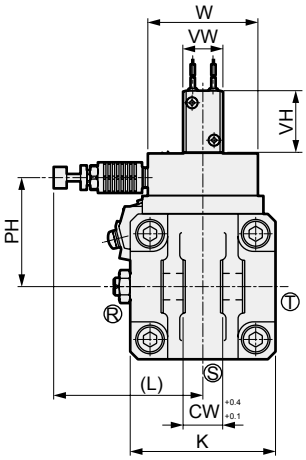




φ40 to φ63



[With bellows]



φ80, φ100

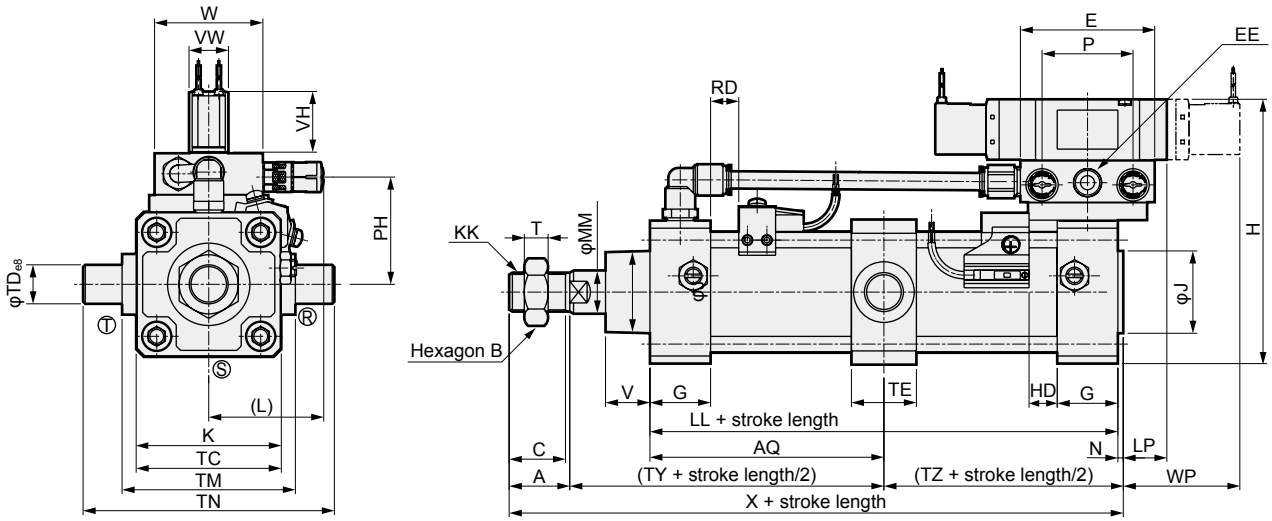
Code	Clevis bracket (CB) basic dimensions																					Mounting method						
Bore size	A	B	C	E	EE	G	H	K	KK	L	LL	LP*	MM	P	PH	T	V	VH	VW	W	WF	WP*	CA	CD	CE	CF	CI	CJ	CW
φ40	22	22	20	62	Rc1/4	26	113	57	M14×1.5	60	93	20	16	42	45	8	18.5	28	18	50	33.5	57	192.5	12	12	10	18	158.5	18
φ50	28	27	26	62	Rc1/4	28	122	66	M18×1.5	60	101	18	20	42	49.5	11	20.5	28	18	50	37	56	210	12	12	10	18	170	18
φ63	28	27	26	76	Rc3/8	30	149	80	M18×1.5	64	105	17	20	51	60.5	11	21	36	23	60	35	65	221	14	16	10	24	177	20
φ80	36	32	34	94	Rc1/2	34	188	98	M22×1.5	122	116	23	25	64	78.5	13	23.5	43	29	90	48	76	272	20	20	14	30	216	28
φ100	45	41	43	94	Rc1/2	36	208	118	M26×1.5	122	128	21	30	64	88.5	16	32	43	29	90	53	75	298	20	20	16	30	233	28

Code	With switch								With bellows											
Bore size	T0, T5 T2, T3		T1, T2Y T3Y, T2J		T8		T2W, T3W		b	d	d*	ℓ								
	RD	HD	RD	HD	RD	HD	RD	HD				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	*1 Over 500	
φ40	11	11	10	10	5	5	13	13	41	40	40	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke length/3.0) + 8	
φ50	13	13	12	12	7	7	15	15	47	47	48	22	36	49	63	90	119	146	(Stroke length/3.6) + 7.5	
φ63	13	13	12	12	7	7	15	15	45	47	48	22	36	49	63	90	119	146	(Stroke length/3.6) + 7.5	
φ80	14.5	14.5	13.5	13.5	8.5	8.5	16.5	16.5	58.5	53	55	14	26	38	49	72	96	119	(Stroke length/4.3) + 2.5	
φ100	18.5	18.5	17.5	17.5	12.5	12.5	20.5	20.5	69.5	61	65	20	32	42	53	76	98	120	(Stroke length/4.5) + 9	

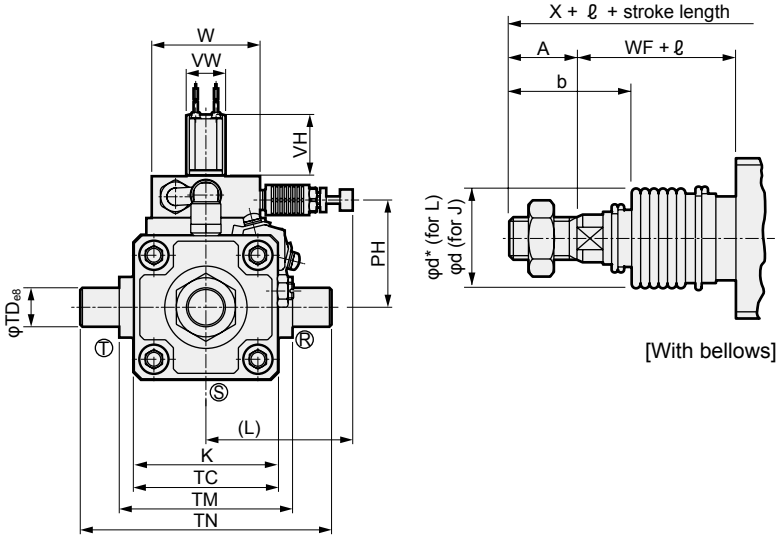
*1 : For the ℓ dimension, round up below the decimal point.
*2 : Refer to page 599 for dimensions of projecting section of T2YD switch.
*3 : For the dimensions of the accessories, refer to pages 454 and 455.

Dimensions CAD

● Intermediate trunnion (TC)



φ40 to φ63



[With bellows]

Code	Intermediate trunnion (TC) basic dimensions																								Mounting method			
Bore size	A	B	C	E	EE	H	J	K	KK	L	LL	LP	MM	N	P	PH	T	V	VH	VW	W	WF	WP	X	AQ	TC	TD	TE
φ40	22	22	20	62	Rc1/4	113	31	57	M14×1.5	60	93	22	16	2	42	45	8	18.5	28	18	50	33.5	55	150.5	46.5+Stroke length/2	57	16	30
φ50	28	27	26	62	Rc1/4	122	38	66	M18×1.5	60	101	20.5	20	2.5	42	49.5	11	20.5	28	18	50	37	53.5	168.5	50.5+Stroke length/2	67	18	30
φ63	28	27	26	76	Rc3/8	149	38	80	M18×1.5	64	105	20	20	3	51	60.5	11	21	36	23	60	35	62	171	52.5+Stroke length/2	82	20	35
φ80	36	32	34	94	Rc1/2	188	43	98	M22×1.5	122	116	26.5	25	3.5	64	78.5	13	23.5	43	29	90	48	72.5	203.5	58+Stroke length/2	100	25	40
φ100	45	41	43	94	Rc1/2	208	51	118	M26×1.5	122	128	25	30	4	64	88.5	16	32	43	29	90	53	71	230	64+Stroke length/2	121	35	50

Code					With switch								With bellows										
Bore size	TM	TN	TY	TZ	T0, T5 T2, T3		T1, T2Y T3Y, T2J		T8		T2W, T3W		b	d	d*	ℓ							
					RD	HD	RD	HD	RD	HD	RD	HD				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	*1 Over 500
φ40	63	95	80	48.5	11	11	10	10	5	5	13	13	41	40	40	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke length/3.0) + 8
φ50	80	116	87.5	53	13	13	12	12	7	7	15	15	47	47	48	22	36	49	63	90	119	146	(Stroke length/3.6) + 7.5
φ63	90	130	87.5	55.5	13	13	12	12	7	7	15	15	45	47	48	22	36	49	63	90	119	146	(Stroke length/3.6) + 7.5
φ80	115	165	106	61.5	14.5	14.5	13.5	13.5	8.5	8.5	16.5	16.5	58.5	53	55	14	26	38	49	72	96	119	(Stroke length/4.3) + 2.5
φ100	135	205	117	68	18.5	18.5	17.5	17.5	12.5	12.5	20.5	20.5	69.5	61	65	20	32	42	53	76	98	120	(Stroke length/4.5) + 9

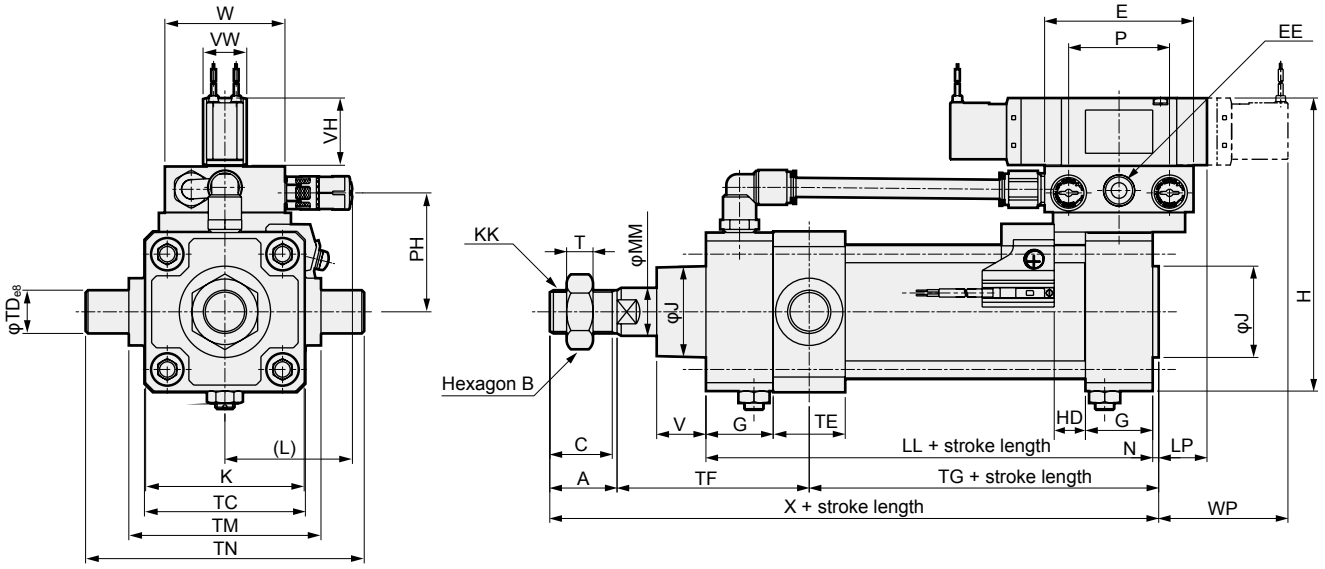
*1 : For the ℓ dimension, round up below the decimal point.

*2 : Refer to page 599 for dimensions of projecting section of T2YD switch.

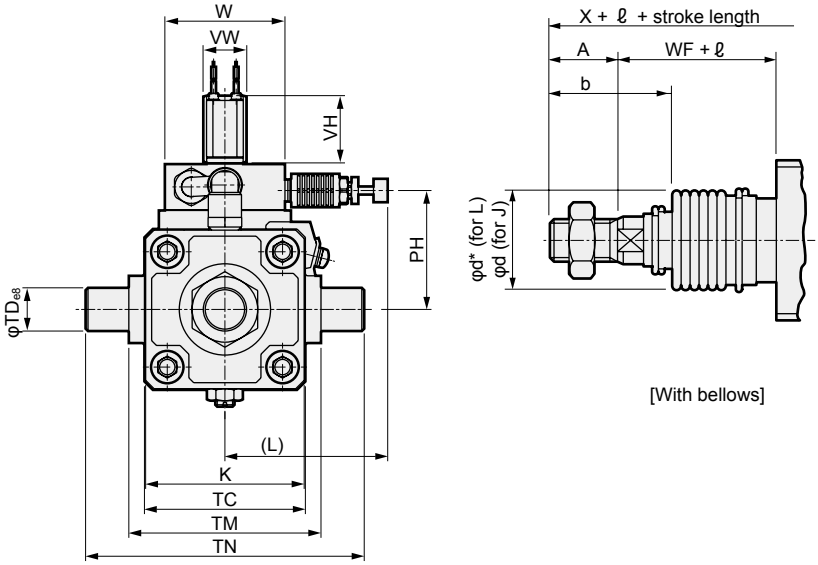
*3 : For the dimensions of the accessories, refer to pages 454 and 455.

Dimensions

● Rod side trunnion (TA)



φ40 to φ63



[With bellows]

φ80, φ100

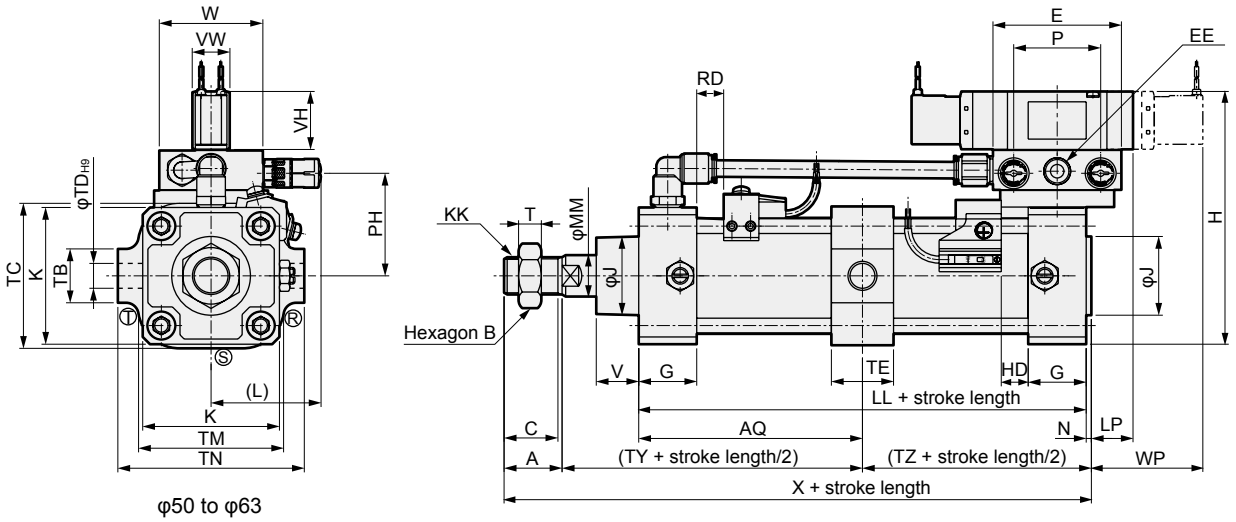
Code	Rod side trunnion (TA) basic dimensions																									Mounting method				
Bore size	A	B	C	E	EE	G	H	J	K	KK	L	LL	LP	MM	N	P	PH	T	V	VH	VW	W	WF	WP	X	TC	TD	TE	TF	TG
φ40	22	22	20	62	Rc1/4	26	113	31	57	M14×1.5	60	93	22	16	2	42	45	8	18.5	28	18	50	33.5	55	150.5	57	16	30	74.5	54
φ50	28	27	26	62	Rc1/4	28	122	38	66	M18×1.5	60	101	20.5	20	2.5	42	49.5	11	20.5	28	18	50	37	53.5	168.5	67	18	30	80	60.5
φ63	28	27	26	76	Rc3/8	30	149	38	80	M18×1.5	64	105	20	20	3	51	60.5	11	21	36	23	60	35	62	171	82	20	35	82.5	60.5
φ80	36	32	34	94	Rc1/2	34	188	43	98	M22×1.5	122	116	26.5	25	3.5	64	78.5	13	23.5	43	29	90	48	72.5	203.5	100	25	40	102	65.5
φ100	45	41	43	94	Rc1/2	36	208	51	118	M26×1.5	122	128	25	30	4	64	88.5	16	32	43	29	90	53	71	230	121	35	50	114	71

Code			With switch				With bellows										
Bore size	TM	TN	T0,T5 T2, T3 HD	T1, T2Y T3Y, T2J HD	T8 HD	T2W, T3W HD	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	*1 Over 500
φ40	63	95	11	10	5	13	41	40	40	25.5	41.5	58.5	75.5	108.5	141.5	174.5	(Stroke length/3.0) + 8
φ50	80	116	13	12	7	15	47	47	48	22	36	49	63	90	119	146	(Stroke length/3.6) + 7.5
φ63	90	130	13	12	7	15	45	47	48	22	36	49	63	90	119	146	(Stroke length/3.6) + 7.5
φ80	115	165	14.5	13.5	8.5	16.5	58.5	53	55	14	26	38	49	72	96	119	(Stroke length/4.3) + 2.5
φ100	135	205	18.5	17.5	12.5	20.5	69.5	61	65	20	32	42	53	76	98	120	(Stroke length/4.5) + 9

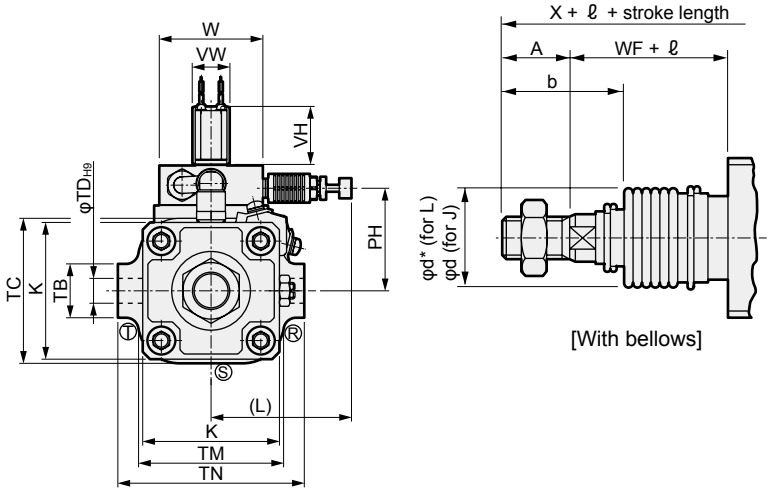
*1 : For the ℓ dimension, round up below the decimal point.
*2 : Refer to page 599 for dimensions of projecting section of T2YD switch.
*3 : For the dimensions of the accessories, refer to pages 454 and 455.

Dimensions

● Intermediate supporting hole trunnion (TF)



φ50 to φ63



φ80,φ100

[With bellows]

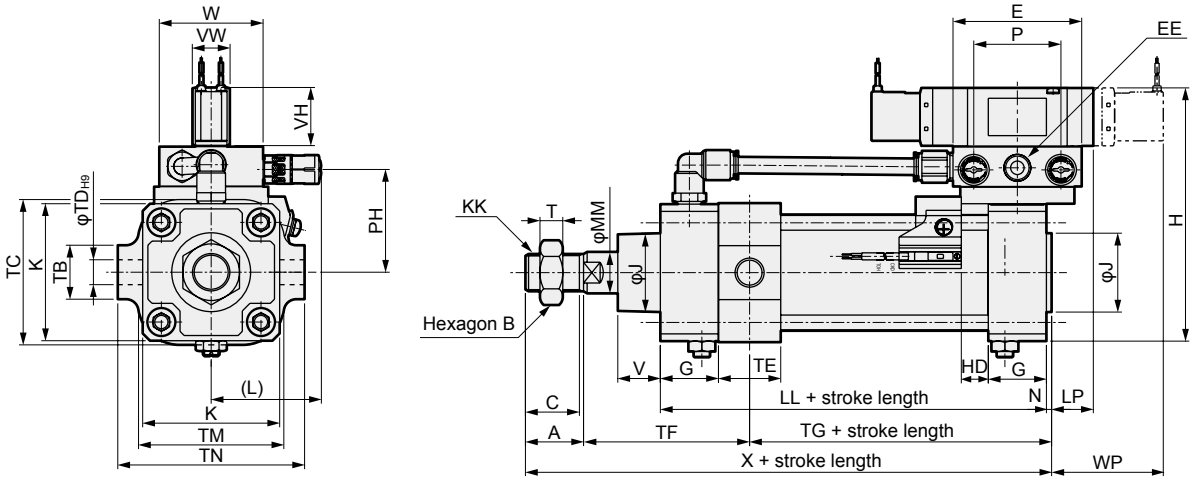
Code	Intermediate hole style trunnion (TF) basic dimensions																						Mounting method						
Bore size	A	B	C	E	EE	H	J	K	KK	L	LL	LP	MM	N	P	PH	T	VH	VW	W	WP	X	AQ	TB	TC	TD	TE	TM	TN
φ50	28	27	26	62	Rc1/4	122	38	66	M18×1.5	60	101	20.5	20	2.5	42	49.5	11	28	18	50	53.5	168.5	50.5+ Stroke length/2	26	67	12	30	70	90
φ63	28	27	26	76	Rc3/8	149	38	80	M18×1.5	64	105	20	20	3	51	60.5	11	36	23	60	62	171	52.5+ Stroke length/2	30	82	14	35	86	104
φ80	36	32	34	94	Rc1/2	188	43	98	M22×1.5	122	116	26.5	25	3.5	64	78.5	13	43	29	90	72.5	203.5	58+ Stroke length/2	35	100	20	40	105	134
φ100	45	41	43	94	Rc1/2	208	51	118	M26×1.5	122	128	25	30	4	64	88.5	16	43	29	90	71	230	64+ Stroke length/2	40	121	20	40	127	150

Code			With switch								With bellows										
Bore size	TY	TZ	T0,T5 T2,T3		T1,T2Y T3Y, T2J		T8		T2W, T3W		b	d	d*	ℓ							
			RD	HD	RD	HD	RD	HD	RD	HD				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
φ50	87.5	53	13	13	12	12	7	7	15	15	47	47	48	22	36	49	63	90	119	146	(Stroke length/3.6) + 7.5
φ63	87.5	55.5	13	13	12	12	7	7	15	15	45	47	48	22	36	49	63	90	119	146	(Stroke length/3.6) + 7.5
φ80	106	61.5	14.5	14.5	13.5	13.5	8.5	8.5	16.5	16.5	58.5	53	55	14	26	38	49	72	96	119	(Stroke length/4.3) + 2.5
φ100	117	68	18.5	18.5	17.5	17.5	12.5	12.5	20.5	20.5	69.5	61	65	20	32	42	53	76	98	120	(Stroke length/4.5) + 9

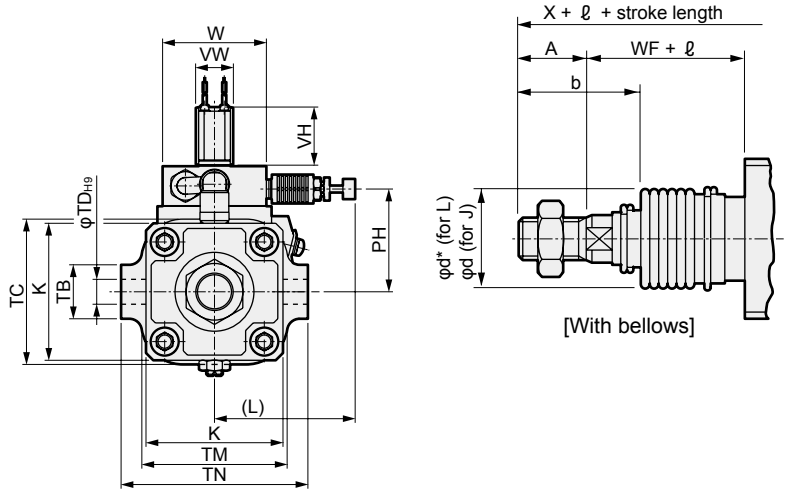
*1 : For the ℓ dimension, round up below the decimal point.
*2 : Refer to page 599 for dimensions of projecting section of T2YD switch.
*3 : For the dimensions of the accessories, refer to pages 454 and 455.

Dimensions

● Rod side hole trunnion (TD)



φ50 to φ63



[With bellows]

φ80,φ100

Code	Rod side hole trunnion (TD) basic dimensions																						Mounting method							
Bore size	A	B	C	E	EE	G	H	J	K	KK	L	LL	LP	MM	N	P	PH	T	VH	VW	W	WP	X	TB	TC	TD	TE	TF	TG	TM	TN
φ50	28	27	26	62	Rc1/4	28	122	38	66	M18×1.5	60	101	20.5	20	2.5	42	49.5	11	28	18	50	53.5	168.5	26	67	12	30	80	60.5	70	90
φ63	28	27	26	76	Rc3/8	30	149	38	80	M18×1.5	64	105	20	20	3	51	60.5	11	36	23	60	62	171	30	82	14	35	82.5	60.5	86	104
φ80	36	32	34	94	Rc1/2	34	188	43	98	M22×1.5	122	116	26.5	25	3.5	64	78.5	13	43	29	90	72.5	203.5	35	100	20	40	102	65.5	105	134
φ100	45	41	43	94	Rc1/2	36	208	51	118	M26×1.5	122	128	25	30	4	64	88.5	16	43	29	90	71	230	40	121	20	40	109	76	127	150

Code	With switch				With bellows										
Bore size	T0, T5 T2,T3	T1,T2Y T3Y,T2J	T8	T2W,T3W	b	d	d*	ℓ							
	HD	HD	HD	HD				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	*1 Over 500
φ50	13	12	7	15	47	47	48	22	36	49	63	90	119	146	(Stroke length/3.6) + 7.5
φ63	13	12	7	15	45	47	48	22	36	49	63	90	119	146	(Stroke length/3.6) + 7.5
φ80	14.5	13.5	8.5	16.5	58.5	53	55	14	26	38	49	72	96	119	(Stroke length/4.3) + 2.5
φ100	18.5	17.5	12.5	20.5	69.5	61	65	20	32	42	53	76	98	120	(Stroke length/4.5) + 9

*1 : For the ℓ dimension, round up below the decimal point.

*2 : Refer to page 599 for dimensions of projecting section of T2YD switch.

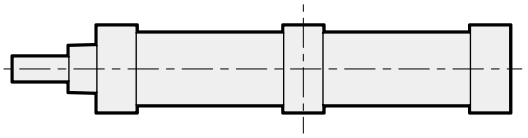
* For the dimensions of the accessories, refer to pages 454 and 455.

About non-sag block

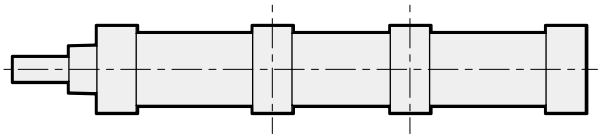
Depending on its stroke length, a non-sag block will be added to the middle part of the cylinder.
The number of non-sag blocks to be added differs depending on the bore size and the stroke length as shown in the table below.

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
φ50	1200 to 1800	1
	1801 to 2000	2
φ63	1200 to 1800	1
	1801 to 2500	2
φ80	1500 to 2000	1
	2001 to 2500	2
φ100	1500 to 2000	1
	2001 to 2500	2

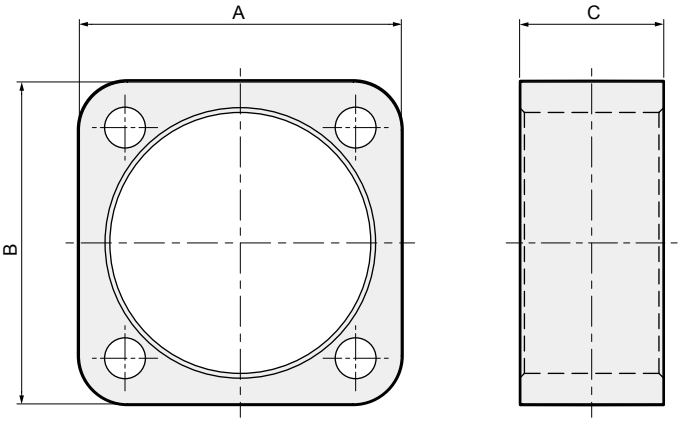


One non-sag block: To be added to the middle point between the covers.



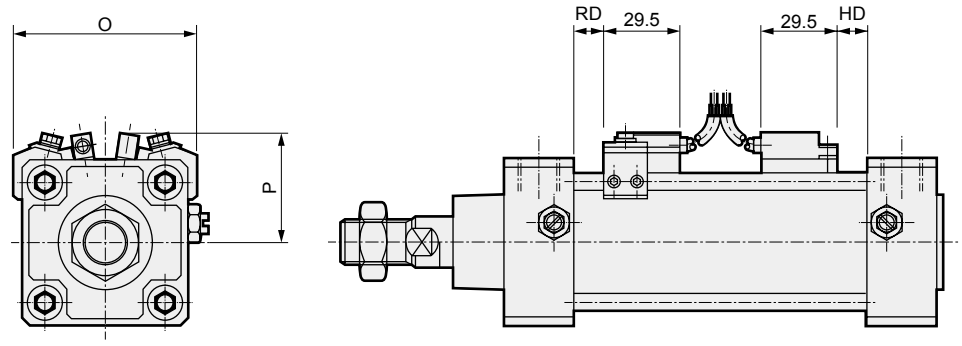
Two non-sag blocks: mount the 2 blocks so that the length of the 2 covers will be divided into 3 equal parts.

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.



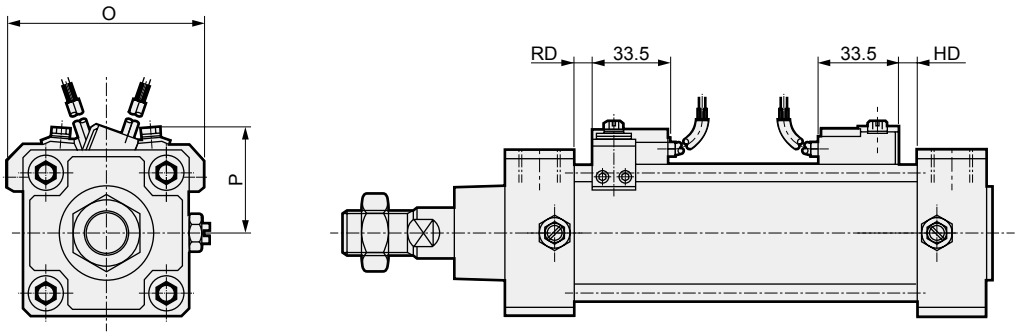
Tube size (mm)	Non-sag block dimensions		
	A	B	C
φ40	56	57	30
φ50	66	67	30
φ63	81	82	35
φ80	99	100	40
φ100	120	121	50

● With T2YD switch



Code / Bore size (mm)	O	P	RD	HD
φ40	66	40	10	10
φ50	73	44.5	12	12
φ63	84	50	12	12
φ80	104	60	13.5	13.5
φ100	120	68	17.5	17.5

● With H0* switch



Code / Bore size (mm)	O	P	RD	HD
φ40	66	42	4	4
φ50	73	44	6	6
φ63	84	47	6	6
φ80	104	58	7.5	7.5
φ100	120	64	11.5	11.5